European Commission

Mediterranean

Core Network Corridor Study

Final report

December 2014

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1 Introduction

The Final Report for the Mediterranean corridor (Report) includes a detailed description of all the elements that should be included in the final work plan.

According to the "Common structure" suggested by the European Commission (EC), the Report has been structured into four sections detailed below:

- **Introduction**, containing all the information concerning the activities realized during the study;
- **Identification of stakeholders**, involved in corridor forums and consulted in order to collect and validated the requested data;
- **Review of studies,** useful for collecting the available information concerning corridor data and main critical issues;
- **Elements of the work plan**, including a description of the technical parameters of the infrastructure for each transport mode, the transport market study, the identification of critical issues on the corridor, the objectives of the corridor and the related key performance indicators (KPIs) as well as a list of projects with the investment required and the envisaged sources of finance.

The following picture shortly describes the activities undertaken according to the methodological approach proposed in the technical offer.

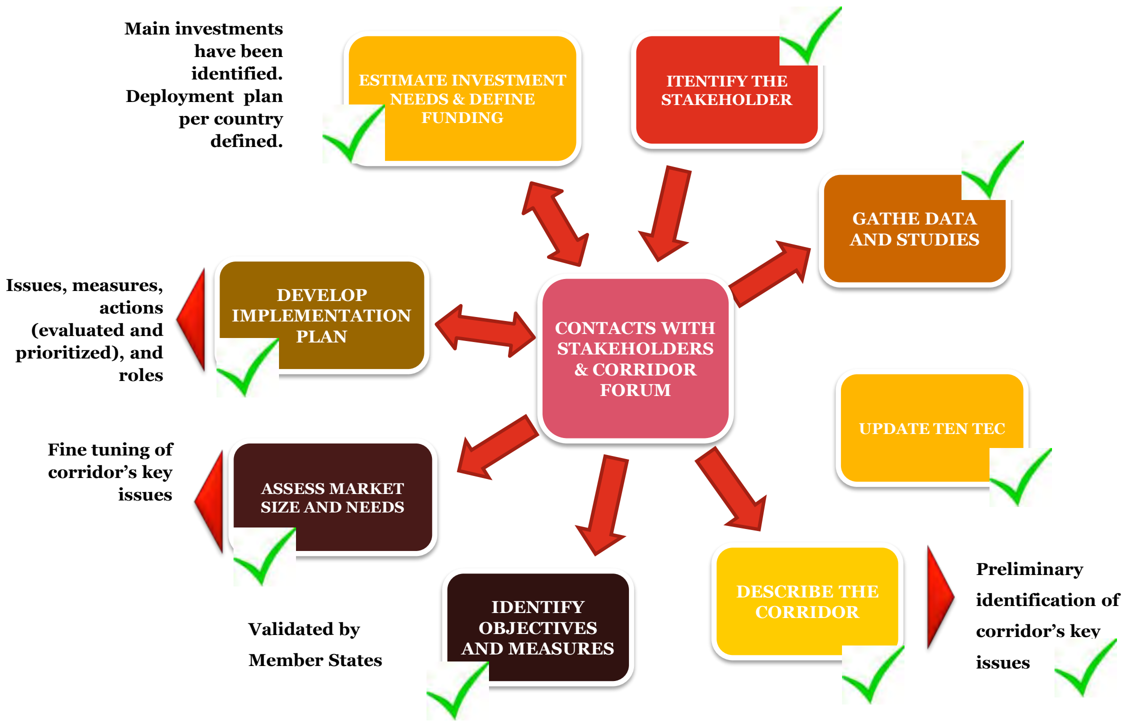


Figure 1 Methodological approach for corridor implementation

The scheme above presents our vision of the work flow, which is conceived in a way to divide the work plan in different sections, fully exploiting all relevant inputs that will be received from the analysis of the data, the examination of the relevant literature, the consultation of the stakeholders, as well as from the project activities themselves.

Coherently, this progress report is organised as follows:

Task	**Description**	**Section**
Introduction		**1**
Identification of stakeholders	It aims to identify the main actors involved along the corridor. Stakeholders have been clustered according to geographic area of responsibility (international, national, regional), type (Association, Governments, Infrastructure manager, Operators) and mode of transport.	**2**
Review of studies	Several studies undertaken in recent years has been analysed in order to identify the relevant corridor-elements (Infrastructure, Demand, General Information, Geographical Coverage, Modal coverage). Focus on the most relevant studies per MS has also been provided.	**3**
Elements of the work plan	This section contains the elements required by the Art 47 of the TEN-T regulation	**4**
Executive summary	This paragraph contains a synthesis of the elements of the work plan.	4.1
Description of the characteristics of the corridor	See the following paragraphs	4.2
Description of the technical parameters for each transport mode	Alignment per mode, list of nodes of the corridor and overlapping sections with other corridors have been detailed. TENtec database update on-going process is described. In addition, the verification of the compliance of the infrastructure with the parameters of the TEN-T regulation is detailed.	*4.2.1*
Transport market study	The analysis assesses the capacity and the traffic flows of the different parts of the corridor, with particular reference to the cross border sections. The analysis carried out is mainly based on the RFC6 implementation plan transport as well the ETISplus database. This section also provides a complete socio-economic analysis for corridor sections and for the corridor catchment area in terms of zoning and related socio-economic indicators (GDP, GDP per capita), etc.	*4.2.2*
Review of critical issues	This section presents a review of the identified critical issues per MS and per mode of transport. The analysis has been reviewed on the basis of the inputs received from the stakeholder’s consultation and of the results of the multimodal market study.	*4.2.3*
Overview of corridor objectives and related measures	This paragraph identifies corridor objectives as coming from EU regulation and specific policy orientation of the Member States along this corridor. An approach for assessing the performance of the corridor with respect to the achievement of such objectives has also been defined.	4.3
Implementation	This section includes a list of projects with the investment required and the envisaged financing sources. A focus on the ERTMS and RIS implementation plan is also provided.	4.4

Table 1 Main contents of the final report

According with existing legal previsions (i.e. UE Regulations 1315/2013 and 1316/2013) and respecting the European policy orientations, the analyses undertaken have been carried out in a **corridor perspective.**

2 Identification of Stakeholders

As a general approach, we can define as potential stakeholder whoever is or forms part of a group, organization, entity, corporate or public institution, social, private sector or international agency having direct or indirect interest in the corridor.

It is important to underline that the role of stakeholders is twofold:

- **providing with studies and information in the field of analysis**, as well as various databases and sources of information useful to identify and analyse current and emerging issues;
- as participant of the corridor Forum, **providing with their opinion as well as valuable experience in their respective fields**. Furthermore, the corridor Forums also represent a chance to receive feedbacks and opinions on the results of this study, to gather suggestions and to fine-tune the activities undertaken.

Thus, in order to ensure the identification of the main actors involved, a cluster approach based on the following criteria has been established (according to the "EC Working Document - Starting the core network corridors"):

- **geographic area of responsibility** differentiated between international, national and regional level (that include only governments);
- **actor type** in terms of:
  - (i) Governments;
  - (ii) Infrastructure managers/providers related to the requested nodes (airports, maritime ports, inland ports, rail - road terminals) identified in the corridor alignment (according to the EU Regulation 1315/2013 and 1316/2013) for the core corridor network;
  - (iii) Operators (most important market players) including railways undertakings responsible for the transport of goods and passengers, on a competitive basis with other companies and others (e.g. shippers, forwarders, etc.);
  - (iv) Associations (representing user groups).
- **modes of transport.**

The resultant structure for the stakeholders' identification process is set as follows.

Competency Scope	Type	Transport mode
International	Infrastructure manager	Airports
		Intermodal terminals
		Ports
		Rail
		Road
	Operator	Airports
		Intermodal terminals
		Ports
		Rail
		Road
	Association	Airports
		Intermodal terminals
		Ports
		Rail
		Road
National	Government	Airports
		Intermodal terminals
		Ports
		Rail
		Road
	Infrastructure manager	Airports
		Intermodal terminals

Competency Scope	Type	Transport mode
		Ports
		Rail
		Road
	Operator	Airports
		Intermodal terminals
		Ports
		Rail
		Road
	Association	Airports
		Intermodal terminals
		Ports
		Rail
		Road
Regional	Government	All

Table 2 Stakeholders' identification process

Stakeholders invited to the **first corridor forum** have been represented by the Member States.

The **second corridor forum** has seen the participation of:

- main rail infrastructure managers along the corridor (restricted to ports or logistic terminals);
- core Rail Freight corridor managers;
- core sea port infrastructure managers;
- core IWW port infrastructure managers.

The **third corridor forum** involved the participants of the second meeting and additionally, the road and airport infrastructure managers as well as the regional representatives.

In order to keep the meetings of the third corridor forum manageable, the TEN-T committee decided that the meetings of the working groups would have taken place around the third and the fourth corridor forum. The first meeting (that took place before the third corridor forum) involved ports and inland waterways.

The **fourth corridor forum** had the same participation as the third Forum meeting. In addition a working group of regions has been organised.

As regards the **consultation of civil society, user organisations and representative organisations**, this has been done by the Coordinators outside the formal Forum meetings, possibly during specific missions in the different Member States and/or through other events along the corridor.

The database resulting from this process is shown in Annex 5.1. and it has been refined on the basis of the feedback received by the Member States authorities during the corridor forums.

3 Review of Studies

Literature review, in the form of existing and on-going studies, databases and traffic models, aims at completing the TENtec database, but also at supporting the corridor description and the identification of the interventions to be undertaken as well as at providing input data for the transport market study.

In order to facilitate an overall assessment, the selected documents/studies have been recorded in a matrix containing several criteria (shown in the following table).

As a general rule, only the latest documents (last five years from 2009 to 2013) has been analysed in order to take advantage of the most updated data and analyses.

Study review is in connection with the identified critical issues (see paragraph 4.2.3) and will be the starting point for projects identification.

Framework for study classification			
General Information		Title	Title of study
		Customer	Organisation funding the study
		Contractor	Study author
		Year of execution	Publication date
		Confidential	Confidential / Restricted (if not fully public)
		Type of Source (purpose of document)	(e.g. position paper, market study, feasibility study, implementation plan, etc.)
Geographical Coverage		Corridor countries	List of countries e.g. ES; FR; IT; SI; HR; HU
		Corridor sections	e.g. Algeciras-Madrid
		Other corridors involved	Drop down list with Lot numbers and names.
Modal coverage		Transport Modes	Drop down list with main modes
		Freight or Passenger	
Study content	Infrastructure	Tech data on current infrastructure	Does it contain technical data on current infrastructure?
		Bottlenecks	Does it describe bottlenecks?
		Infrastructure Projects	Does it contain plans, the feasibility of new projects?
		Tech data on planned infrastructure	Does it show technical specifications for planned infrastructure?
		Cost Data/Analysis on investment	Does it include transport cost data or analysis?
		Financial data on investment	Does it include project costs, and information about financing?
	Demand	Data on historic and current flows	If yes, what time horizon(s) / global demand / modal split / traffic assignment
		Demand/Market Forecasts	
	Others	Traffic Management systems	Does it cover electronic traffic management systems?
		Environmental issues	Does it include environmental assessments, or other externalities?

Table 3 Studies database contents

While the complete record of the selected studies is shown in the Annex 5.2, this section aims to show a detailed fiche of the most relevant collected studies.

It is important to underline that the former represents a general studies review including different types of studies (technically oriented studies but also environmental, financial and transport market studies). On the other hand, the latter represents a selection of the most important studies from a technical point of view. In particular, the studies selected are directly linked to the identification of critical issues.

In this respect, during the review of studies the following elements have been investigated:

- growth rates and estimated demand volumes;
- identified bottlenecks (as is and in the future);
- other underlined critical infrastructure issues;
- accompanying actions proposed;
- proposed investments and their time horizon.

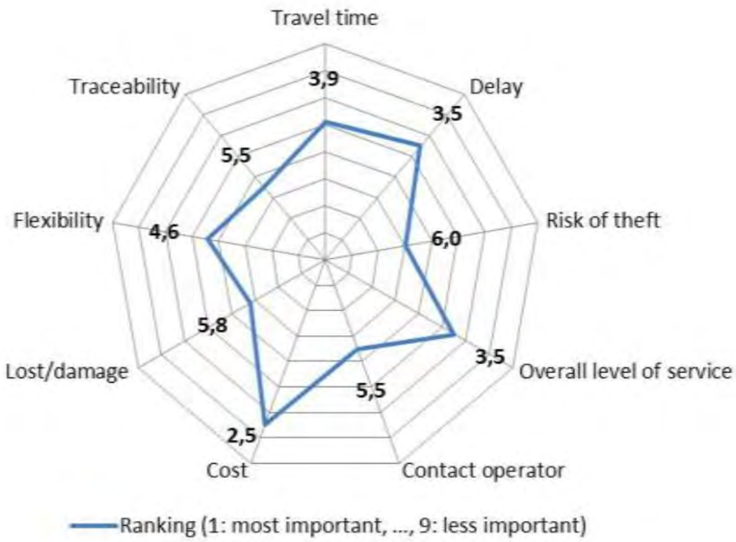
All the above-mentioned elements will be further analysed, thoroughly checked (also comparing the different studies), and then finally summarized in the following study's phases.

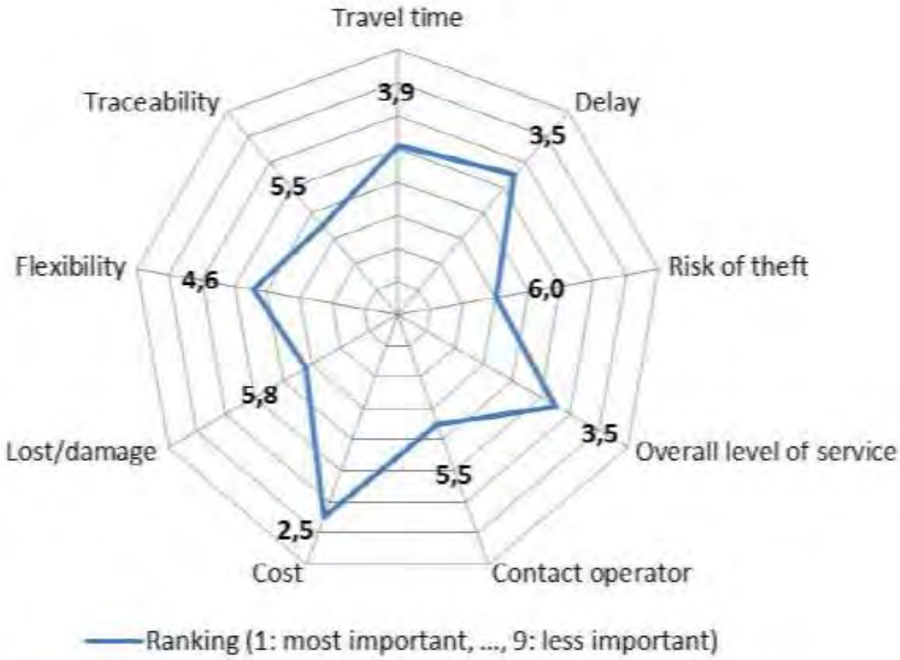
Finally, a summary of the main elements is also provided.

3.1 Detailed fiche of the most relevant collected studies

3.1.1 Corridor level

Title of the study	**RFC 6 Implementation Plan**
Author	EC, Adif, RFF, RFI, Slovenske Zeleznice, MAV, VPE, TP Ferro.
Year	2013
Member State	International (ES / FR / IT / SI / HU)
Corridor section	Spanish, French, Italian, Slovenian and Hungarian rail sections belonging to the corridor
Mode	Rail
Type of source	Implementation plan
Confidential	N
Map	
Description of main findings	▪ corridor description in terms **current freight traffic**, rail **infrastructure**, interoperability and information about **bottlenecks**; ▪ **Demand analysis** and **survey** with operators for defining an **investment plan** to solve the existing **bottlenecks** and for identifying the related costs and the financial expenditures. From the survey, it is possible to note that the **first three attributes supporting the choice of mode** are **cost, overall level of service and delay**.





- Identification of the **foreseen interventions** in order to pursue the objectives of punctuality, capacity upgrade and interoperability.
- Administrative information, **capacity allocation**, **organizational structure** identification in order to **manage** the corridor.
- Analysis of the **current policy transport measures** in the countries belonging to the corridor.

Relevance for corridor Study Activities	**Compliance of corridor infrastructure with TEN-T standards** 1. Analysis and maps of the infrastructure parameters for rail in terms of track gauge, max. train length, axle load, load per meter, train speed, loading gauge, power supply, signalling system and gradient.

*__About the railway line Algeciras-Madrid:__ according to the decision of the 5th meeting of the working group (rfc06) this link will be included in the alignment

2. Identification of corridor alignment and possible diversionary lines per country.

Identification of critical issues

1. Identification of main critical issues for corridor countries in terms of capacity lack, bottlenecks, modernisations, nodes saturation, etc. (for example: analysis of Lyon node bottlenecks regarding saturation and low speed).
2. Identification of physical restriction along the corridor (for example: tunnel restrictions in Slovenia).

Assessment of corridor objectives

1. The study identifies the objectives of rail freight traffic in terms of optimal integration of rail networks, establishment of infrastructure requirements, amelioration of travel time and frequency, capacity increasing and upgrading of maximum weights.
   Identified obstacles to railway interoperability at macro level, concerns three main subsystems:
   - infrastructure: in particular, the **presence of non-standard gauges in Spain, the**

differences of axle load, tunnel gauges and train length;
- energy: **presence of different power systems** (A.C. systems and D.C. systems or without electrification) **and different pantograph**;
- Signalling: **presence of different signalling and train control systems** (in general, one or more system per national network).

Assessment of corridor measures
1. The study addresses specific measures for each member State (for example: Quadrupling of Trieste-Brescia line and upgrading of technical parameters such us maximum speed, maximum gradient, electrification and signalling system).
2. Assessment of the corridor Countries policy measures and organisation for the realisation of the Rail freight corridor (e.g. management board, executive committee, etc.).
3. Assessment of accessibility to ports and terminal for each member State (e.g. development of the access tracks to the Marseille Harbour).

Gathering information for market study
1. Identification of useful sources for data collection such as rail/road traffic for relevant sections and analysis of main international rail/road freight flows with the zones of the Catchment Area (O/D).

Main international ROAD freight flows within zones of the Catchment Area (by O/D)

ORIGIN		DESTINATION		ROAD	RAIL
Code	Name	Code	Name	Tons/Year	Tons/Year
ES51	Cataluña	FR81	Languedoc-Roussillon	2.365.452	827
FR81	Languedoc-Roussillon	ES51	Cataluña	2.357.058	8.820
FR71	Rhône-Alpes	ITC4	Lombardia	1.019.191	183.481
ITC4	Lombardia	FR71	Rhône-Alpes	957.302	102.753

2. Scenario analysis for future freight traffic flows according to coherent hypotheses regarding socio-economic development and modal shift.
3. Realisation of a freight traffic market study with a corridor perspective.

Identification of on-going / planned projects and related characteristics
1. Identification of relevant stakeholders and their needs/projects for defining future scenarios.
2. Identification of national investment plans according to nature of projects, benefits for Rail freight corridor, status of the projects and cost estimation.

Assessment of the investment strategy
1. Definition of an implementation plan and assessment of the investment strategy per Country.
2. Identification of ERTMS deployment plans per Country.
3. Definition of One Stop Shops for the allocation of pre-arranged paths (PaPs) in the corridor.

Within the context of the Mediterranean corridor, several projects co-financed by the European Union have been carried out, as shown in the following table.

EU project	Description
	This project focuses on freight transport connecting Lyon and Madrid (CLYMA) to enable a coordinated implementation of the network in order to stimulate the deployment of the Green corridor concept as introduced in the Freight Logistic Action Plan. The project also intends to develop a managerial structure for the intermodal corridor. CLYMA project aims at developing a demand/offer analysis on Madrid – Lyon axis and to identify the related existing problems and bottlenecks.
	SETA (South East Transport Axis) project aims at the implementation of measures for the improvement of accessibility and logistic workflows as a basis for regional development in South East Europe. SETA focus on the upgrading of the already existing rail infrastructure (with moderate investment costs) and the connection to all other means of transport. Several studies supported by SETA are aimed at analysing bottlenecks in railway infrastructures and ports connections concerning the eastern part of Mediterranean corridor.
	SoNorA (South north Axis) is a transnational cooperation project, financed within the Accessibility priority of the Central Europe Programme, which aims at helping regions across Central Europe. The project aims at developing accessibility in South North direction and between the Adriatic and Baltic seas. Inland waterways studies promoted by Sonora (concerning also all the Italian IWW segments) have been useful for understanding the main problems connected to waterway freight traffics.

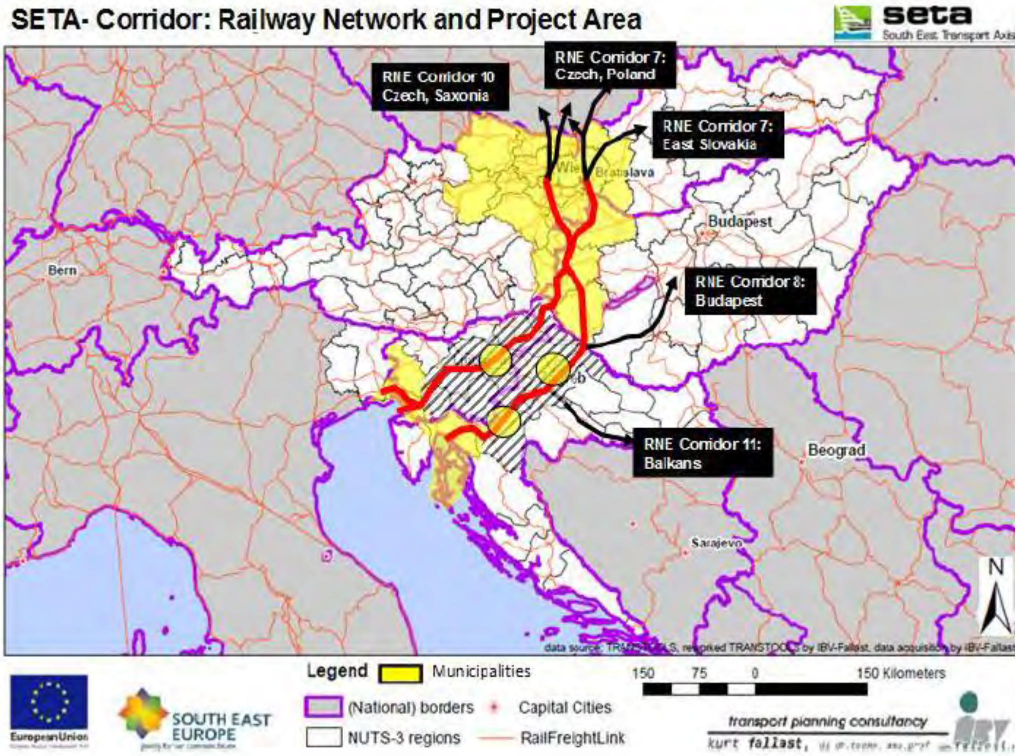
Table 4 EU projects within the context of the Mediterranean corridor

It is very important to take into account the assumptions and the results provided by this study in order to look for synergies and to guarantee consistency and coherence in the upcoming tasks of the project.

The following fiche provides with details on SETA project, the most relevant in terms of critical issues identification.

Title of the study	**Bottleneck analysis**
Author	SETA
Year	2013
Member State	IT,SI,HR,HU
Corridor section	All sections belonging to the East part of the Mediterranean corridor
Mode	Rail, Sea
Type of source	Technical study on railway infrastructure bottlenecks
Confidential	No

Map



Description of main findings

This document provides a detailed overview of the following topics:

- Transport capacity of the SETA corridor (capacity and bottlenecks of infrastructure, transnational terminals, ports etc.)
- Report on bottlenecks related to the urban nodes (capacity and bottlenecks of metropolitan transport networks)
- Report on organizational/interoperability bottlenecks
- Report on port bottlenecks (capacity and bottlenecks of ports/hinterland)
- Technical data on port infrastructures
- Current traffic flows (ports, railway sections)
- Last mile connections with ports.

For identifying the bottlenecks in the existing and future transportation system, the bottleneck analysis is based on the:

- results of WP 4.2 (analysis of transport infrastructure), especially the calculation of design speed (technical speed restriction) and free speed (travel time) for the periods 2015, 2020 and 2030 and improvement of the reference network for 2015, 2020, 2030
- findings of WP 4.3 (transportation model), for the calculation of the existing and future transportation demand (passenger and freight, number of trains)
- GPS measures for the SETA main line, which are necessary to show the existing bottlenecks of travel time
- analysis of the existing railway timetables (graphic time tables) to calculate the average waiting time and the average time in motion for passenger and freight

constraints

- evaluation of the capacity and the conditions of the railway facilities (together with the affected railway companies)

Even if this report is focused on the SETA project area, several rail sections match with the Mediterranean corridor.

Compliance of corridor infrastructure with TEN-T standards

1. An overview of the operating speed for the railway network is presented in several tables.

	DESIGN SPEED PASS.	DESIGN SPEED FREIGHT	NUMBER OF TRACKS
	Current	Current	Current
Pragersko-Zidani Most			
Pragersko - Celje	90	90	2
Celje - Zidani Most	75	75	2
Pragersko-Hodos			
Hodos-Murska Sobota	100	100	1
Murska Sobota - Ormoz	80-90	80-90	1
Ormoz - Pragersko	100	100	1
Zalaszentivan-Hodos			
Zalaszentivan - Zalalövö	100	100	1
Zalalövö - Hodos	100	100	1
Zidani Most-Ljubljana	80	80	2
Ljubljana-Pivka-Villa Opicina			
Ljubljana - Pivka	75	75	1
Pivka - Divaca	75	75	2
Divaca - Sezana	75	75	2
Sezana - Villa Opicina	100	100	1
Triest - Monfalcone	110	110	1
			1
Divaca-Koper	75	75	1

Relevance for corridor Study Activities

Table 13: Design speed / Nr. of tracks - Slovenian part of SETA-corridor

*please note: Ljubliana-Pivka is a double track line (according to the IM Network statement 2014)

	DESIGN SPEED PASS.	DESIGN SPEED FREIGHT	NUMBER OF TRACKS
	Current	Current	Current
Gyekenyes-Dugo Selo			
Gyekenyes - Koprvinica	80	80	1
Koprvnica - Krizeci	50	50	1
Krizevci - Dugo Selo	140	140	1
Dugo Selo - Zagreb GK	80	80	2
Zagreb-Rijeka			
Zagreb - Karlovac	70, 80, 100, 120	70, 80, 100, 120	1
Karlovac - Ostarije	60-80	60-80	1
Ostarije - Moravice	70	70	1
Moravice - Skreljevo	50-70	50-70	1
Skrljevo - Rijeka	80	80	1
Pivka - Rijeka			
Pivka - Sapjane	75	75	1
Sapjane -Rijeka	50	50	1

Table 10: Speed/number of tracks - Croatian part of SETA-corridor

*Please note:

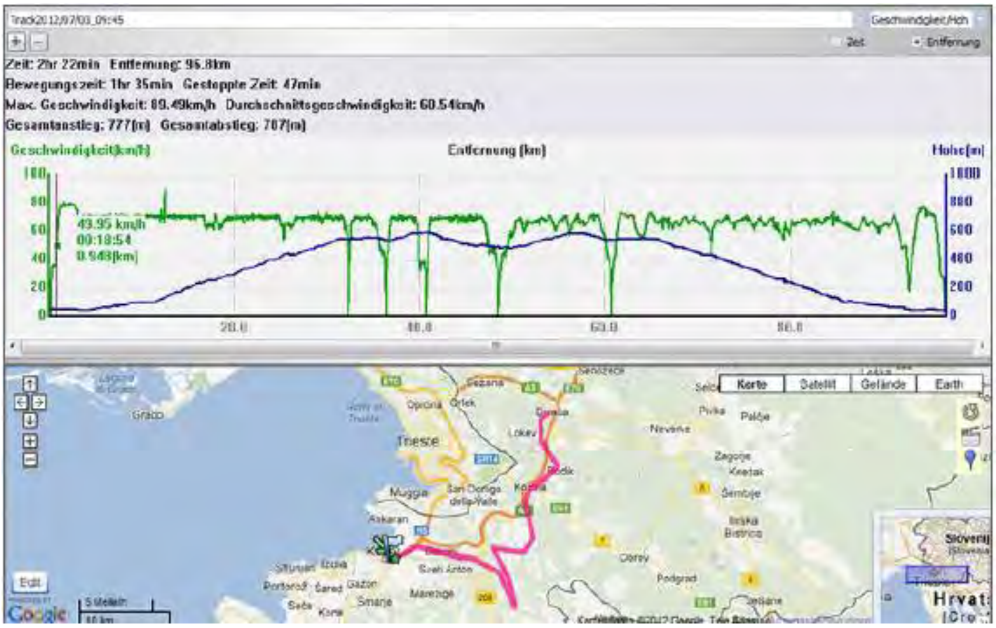
The recent renewal on the railway section Križevci – Koprivnica provided the speed of 140 km/h.

The renewal on the section Zdenčina – Jastrebarsko has been done so the speed on the section Zagreb – Karlovac is 140 km/h.

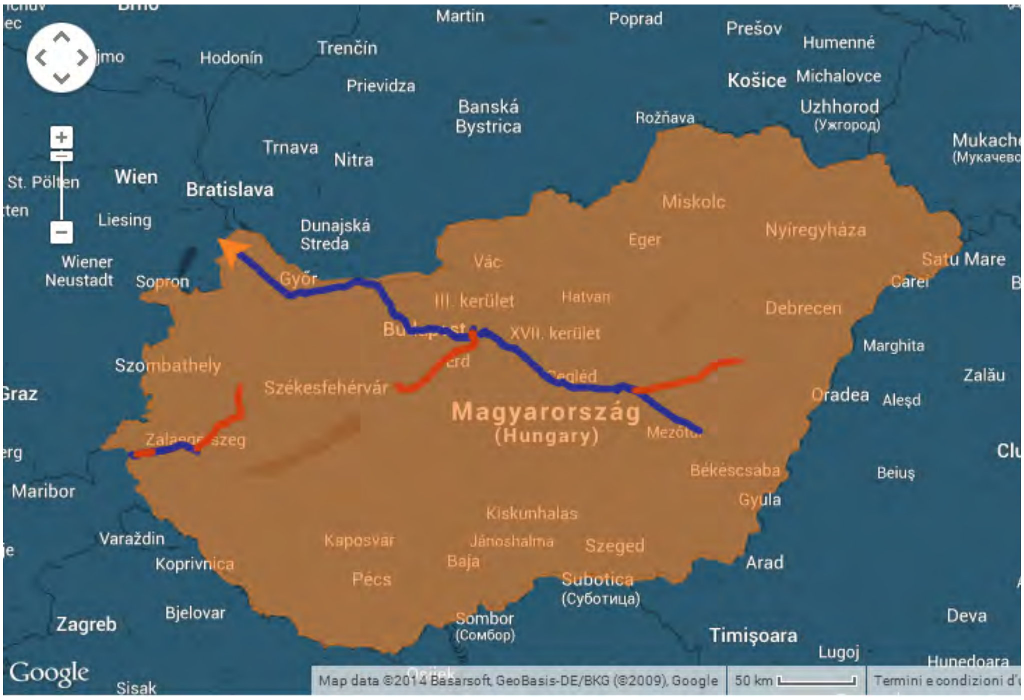
3. Overview, for each rail section, of the actual electrification and signalling system

Identification of the identified critical issue (some examples are listed below)
1. **Rijeka- Zagreb**: The railway was constructed 135 years ago, in accordance with the technical possibilities of that time, designed to meet the then prevailing industrial and trade requirements. It is characterized by an unfavourable route with hard ascends and sharp curves. This rail is therefore completely contrary to the modern traffic requirements and needs, not to speak of the traffic standards in the future

2. **Divača- Koper**: In the existing operation schedule on the mountainous **single track** Divača – Koper section preference was given (based on energy consumption consideration) to the upstream trains against the downstream trains. It means that the downstream running trains have to wait until the upstream running train have passed. There are 3 side-tracks on the whole line. **This limits railway capacity in 48 km, so that the existing 80 trains (in both directions) are near the maximum capacity of this section.** This operation schedule decreases the speed of the freight trains. From the designed speed of 80 km/h the speed of the running trains is 34 km/h. Compared with that, speed of passenger trains is about 60 km/h.



3. **Analysis of the signalling system**



Blue lines: Ertms level 1.
Red lines: Ertms level 2
Actual Ertms lines

Project	User	Supplier	ERTMS Level	Line Type	Order Date	In Service Date	Total Track Length (km)
Boba-Bajánsenye	NIF	Thales	Level 2	ML	2012		202
Budapest - Hungarian border	MAV	Thales	Level 1		2003		306
Budapest-Kelenfold - Szekesfehervar	NIF	Siemens	Level 2	ML	2011	2013	130
Budapest-Kelenfold - Szekesfehervar	NIF	Siemens	Level 1				
Ferencváros - Gyoma	MAV	Siemens	Level 1				2013
Hodos Line (Zalaegerszeg - Zalalovo - Hodos)	MAV	Thales	Level 1		2000		74
Stadler Vehicles for Gysev	Gysev	Siemens	Level 2		2013		
Stadler Vehicles for MAV	MAV	Siemens	Level 2		2013		
Szajol - Puspoklandany	NIF	Thales	Level 2	ML	2012		132
TRAXX Locos	MAV-TRAKCIO Zrt	Bombardier	Level 1/2		2011	2012	

Ertms is planned also for the lines:

- line Boba – Székesfehérvár – Budapest,
- Pusztaszabolcs – Budapest,
- Szolnok – Nyíregyháza – Záhony
- Budapest – Miskolc – Nyíregyháza

Assessment of corridor measures
Increase of good transport by rail aiming at reduce CO2 emission

Gathering information for market study
1. Several tables present current port traffic flows

Port and port-railway capacities

ports	year	area				capacity of cargo handling (in t/year)					
		total area m2	storage area m2	container storage area m2	length of piers (in m)	General cargo	Bulk Cargo	Iron	Coal	Timber	total dry cargo
Rijeka	2012	2.012.639	1.087.000	23.500	7.183	2.305.019	2.000.384	877.384	1123000	254474	4.559.877
Koper	2012	2.800.000	1.223.000	270.000	3.200	1.000.000	7.000.000	na	na	1500000	na
Monfalcone	2012										3.467.858
Trieste	2012										13.008.33

ports	year			Services		Port and port-railway capacities				Dry ports	
		cars (nr.of cars)	container (in TEU)	Shipping lines Far East (service per week)	Shipping lines Africa America (service per week)	Port.railway operator	port container loading capacity TEU/day	railway capacity: number of trains/day (incoming)	railway capacity: number of trains/day (outgoing)	location, name	capacity port - dry port (trains/da y)
Rijeka	2012	**	270.000	3	0*	HŽ	490	14	18	Škrljevo	4
Koper	2012	650.000	600.000	2	30 intra MED	4	840	30	30	EDC SEŽANA	10
Monfalcone	2012	na	591								
Trieste	2012		393.186								

* There are no direct services to AGCT from Africa and America, but we are connected to those services via mediterranean feeder lines
** The port of Rijeka doesn't have a car terminal, so they are included in the „general cargo" category

Identification of on-going/planned projects and related characteristics:

1. Section: Karlovac-Zagreb (HR): planned measures with short term targets (2012-2015) and long term targets (2015-2020) are described in the report

2. Section: Zagreb-Koprivnica- HU border: (HR): planned measures with short term targets (2012-2015) and long term targets (2015-2020) are described in the report

3. Section Koper- Divača (SI): project for the construction of the new railway line (double electrified track) is fully described, as shown in the following map

4. Pragersko-Hodos (SI): electrification and reconstruction

3.1.2 Spain

Title of the study	**Study of socio economic and financial profitability of the implementation of the third rail in the Mediterranean corridor** (section Castellbisbal-Almussafes)
Member State	Spain
Corridor section	Camp de Tarragona <--> Valencia
Mode	Rail
Type of source	Market study
Confidential	Y
Description of main findings	The study presents a summary of the demand forecast for goods and passengers. From a financial point of view, the study details main parameters to be used in evaluations, such as infrastructure investment costs, operating and maintenance costs of the infrastructure, investment costs for rolling stock, operating costs, revenues from the use of infrastructure and socio-economic costs and benefits. All these data are used for the assessment of financial and socio-economic profitability of the project.
Relevance for corridor Study Activities	**Identification of the main critical issues** The study is focused on the implementation of the UIC gauge. Particularly, the study also treats the construction of a new variant Vandellós – Nudo de Perafort to improve the current single track section. **Assessment of corridor objectives** According to the study, the primary objective is the **implementation of the standard gauge in this section in order to promote freight traffic by connecting private derivations, ports and logistics centres with Europe in standard gauge**, and to improve the passenger traffic. **Assessment of corridor measures** The foreseen upgrading of the railway infrastructure complies with measures to promote the efficient management and use of the transport infrastructure aiming at reducing the external costs, such as pollution, noise, congestion and health damage. **Gathering information for market study** The study includes data on current freight demand and forecasts for the timeframe 2016-2045, considered as input in the study of financial and socio-economic profitability of the implementation of the third rail in the section Castellbisbal - Almussafes of the corridor. For passengers, the current situation of traffic flows has been analysed in the area of influence. In this respect, the current supply of transportation services, both private and collective by modes and purpose of travel has been analysed. **Identification of on-going / planned projects and related characteristics** The study also evaluates the projects conceived to increase the access to the ports of the corridor (Tarragona and Valencia); particular mention if given to standard gauge upgrading projects. **Assessment of the investment strategy** The study includes the financial profitability and the social-economic evaluation of the project, according to the socioeconomic (with respect to the situations with and without project) and financial cash flow of the potential services based on a 30 years' time horizon.

Title of the study	**Demand Study for Eastern Andalusia access to high-speed rail**
Member State	Spain
corridor section	Madrid <--> Córdoba <--> Sevilla <--> Antequera <--> Málaga <--> Granada <-->Almería
Mode	Rail
Type of source	Market study
Confidential	Y
Description of main findings	The purpose of the study is the analysis of rail passengers market (the only existing foresight of this kind in the southeaster area of Spain) in the stretch Sevilla - Granada - Almería.
Relevance for corridor Study Activities	**Assessment of corridor objectives** The study focuses on the potentialities of high-speed railway; therefore, it is in line with the objectives of the corridor from the point of view of economically efficiency and clean transport options to the flows of passengers. **Assessment of corridor measures** Since this is a demand analysis of a high speed rail corridor, it includes measures such as promotion of the efficient management and use of transport infrastructure, reduction of the external costs such as pollution, noise, congestion and health. **Gathering information for market study** The study provides a consistent analysis of the current demand (base year 2009) detailed by mode. **Identification of on-going / planned projects and related characteristics** As mentioned, the study includes the possibility of upgrading the conventional lane to high-speed in the stretch Sevilla - Granada - Almería.

Title of the study	**Studies of rail motorway services development in the Iberian Peninsula in 2020**
Member State	Spain
Corridor section	Algeciras <--> Border ES/FR Cerbere/Portbou
Mode	Rail/Road
Type of source	Market study
Confidential	Y
Description of main findings	The study is focused on the potential demand for rail motorway services. The result obtained for road flows forecast in 2020 is 23,385 trucks / day, differentiating by type of goods and also including empty trucks. The study provides an interesting differentiation for the projection of the different traffic flows (Maghreb - Europe, Iberia - Europe), and the evolution of the parameters of the road mode for future horizons. Projections are based on 2008, so the study may be outdated. The rail motorway services analysis in Europe and the approach of services in the Mediterranean area can be the basis for characterizing the future parameters of such services.
Relevance for corridor Study Activities	**Compliance of corridor infrastructure with TEN-T standards** The study includes a theoretical analysis of the future infrastructure requirements. Although this analysis is not specifically referred to the TEN-T standards, the proposed projects comply with them regarding clearance, slope, speeds and axle loads. **Identification of the identified critical issues** The study includes an analysis of the current situation of the above parameters of the railway network in Spain related to two itineraries respectively called "Mediterranean corridor" and "corridor Andalusia - Catalonia". These two routes cover most of the rail network in the Mediterranean corridor. **Gathering information for market study** 1. Traffic between the Iberian Peninsula and the rest of Europe, including road traffic flows toward the Spanish and Portuguese ports to target the Spanish and Portuguese islands and North Africa. The main source is the Transit Survey conducted on the border between Spain and France in 2004, updated to 2008 using the ADT for heavy vehicles in motorways A9 Le Perthus and A63 Biriatou between 2004 and 2008. 2. Goods flows within Spain are obtained by analysing and processing the results of the Permanent Survey on Transport of Goods by Road (EPTMC) for the years 2007 and 2008. 3. Estimation of the evolution of supply and cost of road transport in the study horizon. A hypothesis of stabilization of annual driverless costs in 2002 and cost of fuel in 2008 was considered, that means an annual increase of 0.4% approx. above inflation, and a cost per kilometre in 2020 of 1.12. **Identification of on-going / planned projects and related characteristics** Planned actions are considered in the road network, including new motorways projects. In parallel, an analysis of the current typologies of heavy vehicles (rigid vehicle, articulated vehicle, etc.) was performed to identify those which might use the rail motorway services and possible developments in the future, especially in the use of road vehicles. **Assessment of the investment strategy** The study does not include any information on the investment strategy. It only includes a cost benefit analysis of the rail motorway services.

Title of the study	**Study the flow of cargo through the Pyrenees. Modal split model**
Member State	Spain/France
corridor section	The entire corridor
Mode	Rail/Road/Sea
Type of source	Market study
Confidential	Y
Description of main findings	While the primary purpose of the study is to update the existing French-Spanish freight transport model, during this process it has been necessary to characterize the transport network for each mode, both physical (infrastructure) and service level (time speeds, frequencies) as well as economic issues (costs and prices). For the configuration of future infrastructure scenarios, the following sources of information have been used: ▪ Plan de Infraestructuras, Transporte y Vivienda del Ministerio de Fomento (2012-2024). Spain. ▪ Schéma National d'Infrastructures de Transport. France. From the point of view of demand, the study includes a specific analysis of the impact of the economic crisis and its effects on the recent evolution.
Relevance for corridor Study Activities	**Identification of the identified critical issues** The main objective of this study is to update the modal split model; therefore, the analysis explores the characterization of the service level (time, cost, etc.). The service levels have been used in order to identify bottlenecks, although there is no a specific analysis. Moreover, with regard to the technical parameters of infrastructure, the study includes the main projects planned in Spain and France until 2040, which identifies certain critical issues of the current situation. **Assessment of corridor objectives** The study focuses on the improvement of the freight rail share in order to create an economically, efficient and clean transport market. **Gathering information for market study** In this regard, the study provides information on the current demand (base year 2010) detailed by mode. Moreover it provides socio-economic data, global demand forecast and the related evolution of the modal split throughout the corridor area until 2040. **Identification of on-going / planned projects and related characteristics** The study includes the main planned projects in Spain and France until 2040 and their main characteristics, although the latter does not provide details.

Title of the study	**Market and traffic research on the European freight corridor No. 4**
Member State	Spain/France
Corridor section	Algeciras <--> Madrid
Mode	Rail/Road/Sea
Type of source	Market study
Confidential	Y
Description of main findings	The study provides a detailed description of the current situation in terms of demand (in particular matrix of freight flows is shown for data 2010), infrastructure characteristics and economic issues related to the traffic flows. Transport demand in the short, medium and long term (respectively 2020, 2030 and 2050) has been evaluated. On the supply side, the foreseen infrastructure projects for the different horizons have been analysed and taken into account, in order to incorporate their impact on traffic projections. An interesting analysis on the qualitative variables based on results of the interviews with operators, carriers and other involved stakeholders influencing transport flows is also provided.

Relevance for corridor Study Activities

Compliance of corridor infrastructure with TEN-T standards
Infrastructure parameters on track gauge, number of tracks and electrification are included.

Identification of the identified critical issues
Although this study explores in detail level of services in terms of time and cost, an analysis of the main bottlenecks has not been carried out.

Assessment of corridor objectives
This study is focused on measure aiming at enhancing the rail share in order to create an economically efficient and clean transport market.

Assessment of corridor measures
This study includes the development of transport infrastructure in the short, medium and long term including measures to promote the efficient management and use of transport infrastructure, measures to reduce external costs: such as pollution, noise, congestion and health damage.

Gathering information for market study
As already mentioned, this study shows the matrix of freight flows by origin-destination (at NUTS3 level in the countries affected by the RFC4) by mode and type of goods (13 groups considered). This estimation has been based on the following sources:

- **flows between Portugal-Europe** have been based on the OTEP survey (based on information provided by the railways undertakings);
- **flows between Spain-Europe** have been obtained by the CAFT survey.
- **other flows in the RFC4** have been calculated from the ETISplus database.

Based on both the above information and forecast of the socioeconomic situation, the study provides the demand projections in 2020, 2030 and 2050.

Identification of on-going / planned projects and related characteristics
As mentioned, the study includes the main planned projects in Spain and France until 2050 and their main characteristics, although their description is limited to gauges, number of tracks and electrification.

Title of the study	**Assistance technique pour la mise à jour des trafics à court et moyen terme dans la section Internationale Figueras-Perpignan de la Ligne à grande vitesse**
Author	SENER
Year	2013
Member State	Spain/France
Corridor section	Figueras-Perpignan
Mode	Rail
Type of source	Market study
Confidential	Y

Map

Description of main findings

This study intends to compare contents, methodology, results and conclusion of TPFERRO analyses concerning the high-speed cross border rail section Figueras-Perpignan with un-updated analysis based on the review of more recent studies and the realisation of additional traffic forecast.

An	Trafics Espagne-France	Trafics de passage	Trafics totaux
2005	1.629.778	744.286	2.374.064
2010	1.900.712	818.475	2.719.187
2015	2.099.747	891.346	2.991.093
2025	2.577.876	1.037.658	3.615.534
2050	4.247.606	1.531.370	5.778.976

Tableau 2: Prévisions de l'Offre de TP FERRO (passagers)
Source : Offre de TPFERRO (2003)

Relevance for corridor Study Activities

Compliance of corridor infrastructure with TEN-T standards

The analyses undertaken in the study evaluate the compliance of the main relevant infrastructural parameters defined by TEN-T Regulation. For example, Spanish trains historically have a length of 450 meters until Barcelona and are equipped with the Iberian gauge.

Identification of the identified critical issues

This study identifies the main critical issues of the new line in terms of train length, track gauge, electrification and signalling systems, capacity and related saturation, infrastructural malfunctioning, rolling stock availability, etc. As a result, some critical issues has been identified such as:

- **different rail gauge** between Spain and France (1680 versus 1435 mm)
- **different electrification and power** (3,000V CC, 25,000 V AC et 1.500 V CC)
- **different signalling systems** (Spain: ASFA, Tunnel Le Phertus: ERTMS, France:

DVK) hampering the interoperability along the corridor

TRONÇONS	
CORRIDOR MEDITERRANEEN	
TUNNEL **Passagers+Marchandises**	UIC
VARIANTE DE FIGUERAS - SECTION INTERNATIONALE **Passagers+Marchandises**	UIC
VILAMALLA - FIGUERAS **Marchandises**	Mixte
GÉRONE MARCHANDISES-VILAMALLA **Marchandises**	Mixte
TUNNEL MONTMELO -GARE GÉRONE **Passagers+Marchandises**	UIC
TUNNEL DE MONTMELO **Passagers + Marchandises**	UIC
MOLLET - MONTMELO **Passagers+Marchandises**	UIC
CASTELLBISBAL - MOLLET DEL VALLES **Marchandises**	Mixte
MORROT-CAN TUNIS-CASTELLBISBAL **Marchandises**	Mixte

Tableau 13: Infrastructure ferroviaire UIC pour les marchandises dans la Péninsule Ibérique (2013)
Source: Élaboration propre

Some of the identified critical issues have been considered as possible constraints into traffic forecast model and coherent scenarios has been set accordingly (e.g. freight traffic forecast in case of rolling stock scarcity).

Assessment of corridor objectives
This study identifies the objectives of rail freight traffic in terms of optimal integration of rail networks, establishment of infrastructure requirements, amelioration of travel time and frequency, capacity increasing and upgrading of train length.

Gathering information for market study
- Analysis of the current situation and comparison with traffic forecast realised;
- Identification of new factors/variables able to modify traffic forecast;
- Impact analysis of every factor/variable (e.g. terminal capacity, rolling stock availability, etc.) in terms of future rail demand/supply.

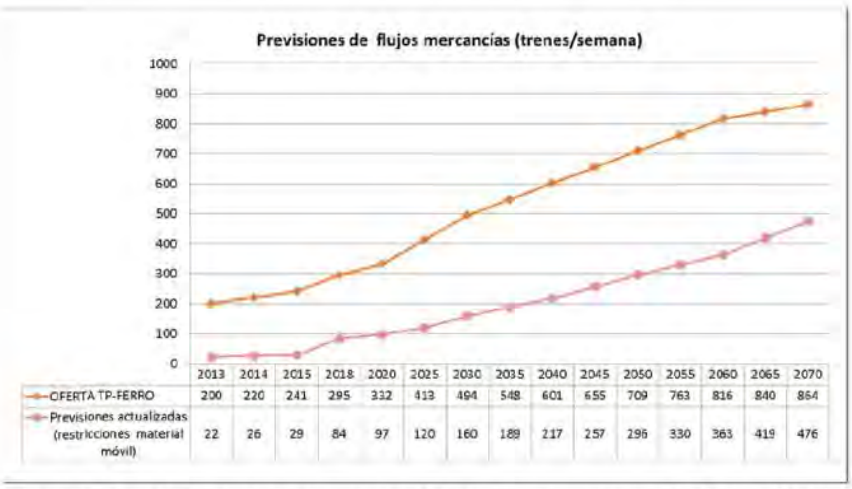
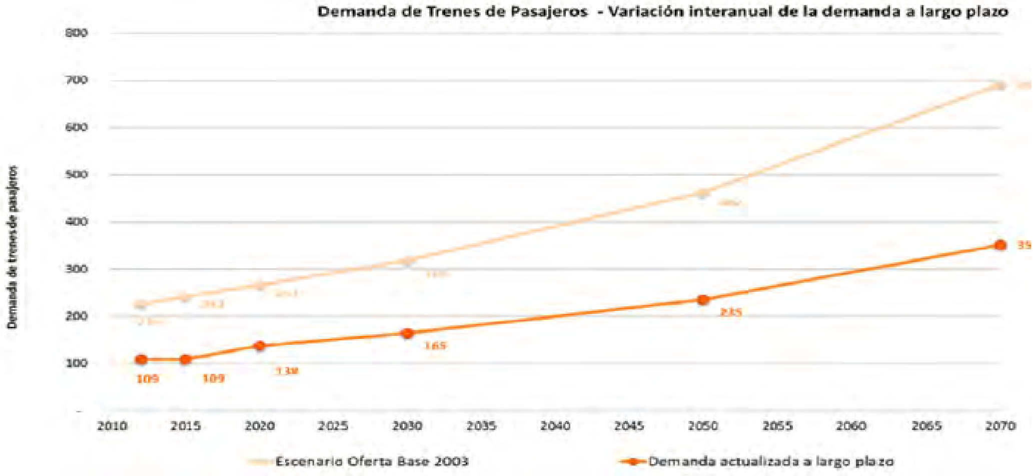


Figure 31: Prévisions de demande attendue trains / semaine (2013-2070), avec des restrictions de disponibilité de matériel
Comparaison avec les prévisions de l'offre TPFERRO
Source : Élaboration propre

The output of the study is the assessment of long-term (2010-2070) forecast for passenger and freight in comparison with TPFERRO forecast.



Identification of on-going / planned projects and related characteristics

1. Identification of relevant stakeholders and their needs/projects for defining future scenarios.
2. Identification of related studies and projects for freight and passenger traffic and recognition of traffic forecast methodologies and scenarios.

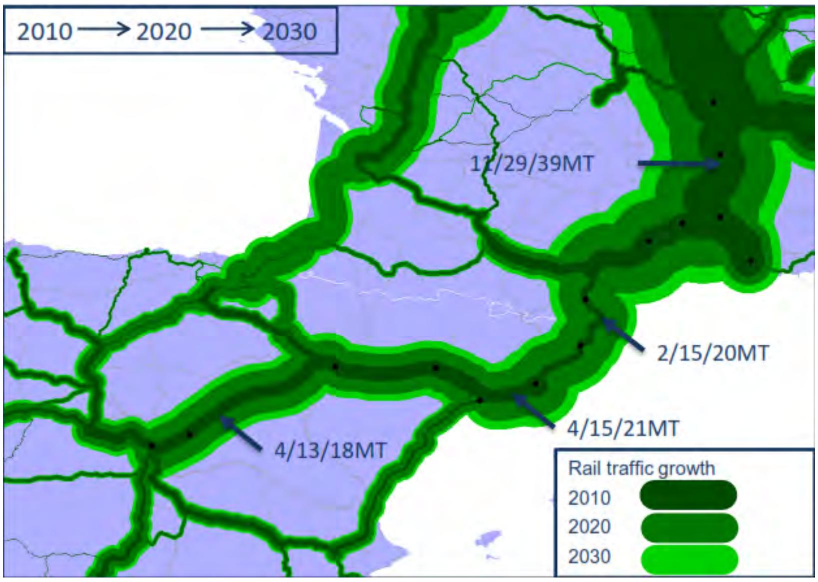
Title of the study	**Market Study of Motorways of the Sea in Spain. WEST-MOS Project**
Member State	Spain
Corridor section	Algeciras <--> Trieste
Mode	Sea, Road
Type of source	Market study
Confidential	N
Description of main findings	In this study, the current situation of the Motorways of the Sea in Europe and particularly in Spain is described and a forecast of the demand for transport by road through the Pyrenees is provided. In addition, the quality criteria in MoS needed in order to shift traffic from road to maritime are defined. Finally, from the above analysis, the potential traffic in Spain for the Motorways of the Sea is estimated. Therefore, the study is considered of particular interest, given the significant **maritime dimension of the Mediterranean corridor**, especially from the point of view of the potential development of maritime services in direct competition with land modes along the corridor.
Relevance for corridor Study Activities	**Identification of the identified critical issues** The study does not include a specific analysis of critical issues, although implicitly identifies the port accesses as bottlenecks. On the other hand, it explicitly mentions the problem of road capacity in the Pyrenees and its inability to absorb the expected traffic flows. **Assessment of corridor objectives** This study proposes the short sea shipping mode as an alternative to road as more sustainable transport mode in terms of noise, accidents and emission of greenhouse gases reduction. The study also highlights the need to improve the competitiveness of maritime transport in the area of the corridor. **Assessment of corridor measures** The identified measures are aiming at supporting intermodality as a key element for the competitiveness of transport chains. Based on this principle, this study deals with the analysis of intermodality from different points of view such as infrastructure, functionality and integration among the involved stakeholders in the modal chain. **Gathering information for market study** Although data used for the current analysis are outdated, at the methodological level, the study contains elements of great interest, in particular the estimated traffic demand and the modal choice model that also incorporates the scenarios assessments provided by the involved stakeholders.

Title of the study	**Catalan Agenda of the Mediterranean corridor**
Member State	Spain
Corridor section	Zaragoza – Tarragona, Valencia – Tarragona, Tarragona – Barcelona – Perpignan
Mode	Rail/Road/Sea
Type of source	Position paper and implementation plan
Confidential	N
Description of main findings	This document sets out the strategic and multimodal infrastructural planning of the Catalan government as regards the Mediterranean corridor. The document illustrates a prioritisation exercise for projects associated with the Mediterranean corridor in Catalonia, developing the specific short and medium-term actions and setting the route map for their implementation, establishing the envisaged investments necessary to guarantee effective implementation of the Mediterranean corridor over time, seeking the utmost profitability and efficiency of the measures to be executed right from the start. The specific objectives are thus: ▪ To provide a diagnosis of the present situation of the Mediterranean corridor that can be used as a basis of reference for the definition of actions and investment planning of the different administrations involved (on the Catalan government level, but also that of the Spanish and European governments) and of the private sector. ▪ Establishing a work plan considering the infrastructures to be realized and the possible work schedule in different time windows (short, medium and long term) to guarantee the capacity conditions and the services needed for transporting passengers and freight. ▪ Define the priority actions, detailing their characteristics and present situation as well as the tasks to be carried out.
Relevance for corridor Study Activities	**Compliance of corridor infrastructure with TEN-T standards** All the actions foreseen in the Agenda are compliant with TEN-T standards. It is to be highlighted that one of the priorities on which the planning is based is the **interoperability**, in order to guarantee compliance with the EU standards along the Catalan section of the Mediterranean corridor. **Identification of the identified critical issues** The infrastructure and operational diagnosis for each mode and the situation of the services is provided in order to identify the main critical issues related to capacity, interoperability and intermodality. **Assessment of corridor objectives** As already mentioned, the identified priorities are the enhancement of the interoperability and intermodality. **Identification of on-going / planned projects and related characteristics** As mentioned, the study includes the main planned projects in Catalonia. However it should be noted that the majority of the infrastructures to be implemented are dependent on the Spanish public budget and therefore not on the regional government that have carried out the planning. In particular, the identified projects are related to the implementation of international gauge, and other EU interoperability standards, the rail and road accessibility of core ports and core and comprehensive airports and rail-road terminals as well as removal of infrastructure and operational bottlenecks.

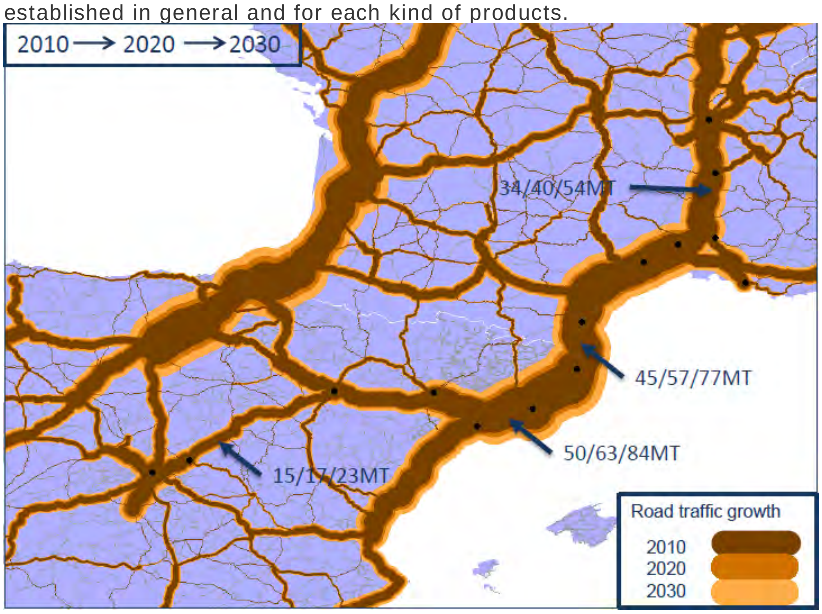
Title of the study	**Demand study on the Lyon – Madrid Axis – CLYMA project**
Member State	International
Corridor section	Lyon – Madrid
Mode	Rail, Road, Sea, IWW
Type of source	Market study
Confidential	No
Description of main findings	Main findings are: ▪ analysis of the current volumes exchanged among the different area which are part of the corridor, by mode (road, rail, short sea shipping and river transportation); ▪ comparison of volumes by mode between 2005 and 2010, to understand evolution of each means of transport and to have an overview of the current situation, critical points, bottlenecks and main flows. ▪ starting from the volumes recorded in 2010, an annual increase of 3% has been estimated in order to forecast expected volumes in 2020 and 2030. ▪ minimum requirements for the modal shift. In the current scenario, rail is not considered as alternative mode because it did not satisfy the minimum requirements and expectations of its potential users. Assuming that rail services shall meet these requirements in an immediate future, and only in this case, modal shift from rail to road might be possible. ▪ modal shift by type of good. The potential attraction of the rail services may depend on several factors, which are more or less sensitive according to the kind of goods to be transported. Therefore the different traffic flows have been analysed separately, in order to make assumptions of modal shift, case by case and according to the characteristics of each traffic flow. By deploying this model, it has been obtained a graph showing the evolution of the traffics by the different modes.
Relevance for corridor Study Activities	**Assessment of corridor objectives** The CLYMA project helps the different stakeholders to identify the main drivers allowing to develop the corridor concept, such as: ▪ The increase in the demand in future years. ▪ The eventual modal transfers from road (the main surface transport mode used today) to more sustainable modes as rail. **Gathering information for market study** The demand study is based on certain assumptions,: ▪ Rail services shall be improved from 2015 to meet the minimum quality requested by shippers. ▪ A modal shift shall be possible according to parameters determined for each kind of goods, as explained before: Distance, technical requirements, volumes, balance of the traffic. ▪ The demand of transportation shall increase 3% annually. ▪ Main restrictions to rail infrastructures shall be resolved. ▪ Passenger transportation shall not interfere more than it does today with freight transportation. It has been considered that all economic sectors/product categories shall develop at the same path. Some of them, however, may have a different evolution thus changing the global transport demand. Although a 3% increase on the demand is generally accepted as valid, this assumption is based in a positive economic evolution. Changes in the logistic organisation may also affect positively or negatively this general percentage. Ports are, together with inland terminals and with intensively populated areas, the main drivers in the generation of traffic flows. Mediterranean ports are competing with Atlantic ports in obtaining a more important share in the main traffic stream, Far East – Europe. The eventual increase of their market share would substantially increase the demand of rail transportation between theses ports and their inland terminals, implemented all along the corridor. A better performance of economies in developing countries may lead to increased volumes among Far East and the Mediterranean, thus also facilitating the traffic through its ports.

In particular, this report includes demand forecasts for each mode.

For the rail transport, the graph shows the evolution of rail traffic considering a 3% annual increase of traffic and the modal shift from road to rail according to the hypothesis considered for the different products.
There is a strong potential for the use of rail traffic, provided that the system meets the minimum requirements required by the shippers.
The Mediterranean corridor attracts most of the traffic increase, which seems to follow the sector of the Mediterranean corridor which is part of the study Madrid-Lyon.
Less progresses can be observed in the South of Tarragona, because the modal shift from road to rail is more difficult when the goods transported require (in a considerable percentage) temperature-controlled transportation.



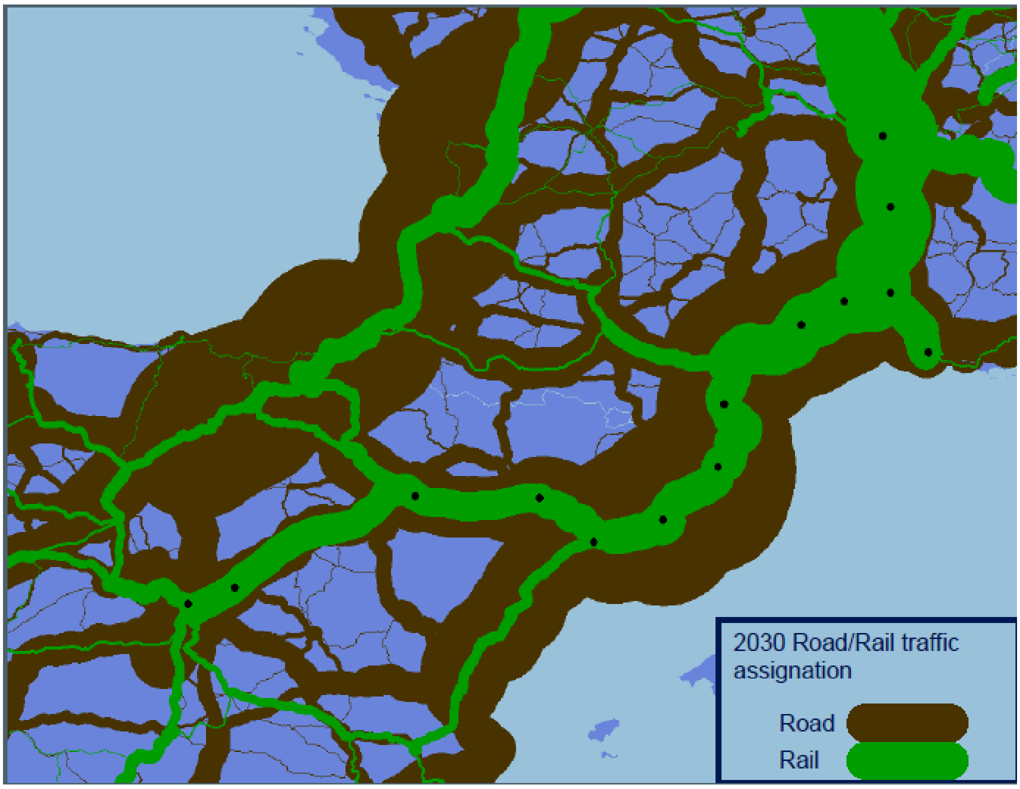
As regard road traffic, the graph shows the foreseen evolution of road volumes, considering a 3% annual increase from 2010 and the modal shift to rail according to the hypothesis established in general and for each kind of products.



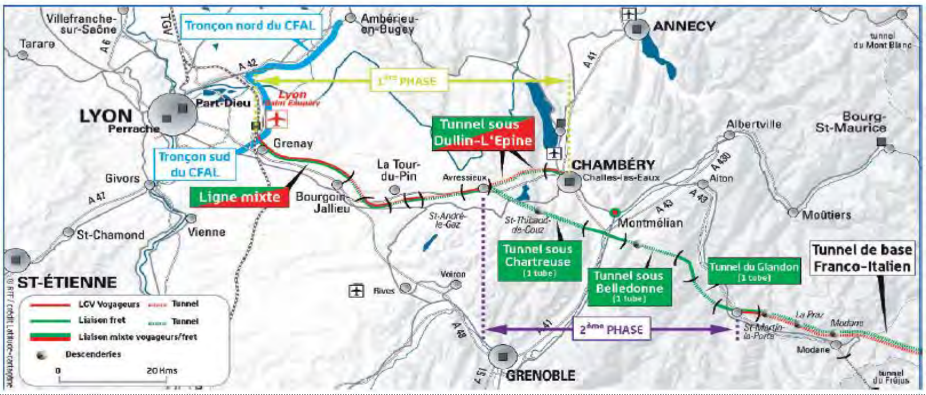
Finally, in relation to the modal shift, this graphic shows the predominance of road transportation in respect to rail, in the horizon 2030, even if some modal shift to rail has been achieved.

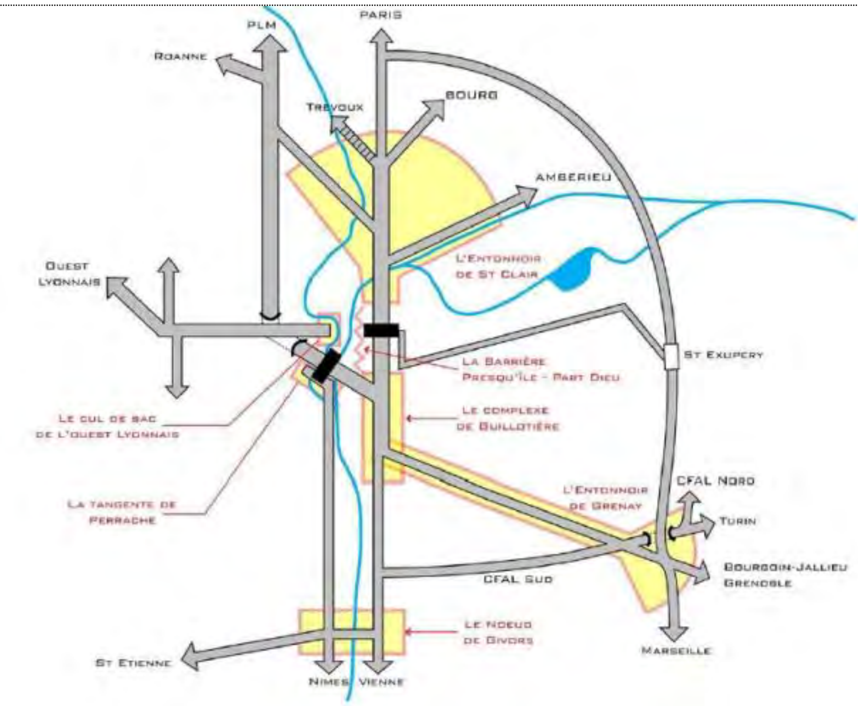
In comparison with the more significant development of rail services in the sector Lyon-Madrid, the small development of the rail South of Tarragona is due to the fact that the transportation there is in temperature controlled vehicles, not extensively available by rail in the current technical development.

Should this become possible, the relation road/rail in this segment would change significantly in favour of rail.

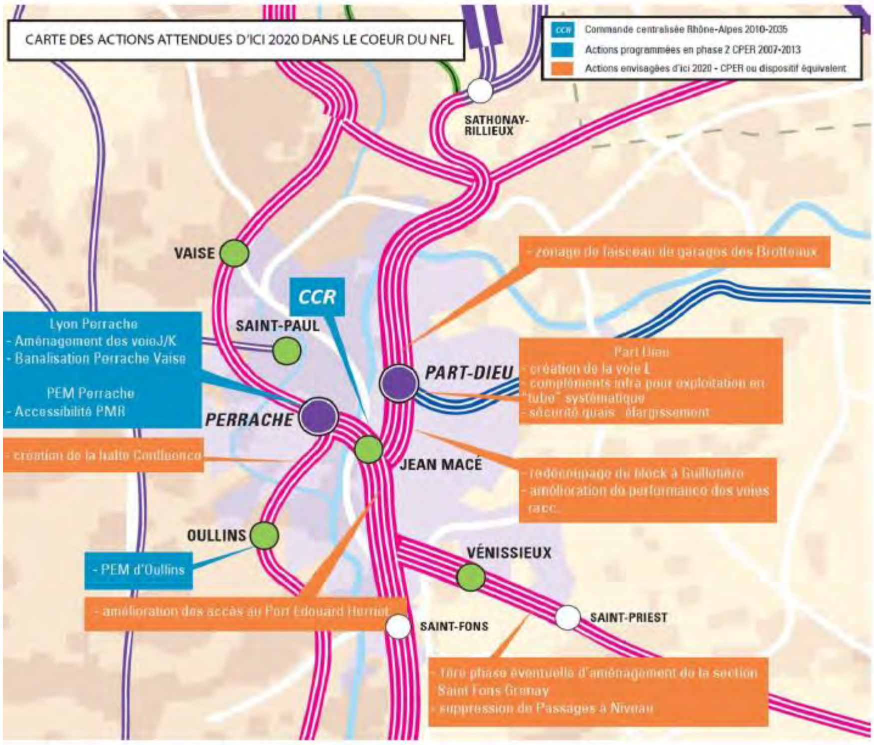


3.1.3 France

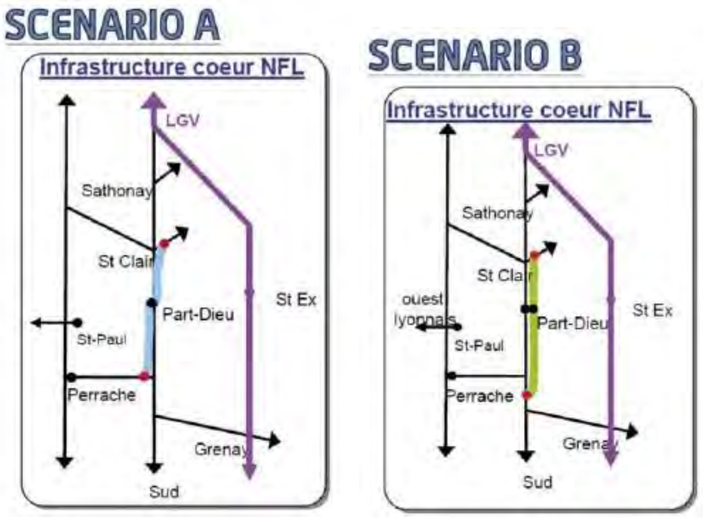
Title of the study	**Lyon – Chambéry – Turin : Studies for the declaration of public utility**
Author	**Réseau Ferré de France** (French rail infrastructure manager)
Year	2012
Member State	France
Corridor section	Flows potentially using French and international sections of the Lyon - Turin (map below)
Mode	All, focus on rail
Study content	▪ Complete study report with : project alignment, phasing, investment costs, environmental and socio-economic impact assessment, traffic studies and cost-benefit analysis
Confidential	No
Map	
Description of main findings	▪ **French access line will be realised in two phases:** new line for freight and passengers between Lyon and Chambery in 2020 (€ 4.1 billion) and freight lines under Chartreuse and Belledone in 2025 (€ 2.9 billion), at the same time as the international section (€ 10.5 billion). Full project should be completed by 2035 (total cost of € 24 billion at 2009 prices, including 60% of the Lyon bypass) ▪ **Freight traffic on the project:** 23 Mtons in 2025, 41 Mtons in 2035 with the complete project (from which 13 Mtons on rolling motorways); without the project, freight traffic is limited to 14 Mtons per year. The complete project in 2035 reduces road traffic across the Alps by 1.5 million trucks / year ▪ **International passenger traffic on the project:** considering travel time reduction, the volume of rail passengers in Modane would be between 3.1 Mpax in 2025 and 4 Mpax in 2035 with the full; the project transfers from air to rail around 0.55 Mpax and from road to rail around 0.6 Mpax on international flows. ▪ **National / regional traffic on the French side of the project:** considering travel time reduction, the volume of rail passengers between Lyon and Chambéry / Grenoble would be between 11 Mpax in 2025 and 14 Mpax in 2035 with the full project; it increases rail traffic by 2.3 Mpax on national and regional flows, half of them being diverted from the road. ▪ **Cost / benefit analysis of the full project is positive:** Socio-economic rate of return is 5% and net present socio-economic value created is € 10 billion (at 2009 prices). ▪ **The project reduces CO2 emissions by 70 Mtons over a period of 60 years including construction phase**
Relevance for corridor Study Activities	**Gathering information for market study** 1. Analysis of trends and impacts of projects on freight and passenger market on a key, cross-border section of the corridor **General remarks** 1. Conducted in 2012, the study can now be considered as having **optimistic assumptions on GdP growth** (the study considers the former growth assumptions of the European Commission – 2009 ageing report – DG ECOFIN) **2. The phasing of the project is likely to be postponed because the "Mobilité 21" commission has classified the Lyon-Turin French access line as "second priority", meaning that it should be launched after 2030**

Title of the study	**Coordination of prospective reflexions on the evolution of the Lyon rail node**
Author	Marie-Line Meaux on behalf of the Ministry of transport
Year	2011
Member State	France
Corridor section	Flows potentially passing through or bypassing Lyon
Mode	Rail
Study content	▪ Analysis of capacity and reliability issues in the Lyon rail node, recommendations for further studies
Confidential	No
Map	
Description of main findings	▪ **The rail complex of Lyon has reached its maximal capacity:** there is no capacity reserve on the section north of the Lyon Part-Dieu station and in the station itself. Average delay due to capacity issues is about 1.5 minute per train. No further development of the train supply in peak hours can be assured from now on. ▪ **Some short-term actions could relieve the operating problems of the node:** centralised command / control system, operational optimisations, new track at Part-Dieu Station. The figure bellow lists all intended actions before 2020

Actions prévues d'ici 2020 dans le cœur du nœud ferroviaire

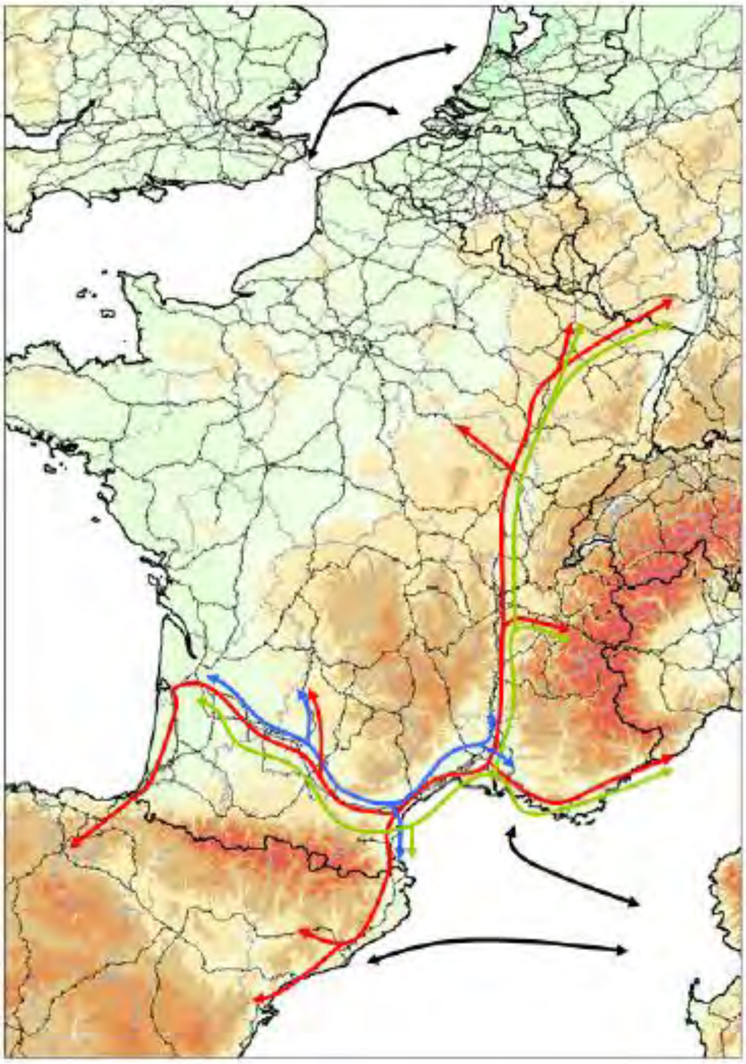


- **However, around 2030, heavy actions will be necessary,** considering the rapid growth of suburban /regional traffic and the potential connection of great infrastructure projects like Lyon-Turin or the Paris – Orléans – Clermont-Ferrand – Lyon HSL project. Six infrastructure scenarios are analysed, and two are retained for further studies: a new double track between St-Clair and Guillotière in the centre of Lyon, in surface (scenario A) or in tunnel (scenario B); a complete four-track alignment between St-Fons and Grenay (on the eastern branch of the node, towards Grenoble) is also necessary.

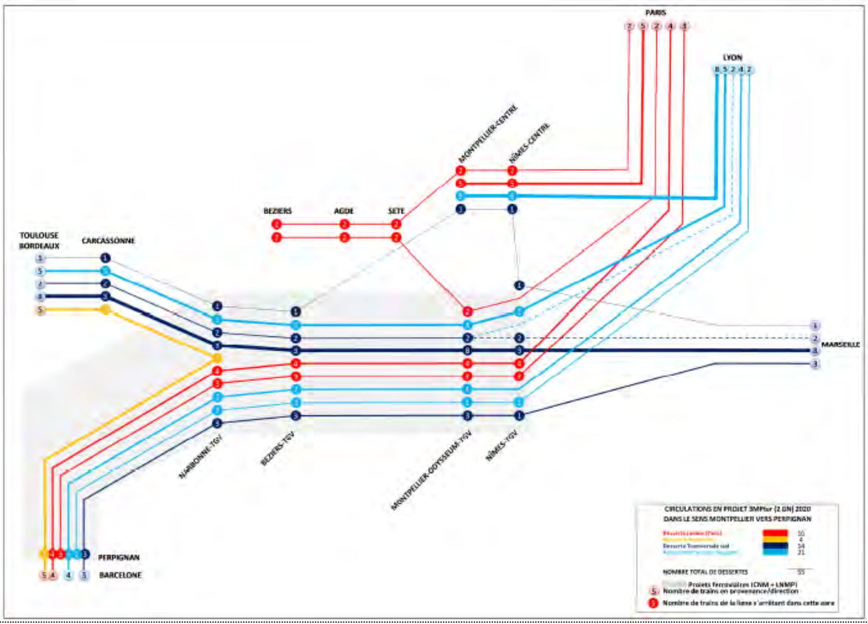


- **Total project costs** are estimated between 700 and 1000 million € for scenario A and between 1700 and 2500 million € for scenario B

Relevance for corridor Study Activities	**Identification of critical issues:** Analysis of capacity issues in an important node of the corridor **General remarks:** Further studies are on-going on scenarios A and B; their result should be known at the end of 2014 and a public debate will be organized in 2015.

Title of the study	**Freight traffic studies for the new line between Montpellier and Perpignan**
Author	Nestear / Egis- on behalf of Réseau Ferré de France (French rail infrastructure manager)
Year	2012
Member State	France
Corridor section	Flows potentially using French sections of the corridor between the Spanish border and Avignon (see map below)
Mode	All, focus on rail
Study content	Assessment and evaluation of freight transport demand in three scenarios : do-nothing, reference case (most probable situation without the project) and with the project
Confidential	No
Map	
Description of main findings	▪ Traffic trend for years 2020, 2035, (expected growth rates of global demand on this section are 2% per annum, with rail share slightly decreasing) ▪ Analysis of market conditions considering operating cost evolutions and realisation of other infrastructure projects (RTE-T, Spanish PEIT, French projects : "Reference" scenario) : in 2020 rail mode share should be 11% against 6% in 2007, which leads to an increase of rail volumes on these sections of 127% over the period (10 Mtons in 2007, 24.7 Mt in 2020) without capacity constraint ▪ Assessment of the capacity constraint and project effects: considering capacity constraint, the maximum volume on rail would be 17.7 Mtons; with the project, traffic is estimated at 25.3 Mtons in 2020.

	Identification of the identified critical issues 1. Analysis of the capacity constraint on the Montpellier – Perpignan section
Relevance for corridor Study Activities	**Gathering information for market study** 1. Analysis of trends and impacts of projects on the market on a key section of the corridor **General remarks** 1. Conducted in 2012, the study can now be considered as having optimistic assumptions on development of rail infrastructure, particularly in Spain (slow implementation of PEIT) and in France (revision of the investment strategy with the "Mobilité 21" commission), and also on GdP growth (the study considers the former growth assumptions of the European Commission – 2009 ageing report – DG ECOFIN)

Title of the study	**Passenger traffic studies for the new line between Montpellier and Perpignan**
Author	Setec / Stratec - on behalf of Réseau Ferré de France (French rail infrastructure manager)
Year	2012
Member State	France
Corridor section	Passenger flows potentially using French sections of the corridor between the Spanish border and Avignon (see map below)
Mode	All, focus on rail
Study content	▪ Assessment and evaluation of passenger transport demand in three scenarios : do-nothing, reference case (most probable situation without the project) and with the project
Confidential	No
Map	
Description of main findings	▪ **Traffic trend for years 2020 , 2035,** (expected growth rates of global demand on this section are between 1.5% and 2.5% per annum according to OD type, with air share slightly increasing) ▪ **Analysis of market conditions considering operating cost evolutions and realisation of other infrastructure projects (RTE-T, Spanish PEIT, French projects: "Reference" scenario):** in 2020 rail mode share should be 8.1% against 6.3% in 2008, which leads to an increase of passenger rail volumes on these sections of 64% over the period (18.7 Mpax in 2008, 30.6 Mpax in 2020). ▪ **Assessment of project effects:** considering travel time reduction, the maximum volume of rail passengers would be between 32.8 and 33.8 Mpax in 2020 depending on project scenarios; the project transfers from air to rail around 0.45 Mpax and from road to rail between 1 and 1.5 Mpax.
Relevance for corridor Study Activities	**Gathering information for market study** 1. Analysis of trends and impacts of projects on the passenger market on a key section of the corridor **General remarks** 1. Conducted in 2012, the study can now be considered as having optimistic assumptions on development of rail infrastructure, particularly in Spain (slow implementation of PEIT) and in France (revision of the investment strategy with the "Mobilité 21" commission), and also on GdP growth (the study considers the former growth assumptions of the European Commission – 2009 ageing report – DG ECOFIN).

Title of the study	**Mobilité 21 – For a national scheme of sustainable mobility**
Author	Commission Mobilité 21 (President : Philippe Duron) - on behalf of the Ministry of Transport
Year	2013
Member State	France
Corridor section	All French sections
Mode	All
Study content	▪ Evaluation and prioritization of great infrastructure projects in France until 2050; definition of two scenarios according to national investment capacity.
Confidential	No
Map	
Description of main findings	▪ **Classification of projects in three groups:** first priorities (works to be launched before 2030), second priorities (works to be launched between 2030 and 2050) and further projects (after 2050) ▪ **Two investment scenarios:** a first one with € 8-10 billions of investment until 2030, a second one with € 28-30 billion until 2030. ▪ **In the second scenario (retained by the Government) following projects on the corridor are classified as first priority (to be launched before 2030) :**

	▪ First phase of improvement of the rail node of Lyon (€ 1000 – 1150 millions) ▪ Improvement of the rail node of Marseille (€ 2500 millions) ▪ Provision for anticipated beginning of works on some second priority projects including Montpellier-Perpignan and Lyon bypass (€ 2000 million overall) ▪ **As second priority (after 2030), following projects on the corridor are identified:** ▪ Second phase of Lyon rail node (€ 400 – 1200 millions) ▪ French access line to the international section of the Lyon-Turin (€ 7990 millions) ▪ New line Montpellier – Perpignan (€ 6300 millions) ▪ Lyon bypass (€ 3500 millions) ▪ The international section of the Lyon-Turin is not part of the scope of the report, but the authors underline the difficulty of financing such a project in the given financial frame without giving up other important projects.
Relevance for corridor Study Activities	**Identification of critical issues** The report establishes a list of key issues, in particular improving "everyday-trains" (suburban and regional transport) and solving major node bottlenecks of the rail network before creating new lines. **Assessment of the investment strategy** The report is currently considered as the base for French investment strategy on transport infrastructure project.

3.1.4 Italy

Title of the study	Cost Benefit Analysis for the new HS line between Venice and Trieste
Author	RFI – Italian rail Infrastructure Manager
Year	2012
Member State	Italy
Corridor sections	Venice, Trieste
Mode	Rail
Type of source	Implementation Plan
Confidential	Y
Map	
Description of main findings	The study is related to the project of the new line Mestre Venice-Trieste (developing as a main line for 156 km), divided into four functional sections, the implementation of which is scheduled in different time frames. The functional sections are the following: ▪ Venezia Mestre - Marco Polo Airport, about 9 km; ▪ Marco Polo Airport - Portogruaro, about 61 km; ▪ Portogruaro - Ronchi of the Legionaries of about 48 km; ▪ Ronchi of the Legionaries - Trieste, about 38 km The study also encompasses the analyses regarding the following related project: ▪ the Marco Polo Airport and the connection with the Regional Metropolitan Railway Service; ▪ doubling of the Cervignano (Strassoldo)-Palmanova-Udine (PM Vat) and the arrangement of Udine node; ▪ Linea dei Bivi (Mestre). The document provides a deep and comprehensive overview of the project including: ▪ Traffic market study indicating the current and the potential forecasted traffic; ▪ Analysis of costs to realise the new line.
Relevance for corridor Study Activities	**Identification of the critical issues** i. The doubling of the rail line is connected with the need to **increase the available transport capacity**. Moreover the **integration with the existing network** and the main trading hubs (freight, ports, airports), will allow the **development of the optimal use of the two lines**. ii. The separation of traffic, made possible by new lines, will **reorganize and strengthen the major railway junctions urban** concerned, which will be redesigned and redeveloped according to the new service and the new supply of transport, carrying out the schemes **for the integration and exchange between different modes of transport**.

Assessment of corridor objectives

The upgrading of the railway in question aims to:

i. contribute to the **evolution of freight to and from the countries of Central and Eastern Europe facilitating the switch of freight transport to the railroad**;
ii. **integrate ports and airports networks with the rail line** of the northern Adriatic;
iii. make **more sustainable national and international cross – border traffic crossing**;
iv. enable the **specialization of lines pursuing the modal shift**;
v. **extend the High Speed network to the east** increasing rail interoperability.

Assessment of corridor measures

i. the foreseen works aim to upgrade the rail infrastructure promoting a better and efficient management of the infrastructure
ii. in addition, the proposed intervention is aimed towards a reduction of the external costs (pollution, noise, congestion etc.)
iii. the proposed project will also increase the interoperability of the network

Gathering information for market study

i. **Detailed information about current and foreseen traffic flows are presented considering the following scenarios: 2015, 2030 and 2050**. The market study offers traffic information and forecast for both passenger and rail flows.

Tonnellate km all'anno sull'intera rete [1000 ton*km/anno]			2010	2015	2030	2050
	Situazione:	Ipotesi di crescita				
STRADA	TENDENZIALE	BASSA	32.797.401	35.027.719	48.096.941	59.132.303
		MEDIA	32.797.401	35.467.332	50.785.618	65.039.702
		ALTA	32.797.401	36.064.221	55.700.425	77.459.147
	CON INTERVENTO	BASSA	32.797.401	35.027.719	47.210.688	57.125.130
		MEDIA	32.797.401	35.467.332	49.048.683	59.911.182
		ALTA	32.797.401	36.064.221	51.741.318	65.824.478
FERROVIA	TENDENZIALE	BASSA	6.910.485	7.986.205	10.355.387	11.878.998
		MEDIA	6.910.485	8.131.879	10.355.387	11.878.998
		ALTA	6.910.485	8.814.290	10.355.387	11.878.998
	CON INTERVENTO	BASSA	6.910.485	7.986.205	11.213.366	14.029.913
		MEDIA	6.910.485	8.131.879	11.796.062	16.331.209
		ALTA	6.910.485	8.814.290	14.525.706	23.640.436

Tabella 7: Traffico merci sull'intera rete

ii. The study shows that, **despite the trend rate of growth of global trade flows in goods** (6% per annum in the twenty years 1984 to 2004), **there is a progressive reduction of rail modal share** (53% in 1984, 39% in 1994, 21% in 2006).

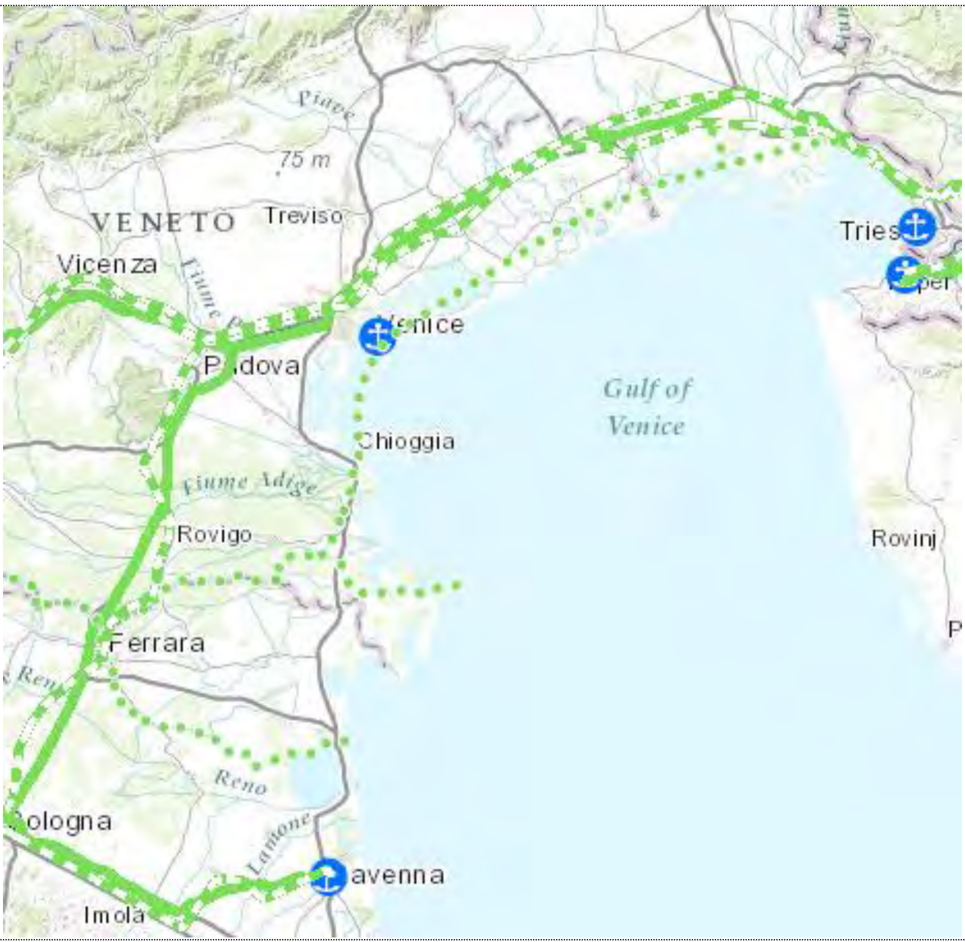
iii. **new line Venezia - Trieste assumes a fundamental importance for the transport of goods along the Mediterranean corridor**.

Identification of on-going / planned projects and related characteristics

i. **The project is fully described** within the study **illustrating all the related characteristics aiming to pursue a sustainable traffic development**

Assessment of the investment strategy

i. The document contains a **financial analysis of the foreseen investment plan** considering the expected cash flows as result from the realisation of the new project and the subsequent related revenues in order **to identify the most feasible implementation of the six identified functional steps leading to the full project deployment**.

Title of the study	**Infrastructures and competitiveness: 4 strategic nodes**
Author	Astrid, Italdecide, ResPublica
Year	2013
Member State	Italy
Corridor section	Ravenna, Venice, Trieste and Monfalcone
Mode	Sea
Type of source	Descriptive analysis
Confidential	N
Map	
Description of main findings	▪ The attractiveness of Italian ports could be boosted in order to manage the traffic flows from Asia to northern Europe realizing the interventions to eliminate the present bottlenecks. ▪ To achieve the proposed goal a better governance of all the stakeholders is mandatory in order to reduce the transit time and increasing the port competiveness.
Relevance for corridor Study Activities	**Identification of the critical issues** ▪ According with the identified traffic trends at 2018, the port infrastructures need to be upgraded to match the increased traffic volume. ▪ The infrastructural bottlenecks will hamper the port capacity to manage additional flows have been identified. ▪ In Trieste, the expansion of quays and the improvement of multimodal connection to integrate the port with other networks will be necessary ▪ In Venice and Ravenna, dredging the ports and the realisation of new quays for specific categories are mandatory in order to accommodate high capacity vessels. ▪ Finally, a big effort of coordination of all interested stakeholders is necessary to ameliorate the attractiveness of Italian ports, reducing transit time and making the usage of North Atlantic ports appealing in order to permit the railway connection to

directly reach the northern Europe.

Assessment of corridor objectives

- The identified actions will make possible to better meet the mobility and transport needs of goods and users and to ensure an efficient use of the transport infrastructure.

Assessment of corridor measures

- The proposed interventions are aimed to relieve the identified bottlenecks
- Consequently they increase the port capacity so that the forecasted traffic volume can be better managed in the forthcoming years permitting an efficient use of the infrastructure
- The improvement of multimodal connection will permit to further ameliorate the integration and the interconnection of transport modes.

Title of the study	**General Plan of the North Italian waterway system**
Author	Consortium composed by Aipo, Alot s.c.a.r.l., Sistemi Territoriali S.p.a and other local authorities.
Year	2012
Member State	Italy
Corridor section	All waterway sections belonging to the Italian Mediterranean corridor
Mode	Inland Waterways
Type of source	Implementation Plan
Confidential	No

Map

Description of main findings

This report has been produced with the aim of becoming a reference for all the infrastructural projects dedicated to the strengthening of the maritime/fluvial connections in the Northern part of Italy.

- Detailed and technical description of the Italian inland waterways (Po regions)
- Traffic (current and forecast) data analysis, inland shipping external cost evaluation compared to road and rail transportation modes
- Physical bottlenecks (last mile connections included)
- Priority projects (on-going/planned/proposed)
- Technical data

Relevance for corridor Study Activities

Compliance of corridor infrastructure with TEN-T standards (Class IV ECMT)

1. Segmentation of the Inland waterways sections aligned to the Ten- Tec database and, with respect to each section, it can be found the corresponding ECMT class. Moreover, it is provided the same type of description in relation to locks' technical data.

Tabella 8: Caratteristiche dimensionali delle idrovie del Sistema Idroviario del Nord Italia.

E WATERWAY	SECTION OF E WATERWAY	LENGHT (km)	MAXIMUM DIMENSIONS OF VESSELS AND PUSHED CONVOYS WHICH MAY BE ACCOMODATED LENGHT (m)	WIDTH (m)	DRAUGHT (m)	MAXIMUM HEIGHT UNDER BRIDGES (m)	CLASS	SUITABILITY FOR COMBINED TRANSPORT	COMMENTS
	Milano - Po Canal/ from Milano to Pizzighettone	96	110,00	12,00	2,50	6,50	Va	B	canalized - project under development
			...	...	...	...	...	...	
	Milano - Po Canal/ from Pizzighettone to Cremona	14	110,00	12,00	2,50	illimitato	Va	B	
			110,00	12,00	2,50	illimitato	Va	B	canalized
	Po/ from Cremona to Casalmaggiore	54	110,00	12,00	2,50	6,50	Va	B	2,5mt x 250days per year - aim: 2,5mt x 300days/year
			110,00	12,00	2,50	6,50	IV	B	
	Po/ from Casalmaggiore to Mincio river mouth (Mantova)	77	110,00	12,00	3,00	6,50	Va	B	2,5mt x 250days per year - aim: 2,5mt x 310days/year
			110,00	12,00	2,50	6,50	IV	B	
E 91	Mincio river/from Lago Inferiore (Mantova) to the mouth (Governolo Lock)	17	80,00	11,00	2,50	6,50	IV	B	
			80,00	11,00	2,50	6,50	IV	B	

Identification of the critical issues

1. The lack of equipment within IWW ports for cargo transhipment operations between the Sea and IWW vessels.

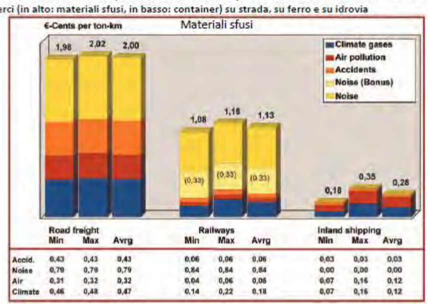
2. A list of priority projects (recommended in order to meet the European structural requirements) has been provided. All project descriptions are accompanied by an estimation of the relative costs, expected results and possible financial sources.

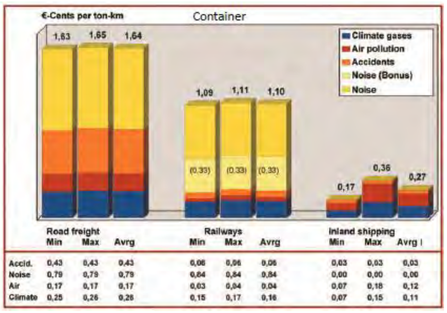
The elimination of the existing bottlenecks is seen as a first step to revitalize the IWW. This shall be followed by the extension of the IWW up to Milan in order to permit further traffic volumes increase.

Assessment of corridor objectives

1. With respect to the objective of low-carbon and clean transport, an external costs comparison for each kind of freight transportation is presented:

Figura 71 Valori medi dei costi totali (rumore, incidentalità, inquinamento acustico e cambiamenti climatici) per trasporto merci (in alto: materiali sfusi, in basso: container) su strada, su ferro e su idrovia





2. In order to verify the consistency with the objective of interconnection, the characteristics of rail and road connection have been assessed for the examined inland ports.

Assessment of corridor measures

Concerning the modal shift incentives, different proposal are presented; among the most important :

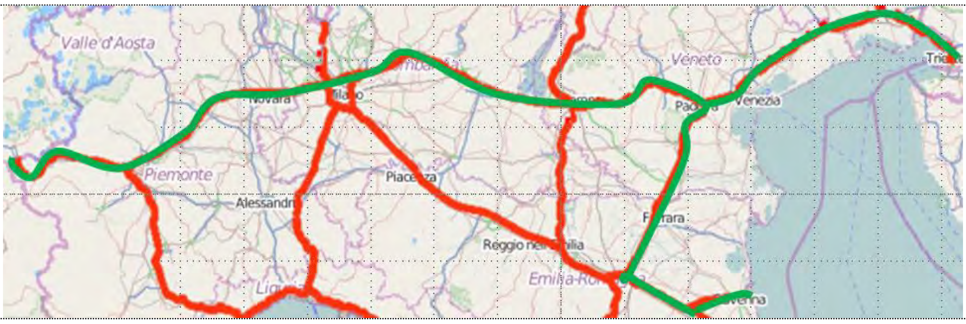
- a legislative modification to be applied to IWW ports on the Adriatic sea (in order to apply the current regulation for road transport to IWW port instead of the one for maritime transport, which are more stringent, making the IWW transport more expensive and less competitive);
- a proposal about economic incentives (fiscal) to make IWW transport more competitive with respect to the road transport.

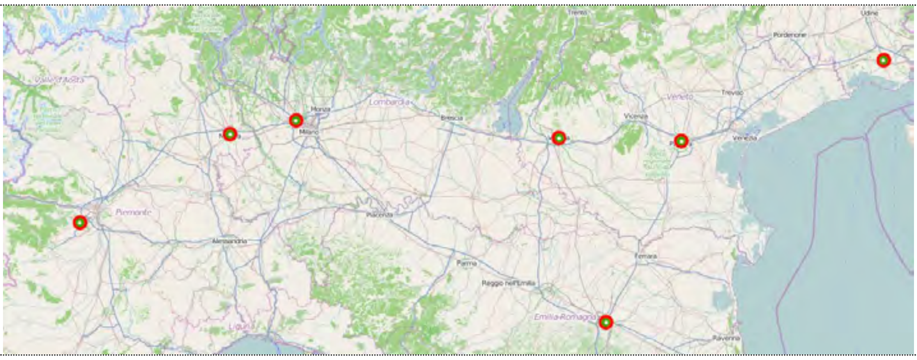
Identification of on-going / planned projects and related characteristics

- Description of all interventions expected on the IWW in order to be compliant with TEN T standards.
- Identification of priority projects to be undertaken according to the available funding.
- Assessment of "quick – wins" actions to be immediately implemented with no need of budget expenditures.

Assessment of the investment strategy

All the proposals presented in the study are accompanied by an estimation of the relative costs, expected results and possible financial sources.

Title of the study	**Annual Report 2013**
Author	Osservatorio Territoriale Infrastrutture (OTI Nordovest) (*OTI Nordovest has been created by Assolombarda, Industrial Union of Turin and Genoa Confindustria, to carry out the monitoring of the infrastructure works necessary for the reinforcement of the transport system in the Northwest of Italy. The precise verification of the progress of initiatives, analyses and contributions of proposals addressed to those involved in the planning and implementation of interventions, represents the contribution that the three associations are intended to provide for the achievement of greater benefits, both for the territories concerned, and a national and international scale*).
Year	2013
Member State	Italy
Corridor section	All Roads/Rail sections belonging to the Mediterranean corridor
Mode	Road/Rail
Type of source	Descriptive analysis
Confidential	No
Map	
Description of main findings	This document provides a general overview on the actual works progress for Rail, Roads and Ports; it shows the implementation status for the main projects, explaining the reasons for possible delays. Some rail /road sections are not sufficiently funded to finalise the works while are blocked due to the lack of agreement between the infrastructure managers and the public entities about how to undertake their realisation.
Relevance for corridor Study Activities	**Identification of the identified critical issues** 1. The high speed section Brescia-Verona suffers a lack of funding 2. Verona-Padova (HS): there is still no agreement on the track section (RFI-Public entities) 3. Venezia-Trieste (HS): there is still no preliminary project on this section 4. Venezia-Trieste (Highway): the project for the realisation of the third lane is slowed due to problems of obtaining bank loans **Assessment of corridor objectives** The report identifies all the actual infrastructural projects currently on-going concerning the Italian section of the Mediterranean corridor. The following section can be mentioned among the most representative sections for the Mediterranean: ▪ improve the road and rail connection of Malpensa airport (creation of multimodal connection between different transport modes promoting the interconnection of different transport networks) ▪ the state of the art of the rail connection between Trieste and Divača (corridor objective: provide appropriate accessibility of all regions of the Union; improve the cross – border sections of the corridor) ▪ construction of the new Brescia-Milano highway, with the purpose of solving the actual traffic congestion and therefore reducing congestion and pollution (more environmental friendly). **Identification of on-going / planned projects and related characteristics** The status for all the on-going projects (for both Rail and Road) including the related financial data and funding needs are presented.

Title of the study	**Logistic and economic development**
Author	Associazione Studi e Ricerche per il Mezzogiorno (SRM) *"Studi e Ricerche per il Mezzogiorno" (SRM) is a Center for Economic Studies and Researches whose objective is to develop analysis on Italian regional economy in the European and Mediterranean perspective, with a special focus on Southern Italy's economic, entrepreneurial and social tissue. Thanks to our studies, published and available for business and academic community, we contribute to the dissemination of the economic knowledge and culture and to create an added value.*
Year	2013
Member State	Italy
Corridor section	All rail/road terminals belonging to the Italian Mediterranean corridor: Orbassano SITO, Milano sm., Novara, Padova, Verona, Cervignano, Bologna.
Mode	Rail Road Terminals
Type of source	Descriptive analysis
Confidential	No
Map	
Description of main findings	The study provides a general overview on the state of art of our logistical infrastructures: ▪ Traffic and infrastructures data ▪ Traffic connections between Ports and Rail Road terminals ▪ Technical data for each terminal about equipped areas and areas available for future developments ▪ Maximum admissible train length ▪ RRT Ratios: loading-unloading and collection-delivery tracks The study identifies also the relevant critical issues. ▪ Bottlenecks in terms of train length limitations for each terminal ▪ Equipped areas and areas available for future developments
Relevance for corridor Study Activities	**Identification of the identified critical issues** 1. Even if this document is not focused on the main critical issues for each terminal, a paragraph implements an examination on track length limitations and RRT ratios for loading/unloading and collection/delivery tracks.

Aree coperte dai terminal interportuali (Mq)

	Superficie dei terminal interportuali (Mq)	N. binari di carico/scarico	Lunghezza singolo binario (m)	N. binari di presa consegna	Lunghezza singolo binario (m)
Interporto Quadrante Europa (Verona)	300.000	22	600	31	600
SITo Torino	100.000	4	400-624	3	470-500
Interporto di Rivalta Scrivia	1.000.000	5	750	5	450-500
Interporto di Bologna	320.000	16	460-600	4	-
Interporto di Padova	240.000	16	450-700	21	-
CePIM - Interporto di Parma	66.000	3	350	9	600
Interporto Campano	250.000	7	750	13	750
Interporto Sud Europa	150.000	8	650	3	650
Interporto di Trento	164.000	12	120-650	9	660-880
Interporto d'Abruzzo	76.000	4	680	2	-
Interporto Amerigo Vespucci	126.000	2	600	2	600
CIM Novara (*)	152.000	7	600-650	13	600-700
Interporto delle Marche	90.000	6	500	4	695
Interporto della Toscana Centrale	72.000	8	650	1	650
Interporto della Puglia	30.000	4	580	10	550
Interporto di Cervignano del Friuli	160.000	6	750	2	500
Interporto di Rovigo	45.000	3	600	4	500
Interporto di Vado	15.000	1	650	1	-
Portogruaro Interporto	200.000	-	-	3	390-478
Totale	**3.556.000**				

(*) Gestisce anche il contiguo terminal di RFI Novara-Boschetto di 45.000 mq, con altri 5 binari da 400 m ciascuno.

TABELLA 14 - Fonte: UIR, 2012

2. The paper analyses, for each rail/road terminal, the distinction between the already equipped areas and those areas currently available for future expansion needs.

Aree destinate, disponibili ed infrastrutturate (Mq)

	AREE DESTINATE TOTALI	di cui: Aree disponibili	di cui: Aree infrastrutturate	% di ampliamento rispetto alle aree già infrastrutturate nel BREVE PERIODO	% di ampliamento rispetto alle aree già infrastrutturate nel LUNGO PERIODO
Interporto Quadrante Europa (Verona)	4.200.000	3.900.000	3.120.000	25%	35%
SITo Torino	2.907.000	2.907.000	2.740.000	6%	6%
Interporto di Rivalta Scrivia	2.250.000	2.250.000	2.250.000	0%	0%
Interporto di Bologna	4.194.300	3.713.093	2.109.074	76%	99%
Interporto di Padova	2.000.000	2.000.000	2.000.000	0%	0%
CePIM - Interporto di Parma	2.521.815	2.022.994	1.850.000	9%	36%
Interporto Campano	2.900.000	2.900.000	1.527.000	90%	90%
Interporto Sud Europa	4.100.000	4.100.000	1.300.000	215%	215%
Interporto di Trento	1.200.000	1.000.000	1.000.000	0%	20%
Interporto d'Abruzzo	960.000	960.000	960.000	0%	0%
Interporto Amerigo Vespucci	2.755.723	1.134.978	926.373	23%	197%
CIM Novara	1.700.000	580.000	580.000	0%	193%
Interporto delle Marche	1.010.000	540.000	540.000	0%	87%
Interporto della Toscana Centrale	1.012.000	710.000	521.000	36%	94%
Interporto della Puglia	400.000	400.000	400.000	0%	0%
Interporto di Cervignano del Friuli	1.360.000	460.000	350.000	31%	289%
Interporto di Rovigo	1.900.000	1.900.000	300.000	533%	533%
Interporto di Vado	115.000	115.000	115.000	0%	0%
Portoguaro Interporto	200.000	200.000	90.000	122%	122%
Totale	**37.685.838**	**31.793.065**	**22.678.447**		

TABELLA 13 - Fonte: UIR, 2012

3. The operators recommend a greater reliability and efficiency (lack of ICT systems that integrates all the logistic operators), a better predictability for transports services and a decrease in track access charges for rail services.

Gathering information for market study

1. current traffic flow (intermodal units, UTI)

Traffico intermodale ferroviario (UTI movimentate nel 2011)

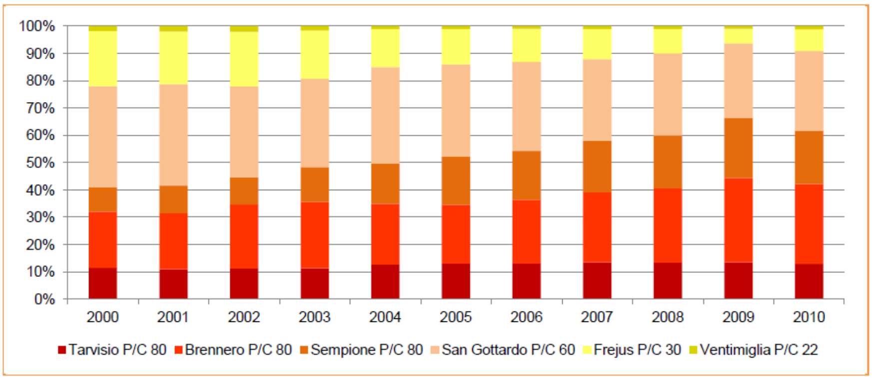
	UTI movimentate	di cui:					
		casse mobili	*container*	*semirimorchi*	*TIR*	*cisterne*	*FTL*
Interporto Quadrante Europa (Verona)	296.213						
CIM Novara (*)	200.778						
Interporto di Rivalta Scrivia	138.700	24700	114000				
Interporto di Padova	136.000	4500	131000	500			
Interporto di Trento	105.902	5990		13886	86026		
Interporto di Bologna	89.326	36712	52614				
Interporto Campano	35.683	11496	17937			5532	718
CePIM - Interporto di Parma	30000	30.000					
Interporto di Cervignano del Friuli	16.150						
Interporto Amerigo Vespucci	12.000		12000				
Interporto di Rovigo	6.000		6000				
Interporto delle Marche	4.000		4000				
Portoguaro Interporto	2.500	2500					
SITo Torino	720	720					
Interporto di Vado	-						
Interporto della Toscana Centrale	-						
Interporto d'Abruzzo	-						
Interporto Sud Europa	-						
Interporto della Puglia	-						

(*) compreso il traffico del terminal Novara Boschetto.

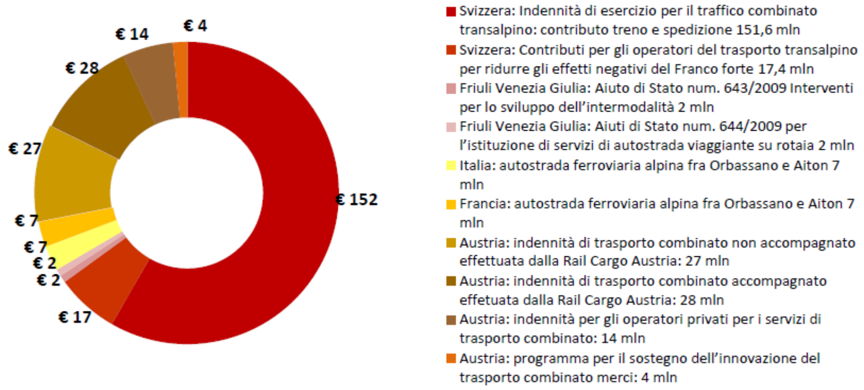
TABELLA 15 - Fonte: UIR, 2012

Assessment of corridor objectives

The report mentions a recent national law ("Legge quadro in materia di interporti e piattaforme logistiche") aimed at developing our RRT infrastructures, setting a time limit of five years for their realisation, by funding these projects with 5 mln euros during the period 2012-2014. This measure will solve the objective concerning the development of all transport modes in a manner consistent with ensuring sustainable and economically efficient transport in the long term.

Title of the study	**Preparatory work for the Logistic National Plan**
Author	**CERTeT** - Centro di Economia regionale, dei Trasporti e del Turismo *(Department of the Bocconi University)* on behalf of the Italian Ministry of Infrastructure and Transport
Year	2011
Member State	Italy
Corridor section	Italian sections belonging to the Mediterranean corridor
Mode	All
Study content	▪ Assessment and evaluation of transport policies and regulatory framework in the Mediterranean corridors (Mediterranean, Baltic – Adriatic, Rhine – Alpine, Scandinavian – Mediterranean). ▪ Analysis of European and Italian policy measures supporting intermodality ▪ Assessment of infrastructure background and overview economic, political and legal aspects related to the Italian core corridors
Confidential	No
Map	 .
Description of main findings	▪ **Evaluation of import / export flows by type of goods between the Mediterranean countries** (in 2011 Italy was the most consistent trade partner for all countries, in particular France and Spain) ▪ **Analysis of traffic flow per mode at the Italian cross border sections** ▪ **Assessment of the investments in infrastructures and services undertaken and foreseen at 2020** (e.g. enlarging of the loading gauge at GB1 for the historic line Turin - Lyon) ▪ **Analysis of the current policy transport measures in Italy, France, Switzerland and Austria** (e.g. restriction for road transport via Switzerland by the introduction of the TTCCP, introduction of "Ecobonus" for the sea motorways Italy – France)
Relevance for corridor Study Activities	**Identification of the identified critical issues** 1. Analysis of the loading gauge on traffic flow distribution at cross border sections.  2. Analysis of the main critical issues for the following sections: Lyon – Turin; Orbassano node; Milan - Verona; Verona-Trieste-Divača; Padova node. **Assessment of corridor measures** 1. Analysis of European policy measures and related funding instruments (e.g. Marco Polo, WEST-MOS) 2. Assessment of the Italian policy measures at both national (e.g. Ferro bonus", "Eco bonus and regional level (e.g. Friuli Venezia Giulia).

3. Analysis of incentives to foster rail traffic in Italy at 2011 in comparison to Switzerland, France and Austria



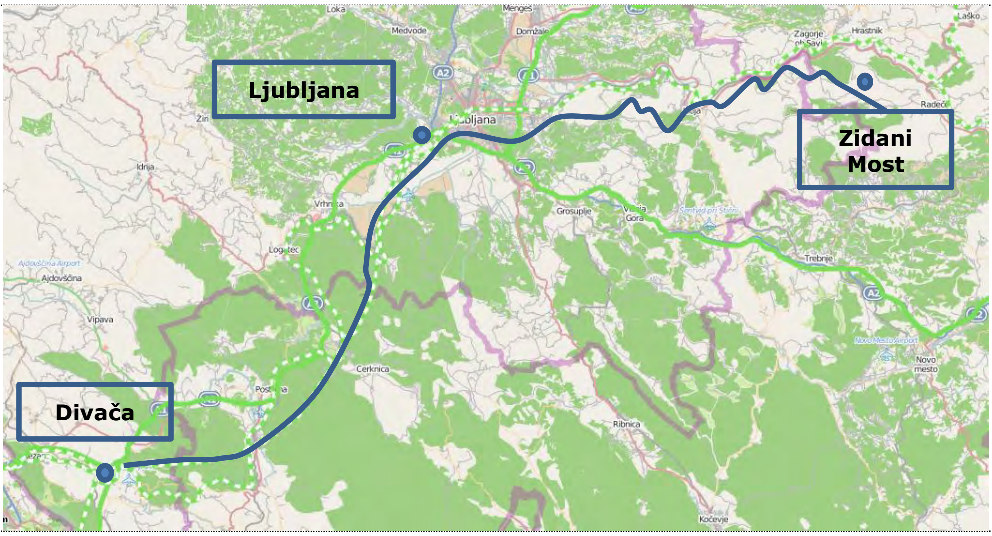
Gathering information for market study

2. Analysis of import / export between Italy and other countries
3. Examination of traffic flow in the Adriatic ports between 2005 and 2011
4. Examination of freight traffic flow in the North Italian airports between 2000 and 2011
5. Evaluation of future development of traffic flows in the Mediterranean transhipment sea ports

Assessment of the investment strategy

3. Examination of the investment strategy of the shipping companies
4. Evaluation of investment strategy of Mediterranean Port Authorities related to the container traffic

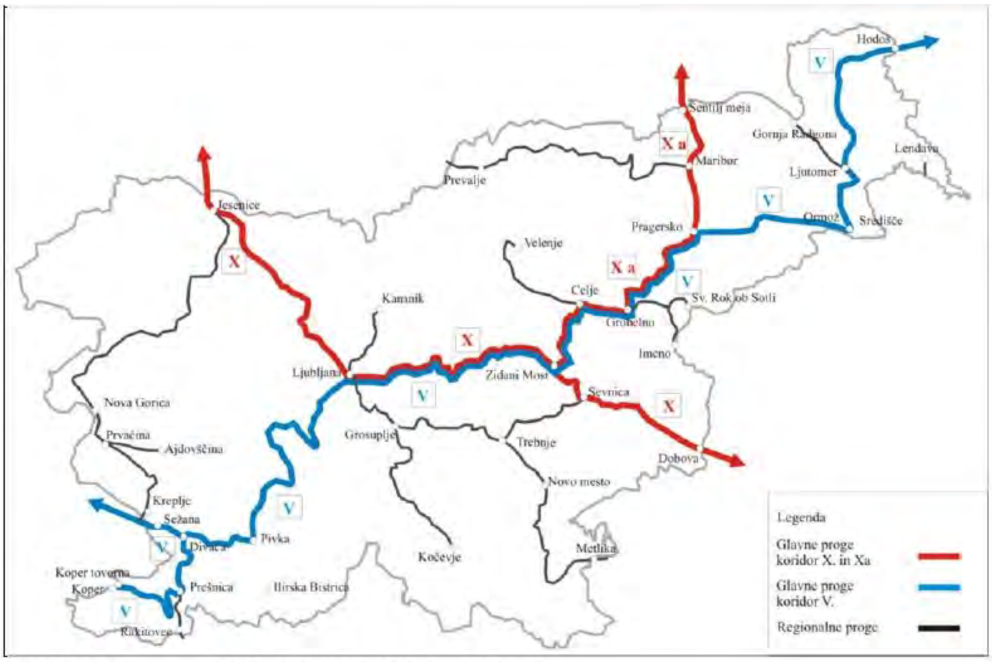
3.1.5 Slovenia

Title of the study	Feasibility studies on new railway link between Divača and Ljubljana and Ljubljana and Zidani Most.
Author	Ministry of Infrastructure and Spatial Planning
Contractor	PNZ svetovanje projektiranje d.o.o.
Year	2013
Member State	Slovenia
Corridor section	Slovenian rail sections between Divača and Ljubljana and Ljubljana and Zidani Most
Mode	Rail
Type of source	Feasibility study
Confidential	N
Map	
Description of main findings	The Study designs the concept of a new line between Divača and Ljubljana, Ljubljana and Zidani Most and Zidani Most and Maribor that may constitute a valid alternative to existing lines for high speed and high capacity traffics. It analyses as well an upgrade of current infrastructure on the sections: Trieste-Divača, Koper-Divača, Maribor/Pragersko - Hodoš, Maribor - Šentilj, Jesenice - Ljubljana, Zidani Most/Zagorje - Divača and an upgrade with additional track on the sections: Ljubljana-Kamnik, Grosuplje-Ljubljana. The study preliminarily analyses the concept of future Slovenian traffic system in the framework of TENtec Network and corridors. The study provides an extensive analysis of: ▪ New line traffic forecast (estimated by means of CETRA traffic model); ▪ Technological analysis; ▪ Spatial and environmental analysis; ▪ CBA. The study has proven that the so called corridor V, or the Mediterranean corridor, is very attractive and it draws also the traffic from the neighbouring countries (Austria and from roads) if Slovenia can provide such a railway supply as the competitive corridors can provide compliant with the standard network TEN-T (IV-M). The forecast in the study shows that the Slovenian transport system has an exceptional potential of Trans-European significance.
Relevance for corridor Study Activities	**Compliance of corridor infrastructure with TEN-T standards** The concept and the categorisation of the Slovenian rail network is based on the identification of TENtec infrastructural parameters (such as clearance GC, axle load 25.0 t/axle, line speed 200km/h, train length 740m, ERTMS, electrification, etc.).

Slika 1–5: Osna obremenitev po progah

Identification of the identified critical issues
The study identifies the main critical issues of the new line in terms of severe gradients in some points, high investment costs, environmental vulnerability, node capacity, saturation, etc.

Assessment of corridor objectives
The study identifies the objectives of rail freight traffic in terms of optimal integration of national rail network with European corridor, establishment of infrastructure requirements, amelioration of travel time and frequency and capacity increasing.



Slika 1–1: Potek vseevropskih železniških koridorjev V. in X. preko Slovenije

Gathering information for market study
1. The study was based on two on-site surveys regarding:
   - The counting of passengers on the suburban, inter-urban and international buses
   - Stated preferences about the frequency of public transport journeys on the

mode choice and the price of tickets.

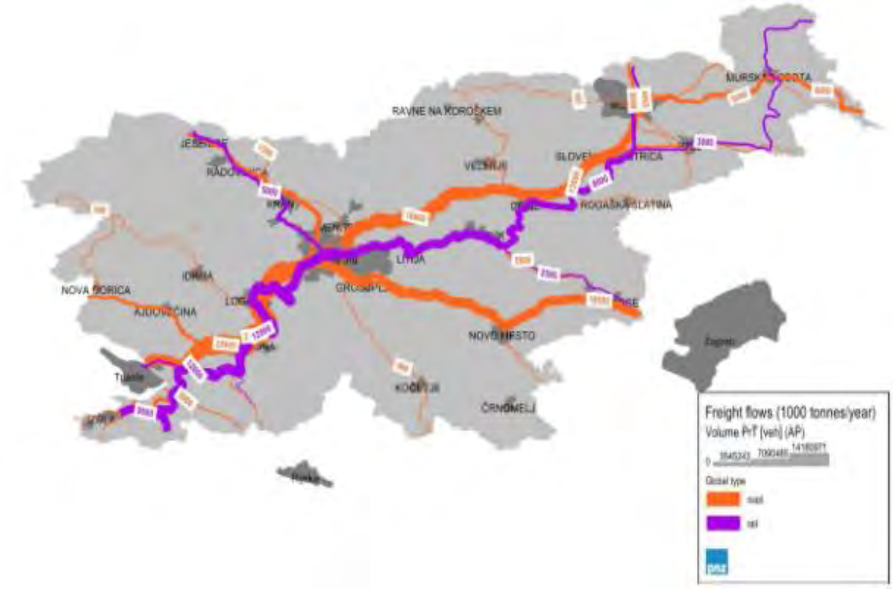
2. By means of using CETRA national traffic model and considering a coherent set of hypotheses, a traffic forecast model was realized for years 2020 and 2030.

Identification of on-going / planned projects and related characteristics

The study was based on two previous studies concerning comparable new rail lines and proposing similar alignments.

Assessment of the investment strategy

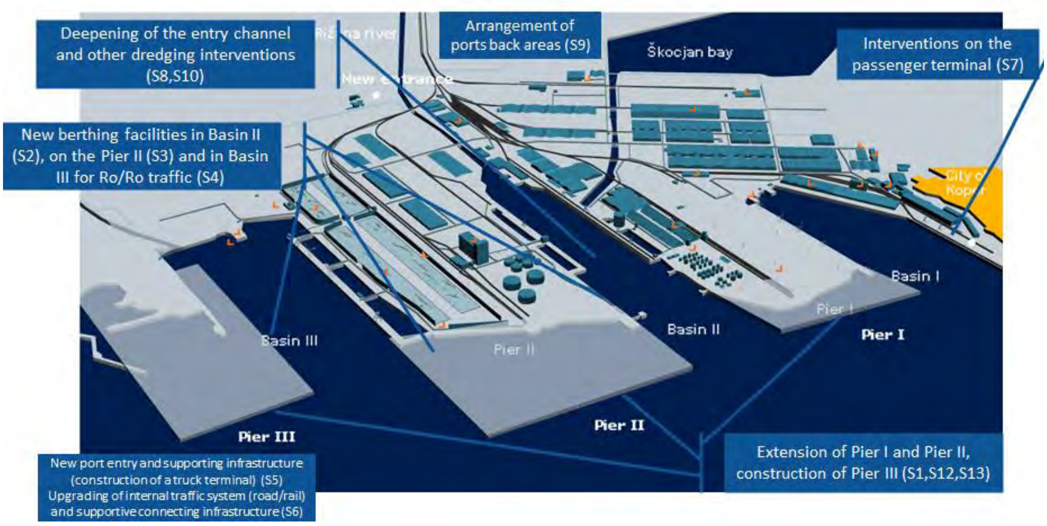
1. The study evaluates the possible investment strategy for the realisation of the line. Based on CBA, three variants are proposed according to maximum speed:
   - Variant 1: 250 km/h;
   - Variant 2: 200 km/h;
   - Variant 3: 160 km/h.
2. The study underlines the fact that, even accounting for environmental cost reduction, variants are not economically feasible for Slovenia over a period of 30 years and with a 5.5% discount rate.
3. The study designs an enlarged concept, by including the benefits deriving for entire area of Central Europe, which turns the variants to be positive in case of 30 years period and 2.5% discount rate.
4. Since the main future traffic will be freight traffic, the study recommend to consider maximum speed on Core TEN-T Network up to 200 km/h.

Title of the study	***National program on transport and transport infrastructure strategy***
Author	Slovenian Ministry of transport and infrastructure
Year	2013
Member State	Slovenia
Corridor section	Slovenian sections belonging to the corridor
Mode	▪ rail ▪ road (and parking for trucks) ▪ public transport ▪ bike ▪ port Koper ▪ airport
Type of source	National Plan
Confidential	N
Map	
Description of main findings	The National Program intends to provide a macroscopic snapshot of Slovenian transport services and traffics. Yet, the study actualises existing analyses/forecast with a holistic approach and identifies possible measures for the removal of critical issues/bottlenecks per mode. Modal split sustainability, transport efficiency issues and environmental sustainability are evaluated.
Relevance for corridor Study Activities	**Compliance of corridor infrastructure with TEN-T standards** 1. The analyses undertaken in the National Program evaluate the respect of some infrastructural parameters defined by TEN-T standards. For example, concerning rail network, the following infrastructural problems are identified: ▪ about year 2030 capacity will be reached on nearly all main and some regional lines ▪ single track lines on sections (except for: Ljubljana-Pivka, Sezana-Villa Opicina, Borovnica-Ljubljana) ▪ axle load, speed and train lengths not meet TEN-T standards everywhere ▪ 14 sections with speed reduction (30-70% decrease) 2. Yet general problems are identifies such as: ▪ regional rail lines ▪ electrification system (25 kV) ▪ ETCS level 2 ▪ inappropriate bike network ▪ system of road bypasses ▪ maintenance strategy

Identification of the identified critical issues

The National Plan identifies the main critical issues of the transport network in terms of train length in some points, parking spaces for trucks, speed reduction and signalling systems, node capacity, saturation, infrastructural constraints, shallow channels, insufficient capacity of inner ports, etc.

Concerning the port of Koper:



Problems / challenges:

- Due to the high growing volumes and confirmed new market potentials, the port of Koper needs **additional port infrastructure capacities**[1].
- In order to support the growing volumes via the port of Koper, suitable **supporting and connecting public infrastructure** has to be realized (railway, maritime and road last mile connection).
- Since the cargo in the Port of Koper uses in more than 60% railway services, it is essential that **railway infrastructure** eliminating potential bottlenecks is provided on **time along the corridor**.

Goals:

To increase the total annual cargo traffic:

- above 20 mio tons until 2015
- above 24 mio tons until 2020
- above 30 mio tons after 2030
- supporting a favourable modal split of more than 60% of traffics using railway infrastructure – modernization/new track along corridor needed

On-going actions:

- Dredging of the accessing canal into Basin I (outside the area under Concession; main investor Republic of Slovenia; co-financed by Cohesion fund),
- Dredging of the Basin I (inside the area under Concession; main investor Port of Koper – co-financed in 10% by TEN-T - project NAPA DRAG),
- Extension of Pier I (on-going works provided by the Port of Koper own funds; project design for additional extension co-financed in 50% by TEN-T - project NAPA PROG)
- Preparation of project documentation for new investments in berthing facilities and supporting connecting infrastructure within the port (main investor Port of Koper – co-financed in 50% by TEN-T - project NAPA STUDIES)

Foreseen investments:

- Extension of Pier I
- Construction and improvement of new berthing facilities port Basins I, II and III
- Construction of port new entries and supporting road infrastructure
- Construction of additional connecting rail infrastructure network within the port
- Passenger terminal infrastructure

[1] It shall be highlighted that within the MDS Trans modal study "NAPA: Update of market study on the potential cargo capacity of the North Adriatic ports system in the container sector" the estimated market share for the port of Koper is about 36% i.e. 2.1 mio TEU/year (please refer to pag. 41).

- Arrangement of port's back areas
- Dredging of port's basins according needs
- Dredging of port's accessing canal to Basin II
- Extension of Pier II (after 2020)
- Construction of the Pier III (after 2020)

Assessment of corridor objectives

1. The National Programme identifies the objectives of maximizing freight traffic in terms of optimal integration of networks, establishment of infrastructure requirements, amelioration of travel time and frequency, increasing public transport accessibility, etc.
2. Particular attention is given to social and environmental acceptability for transports in terms of security and environmental damages reduction (noise, GHG).

Assessment of corridor measures

1. The National Programme defines several measures for implementing development objectives per each mode.
2. For example, concerning modal split measures, the Programme identifies:
   - increased frequency
   - more public transport on dedicated lanes
   - comfortable and simple intermodal transfer
   - restrictive parking policies in urban areas and extensive P+R
   - comfortable and safe bike routes, paths
   - restriction and claiming of motorized traffic in urban areas

Gathering information for market study

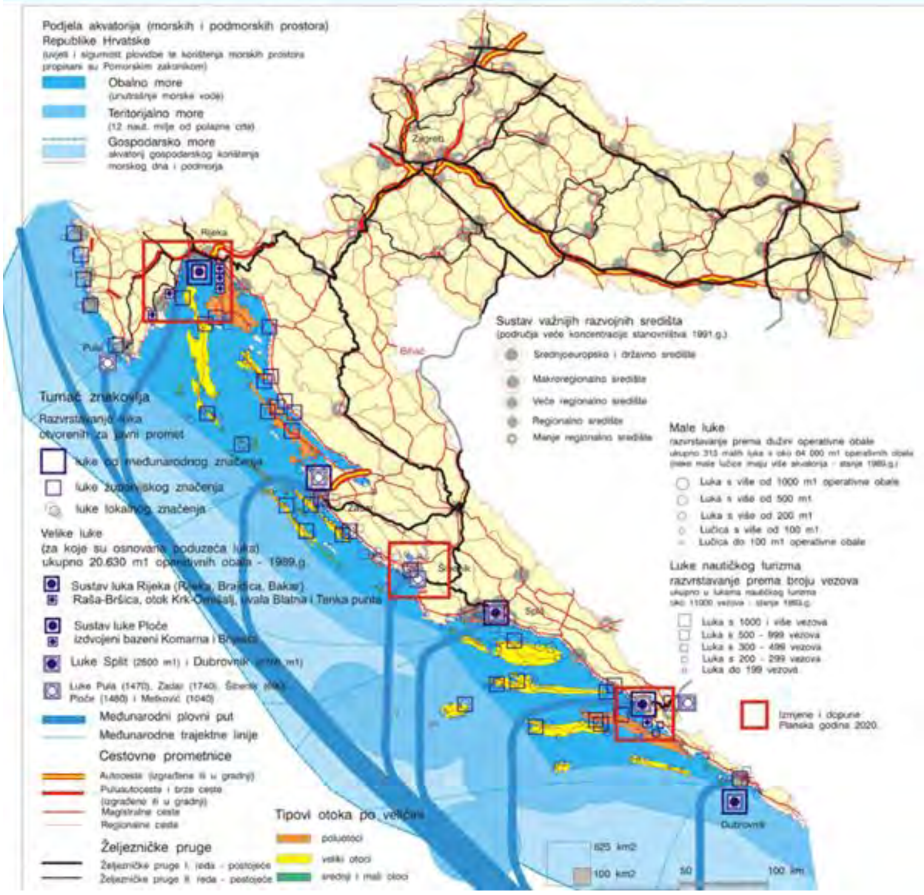
1. The National Program compares existing forecast, particularly concerning:
   - CETRA MODEL
   - CBA of HSR Divača-Ljubljana-Zidani Most)

section	forecast	model CETRA (2030)
Divača-Ljubljana (2)	40 mio T (year 2035, low scenario)	25mio T
Trieste-Divača (2)	11-15 mio T (year 2035, low scenario)	8 mio T
Koper-Divača (2)	18-19 mio T (year 2035, low scenario)	17 mio tonnes
Brenner (1)	> 200 freight trains per day (year 2025)	300 freight trains per day
Koralm (1)	50-100 freight trains per day (year 2025)	100 freight trains per day
Wien-Linz (1)	> 200 freight trains per day (year 2025)	190 freight trains per day
Tauern (1)	100-150 freight trains per day (year 2025)	120 freight trains per day

Identification of on-going / planned projects and related characteristics

For the realisation of the Scenario analyses, the National Program identifies existing studies and projects

3.1.6 Croatia

Title of the study	***Transport development strategy of the republic of Croatia(2014-2030)***
Author	Ministry of maritime affairs, transport and infrastructure
Year	2014
Member State	Croatia
Corridor section	Croatian sections belonging to the corridor
Mode	• rail • road (and parking for trucks) • ports • airports
Type of source	Strategic National Plan
Confidential	N
Description of main findings	This document provides an overview of the general objectives, divided per transport mode, of the Croatian Development Ministry. Moreover, the report describes the main critical issues in relation to all kind of transport modes. The majority of the objectives of the national Ministry are in line with those proposed by the Commission. Finally, a SWOT analysis per mode has been taken into account (as it shown in the following tables).
Relevance for corridor Study Activities	**Identification of the identified critical issues** 1. Port of Rijeka: Rijeka: Container storage area is rather narrow, and space is limited, so that is a severe bottleneck of the port of Rijeka. Increasing of container transhipment requires the construction of dry ports in the port hinterland and efficient railway connections.  2. For each transportation mode, the report presents a useful introduction explaining the main characteristics, opportunity and problems. Moreover it can be found a list of hypothesis already defined as part of the methodological procedure employed in the Croatian Transport Development Strategy definition, because of the existing lack of accurate data and/or information.

Assessment of corridor objectives

1. In line with the corridor objectives, the document presents different national targets in terms of Navigation, road safety and security. As an example of this, the paragraph 5.1.8 states: "The maritime industry has to be developed in a safe and sustainable manner. Efforts to create a strong growth potential for the maritime industry should comply with the safety requirements and be coordinated with the development of navigation safety public services".

3.1.7 Hungary

Title of the study	**Operative Programme of Integrated Transport Development (Integrált Közlekedésfejlesztési Operatív Program)**
Author	Ministry of National Development
Year	2013
Member State	Hungary
Corridor section	Mediterranean Core Transport corridor No. 3
Mode	Rail, road, IWWT, aviation, other
Type of source	development programme
Confidential	N
Description of main findings	The document presents the operative development programme of the transport industry in Hungary targeting the accomplishment of the EU programme "Europe 2020" and an improved level of European regional cohesion. Priority axles of development are explained in some details. For the identification of these priorities, due consideration has been given to requirements of financing from the Cohesion and the Regional Development Funds, TEN-T development needs, objectives set in "Europe 2020", position papers of the European Commission, etc. Other main chapters deal with the aspects of regional and local (settlement) development, the issues of reducing poverty in social and geographic dimensions, special needs of disadvantaged regions, the stakeholders in charge of programme execution, inspection and evaluation and the coordination of various European development programmes in Hungary. This document has already been approved by the Hungarian Government except for the list of specific transport development projects to be proposed for 2014-2020 (as per 15 September 2014).
Relevance for corridor Study Activities	**Compliance of corridor infrastructure with TEN-T standards** With some exceptions, the document does not contain specific statements in corridor perspectives on compliance with TENT-T infrastructure standards. *In general*, 71.9% of the 1,613 km long Hungarian TEN-T core *railway network* does not correspond to the 22.5 tons axle-load requirement, ETCS has been applied on one main line and GSM-R is completely absent from the network. Works are underway to improve this situation, including the achievement of speed targets, depending on the given profile of rail sections (i.e. carrying international, suburban passenger or freight traffic). Out of the total Hungarian *road network,* 1,144 km is an integral part of the core TEN-T, of which the construction of some 144 km of motorway is still to be accomplished (e.g. M0 North and West, M3 access to UA border). There is also a need to reduce bottlenecks on certain sections in order to improve road safety, service quality, capacity utilisation, traffic flow, access features, etc. This implies also the construction of additional traffic lanes (e.g. M70). ITS facilities are to be extended on most of the network. **Identification of the identified critical issues** Specific main critical issues presented in the report (and also confirmed during the Meeting between consultants and the HU Ministry of National Development, 30 April 2014): • Rail: (a) speed and double track requirements to be applied only depending on profile and traffic level versus available capacity features of the rail section concerned (e.g. on sections Horgos/SLO border-Boba, Boba-Székesfehérvàr, Hatvan-Miskolc, Miskolc-Nyiregyhàza); (b) axle-load and ETCS 1/2 as well as GSM-R to be fully applied; (c) avoid too many and frequent section track closures by efficient coordination of on-going works (e.g. section Pusztaszabolcs-Budapest); (d) satisfy heavy traffic needs on the Southern Rail Bridge in Budapest (by extension and reconstruction); it should duly be kept in mind that these measures do not represent the same order of magnitude, neither from a financial, nor an investment point of view. • <u>Roads</u>: high accident risk (M70); heavy and often congested traffic (e.g. M0); worn-down and deteriorated asphalt surface (e.g. M0); restrained border access (e.g. to UA border)

Assessment of corridor objectives

Objectives of the integrated transport development programme are grouped around *6 priority axles*. These are:

1. Improved access to the TEN-T road network
2. Improved access to the TEN-T rail and inland waterway network
3. Improved access to the regional road network as well as improvement of road safety
4. Improved access to suburban and regional rail network; achievement of better energy efficiency
5. Sustainable urban transport development
6. Efficient technical assistance (project preparation, monitoring, administrative and technical support, audit, etc.)

Assessment of corridor measures

Measures have been identified for each priority axle.

1. Improved access to the TEN-T road network
    - Road network development
    - Improvement of road safety and sustainability features
2. Improved access to the TEN-T rail and inland waterway network
    - Rail network modernisation
    - Vehicle fleet development (e.g. purchase of electric motor trains)
    - GSM-R and ETCS application
    - Improvement of traffic safety, sustainability and smooth access features
    - Improvement of traveller information systems, application of ITS and data exchange in passenger transport
3. Improved access to the regional road network as well as enhancement of road safety
    - Improved / reconstructed liaison of 2nd and 3rd class network nodes to the TEN-T network
    - Promotion of Intermodal solutions
    - Development of smooth passenger transport access facilities (e.g. at bus-bays and stops, bus turn-around terminals)
    - Education, training, media activity (possible projects)
4. Improved access to suburban and regional rail network; achievement of better energy efficiency
    - Rail network modernisation in order to improve scheduled train services (e.g. further electrification; reduction of bottlenecks by lifting slow-down signs, bridge reconstruction, energy supply system modernisation, partial double tracking, etc.)
    - Vehicle fleet development (e.g. purchase of electric motor trains)
    - Station modernisation (e.g. reconstruction of station buildings, smooth access to installations, parking facilities, facilitated administration, etc.)
5. Sustainable urban transport development
    - Development of financially sustainable fixed track modes
    - Development of intermodal passenger terminals / interfaces
    - Purchase of vehicles for fixed track modes
6. Efficient technical assistance
    - Project preparation, monitoring, administrative and technical support, audit
    - Communication on projects

Gathering information for market study

This document is not directly relevant for market study.

Identification of on-going / planned projects and related characteristics

Government has not approved project list yet.

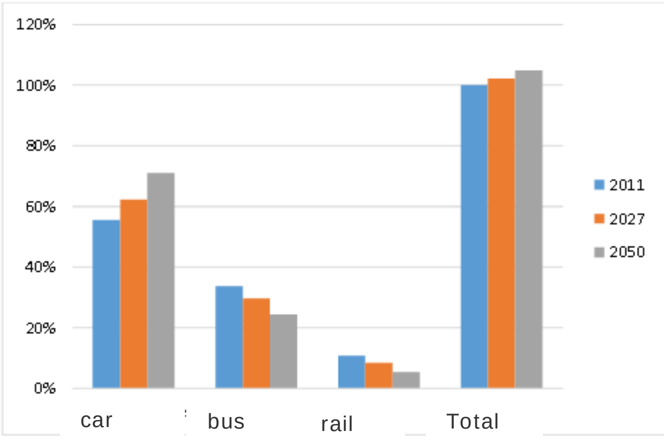
Assessment of the investment strategy

Main targets of the planned investments are on the one hand that all selected projects should meet EU core corridor requirements. They should be based on solid feasibility study, social-economic CBA and environmental impact assessment. The issues of investment scheduling and the matters of financial sustainability should be clarified including sources of investment (state, EU).

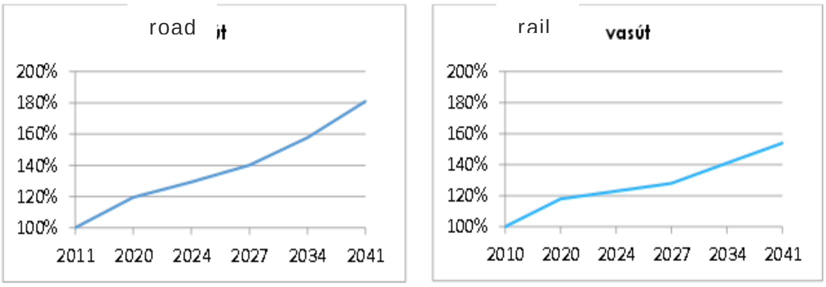
On the other hand, proposed investments should meet social and economic needs of the country and consequently be part of the National Transport Strategy document.

<table>
<tr><td>Title of the study</td><td>National Transport Strategy – National Transport Policy Concept (Nemzeti Közlekedési Stratégia – Nemzeti Közlekedési Koncepció)</td></tr>
<tr><td>Author</td><td>Strategy Consortium headed by FŐMTERV (Stratégia Konzorcium, vezető: FŐMTERV)</td></tr>
<tr><td>Year</td><td>2013</td></tr>
<tr><td>Member State</td><td>Hungary</td></tr>
<tr><td>Corridor section</td><td>Mediterranean Core Transport corridor No. 3</td></tr>
<tr><td>Mode</td><td>Rail, road, IWWT, aviation, other</td></tr>
<tr><td>Type of source</td><td>Governmental strategy paper</td></tr>
<tr><td>Confidential</td><td>N</td></tr>
<tr><td>Description of main findings</td><td>

- Presentation of the existing situation: HU’s geo-strategic position; economic situation in HU and the region; state of play in the passenger transport sector; state of play in the goods transport sector; review of the geographic structure of infrastructure; expected trends of the development: population, GDP, energy prices, transport demand; regulation; SWOT analysis; critical issues; main targets and forecasts



Expected development of passenger transport demand in Hungary



Expected development of goods transport demand in Hungary

- Alternatives of transport development concepts: methodology; definition of development alternatives and their suitability to meet various targets; analysis of alternatives
- Presentation of the proposed transport development concept based on sustainability, cost efficiency of services, development of related infrastructure and other tools, as well as operation, regulation, financing, institution building; TT Matrix (targets & tools); target fulfilment indicators; consideration of aspects of the Government’s Environmental Strategy Review

</td></tr>
<tr><td>Relevance for corridor Study Activities</td><td>Compliance of corridor infrastructure with TEN-T standards
In the past ten years, important transport infrastructure development has taken place in Hungary. Existing main roads and railway lines fit into large international networks and corridors. In the first half of this period, priority was given to motorway construction; in the last three years railway reconstruction has unequivocally prevailed. The average state of secondary elements of infrastructure in the country (e.g. those in the rail sector), not speaking about Mediterranean corridor No. 3, still</td></tr>
</table>

lags behind transport demand requirements (e.g. concerning transport reliability).

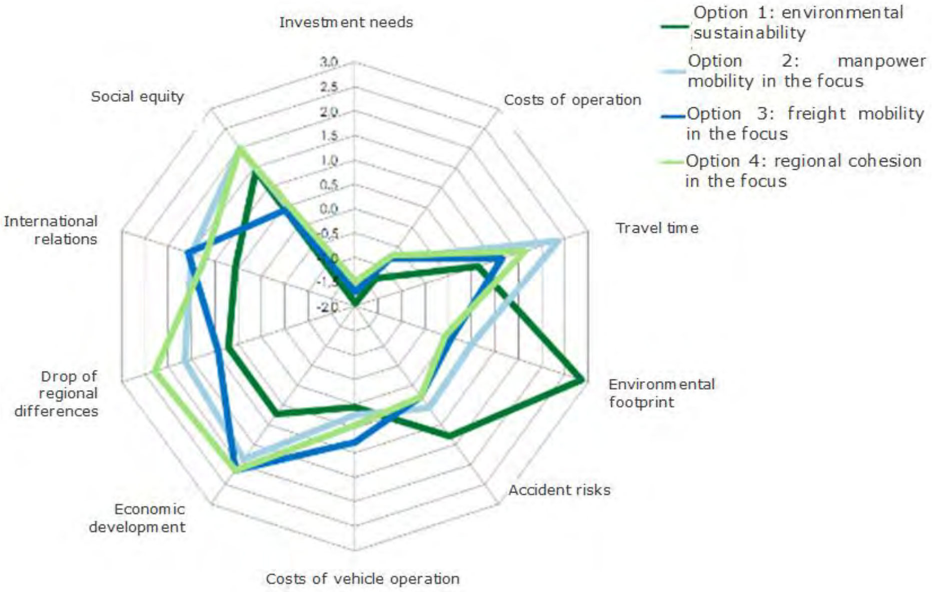
Identification of the identified critical issues
A focal critical issue, also of relevance for the Mediterranean corridor No. 3, is the extreme geographic centralisation and radial spatial distribution of transport infrastructure systems with Budapest in absolute central position. In case of the railways for example, there is a restricted throughput capacity in the capital city for various reasons, in particular concerning the lines Ferencváros – Kelenföld, Budapest-Keleti pu. – Rákos, Budapest-Nyugati pu. – Kőbánya-Kispest. Budapest should remain a strong urban conurbation in international comparison but it should better exploit its position as an international traffic node with new openings and improved access to all major cities, in particular in the East and the South.

Assessment of corridor objectives
Presented transport policy options explore different objectives of development.

- Option 1: environmental sustainability in the focus – emphasis is put on railway transport development both in the freight and passenger transport sectors
- Option 2: manpower mobility in the focus – solid spatial links should be created in the field of passenger transport both in the country side (various regions) and urban conurbations; preference is given to the development of rail transport
- Option 3: freight mobility in the focus – due to the dominance of freight transport by road, priority is given to the development of road transport duly considering requirements of environmental sustainability; for international long distance transport preference is given to rail and inland waterway
- Option 4: regional cohesion in the focus – special attention is given to the development of regional and long-distance transport connections (freight) as well as public transport modes (passengers) in disadvantaged regions

The selected mix of policy measures should support economic growth by increasing transport efficiency, improving traffic safety, reducing environmental impact and improving regional equity. Tools to achieve these objectives: influence transport demand; improve network access to high quality core EU network as well as to basic infrastructure; improve passenger and freight transport chains; create more intelligent systems (ITS); develop physical system according to demand; improve public transport wherever socially justified (e.g. create passenger transport modal interfaces); develop competitive freight transport infrastructure; create and finance on a long-term basis cost-efficient public transport services; coordinate incentives and support to achieve objectives; ensure efficient regulation, institutions, monitoring systems

Assessment of corridor measures
The value of transport policy options and related development measures can be assessed on expected results.



Impact assessment of various transport policy concepts and related development measures

Gathering information for market study

The presentation of the existing situation (see above under "Description of Main Findings") contains useful general/macro information for a market study.

Identification of on-going / planned projects and related characteristics

Not relevant (no specific projects mentioned)

Assessment of the investment strategy

In general, terms, cost efficiency and social utility are principal requirements for transport infrastructure development. Long-term development financing should be assured.

3.2 Conclusions

Corridor level

At the corridor level, **two studies considered of special interest have been analysed**; the RFC 6 Implementation Plan and the SETA Bottleneck analysis.

The **RFC 6 Implementation Plan** is the most relevant study since it covers the most relevant rail sections belonging to the Mediterranean corridor. In this respect, the implementation plan provides detailed data on the current freight traffic, rail infrastructure characteristics, interoperability and information about bottlenecks. It also provides an interesting survey of operators, useful to define the investment plan and the removal of bottlenecks. Finally, it includes other useful information on the planned projects.

The **SETA Bottleneck analysis** reveals the most important bottlenecks on railways and ports belonging to the East side of the corridor. It also includes detailed analysis of transport capacity, metropolitan bottlenecks, organizational/interoperability bottlenecks, port bottlenecks, technical data on port infrastructures, current traffic flows and last mile connections with ports.

Therefore, **the selected studies provide, mainly, information on the railway network and ports**, particularly in regard to **freight transport**.

This means that, the available study at the corridor level does not provide an exhaustive analysis on the other modes and in particular on passenger flows. Although that, since the corridor plays a significant role for domestic interregional passenger flows, this lack of information does not prevent an in-depth analysis on this side.

Spain

As regards freight, the selected studies provide a good picture of the current and planned infrastructures (in different horizons) in the majority of sections and nodes belonging to the Spanish side of the corridor. A specific exception should be made for the stretch Almeria-Sevilla, which is not part of the RFC6 and then deserve a more deep study and analysis.

Also for passengers, the identified studies provide full details on the demand aspects. In this respect it is important to mention the study on the Figueras-Perpignan cross border section. It provides a detailed analysis of the long term forecast (2020-2070) specifying all depending factors and elements.

It is also worth considering the study “Catalan Agenda of the Mediterranean corridor”, a position paper of the Catalan regional government on the corridor aiming at analysing the current infrastructure situation in order to identify priorities in terms of infrastructure works and measures to be implemented.

France

The identified studies allow gathering all needed information on both passenger and freight in relation to all the French sections along the corridor.

In particular, a detailed study has been undertaken on the Lyon rail node in order to analyse the critical issues in terms of capacity and the related solutions. The study also provides some recommendations for further studies.

A comprehensive vision of the French investment strategy on the corridor is provided by the "*Rapport de la Commission mobilité 21*" aiming at evaluating and prioritizing the great infrastructure projects in France until 2050 as well as at defining two scenarios according to the national investment capacity.

Italy

As for France, the collected studies provide a good picture of the Italian side of corridor from several points of view: technical data (in particular for those sections dedicated to freight traffic), demand analysis, stakeholders' identification, critical issues and investments strategies.

A study on ports deserves a special mention (i.e. the study "Infrastructure and competitiveness: 4 strategic nodes") given their particular relevance to the corridor and their role within the TEN-T network. The study provides a focus on how to enhance the ports of southern Europe by removing bottlenecks and operational barriers.

It is also important to bring the attention to the "General plan of the North Italian waterway system" since the "Po river" is the only IWW belonging to the corridor. This study provides an in-depth analysis of the "Po River" taking into account the following aspects: technical description, current and future traffic flow, inland shipping external cost evaluation compared to other modes, physical bottlenecks (including last mile connections), priority projects (on-going/planned/proposed).

Slovenia

The National Program provides a good snapshot of Slovenian transport services and traffics. Yet, the study actualises existing analyses/forecast with a holistic approach and identifies possible measures for the removal of critical issues/bottlenecks per mode. Modal split sustainability, transport efficiency issues and environmental sustainability are also evaluated.

Croatia

The most important study, the "Transport development strategy of the republic of Croatia (2014-2030)" (completed on 30th October 2014) provides an overview of the general objectives, per transport mode, of the Croatian transport strategy as well as the main identified critical issues. Finally, a SWOT analysis per mode has also been defined.

Hungary

The selected studies have been clustered into three groups: those which refer to rail modes, those which relate to road and those with general content (that include all modes).

The first two groups provide a very comprehensive picture since they contain both demand data and technical data of the existing infrastructure as well as an analysis of bottlenecks and of the planned investments. As additional information, stakeholders' identification, information sources and databases or implementation plans are provided.

The latter group does not provide specific technical data on the different mode of transport considered, but on the other hand, it contains useful references to information sources and databases in order to collect them. This group of studies also incorporates demand analysis, which means that, in this respect, the information is complete for the whole country. Finally, investment analysis is also provided.

4 Elements of the Work Plan

4.1 Executive summary

According to the art. 47 of the EU Regulation 1315/2013, the work plan includes a description of characteristics, cross-border sections and objectives of the core network corridor, applying the objectives and priorities set out in Articles 4 and 10 as well as an analysis of the required investments.

A) Description of the corridor characteristics

The description includes:

1. An analysis of the technical parameters of the infrastructure for each transport mode;
2. the transport market study;
3. the identification of critical issues on the corridor (cross border sections, bottlenecks, interoperability, intermodality, operational and administrative barriers).

1) Description of the technical parameters of the infrastructure for each transport mode

This description allows the verification of the compliance of the infrastructure with the parameters of the TEN-T regulation, and consequently the identification of issues, which hinder a train/vessel/truck to use efficiently and effectively the infrastructure (interoperability).

<u>Compliance of Railway corridor sections with the relevant TEN T regulation</u>

Regarding **speed limits**, four countries are nearly full compliant (ES, FR, IT and HU), while in Slovenia only 2/3 of sections are compliant and in Croatia 1/3. In both cases these physical bottlenecks concern the connections to ports of Koper and Rijeka respectively.

Interventions are expected in order to overcome these speed limitations along Slovenian rail sections; also in Croatia, upgrades of the existing rail lines and new lines to increase freight train speed are foreseen.

Regarding **electrification,** four countries are fully compliant (FR, IT, HR and HU). Spain and Slovenia foresee interventions (e.g. Alicante-Murcia-Cartagena and Almería (Huéneja Dolar)-Granada, Bobadilla-Algeciras for Spain and Pragersko –Hodos for Slovenia).

Regarding **axle load,** all countries are compliant with the European requirement except for Hungary and Slovenia. In these countries, several interventions on rail sections aiming to solve physical bottlenecks are foreseen.

Track gauge is almost full compliant to the European requirements less for Spain that adopts the 1668 mm standard for the existing conventional lines; the recently built HS lines has the UIC gauge (thus ensuring full interoperability on these lines). Furthermore, several projects listed in the Spanish implementation Plan aim at solving this issue on the majority of the conventional lines part of the alignment (upgrading to mixed gauge and third rail track between Reus and Vilaseca).

Train length parameter has low rate of compliance (26%), except France; the remaining countries foresee projects to standardize their sections to the European target. As examples: in Italy Bologna- Ravenna section (intervention foreseen); Slovenia (Pragersko- Hodos); Croatia (Goljak – Skradnik); Spain (Conventional rail line FR border-Barcelona-Valencia-Alicante-Murcia-Cartagena;Madrid-Córdoba-Algeciras: Madrid-Barcelona).

Finally, regarding **ERTMS**, despite the lowest compliance, it is important to mention that all countries foresee great effort to adopt the new European signalling system along the corridor sections.

Compliance of Road corridor sections with the relevant TEN T regulation

As regard parameter "Motorway or Express roads", all countries are compliant. More specifically, few sections are not motorways: the western part of Spain (ex. Motril – Playa Cambriles, Motril-Nerja) and the Hungarian section close to Ukranian border.

Concerning the "Use of tolling systems/ITS and their interoperability with other systems", it is important to mention the particular case of the Spanish tolling systems. The Spanish high capacity roads are composed by Autopistas and Autovías; only Autopistas have a tolled system with toll barriers while Autovías are re-paid by the general tax system. Finally, regarding the toll system, it shall be highlighted that Slovenia and Hungary adopt the vignette system. More specifically, in these countries cars, buses and trucks under 3.5 tonnes maximum weight are subject to a time-based system and large heavy good vehicles to a distance-based road user charge.

Compliance of ports with the relevant TEN T regulation

For ports, Regulations (EU) 1315 and 1316/2013 established the connection to the rail network to be fulfilled by 2030 as requirement.

All ports are fully compliant. Nevertheless, it shall be highlighted that several ports are further empowering the rail connection.

Compliance of Airport nodes with the relevant TEN T regulation

For Airports, Regulations (EU) 1315 and 1316/2013 established as requirement the connection to the heavy rail network to be fulfilled by 2050.

France is already fully compliant, while Spain and Italy have a lower compliance rate. In Spain, three interventions are foreseen in order to connect Alicante, Sevilla and Valencia airports by heavy rail. In Italy, Venice airport will be connected to the conventional and HS rail lines. Bologna and Milan Linate airports will be connected to the national rail line network by a people mover and Underground line 4, respectively.

For the East part of the corridor, at the moment, no projects are foreseen to foster these kinds of connections.

Compliance of IWW corridor sections with the relevant TEN T regulation

About 20% of the total length of the waterways sections does not meet the standard. More precisely: Pavia-Casale Monferrato and Piacenza –Pavia, covering about 150 km, where the minimum width is about 8 m. instead of 9.5 m. Another relevant issue concerns the limited bridge clearance over the section Ferrara- Porto Garibaldi where maximum height under bridge is 4.1m (Pontelagoscuro).

In order to solve these critical physical bottlenecks some interventions are planned, such as: the construction of the new lock Isola Serafini and the implementation to the class V standard of the segment Pontelagoscuro- Porto Garibaldi.

2*) The transport market study*

Sources and data gathering for the transport market study

The transport market study relies on the following **data sources**:

- Traffic flow data gathered by consortium members on the corridor network sections for the filling of the TENtec database (passengers and freight);
- CAFT (Cross alpine freight traffic survey) / Transit survey data on Pyrenean and alpine crossings, as well as data coming from alpine and Pyrenean transport observatories (OTP, Alpinfo);
- Specific studies gathered by consortium members, especially on cross-border sections;
- Etisplus matrices and Eurostat sources on road, air, rail, passenger and freight traffic.

The first activity regarding market study was to **put all these sources together to form a consistent database for the year 2010**, which is the last year where a global set of data on the whole corridor can be found (i.e. ETISplus database); where possible, more recent evolutions of traffic has been indicated.

Analysis of the current transport market along the corridor

In order to summarize the description of the current transport market on the corridor and prepare the forecasting exercise, **it is necessary to identify the international origin-destination pairs constituting the "market area" of the corridor**. In this respect, **an assignment to a simplified network of 2030**, considering corridor implementation has been carried out.

The assignment identifies the minimum cost path between all origins and destinations at Nuts2 level in Europe and allow to select the origin-destination pairs which cross at least one of the following borders:

- ES / FR on the Mediterranean side;
- FR / IT entire border (since itinerary shifts from Ventimiglia are probable);
- IT / SI entire border;
- SI / HU entire border;
- SI / HR entire border;
- HU / HR northern part of the border.

This will provide a better understanding of the market area of the major international flows along the corridor in terms of origin-destination, including possible itinerary shifts with corridor implementation. **This analysis focuses on rail and road flows, while maritime traffic between the corridor countries will be analysed globally in the ports section.**

Freight flows in the corridor's market area

According to this definition, the freight flows in the corridor's market area for 2010 are the following:

Total market area (1000 tons / year)	2010
Road	129.623
Rail	22.206
Total *(except sea)*	**151.829**
Rail share	**14,6%**

ROAD	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		18 989	7 407	152	88	387	250	1 803	10 173
France			25 238	724	124	571	1 126	135	383
Italy				5 677	6 200	7 300	3 717	1 645	5 732
Slovenia					3 600	5 300	673	4 476	15
Croatia						5 800	711	3 214	2 894
Hungary							350	0	111
South-Eastern Europe								0	4 659
North-Eastern Europe									
Western Europe									

RAIL	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		289	177	0	0	6	1	4	1 389
France			5 350	34	6	17	56	1	115
Italy				176	1 225	1 716	387	128	3 015
Slovenia					319	2 096	173	1 132	0
Croatia						1 900	122	635	628
Hungary							133	0	40
South-Eastern Europe									934
North-Eastern Europe									
Western Europe									

OTAL (except sea traffi	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		19 278	7 584	152	88	393	252	1 807	11 561
France			30 588	758	130	588	1 182	136	499
Italy				5 853	7 425	9 016	4 104	1 772	8 747
Slovenia					3 919	7 396	846	5 608	15
Croatia						7 700	833	3 850	3 522
Hungary							483	0	151
South-Eastern Europe								0	5 592
North-Eastern Europe									
Western Europe									

RAIL SHARE	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		2%	2%	0%	0%	1%	1%	0%	12%
France			17%	5%	5%	3%	5%	1%	23%
Italy				3%	16%	19%	9%	7%	34%
Slovenia					8%	28%	20%	20%	0%
Croatia						25%	15%	16%	18%
Hungary							28%		26%
South-Eastern Europe									17%
North-Eastern Europe									
Western Europe									

Looking at international freight flows on the corridor, it can be observed:

- **relatively strong exchange flows** (about 150 million tons of potential market);
- **relatively low market shares for rail transport** (14%), especially in the East-West direction (in comparison to the other international flows in Europe, in particular between Benelux or Germany and Northern Italy).

Two groups of reasons can explain this phenomenon:

- **structure of the traffic**: industrial density of the North-Western Europe and strong traffic of the North ports allow frequent services of combined transport. Even if there are important industrial nodes and ports along the corridor, flows tend to be more diffused in the North-South direction.
- **transport policy and infrastructure**: congestion in main nodes, lack of interoperability (the main problem is the track gauge change at the Spain-French

border) and insufficient performances on some sections causes the low rail market share but also transport policies and organizational issues within railways undertakings should be improved in order to enhance the modal shift.

Passenger flows in corridor market area

As shown below, **passenger international flows in the corridor's market area represent about 129 million passengers per year in 2010**.

Total market area (1000 pax / year)	2010
Road	46 261
Rail	3 001
Air	79 659
Total	**128 921**
Rail share	***2,3%***

These flows are considerably more important in the Western part of the corridor than in the Eastern side: more developed European integration and presence of major touristic zones as well as business centres explain this phenomenon.

Rail share was very low (just above 2%), which is mainly causes by structural reasons: the **short-distance cross-border trips are**, up to date, much more efficient by road than by rail. The other important flows are **between major cities and to touristic zones** of the corridor countries or neighbouring countries; the distance between these major nodes is generally really high (over 1.000 km in most of the cases), which gives to the air transport an important market advantage.

ROAD	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		15 868	563	10	12	12	19	52	889
France			20 263	70	117	108	309	0	279
Italy				1 480	439	198	630	382	1 176
Slovenia					541	182	157	148	13
Croatia						37	412	95	516
Hungary							203	0	1 081
South-East Europe									
East Europe									
West Europe									

RAIL	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		486	103	1	1	0	1	5	106
France			1 142	14	22	4	4	0	35
Italy				132	85	35	45	27	76
Slovenia					22	32	11	2	1
Croatia						12	9	2	174
Hungary							14	0	399
South-East Europe									
East Europe									
West Europe									

AIR	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		3 195	9 315	67	70	423	2 699	2 685	25 947
France			7 337	73	192	636	4 532	0	22
Italy				65	170	542	5 188	617	11 065
Slovenia					39	2	275	76	14
Croatia						16	55	90	1 673
Hungary							46	0	2 534
South-East Europe									
East Europe									
West Europe									

TOTAL	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		19 549	9 981	78	83	435	2 719	2 742	26 942
France			28 742	156	331	748	4 845	0	335
Italy				1 677	694	775	5 863	1 025	12 317
Slovenia					602	216	443	226	29
Croatia						65	476	187	2 363
Hungary							263	0	4 014
South-East Europe									
East Europe									
West Europe									

Rail share	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		2%	1%	1%	1%	0%	0%	0%	0%
France			4%	9%	7%	1%	0%		10%
Italy				8%	12%	5%	1%	3%	1%
Slovenia					4%	15%	2%	1%	4%
Croatia						19%	2%	1%	7%
Hungary							5%		10%
South-East Europe									
East Europe									
West Europe									

Forecasting results in terms of overall transport demand along the corridor for freight

Based on the GDP growth assumptions, the total freight flows (except maritime traffic) in the market area in 2030 would be the following:

Total Market area	road + rail
2010	151 829
2030	267 605
Annual growth rate	2,9%

TOTAL 2030 (except sea traffic)	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		27 406	13 388	420	218	1 086	655	4 569	16 195
France			49 524	2 271	418	1 838	3 389	392	822
Italy				10 981	17 883	17 766	8 089	3 601	12 409
Slovenia					6 990	13 563	1 578	10 459	34
Croatia						13 485	1 396	6 910	7 619
Hungary							864	0	429
South-Eastern Europe								0	10 958
North-Eastern Europe									
Western Europe									

Annual traffic growth (2010 - 2030)	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		1,8%	2,9%	5,2%	4,6%	5,2%	4,9%	4,7%	1,7%
France			2,4%	5,6%	6,0%	5,9%	5,4%	5,4%	2,5%
Italy				3,2%	4,5%	3,4%	3,5%	3,6%	1,8%
Slovenia					2,9%	3,1%	3,2%	3,2%	4,3%
Croatia						2,8%	2,6%	3,0%	3,9%
Hungary							2,9%		5,3%
South-Eastern Europe									3,4%
North-Eastern Europe									
Western Europe									

According to the GdP assumptions and econometric models, **the total demand in the market area of the corridor would increase from 151 million tons in 2010 to 267 million tons in 2030, with an average annual growth rate of 2,9%**.

Traffic elasticity to GdP growth vary from 1,3 – 1,7 for relations between Western European countries to much higher values for traffics with Eastern Europe. This is explained by the different levels of integration in the European Union.

With the implementation of the corridor, **rail market share could potentially increase up to 27%, reaching about 72 million tons a year. In particular, as Spain is considered to be almost fully connected with UIC gauge, exchanges with Spain could have similar rail shares with other flows.**

These results take into account the development of unaccompanied combined transport services along the corridor. Short-distance accompanied rolling motorway services between Lyon and Turin has been considered separately.

The following tables summarize the forecasting results for the market area:

Total Market area	2010	2030 Trend (do-nothing)	2030 Corridor implemented	2030 Corridor Implemented (including accompanied rolling motorway)
Road	129 623	228 647	195 131	186 431
Rail	22 206	38 958	72 474	81 174
Total (except sea)	151 829	267 605	267 605	267 605
Rail share	*14,6%*	*14,6%*	*27,1%*	*29,4%*

These forecasts show that there is a strong potential for international Rail traffic development on the Mediterranean corridor until 2030.

First, **the global demand can be expected to have a solid dynamic if GdP growth in Europe turns back to "normal" rates** (as in the EC projections) on a long term average. **It is, in particular, related to the exchanges of goods with countries of Eastern Europe.**

Secondly, starting from a relatively low base in 2010, the final rail shares given by the forecasting model (between 20% and 30% for most of the relations considered) are not excessively high for international, continental rail transport as long as it offers competitive performances; they remain below observed rail shares in Europe on the North – South direction.

Thus, implementing the corridor could potentially shift about 33 million tons / year from road to rail (about 2,3 million trucks / year equivalent) or even 41 million tons / year (3 million trucks) if we consider accompanied rolling motorway.

But it is important to stress that these forecasts express the *potential* market of the corridor, meaning that reaching these effects imply the complete implementation of the corridor with fulfilment of the TEN-T standards and resolution of bottlenecks as well as the creation of adequate transport services along the infrastructure, particularly in the combined transport.

In relation to the maritime traffic, all ports and all commodity types are expected to grow in the period of 2010-2030, in particular container traffic (about 4%) without assuming a port shift and without specific growth of transhipment traffic.

Basing on the model's results for the ports' traffic and the consortium assumptions for evolution of the modal shares in inland traffic, the volume of rail, road and IWW freight coming and going from the ports in 2030 has been assessed and shown in the table below:

2030 MED forecast	Sevilla	Algeciras	Cartagena	Valencia	Tarragona	Barcelona
Total (M tons)	5,9	134,1	29,5	100,5	43,4	67,8
% Transhipped	*0%*	*54%*	*0%*	*53%*	*2%*	*25%*
% with land transport	*100%*	*46%*	*100%*	*47%*	*98%*	*75%*
MTons with land transport (including pipe)	5,9	61,5	29,5	47,3	42,7	50,8
% pipe	*0%*	*69%*	*80%*	*0%*	*59%*	*8%*
% rest land	*100%*	*31%*	*20%*	*100%*	*41%*	*92%*
Mtons with land transport (except pipe)	5,9	19,2	6,0	47,3	17,6	46,8
%road	*90%*	*85%*	*92%*	*84%*	*82%*	*84%*
%rail	*10%*	*15%*	*8%*	*16%*	*18%*	*16%*
%IWW	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Mtons road	5,3	16,3	5,5	39,7	14,4	39,3
Mtons rail	0,6	2,9	0,5	7,6	3,2	7,5
Mtons IWW	0,0	0,0	0,0	0,0	0,0	0,0
Trains / Day in 2010	0	0	0	9	9	13
Trains / Day in 2030	4	17	3	45	19	45

2030 MED forecast	Marseille	Ravenna	Venezia	Trieste	Koper	Rijeka	Total
Total (M tons)	113,4	39,9	52,0	60,6	24,5	19,2	684,9
% Transhipped	*1%*	*1%*	*0%*	*0%*	*4%*	*4%*	*22%*
% with land transport	*99%*	*99%*	*100%*	*100%*	*96%*	*96%*	*78%*
MTons with land transport (including pipe)	111,8	39,5	52,0	60,6	23,5	18,4	537,5
% pipe	*65%*	*0%*	*41%*	*60%*	*0%*	*35%*	*43%*
% rest land	*35%*	*100%*	*59%*	*40%*	*100%*	*65%*	*57%*
Mtons with land transport (except pipe)	38,9	39,5	30,5	24,2	23,5	12,0	305,4
%road	*74%*	*78%*	*70%*	*74%*	*32%*	*60%*	*77%*
%rail	*18%*	*22%*	*20%*	*26%*	*68%*	*40%*	*23%*
%IWW	*8%*	*0%*	*10%*	*0%*	*0%*	*0%*	*2%*
Mtons road	28,8	30,8	21,3	17,9	7,5	7,2	234,1
Mtons rail	7,0	8,7	6,1	6,3	16,0	4,8	71,0
Mtons IWW	3,1	0,0	3,0	0,0	0,0	0,0	6,2
Trains / Day in 2010	23	21	13	24	85	12	210
Trains / Day in 2030	42	52	36	37	95	28	423

Table 5 Port inland traffic by mode in 2030 (source: Consortium)

This analysis shows that it is reasonable to consider that the number of train circulations generated by the ports of the corridor could double by 2030 with respect to 2010 level, even taking into account an increase of the trains' length and weight of goods. **The most important effects are to see at the ports of Algeciras, Valencia and Barcelona, which combine traffic growth of the ports and important modal shift expectations, with the expected improvements of the rail connections.**

Considering additional growth from shifting traffic from ports of the north range (which is reasonable to consider, even if not in the proportions of the single port's ambitions), this rail traffic increase could be even more important.

The maritime dimension of the corridor is also expressed by a strong traffic of short sea and ro-ro services between the corridor's countries or between Europe and northern Africa. This traffic is also expected to grow rapidly in the coming year with the development of the motorways of the sea and with the rapid economic and demographic growth of Africa.

Forecasting results in terms of overall demand and potential market shares by mode for passengers

Based on the GDP growth assumptions, the total passenger flows in the market area in 2030 would be the following:

Total market area (1000 pax / year)	All modes
2010	128 921
2030	177 779
Annual growth rate	*1,6%*

TOTAL market area (2030, trend scenario)	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		28 202	13 506	111	123	600	4 020	4 134	37 665
France			38 142	219	480	1 012	7 025	0	463
Italy				2 204	944	984	7 975	1 422	16 381
Slovenia					864	289	636	331	38
Croatia						90	708	283	3 297
Hungary							365	0	5 264
South-East Europe									
East Europe									
West Europe									

Annual growth rates 2010 - 2030	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		1,8%	1,5%	1,8%	2,0%	1,6%	2,0%	2,1%	1,7%
France			1,4%	1,7%	1,9%	1,5%	1,9%		1,6%
Italy				1,4%	1,5%	1,2%	1,5%	1,6%	1,4%
Slovenia					1,8%	1,5%	1,8%	1,9%	1,5%
Croatia						1,6%	2,0%	2,1%	1,7%
Hungary							1,6%		1,4%
South-East Europe									
East Europe									
West Europe									

Implementing the corridor will significantly reduce rail travel time, and consequently increase frequency of train services on various international relations along the corridor, therefore generating shifts from road or air to rail but also, as already mentioned, traffic induction.

The corridor's implementation would increase rail shares in particular for traffic between France and Spain (from 2% in 2010 to 12% in the scenario 2030 "with corridor implementation") **and between France and Italy** (from 4% in 2010 to 8% in the scenario 2030 "with corridor implementation")**.**

The following table summarizes the results for the whole market area.

Total market area (1000 pax / year)	2010	2030 trend scenario	2030 with corridor implementation	Diff. Corridor - trend
Road	46 261	63 539	61 125	-2 413
Rail	3 001	4 061	10 011	5 950
Air	79 659	110 179	108 153	-2 026
Total	**128 921**	**177 779**	**179 289**	**1 510**
Rail share	***2,3%***	***2,3%***	***5,6%***	

This forecast shows that implementing the corridor could increase the international rail traffic by nearly 6 million passengers / year in 2030. This increase would come from modal shifts from air (2 Mpax), modal shifts from road (2,4 Mpax) and traffic induction (1,5 Mpax). Rail share would go from 2,3% to 5,6% on the overall market area, which represents more than a doubling of the rail traffic with respect to the do-nothing scenario.

Given the considerable volumes of air traffic, the modal shift from air may seem small; but again, a lot of air traffic flows on the corridor concern very long distances on which rail, even in high speed, cannot compete.

General conclusions and identification of the main bottlenecks

The transport market study helps drawing both general and specific conclusions on several bottleneck issues.

General conclusions of the analysis could be the following:

1. **The implementation of the Mediterranean corridor represents a major opportunity to shift important volumes of freight from road to rail**, with a potential shifting of 40 million tons of goods from road to rail by 2030. Nevertheless, the realization of this objective needs a fully upgraded and interoperable infrastructure with adapted services and rail-road terminal.
2. **The connections to the ports are a key element for the success of the corrido**r. All ports of the corridor have great ambitions of development in the 10-20 coming years, with various projects regarding especially improvement of capacities for container traffic and rail connections. In fact, intercontinental container traffic in Europe is still handled above all in the ports of the north range, generating very long-distance hinterland flows. The development of the ports of the Mediterranean, together with an efficient rail connection of these ports to the core network, could help **reaching a better balance between north and south range and an enhanced sustainability** (reducing the costs in time and fuel as well as the related emissions) of Europe's international trade with other continents**. The short sea services between European countries or with northern Africa is also a strong and growing element of the maritime dimension of the corridor**.
3. **Even if they have for the moment relatively low traffic, IWW could play an important role in the future for the Mediterranean corridor**. By connecting major industrial zones to seaports, they could offer an interesting alternative to road or rail transport for certain types of goods, which is important to develop as road and rail networks will increasingly suffer from congestion in particular around seaports and urban nodes. In Italy, the IWW system could reach a completely different dimension if Milano and Piacenza were to be properly connected to the network; in France, the development of the traffic on the Rhône, which is growing rapidly in the last years, is a major opportunity for the port of Marseille / Fos and for enhancing multimodality along a very congestioned valley, supporting strong container traffic growth.
4. **The corridor developments are also likely to improve significantly the competiveness of rail for international passenger traffic**, with a potential increase of 6 million passengers per year by 2030, 2 million of which shifted from air traffic. **The corridor implementation could also have important effects for national and regional traffic**, improving travel time on sections with strong national flows (Nîmes – Montpellier - Perpignan, Lyon – Chambéry / Grenoble, Milano – Venezia - Trieste…) and creating opportunities for new performant regional services where congestioned nodes are relieved.

Regarding specific critical issues and bottlenecks, the following conclusions could be highlighted.

Capacity issues

- **The realization of the potential traffic of the Lyon – Turin international section needs the solving of major capacity issues in the Lyon node and from Lyon to Saint-Jean de Maurienne**. For example, there could be potentially about 200 passenger trains per day on the existing 2-tracks line between Chambéry and Montmélian in 2030. This is clearly not compatible with the expected number of freight and rolling motorway trains potentially using the cross-border section if no new link is created.

  The Lyon node is already critical today and its situation prevents any significant development of rail traffic coming from Spain or from the port of Marseille to northern Europe, Switzerland or to Italy. An alternative path to Switzerland or Italy might be available in the short term via the newly electrified line between Valence, Grenoble and Chambéry but with quite limited capacity.

  The Turin Node is an essential point of the national railway system, both concerning its function as a node for the HS/HC system and for the Turin-Lyon corridor and its metropolitan mobility value. The planned interventions for the node, both infrastructural and technological, are essential in order to increase its capacity and enhance the intermodal integration.
- In relation to the **urban nodes** (i.e. Madrid, Barcelona, Marseille, Lyon, Torino, Milano, Venice, Ljubljana, Zagreb and Budapest), it is important to underline bottlenecks related to the overlapping of different types of rail traffic (metropolitan, regional, long distance and freight). The planned investments are necessary to relax such constraints. For example, once all major generators connected, there could be **some capacity issues in the urban area of Barcelona**, with about 100 – 150 freight trains per days on some sections having to share tracks with heavy commuter rail traffic; **this issue would require a more in-depth analysis of local traffic.**
- **Capacity issues between Montpellier and Perpignan will become critical in case of all connections to Spanish seaport, industrial plants and the other logistic terminals will be upgraded at UIC gauge. In addition, the new line will become necessary to realize the potential demand of the corridor**, since between Montpellier and Beziers by 2030 there is an expected could be a demand equivalent to 140 freight trains, 100 regional trains and about 60 high-speed passenger trains. The total resulting traffic is not possible on the existing line alone.
- **Traffics between Trieste and Divaca are expected to be compatible with a two-track upgraded line**.
- **Given the present traffic and its potential development, the upgrade of the line between Divaca and Koper is an absolute priority**: 80 trains / day on a single-track line in the present situation, with an expected increase according to our projections to 19 million tons and 135 trains per day by 2030.
- **The need for a new line is also clear in the central part of Slovenia**, where freight traffic could reach over 200 trains a day. Such traffic does not appear to be easily mixed with the passenger traffic in the Ljubljana area.

Interoperability and intermodality issues

- **Accesses of main factories, ports and intermodal logistics terminals to the main transport network (in particular rail or IWW where appropriate) have to be guaranteed and / or enhanced** in order to ensure appropriate capacity and service level in comparison to their needs and assure that the development of the transport system has an impact on the socio-economic growth of regions. Thus, the issue of the last mile linking the core network to production, exchange or consumption sites is among the first priorities to be addressed
- **The realization of the rail potential international traffic in Spain could only be achieved by a full UIC gauge connection from the main traffic generators to the border**.
- **In order to enhance the modal shift, a substantial improvement of the corridor interoperability has to be ensured removing the remaining restrictions in particular in terms of train length, axle load and signalling system needed to meet the market needs** (especially on the Eastern part of the corridor)**.** While this effort can only be made gradually, this kind of issue is only solved when the whole corridor has reached the common standards, and even a very small section remaining with lower standards in the central part of the corridor has enormous negative effects on its potential.

3) Identification of critical issues on the corridor

The table below shows the main identified critical issues per mode and MS.

	Item	Spain	France	Italy	Slovenia	Croatia	Hungary
Railways							
Bottlenecks	**Single track sections**[2]	e.g. Vandellós – Tarragona, Algeciras-Bobadilla – Granada-Moreda- Almeria, Bobadilla-Sevilla-Cordoba-Linares-Santa Cruz de Mudela, Reus-Zaragoza, Alicante – Murcia. An important bottleneck is the Algeciras-Bobadilla section: single, not electrified track with high gradients.	St-André le Gaz – Chambéry.		Koper – Divaça, Ormož – Ljutomer.	Lack of capacity in lines due to single track (all sections belongings to the corridor less than Dugo Selo – Zagreb).	SI/HU border - Zalolovo-Székesfehérvár. Gyekehyes-Pusztaszabolcs Nyiregyhàza – Mezozombor.
	Congested double track sections (> 100 trains / day) or sections with capacity issues related to the mix between passenger and freight trains	Heavy commuter train traffic on double track: (Martorell-Castelbisbal, near Barcelona) Heavy mixed traffic on double track: (Barcelona-Sant Vicençs de Calders-971 trains per week) (Valencia-Xátiva-1016 trains per week) (Madrid-Guadalajara-816 trains per week) Madrid-Aranjuez-1340 trains per week).	Mixed and intense use of the infrastructure, with heavy commuter train traffic (node of Lyon; Moirans – Grenoble ; Chambéry – Montmélian ; Nimes – Montpellier).	Capacity reductions and related congestion on specific sections (e.g. existing double track line Treviglio – Brescia; Avigliana – Turin and Venice S.L-Venice Mestre) Congestion on Trieste– Divaca border section expected in medium-long term. Mixed use of the infrastructure (nodes of Torino, Milano and Milano Lambrate). Performance requirement for freight traffic.	Lack of capacity on the sections (e.g. Zidani Most-Celje, Ljubljana node).	Mixed use of the infrastructure (e.g. DugoSelo –Zagreb).	Heavy mixed traffic on out-dated Szolnok-Szajol-Püspökladány section, including at worn-down Szolnok station. Anyway, there is a new line Szajol-Püspökladány under construction that may overcome capacity issues.

[2] "Double track" should not be considered as an absolute requirement wherever a single track is satisfactory for the given (observed and forecast) level of traffic. Therefore it ca not be considered an automatic bottle-neck issue.

	Item	Spain	France	Italy	Slovenia	Croatia	Hungary
Slow implementation of actions & projects		New line between Murcia and Almería Works on-going, but there is not official date for inauguration. The upgrade of the Madrid-Zaragoza-Tarragona conventional line is not yet defined and planned. There is no expected starting date for this section.	Many projects postponed due to financing difficulties and priority shift (Montpellier - Perpignan, Lyon bypass).	The national part of the new Turin-Lyon railway link has not been realized yet (and it is not formally approved by CIPE). The preliminary project of Venezia – Trieste has not been approved yet. The environmental evaluation undertaken by the Ministry of Environment is currently stopped waiting for clear indications about the expected routing. Connection between IT and SI (the expected routing is under evaluation). Moreover, the same problem arises for the new HS link Turin-Lyon, which final project has not yet been approved by CIPE.	Connection between Italy and Slovenia (the expected routing is still under evaluation). Connection between Italy and Slovenia.		
Roads							
Bottlenecks		Limitation of capacity and related congestions (at peak hour in road sections around Madrid (M-50 Motorway), Valencia (A-7 Motorway) and especially Barcelona (AP-7 Motorway). Single lane around Motril (A7 Motorway).	Limitation of capacity and related congestions (Lyon and the Rhône Valley - A7 motorway; A9 motorway in Montpellier and between Perpignan and the Spanish border).	Limitation of capacity and related congestions (road sections around Milan and IT/SI cross border).	Limitation of capacity (Ljubljana node) due to high traffic volumes.		Lack of motorway connection to Ukraine (23 km). Lack of motorway connection to Slovenia (Letenye-SI/HU border).
Environmental and safety risks	**Safety provisions as provided by Dir. 2008/96 &**	Emission of CO2 & air pollutants; transport safety. Environmental	Environmental impacts on sensitive areas (Alps). Emission of CO2 &	Environmental impacts on sensitive areas (Alps). Emission of CO2 &	Emission of CO2 & air pollutants; transport safety.	High emission of CO2 and other pollutants.	Recently improving accident rates and shrinking death toll but HU is still at the

	Item	Spain	France	Italy	Slovenia	Croatia	Hungary
	2004/54	impacts on sensitive areas (Pyreneans) IMD recorded in La Junquera: 29,000 with 33% of heavy traffic.	air pollutants; transport safety.	air pollutants; transport safety.			lower end of the EU scale. Lack of safe and secure truck parking sites all along the highway network. Upgrading of the current M70 motorway for traffic safety reasons.
Airports							
Physical bottlenecks	**Airport infrastructure**					Lack of capacity in the summer season.	
Intermodal integration	**Rail connection to the airport**	No rail connections to the main railway network are available, even if it can be mentioned a connection by underground with Madrid airport.	No direct rail connection with Marseille airport.	Lack of rail connection with the airports (e.g. Venice, Milano Linate & Orio al Serio); need to upgrade last mile link with Malpensa.	Lack of connection between Ljubljana airport and railway network.	Lack of rail connection between Zagreb airport and city.	
Ports							
Bottlenecks	**Port infrastructure**	In the Spanish ports investments are necessary to facilitate shunting, reduction of travel times and increase of available paths.	Operational bottlenecks on the railways connections to Marseille and Fos port.	Limited available draughts and related constraints for certain type of traffic (e.g. Venice, Ravenna). Limited warehouse space for Trieste port.		Small container storage area. Long vessel waiting times re-scheduling due to port congestion. Insufficient mooring space. Not flexible infrastructure to increasing ship size (Port of Rijeka).	
Intermodal integration	**Rail / road access to the port**	Limited access: As a general issue related to all ports included in the alignment it is important to underline that the adaptation to UIC of the related rail connection will allow the increase of the share of freight rail vis-à-vis road on the short term all along the two main sections of the	Rail access and RRT in Marseille and Fos to be improved	Reduced rail accessibility and need to improve rail infrastructure connections. In particular, a single track rail connection to Venice port causes traffic flow restraint.	Insufficient integration among transport modes (Divaca-Koper Port: a single rail track electrified (48km), situated in a mountainous region with operational speed for freight of 34km/h). In the meanwhile, the major transport infrastructure is the A1 highroad connecting Koper to	Limited rail access.	

	Item	Spain	France	Italy	Slovenia	Croatia	Hungary
		Mediterranean corridor. Although the main existing bottlenecks are mostly referred to rail, also road connections to ports should be improved.			Divača and Ljubljana.		
Lack of interoperability	**Traffic management systems**	Lack of interoperable IT systems to ensure the safety and traceability of the load.		Lack of interoperable IT systems to ensure the safety and traceability of the load.	Lack of interoperable IT systems to ensure the safety and traceability of the load.	Lack of interoperable IT systems to ensure the safety and traceability of the load.	
Road-rail terminals							
Bottlenecks	**Terminal infrastructure**	All terminals in the main nodes (Madrid, Zaragoza, Barcelona), have a limited usable tracks and do not have UIC links.	Limited productivity due to limited usable track lengths (Avignon – Courtine; Le Boulou; Perpignan; Marseille – Canet; Lyon – Venissieux).	Lack of terminal capacity in some area (e.g. Milano Smistamento, Trieste C.M.)	Limited capacity (e.g. Ljubljana)		
Intermodal integration	**Rail access**	Limited access capacity due to limited usable track lengths (Abroñigal Logistic Terminal - Madrid).	-Limited accessibility from Venissieux to the south (St-Fons connection).				
IWW							
Bottlenecks	**IWW infrastructure (target: minimum class IV of CEMT classification)**		Class IV not reached yet on the Canal du Rhône à Sète (this section is still not included in the Mediterranean corridor alignment)	Accessibility of the western part of the IWW (between Cremona Milan and Casale Monferrato) is limited to large vessel due to a missing lock.			
Intermodal integration	**Integration between IWW and other modes**		Rail access to the port of Lyon to be improved (the not electrified line provoke complex movements).	Lack of direct transhipment between IWW and sea port; Lack of rail connection (e.g. Mantova port).			Technical features (e.g. draught) of IWW (Danube) in HU are much worse than the EU average. Similar situation is true for ship loading capacity, port density, and port services.

B) Programme of measures

1) Identification of corridor objectives

Needless to say, **the development of the Corridor as the backbone of international exchanges between East and West part of Europe will contribute to the economic growth and competitiveness of such areas, as well to their connection with third countries (in particular in the North and West Africa as well as with third countries in the East)**

The TEN-T Regulation[3] defines the **general objective** of the TEN-T network as:

The trans-European transport network shall strengthen the *social, economic and territorial cohesion* of the Union and contribute to the creation of a single European transport area, which is *efficient* and *sustainable*, increases the *benefits for its users* and supports *inclusive growth*. It shall demonstrate European added value by contributing to the objectives in the following defined categories: (i) territorial and structural cohesion; (ii) efficiency between different networks; (iii) transport sustainability; (iv) and increasing the benefits for the users.

The TEN-T regulation provides a list of aspects related to these four categories. These are combined with the priorities for transport infrastructure requirements per mode of transport, included in the TEN-T regulation, and the identified specific corridor objectives and main critical issues, resulting in the following **operational objectives**, grouped in the categories efficiency and sustainability. These operational objectives are further detailed per mode of transport, as presented in the next section.

In that respect, the corridor shall provide **economically efficient and clean transport options to the flows of passenger and goods between those territories as well as to the other Countries that will take benefit from the corridor development for their international flows** (e.g. Portugal on the Western Side, as well as Balkan countries, Ukraine etc. on the Eastern side).

Given the socio-economic characteristics of the territories involved, the corridor is especially **relevant for the international trade of goods, given the strong economic relationship between the Countries of its Western part and the development – in perspective – of the ones with the Countries on the Eastern part**. Due to the crossing of environmental sensitive areas, such as the Pyreneans and the Alps, the objectives of "**low-carbon and clean transport, and environmental protection" can be more easily met by developing efficient rail freight transport supply** (in terms of both services and infrastructure), well interconnected by efficient "last mile" links with relevant freight transport nodes (sea and IWW ports, intermodal rail-road terminals). The latter shall provide sufficient capacity and efficient operations, in order to avoid that the removal of bottlenecks at network level will make emerge other ones on nodes.

The removal of existing localised bottlenecks on the infrastructure, as well as the alignment of it to suitable technical standards for freight (e.g. 740m allowed length for trains, maximum gradients for new lines 12.5 mm/m., 22.5 axle load, loading gauge UIC C) appears to be a key measure for corridor development.

The development of the corridor as the backbone of international exchanges between East and West part of Europe will contribute to the economic growth and competitiveness of such areas, as well as to their connection with third countries. The corridor crosses some of the most developed region of Europe (Cataluña, Rhone-Alpes, and Northern Italy). In particular, the GDP at market prices

[3] Regulation on Union guidelines for the development of the trans-European transport network and repealing Decision (11 December 2013).

in 2010 represents 17% of total EU (28) GDP. Nevertheless, all corridor territories suffered considerably during the economic crisis of last years as shown by socio-economic data.

In the period 2006 – 2012, the GDP per capita suffered a major decline, with special emphasis on Italy and Spain. Croatia and Hungary recorded lower declines (approximately -0.6%), while Slovenia and France recorded the smallest decreases with -0.2% and -0.1% respectively.

The re-launch of the growth taking benefit of the economic potential of the corridor regions will certainly be boosted by better connections between them and to other European market areas, as well as to ports as door for the longer distance exchanges with other continents.

Advanced technological and operational concepts allowing interoperability, tracking & tracing of goods, better intermodal integration are among the accompanying measures to be implemented in order to achieve such targets.

Finally, **the corridor implementation shall be focused on the "network effect" that can be allowed by its connection with other Core Network corridor**, such as the Baltic-Adriatic & the Orient/East-Mediterranean corridors on the Eastern part, the Scandinavian-Mediterranean & the Rhine-Alpine ones in the central part, and the North Sea-Mediterranean & the Atlantic ones on the Western part. The Mediterranean corridor is likely to become the distribution axis of the follows gathered by such North-South corridors across all Southern European regions, i.e. playing an essential role for an integrated functioning of the TEN-T network. However, the actual achievement of such role implies a harmonised and coherent development with the other corridor in terms of both timing and technical characteristics, as well as proper attention on the development of connecting nodes in terms of capacity and intermodal integration. The market analysis carried out this study allows to understand the magnitude of the flows exchanged with the other Core-Network corridors, as well as with non-EU Countries such as Ukraine.

On the passenger side, connections between the biggest urban areas that are suitable for high-speed rail are mostly already existing (Madrid-Barcelona; Lyon-Marseille; Turin-Milan). Over longer distances, the rail travel time will not ensure strong competitive advantage against air transport, so that the key development strategy is likely to be focused on better railway link to corridor main airports (fully integrated with the national rail network), and in some cases also better road connections to them (to avoid local landside bottlenecks).

Besides, **specific improvement of the connections for passengers shall be analysed at the national level**, since the corridor plays also a significant role for domestic interregional flows between different areas, in particular in Spain, France and Italy. Yet, the market analysis allows to understand the existing and future flows and the related supply needs.

2) Identification of Key Performance Indicator (KPI)

KPIs are based on the defined general and operational objectives. The definition of KPIs follows the differentiation between general and operational objectives, with higher-level and operational KPIs respectively, as presented below.

In order to measure progress and deliverable of the general objective, three principle KPIs are defined, as shown in the following table:

Objective	KPI
Economic efficiency	**Transport costs**
Clean transport	**Modal split**
Cohesion-regional cooperation and trade	**Freight and passenger flows**

Relevant indicators linked to the specific objectives are listed below.

Operational Objective	KPI
Ad 1) Removal of infrastructure bottlenecks and "filling" missing links	**Number of identified bottlenecks** (infrastructure, capacity)
Ad 2) Upgrading of infrastructure quality level	Improved **technical standards** per mode of transport (% of electrification, double track, standard gauge, etc.)
Ad 3) Efficient use of infrastructure	Freight and passenger **flows** **Infrastructure utilisation rate**
Ad 4) Optimal integration and improved interconnection of transport modes	**Modal split** (amount of freight (tons) or travellers (pax) transported by a particular mode of transport) **Use of common traffic management systems** **Presence and use of intermodal terminals** **Availability of last mile infrastructure**
Ad 5) Optimal interconnection of national transport networks	**Border waiting time** **Use of common standards and procedures**
Ad 6) Promotion of economically efficient and high-quality transport	**Transport time** **Mean speed** **Frequency** Freight security **– availability of secured parking**
Ad 7) Promote resource-efficient use of infrastructure	**Pollutant emissions** (NOx, SOx, PM in terms of gr/tonkm) **Availability of refuelling infrastructure for alternative fuels**
Ad 8) Reduce congestion	**Mean speed**
Ad 9) Improve road safety	**Safety** (number of accidents or incidents assessed on the entire network or on its considered sections)

3) Identification of measures

The defined objectives establish the basis for defining the measures to be implemented. Where the objectives define the ambition, the measures define how this is to be realised. The operational objectives are most suited to be linked to measures. An assessment of the KPIs provides a basis and justification to prioritise measures.

The table below includes the defined operational objectives and measures, also based on the identification of critical issues. The list of potential measures will be confronted with the list of projects that are provided by the Member States. This will help shape the programme of measures that eventually will be integrated in the corridor implementation plan.

Operational objectives	Measures
Removal of infrastructure bottlenecks and "filling" missing links	• New or upgraded infrastructure • Demand management polices
Upgrading of infrastructure quality level	• Improvement of technical standards to the level of TEN-T requirements • Elimination of sections that do not meet the minimum technical standards
Efficient use of infrastructure	• Traffic management systems to efficient use of infrastructure • Optimal usage of existing infrastructure
Optimal integration and improved interconnection of transport modes	• Supporting intermodal policy • Development and upgrading of intermodal terminals • Supporting IT management systems • Last mile infrastructure, providing access to intermodal transfer point
Optimal interconnection of national transport networks	• Customs cooperation to reduce border waiting time • Optimisation of border crossing procedures • Harmonisation of operational procedures (terminal operating times, brake tests, etc.) • Harmonisation of traffic management systems
Promotion of economically efficient and high-quality transport	• Provision of secured parking areas
Promote resource-efficient use of infrastructure	• Provision of refuelling infrastructure for alternative fuels • Restrictions to highly polluting vehicles • Protection of environmental sensitive areas
Reduce congestion	• Use of IT systems, such as dynamic route information panels • Demand management polices
Improve road safety	• Develop forgiving infrastructure • Implementation of EU Directives on Transport Safety

4) Monitoring of the implementation plan

In order to monitor the implementation plan, the following indicators have been proposed. In case of mandatory KPIs, the year when compliance is needed is indicated. Compliance earlier than 2030 or 2050 is off course also allowed and encouraged.

Mode	Key Performance Indicator (KPI)	Type	Current	Objective 2030	Objective 2050
Rail	Electrification	Passenger/freight	90%	100%	
	Track gauge 1435mm	Passenger/freight	70%	100%	
	ERTMS implementation	Passenger/freight	13%	100%	
	Line speed>100 km/h	Freight	93%	100%	
	Axle load	Freight	84%	100%	
	Train length	Freight	24%	100%	
Inland waterways	CEMT class IV	Freight	80%	100%	
	CEMT class V	Freight	15%		
	CEMT class VI	Freight	12%		
	Draught (min 2.5m)	Freight	88%	100%	
	Height (min 5.25m)	Freight	79%	100%	
	Share of double locks	Freight	64%		
	Navigation reliability	Freight	N\A		
	RIS implementation	Freight	56%		
Road	Express road or motorway	Passenger/freight	95%	100%	
	Parking areas every 100km	Passenger/freight	79%	100%	
	Availability of clean fuels	Passenger/freight	N\A		
	Interoperability of tolling systems	Freight	N\A	100%	
Airports	Connection to rail network	Passenger/freight	20%		100%
	Availability of clean fuels	Passenger/freight	N\A	100%	
Seaports	Connection to rail network	Freight	100%	100%	
	Waterway CEMT IV connection	Freight	20%		
	Waterway CEMT V connection	Freight	20%		
	Availability of clean fuels	Freight	N\A	100%	
Inland ports	Connection to rail network	Freight	100%	100%	
	Waterway CEMT IV connection	Freight	100%		
	Waterway CEMT V connection	Freight	100%		
	Availability of clean fuels	Freight	N\A	100%	
	Multimodal transhipment capacity	Freight	N\A		
RRT	Multimodal transhipment capacity	Freight	N\A		

C) Implementation plan

This paragraph intends to give a **snapshot of projects** which are currently on-going or which are planned within the MSs belonging to the corridor.

According to the template defined by the Tent committee, **the following information has been provided**:

  - general description of each project,
  - project promoter,
  - location on the base of the corridor alignment established by the UE Regulation 1315/2013[4],
  - expected timing for the implementation,
  - project costs,
  - envisaged financing sources,
  - pre-identified projects,
  - solved critical issues.

  The project list has been populated according to specific guidelines defined in order to harmonize the included information.

  The collected information has been provided by the involved stakeholders per each MS and per mode.

Looking at the project lists proposed by the Member States it is possible to underline that:

- **Spanish project** list foresees realisation of a consistent number of projects, in particular for railways and ports.

  Within this framework, the projects promoter (Grupo Fomento, which includes the Ministry and all the group companies) plan to invest for addressing the main existing critical issues (i.e. **implementation of UIC gauge both on main lines and last mile connection to seaports and intermodal terminal**). More specifically, it should be mentioned several intervention on the rail section **Bobadilla- Algeciras** regarding the upgrading of the existing single track line in terms of UIC gauge, ERTMS and electrification.
- **French projects** will permit to tackle the main critical issues of French sections. In particular, after completing the Nimes and Montpellier bypass (in 2017), the remaining issues will be the nodes of Lyon and Marseille, and the Montpellier – Perpignan section (new line in project). Treating cross-border sections, in continuity with the base tunnel of Lyon-Turin, the new access lines from Lyon will be necessary to achieve the modal shift potential of this major work. All these projects, together with ERTMS implementation between Lyon and Marseille, form a coherent system reaching TEN-T requirements on the whole French part of the corridor with sufficient capacity to support rail traffic development and modal shift.

  Concerning the two most important French ports on the Mediterranean corridor (i.e. Marseille and Fos-sur-Mer), the projects defined by the Marseille Port Authority (which manages both ports) aim at **improving rail connections of the port** (identified as a major critical issue) **together with developing multimodal logistics platforms within the ports.**
- **Italian project** list foresees the realisation of a consistent number of projects for rail, IWW and seaports. **The cross border rail projects are: (i)** Building new transalpine links, with the **Lyon-Turin line**, planned in the medium run (works are expected to finish in 2030) and (ii) the creation of the **HS line IT/SI.** The **current constraints for freight services concern the loading gauge and the maximum admissible train length**. These problems will be tackled by two different infrastructural projects, the first of which aims at upgrading the loading gauge up to the maximum standard from the French

[4] Grey rows at the end of each table indicate projects that have been proposed by Member State even if they regard sections that are not part of the Mediterranean corridor.

cross border up to Milan, along the conventional line. About standard on train length (740m), several interventions are foreseen along the whole Italian Mediterranean corridor conventional lines. Finally, regarding **compliance with the parameters of the TEN-T regulation**, the upgrading of the signalling system to **ERTMS** is foreseen along the whole Italian Mediterranean corridor section.

As regard IWW projects, the missing link Milano – Pizzighettone will be addressed as well as the development of **intermodality (with rail and road).** The **construction of a new lock** over the section Pavia-Piacenza, **the adaptation to the class V standard** of the Litoranea Veneta section **and reconstruction of the Pontelagoscuro bridge**, identified as the main physical bottlenecks because of the limited vertical bridge clearance (4.1 m.) have also a high level of priority.

In addition, several projects **(related to land connections)** aiming at optimizing the integration and interconnection of transport modes are foreseen on **Venice, Ravenna and Trieste ports as well as Malpensa, Venezia and Bergamo airports.**

- **Slovenian project list** includes the creation of new structure (line, tunnel, bridge, etc.) in order to increase capacity and to achieve TEN-T standard (estimated expenditure of about 280 million of euros) on the **IT/SI border.**

  One of the main issues which should be underlined concern the **bypass of the Ljubljana railway hub** in order to eliminate cargo traffic from the city centre.

  Lack of capacity on some routes, in particular from Divaca up to Koper Port has been addressed by the infrastructure manager with different interventions.

  Some sections forming part of the corridor alignment do not meet the **axle load requirement**; in order to tackle this issue, some interventions are foreseen (sections Zidani Most – Pragersko and Pragersko- Hodos).

  Finally, some interventions will upgrade the maximum admissible length of trains operating on some railway sections, as example project on the section Ljubljana-Zidani Most.

  In relation to the Koper port, several interventions aiming at enhancing the existing infrastructures have been realized considering the expected growth of cargo volumes.

- **Croatia project list** foreseen several interventions aiming at removing some capacity problems related to the **single track** sections (except Dugo Selo-Zagreb and Zagreb – Marof). In this respect it is important to underline that section **Zagreb-Rijeka** suffers also from low technical standards with unfavourable route characterised by hard ascents, sharp and low radiant curves. This project will also allow to enhance the rail connection to seaport of Rijeka.

  In addition, TENt requirements will be meet with the foreseen interventions aiming at solving issue related to the limited **train length**.

  In relation to the **Rijeka port**, several interventions aiming at partly tackling the critical issues related to the limited container storage area are foreseen

- As regard **Hungary**, since the Government approved the National Transport Infrastructure Development Strategy on 28 August 2014, the proposed project list included in this report has to be considered as preliminary since it has not been still published in the Hungarian official documents.

  The issues addressed by the rail projects mainly concern the enhancement of the rail interoperability (in particular axle load and train length) and the development of traffic management systems (mainly ERTMS).

A specific project related to the enhancement of IWW infrastructure is also foreseen in order to solve some interoperability issues.

As regards road, the most important intervention concerns the construction of last 23 km of motorway to UA border crossing necessary as an extension of Motorway.

4.2 Description of the characteristics of the corridor

4.2.1 Description of the technical parameters for each transport mode

4.2.1.1 Description of the corridor

The **Mediterranean corridor will link ports in the south-western Mediterranean region to the Ukrainian border with Hungary**, following the coastlines of Spain, France, and crossing the Alps towards the east.

It brings together several other corridor concepts:

- Rail Freight corridor 6 "Almería-Valencia/Madrid-Zaragoza/Barcelona-Marseille-Lyon-Turin-Milan-Verona - Padua/Venice - Trieste/Koper-Ljubljana-Budapest-Zahony (Hungarian-Ukrainian border)[5]" according to the EU Regulation 913/2010, operating from November 2013 (RFC 6);
- Rail Freight corridor 4: "Sines-Lisboa / Leixões | Sines-Elvas / Algeciras - Madrid-Medina del Campo / Bilbao /San Sebastian – Irun – Bordeaux – Paris / Le Havre / Metz"
- Rail Network Europe corridor 08 "Lyon/Dijon – Torino – Ljubljana/Koper – Budapest" (RNE 08);
- Rail Network Europe corridor 06 "Mannheim/Gremberg – Lyon – Nîmes – Perpignan – Barcelona – Valencia/Paris – Madrid – Lisboa" (RNE 06);
- ERTMS corridor D "Valencia – Lyon – Ljubljana – Budapest";
- TEN-T Priority Project 3 "High-speed railway axis of southwest Europe" (PP3);
- TEN-T Priority Project 6 "Railway axis Lyon-Trieste-Divača/Koper-Divača-Ljubljana-Budapest-Ukrainian border" (PP6).

Given its nature, the Mediterranean corridor is expected to become a major European corridor, linking South-Western and Eastern EU countries.

In particular, **it represents a key access gateway to Ukraine and therefore it has a high potential in diverting part of the Western Europe-Asia traffic flows, which presently are ensured by the road mode.**

Therefore the traffic development along this corridor has to be interpreted also in terms of **significant potential increase in the rail market share and the consequent reduction of environmental externalities** in terms of reduction of gas emissions and roads and highways congestion (source: RFC6 Implementation plan, 2013).

According to the EU document "Appendix 1 – corridor description", the main missing links are related to:

- the new cross border rail links between France and Italy ("Lyon-Turin") and between Italy and Slovenia ("Trieste-Divača");
- the multimodal connections with the ports in Spain that have to be developed and, in general, along the corridor, the lack of interoperable multimodal centres able to attract private operators and generate additional demand;
- Spanish railway connection between Murcia and Almería.

Moreover, concerning rail interoperability, some barriers have to be overcome:

- the coexistence of two gauges;
- different electrifications (25kV AC in high-speed networks and in HU, 1.5 kV DC in Southern France – conventional lines), different standards with regards to train length and axle loads;
- Lack of electrification and important gradients (Algeciras-Bobadilla 23‰)

On the other hand, some success stories can be highlighted such us:

[5] The railway line Algeciras-Madrid will be included in the RFC 6 alignment as agreed during the 5th meeting of the working group .

- the Madrid-Barcelona high-speed line that reduced the journey time between the two cities attracting millions of passengers from air and road transport because of the standards of comfort and a seamless city to city connection;
- The connection of the Spanish and French high speed networks (Barcelona-Perpignan- in operation since 2013).
- The improved rail accessibility which will take place in Milan Malpensa airport (located in the intersection between two different Ten-t corridors) with the foreseen linkage between terminal 1 and 2 as part of the Ten-t project called "Accessibility to Malpensa airport from the North". This is an extremely important investment which will provide easier connections to airport passengers. It's important to specify that Malpensa T2 is constantly increasing its flight traffic reaching 6 million passengers in 2013.

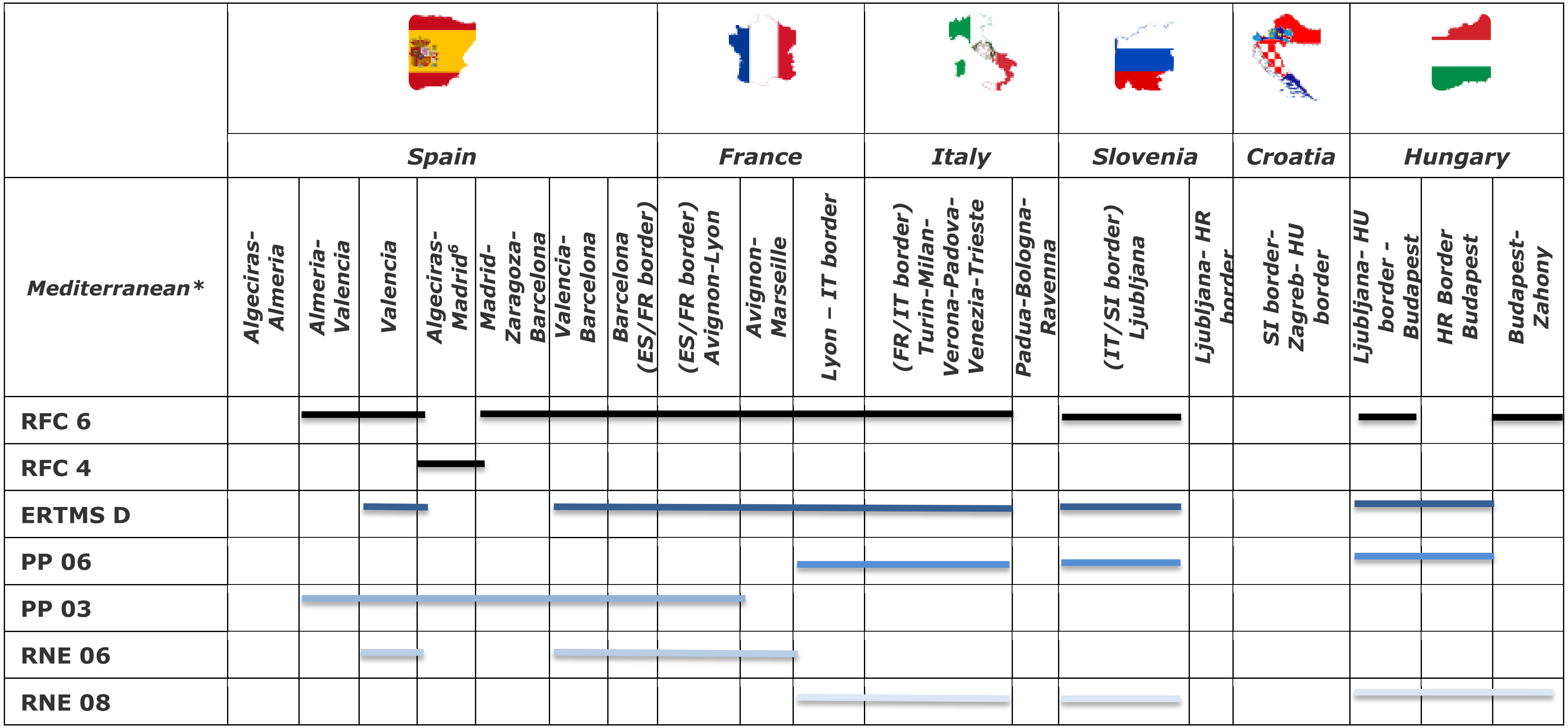


Figure 2 Alignment of different corridor concepts

*This representation corresponds to the official Mediterranean corridor alignment, thus not considering all the proposed modifications requested by Member States (these issues have been described in the annexes)

[6] Please see the previuos note.

4.2.1.2 General alignment

In order to provide an **overview of the entire corridor**, the following paragraphs illustrate the alignment per mode, the list of nodes, the overlapping with other corridors (according to the UE Regulation 1315/2013 and 1316/2013) and the inclusion of comprehensive network sections for the purpose of the study.

The **main branches as identified in the Annex I of the EU Regulation 1316/2013 are**:

- Algeciras – Bobadilla – Madrid – Zaragoza – Tarragona;
- Sevilla – Bobadilla – Murcia;
- Cartagena – Murcia – Valencia – Tarragona;
- Tarragona – Barcelona – Perpignan – Marseille/Lyon – Torino – Novara – Milano – Verona – Padova – Venezia – Ravenna/Trieste/Koper - Ljubljana – Budapest;
- Ljubljana/Rijeka – Zagreb – Budapest – UA border.

The alignment per mode includes a list of all lines/sections with description of beginning and ending points as well as an indication of all nodes designated to the corridor according to Annex II of the TEN-T guideline (further details on nodes are provided in the following paragraph).

Concerning nodes**, this corridor will provide multimodal links between the western Mediterranean ports with the centre of the EU. The development of this corridor would also balance intercontinental port traffic, which today is mainly concentrated in the North Sea harbours.**

The corridor will foster the **development of these ports as major multimodal logistic platforms and will improve the multimodal connections in sensitive areas such as the Pyrenees and the Alps, connecting some of the major urban areas of the EU with high-speed trains.**

In particular, 70 core nodes have been included in the Mediterranean corridor according to the following distribution.

MS	Urban	Airports	Ports	Rail Road Terminals	IWW nodes	Total nodes per MS*
ES	4	6	6	7	1	24
FR	2	2	1	3	2	10
IT	4	6	3	6[7]	5	24
SI	1	1	1	1		4
HR	1	1	1	1		4
HU	1	1		1	1	4
Mediterranean	**13**	**17**	**12**	**19**	**9**	**70**

**The Total takes into account nodes that can be considered both as seaport and inland port.*

Table 6 Mediterranean corridor core nodes

A detailed description of the nodes and the lines of the TEN-T core network per MS, is set out in Annex I and II of the TEN-T guideline and CEF Regulation and provided in the following table.

Sevilla is both a maritime and an inland port. Because of its inland geographical location, the port has a connection to the sea through the inland waterway of

[7] The RRT Modena Marzaglia has not been considered (nevertheless its inclusion has been proposed; see paragraph 5.5.2) since it is a new terminal currently not included in the TENT core network. It is linked to Milano-Bologna line, also proposed as a line to be included in the corridor alignment.

Guadalquivir river between Sevilla and San Lúcar de Barrameda. It would be important to consider this inland waterway as core and be part of the corridor.

MS	Mediterranean Sections	Rail section	Roads*	Airport	Maritime and/or IWW Ports	Rail Road Terminal	IWW sections[8]
ES	Algeciras - Almeria	Algeciras – Bobadilla – Antequera – Granada - Almeria			Bahia de Algeciras (M.)	Antequera (Bobadilla)	
ES	Malaga – Cartagena – Murcia - Alicante	Almeria – Murcia Murcia -Cartagena Murcia - Alicante	A-7 and AP-7 (E – 15)	Malaga, Alicante-Elche	Cartagena (M.)	Murcia	
ES	Alicante – Valencia – Tarragona - Barcelona	Alicante –Valencia Valencia – Tarragona Tarragona - Barcelona	A-7 and AP-7 (E – 15) (	Alicante-Elche, Valencia, Barcelona-El Prat	Valencia (M.), Tarragona (M.), Barcelona (M.)	Barcelona	
ES	Algeciras – Sevilla – Cordoba	Algeciras – Bobadilla – Sevilla - Cordoba Bobadilla – Cordoba	A-381,AP-4,A-4 (E – 5) Alternative route A-91, A-92N A-92 and A-45 motorway	Sevilla	Bahia de Algeciras (M.) Sevilla [9](M. and IWW)	Cordoba, Antequera (Bobadilla)	
ES	Cordoba - Madrid	Cordoba – Ciudad Real - Madrid (HS)		Madrid-Barajas (Adolfo Suarez)		Cordoba, Madrid	
ES	Cordoba - Madrid	Cordoba – Linares – Madrid	A–4 (E – 5)	Madrid-Barajas (Adolfo Suarez)		Cordoba, Alcazar de San Juan, Madrid.	
ES	Madrid – Zaragoza – Barcelona	Madrid – Zaragoza – Leida -Tarragona – Barcelona (HS)	AP-2 and A-2 (E – 90)	Madrid-Barajas (Adolfo Suarez), Barcelona-El Prat	Barcelona (M.) Tarragona (M.)	Zaragoza, Madrid, Barcelona.	

[8] The IWW network belonging to this corridor is composed by nine core Ports (Sevilla, Fos Sur Mer, Lyon, Venice, Trieste, Ravenna, Mantua, Cremona and Budapest) and the Po river (Italian IWW section).
[9] About the Port of Sevilla it should be underlined that this node should be considered just as maritime, by virtue of the fact that all the traffic flows are maritime.

MS	Mediterranean Sections	Rail section	Roads*	Airport	Maritime and/or IWW Ports	Rail Road Terminal	IWW sections[8]
ES	Madrid – Zaragoza - Barcelona	Madrid – Zaragoza – Caspe/ Monzón - Tarragona - Barcelona		Madrid-Barajas (Adolfo Suarez), Barcelona-El Prat	Barcelona (M.), Tarragona (M.)	Zaragoza, Madrid, Barcelona	
ES	Barcelona – ES/FR Border	Barcelona – Perpignan (HS Line and Conventional Line)**	A-7 and AP-7 (E – 15)	Barcelona-El Prat	Barcelona (M.)	Barcelona	
FR	ES/FR Border – Avignon	Perpignan – Montpellier – Avignon (HS Line and Conventional Line)**	E -15 (A9)			Avignon	
FR	Avignon – Fos-sur-Mer - Marseille	Avignon – Marseille (HS Line and Conventional Line)	E – 714 (A7)	Marseille	Marseille and Fos-sur-Mer (M. and IWW)	Avignon, Marseille (Miramas)	
FR	Avignon - Lyon	Avignon – Lyon (HS Line and Conventional Line)	E – 15 (A7)	Lyon	Lyon (IWW)	Avignon, Lyon	
FR	Lyon - FR/IT Border	Lyon - FR/IT Border (HS Line and Conventional Line)**	E – 70 (A43)	Lyon	Lyon (IWW)	Lyon	
IT	FR/IT Border - Turin	Lyon - Turin Line (HS Line and Conventional Line)**	E – 70 (A32)	Turin		Orbassano	
IT	Turin - Milan	Turin - Milan (HS Line and Conventional Line)	E 64 (A4)	Malpensa, Linate		Novara, Milano (Smist.)	*Po river (from Casal Monferrato to Voghera and from Voghera to Cremona)*

MS	Mediterranean Sections	Rail section	Roads*	Airport	Maritime and/or IWW Ports	Rail Road Terminal	IWW sections[8]
IT	Milan – Verona	Milan - Verona (HS Line and Conventional Line)**	E 64 (A4)	Bergamo, Malpensa, Linate	Cremona (IWW)	Verona, Milano (Smist.)	*Waterway Milano – Cremona (from Milan to Cremona)* Milano - Pizzighettone Pizzighettone - Cremona [10]
IT	Verona – Padua	Verona - Padua (HS Line and Conventional Line)**	E70 (A4)			Verona, Padua	*Po river (from Casal Monferrato to Polesine Camerini)* Pavia - Casale Monferrato Piacenza - Pavia Cremona - Piacenza Cremona - Casalmaggiore Casalmaggiore - Foce Mincio Mincio - Ferrara Ferrara - Volta Grimana V. Grimana - Polesine Camerini *Mincio river: from Mantua to Po river* Mantova - Foce Mincio[11]
IT	Padua - Venice	Padua – Venice (HS Line and Conventional Line)**	E70 (A4)	Venice	Venice (M. and IWW) Mantua (IWW)	Padua	
IT	Venice - Trieste - IT/SI Border	Venice – Trieste (HS Line and Conventional Line)**	E55 – E70 (A4)	Venice	Venice (M. and IWW) Trieste (M. and IWW)	Cervignano	*Waterway Po-Brondolo (From Volta Grimana to lagoon Venice – Conca di Brondolo)* V. Grimana - Cavanella d'Adige Cavanella d'Adige - Chioggia Chioggia - Venezia *From Venice to Monfalcone*

[10] About these sections, it is important to underline that even if they are identified as core sections, they are not part of the Mediterranean corridor (for further details, please see paragraph 5.4).

[11] It is important to underline that even if Mantua is identified by the Regulation as core node, it is not part of the Mediterranean corridor alignment on the TEN-Tec system. Moreover, in accordance with AIPO (the Italian IWW infrastructure manager for Po River) and with the Italian Ministry, the inclusion of the Fissero-Tartaro-Canal Bianco Channel in the Mediterranean corridor alignment has been proposed (for further details see par. 5.5.2).

MS	Mediterranean Sections	Rail section	Roads*	Airport	Maritime and/or IWW Ports	Rail Road Terminal	IWW sections[8]
							Porto Nogaro <--> Monfalcone Venezia <--> Porto Nogaro
IT	Padua - Bologna	Padua - Bologna	A13	Bologna	-	Bologna, Padua.	
IT	Bologna - Ravenna	Bologna - Ravenna	E 45 (A14 and A14 dir)	Bologna	Ravenna (M. and IWW)	Bologna	*Ferrarese waterway (From Po river to Garibaldi port)* Ferrara <--> Porto Garibaldi
SI	IT/SI Border - Koper	IT/SI Border – Sezana - Divača - Koper	E 70 (A3), J. RA13/RA14 (Fernetti, Sistiana -Villa Op.), R13 up to Trieste Port E 61 (A1) to Koper		Koper		
SI	Koper - Ljubljana	Koper – Divača – Ljubljana (From Divača: HS Line and Conventional Line)**	E 61 (A1) from Koper E 70 (A3)	Ljubljana	Koper (M.)	Ljubljana	
SI	Ljubljana – SI/HU Border	Ljubljana – Pragersko - Hodos - SI/HU Border	E 57 (A1) E 653 (A5)	Ljubljana		Ljubljana	
SI	Ljubljana – SI/HR Border	Ljubljana – Dobova - SI/HR Border	E 70 (A2)	Ljubljana		Ljubljana	
HR	SI/HR Border - Zagreb	SI/HR Border - Zagreb	E 70 (A3)	Zagreb		Zagreb	
HR	Zagreb - Rijeka	Zagreb - Rijeka	E 65 (A1 and A6)	Zagreb	Rijeka (M.)	Zagreb	
HR	Zagreb – HR/HU Border	Zagreb – Koprivnica - HR/HU Border	E 70 (A3) E 65 (A4)	Zagreb		Zagreb	
HU	SI/HU Border - Budapest	SI/HU Border –Zalalovo – Boba –Szekesfehervar - Budapest	E 653 (M70) E 71 (M7) E 60 (M0)	Budapest	Budapest (IWW)	Budapest	
HU	HR/HU Border - Budapest	HR/HU Border – Kaposvar – Budapest -	E 71 (M7) E 60 (M0)	Budapest	Budapest (IWW)	Budapest	
HU	Budapest – Nyiregyhaza (South)	Budapest – Szolnok – Debrecen - Nyiregyhaza	E 60 (M0) E 71 (M3)	Budapest	Budapest (IWW)	Budapest	

MS	Mediterranean Sections	Rail section	Roads*	Airport	Maritime and/or IWW Ports	Rail Road Terminal	IWW sections[8]
HU	Budapest – Nyiregyhaza (North)	Budapest – Miskolc - Nyiregyhaza	E 71 (M3) E 79 (M3) E 60 (M0)	Budapest	Budapest (IWW)	Budapest	
HU	Nyiregyhaza - HU/UA Border	Nyiregyhaza - Zahony – HU/UA Border	E 573 (M3)				

Table 7 Detailed description of the Mediterranean sections and nodes

**   N.B. Border sections for Rail and Road may be different.*

*** HS line under construction / foreseen*

****This representation corresponds to the actual Mediterranean corridor alignment, thus not considering all the proposed modifications requested by Member States (these issues have been described in the annexes).*

Legend: M= seaport; IWW= inland port.

4.2.1.3 TENtec data collection and encoding

Data collection aims at completing the TENtec database, but also at supporting the description of the corridor and the identification of the measures to be undertaken.

Initial data coverage

The following table presents the initial coverage of data and identifies the filling rate per MS, per mode and per type of data (technical parameters or traffic data) for the sections and node belonging to the corridor according to the breakdown established by the EC in order to address the overlapping issues.

The filling rate is based on the compulsory parameters and refers to 2013 (set as coherent Baseline year) or previous years in case of unavailable data.

The main critical issue for data coverage regards Croatia, which data are not available for any TENtec tables. Also traffic data for all modes of transport and MS have a very low filling rate.

For rail, technical parameters are sufficiently covered by current TENtec data, with an average of 54% (and 65% excluding Croatia) and a range, excluding Croatia, starting from 29% (France) up to 94% (Hungary). Rail traffic data are less covered, with a very low coverage for Italy (1% only) and no coverage at all for Croatia. The general average is only 25% for all countries.

Concerning road, technical parameters are well covered, with an average of 60% (and 72% excluding Croatia); for road traffic data, there is higher coverage, with a general average of 69% (excluding Croatia).

Inland waterways data, only relevant for Italy, shows 30% coverage for technical data. No data is available for traffic parameters.

For **rail road terminals**, except for Spain (which has an average coverage of 92 % for technical parameters), no data is available for technical data or for traffic data.

Concerning ports, technical parameters present coverage of 60% while traffic data shows relevant gaps.

Airports' data show a full coverage for both technical (excluding Croatia) and traffic data (less than for Italy and Croatia).

Mode	Type of data	ES	FR	IT	SI	HR**	HU
Rail	Technical parameters	92%	29%	31%	76%	0%	94%
	Traffic data	0%	0%	1%	54%	0%	100%
Road	Technical parameters	100%	43%	68%	50%	0%	100%
	Traffic data	48%	0%	99%	98%	0%	100%
IWW	Technical parameters			30%			
	Traffic data			0%			
RRT	Technical parameters	92%	*	0%	0%	0%	0%
	Traffic data	0%	*	0%	0%	0%	0%
Ports	Technical parameters	75%	*	44%	78%	0%	100%
	Traffic data	50%	*	0%	100%	0%	100%
Airports	Technical parameters	100%	*	100%	100%	0%	100%
	Traffic data	100%	*	0%	100%	0%	100%

**in charge of North Sea – Mediterranean*

*** The initial data coverage for Croatia is 0% for all modes because TENtec data for the country have been officially collected after the formal adhesion to the European Union (31 July 2013).*

Table 8 TENtec Initial data coverage by mode and by MS

Data sources and data strategy

Based on the official files retrieved on TENtec OMS site, which show data per mode, per section/node, per year and per parameter, collection of missing data has been carried out by:

- **verifying the consistency and updating of existing information in the TENtec database** (limited to compulsory parameters, according to the last version of the Glossary[12], dated 6/2/2014);
- **searching for the missing information in the TENtec database** in order to complete the fields that are not filled-in or contain clearly inconsistent information. In this respect, the relevant stakeholders have been consulted in order to validate the collected data.

Focus on Rail

For railways, twenty-four parameters were required. The following table identifies compulsory parameters and their description according to the Glossary. Parameters requirements are also stated, according to Regulations n. 1315-1316/2013.

Parameters	Type	Definition	The TEN-t compulsory parameters versus the regulation requirements
Parameter_1	Length of section (km)	Total in km	
Parameter_2	Type	Conventional / High speed In case of mixed types, e.g. a high speed is operated next to a conventional line, please use the type being most relevant to long distance travel (minimum 200km). The possibility of creating parallel sections in a transport mode is being developed.	
Parameter_3	Category	I – Speed >=250km/h II – 200km/h =<Speed <250km/h III – Specially upgraded for HS	
Parameter_4	Activity	Freight / Passenger / Passenger and Freight	
Parameter_5	Number of tracks	Total (most relevant figures, e.g. if a single track railway of 10km has 2km stretch of two tracks, the relevant total is one track)	
Parameter_6	Traction	Electrified / Diesel	Core network to be electrified by 2030 (including sidings where necessary)
Parameter_7	Track gauge (mm)	1000 / 1435 / 1520 / 1524 / 1600 / 1602 / 1668 / (Multiple selection for "dual gauge" will be implemented in a future release)	New lines to be built in UIC standard gauge (1435mm), except in certain circumstances
Parameter_8	Load gauge (UIC type)	3 international gauges, agreed by UIC: - A GAUGE: Total height 3.85 m. above t - he rail and 1.28 m. on either side of the track axle - B GAUGE: Total height 4.08 m. above the rail and 1.28 m. on either side of the track axle - C GAUGE: Total height 4.65 m. above the rail and 1.45 m. on either side of the track axle. Another gauge of particular significance is the B+ GAUGE, for which the total height is 4.18 m. above the rail and 1.36 m. on either side of the track axle. - W GAUGE: (UK)	

[12] Open Method of Coordination - Geographical Information System Glossary: Technical and Financial Data, DRAFT Update - corridor Studies 06/02/2014.

Parameters	Type	Definition	The TEN-t compulsory parameters versus the regulation requirements
Parameter_11	Max operating speed (km/h)	Maximum operating speed: The highest speed allowed on commercial service taking into account technical characteristics of the infrastructure.	Core freight lines 100 km/h by 2030 (NB: no speed requirement for passenger lines)
Parameter_12	Max inclination %	Necessary conversion to ‰ will be done automatically by TENtec in a future release	
Parameter_13	Max axle load (kN)		Core freight lines 22.5 t axle load by 2030
Parameter_14	Rail voltage (volt)	The following types of electric current are in use: - AC (25 000 Volts, 50 Hz, 15 000 Volts, 16 2/3 Hz) - DC 3 000 Volts, 1 500 Volts, 750 Volts, 660 Volts, 630 Volts	Core network to be electrified by 2030 (including sidings where necessary)
Parameter_15	Maximum train length (m.)		Core freight lines to allow for 740m trains by 2030
Parameter_18	Passenger traffic flow (pax per year)		
Parameter_19	Passenger traffic flow (trains per year)		
Parameter_21	Freight traffic flow (net tons per year)	Net tons	
Parameter_22	Freight traffic flow (trains per year)		
Parameter_23	ERTMS in operation	YES / NO Parameter 23a ERTMS baseline Foresee the following options: - Baseline 2 - Baseline 3 - Older version	Core network to be equipped with ERTMS by 2030
Parameter_24	ERTMS level	1 / 2 / 3 - ERTMS level 1 is designed as an add-on to or overlays a conventional line already equipped with line side signals and train detectors. - As opposed to level 1, ERTMS level 2 does not require line side signals. The movement authority is communicated directly from a Radio Block Centre (RBC) to the on-board unit using GSM-R. - ERTMS Level 3 allows for the introduction of a "moving block" technology.	Core network to be equipped with ERTMS by 2030
Parameter_25	Control and command system	All the equipment necessary to ensure safety and to command and control movements of trains authorised to travel on the network	
Parameter_27	Voice system radio (GSM-R)	Global System for Mobile Communications - Railway	
Parameter_30	Passenger traffic flow (trains per year)		
Parameter_31	Freight traffic flow (gross tons per year)		
Parameter_32	Junction (for nodes)	The need for a train to reverse at a junction in order to continue in the absence of a direct link connecting two railway lines.	

Table 9 TENtec railways compulsory parameters

For data gathering, the following available sources are used (listed by importance):

- National network statements;
- RFC6 Implementation plan;
- RFC4 Implementation plan
- RNE publications;
- ETISplus database;
- Other coherent studies retrieved by the Consortium.

In this respect, it is important to underline that the given definition of sections in the TENtec system does not match with the sections defined in the network statements.

Consequently, in order to verify existing data and / or collect the missing ones, sections defined in the network statements (NS) have been aggregated. As example, in Italy 136 network sections correspond to 40 TENtec sections.

In order to aggregate not homogenous values for a given parameters at NS sections level and consequently to calculate value of parameters at TENTec section level (as aggregation of NS sections), specific rules has been applied. As an example (not exhaustive):

- TENtec sections length as sum of length of sections defined in the network statements;
- TENtec sections Max inclination and loading gauge as most constrained value applied to sections defined in the network statements.

As result of the undertaken data collection the following table shows the current missing data.

MS	Missing data
Spain	▪ Parameter_18 – Passenger traffic flow (pax per year) ▪ Parameter_21 - Freight traffic flow (net tons per year) ▪ Parameter_31 – Freight traffic flow (gross tons per year) ▪ Parameter_32 – Junction (for nodes)
France	▪ Parameter 32 – Junction (for nodes)
Italy*	▪ Parameter_32 – Junction (for nodes) ▪ Parameter_8 - Load gauge (UIC type)**
Slovenia	▪ Parameter_32 – Junction (for nodes)
Croatia	▪ Parameter_32 – Junction (for nodes)
Hungary	▪ Parameter_32 – Junction (for nodes)

** Padova-Ravenna (rail) is covered by Baltic-Adriatic corridor.*
*** Please take into account that in case of Italy, this parameter is expressed in terms of PC only (combined).*

Table 10 Updating status on TENtec rail compulsory parameters

Focus on roads

For roads, data were required for fourteen parameters. The following table identifies compulsory parameters and their description according to the Glossary. Parameters requirements are also stated, according to Regulations n° 1315-1316/2013.

Parameters	Type	Definition	The TEN-t compulsory parameters versus the regulation requirements
Parameter_1	Length of section (km)		
Parameter_2	Type	1=motorways, 5=Rural road with separate directions (Roads outside the boundaries of a built-up area), 6=Rural two-lane road (Roads outside the boundaries of a built-up area), 9=Urban roads (Road within the boundaries of a built-up area), 90=ferries	Whether the road is a (1) ordinary road, (2) express road or (3) a motorway (definitions are contained in Art 17(3) TEN-T regulation): Roads have to be either an express road or a motorway by 2030
Parameter_3	Lanes forward	Number of traffic lanes in forward direction	
Parameter_11	Freight traffic flow (tons per year)	If just estimates available, please use the comment-field for explanation.	
Parameter_12	Freight traffic flow (trucks per year)	If just estimates available, please use the comment-field for explanation.	
Parameter_14	Passenger traffic flow (pax per year)	If traffic flow is only known for one direction, multiply with 2.	
Parameter_15	Passenger traffic flow (cars per year)	If traffic flow is only known for one direction, multiply with 2.	
Parameter_17	Part of a tolled road	YES /NO	Use of tolling systems/ITS and their interoperability with other systems
Parameter_18	Road toll for cars(euro per km)	Euro per km	
Parameter_19	Road toll for trucks(euro per km)	Euro per km; Regardless of weight and distance.	
Parameter_24	Part of a user-charged road	YES /NO	
Parameter_27	Lanes	Total number of traffic lanes	
Parameter_28	Road toll for all trucks	Euro per km; Regardless of weight and distance.	
Parameter_29	Road toll for all busses	Euro per km; Regardless of weight and distance.	

Table 11 TENtec roads compulsory parameters

Missing data collection has been performed using all the relevant information published by the related road managers such as periodical reports on traffic trends, annual reports, etc. Moreover, in order to calculate tolling and gather other information (i.e. number of lanes, distances) the road managers web sites has also been consulted.

Nevertheless, all the collected relevant studies have been used to verify the results of the performed desk analysis.

As already mentioned, traffic flows for each specific section as detailed in the TENtec database have been the most critical data to be collected, since generally the available data was referred to all sections managed by each road manager.

Moreover, in certain cases a conversion by using average load factors has been undertaken in order to provide data in the requested unit of measure (tons per year and pax per year) since the data were generally available only in the following unit of measure: trucks per year and cars per year.

As result of the undertaken data collection, all requested parameter have been populated.

Focus on airports

For airports, data were required for three parameters. The following table identifies compulsory parameters and their description according to the Glossary. Parameters requirements are also stated, according to Regulations n° 1315-1316/2013.

Parameters	Type	Definition	The TEN-t compulsory parameters versus the regulation requirements
Parameter_6	Connection with rail	YES - integrated into long distance rail network - rail shuttle NO - other local public shuttle (such as METRO)	Certain airports have to be connected to heavy rail by 2050 (see Annex II)
Parameter_10	Passenger traffic flow (pax per year)		
Parameter_13	Freight traffic flow (tons per year)		

Table 12 TENtec airports compulsory parameters

Missing data collection for airport was mainly based on studies and information provided by the related stakeholders. In addition, for connections with rail, studies and documents published by the respective rail infrastructure managers has been consulted.

As result of the undertaken data collection, all requested parameter have been populated.

Focus on ports

For ports, data were required for 10 parameters. The following table identifies compulsory parameters and their description according to the Glossary. Parameters requirements are also stated, according to Regulations n° 1315-1316/2013.

Parameters	Type	Definition	Matching TEN-t compulsory parameters with Regulation requirements
Parameter_2	Type of Port	Maritime, IWW, Maritime & IWW	
Parameter_5	Maritime chamber lock (width m.)		
Parameter_6	Maximum draught (m.)-natural or dredged	Maximum draught of ship which may enter the port	
Parameter_14	Passenger Traffic Flow (pax per year)		
Parameter_15	Freight Traffic Flow (tons per year)		
Parameter_18	Connection with rail	YES / NO	core ports to be connected to rail by 2030
Parameter_19	Rail connection (no. of tracks)	Number of tracks connecting the port to the hinterland network.	
Parameter_21	Transhipment facilities for intermodal transport	YES / NO	
Parameter_22	Road connection (no. of lanes)	Total no. of lanes (sum of forward-/backward lanes), connecting the port to the hinterland network.	
Parameter_24	Waterway connection (CEMT class)	All classes; only Inland Waterways are meant, because a port can be connected to any other port in principle	

Table 13 TENtec ports compulsory parameters

Collection of the missing data was mainly based on studies and information provided by the related stakeholders. Where available, the Port Authority website has also been consulted. In addition, for connections with rail and road, studies and documents published by the respective infrastructure managers has been consulted.

As result of the undertaken data collection, all requested parameter have been populated.

Focus on IWW

For IWW, data were required for thirteen parameters. The following table identifies compulsory parameters and their description according to the Glossary. Parameters requirements are also stated, according to Regulations n° 1315-1316/2013.

Parameters	Type	Definition	Matching TEN-t compulsory parameters with Regulation requirements
Parameter_1	Section (km)		
Parameter_2	CEMT class	Categories of navigable inland waterways Class (length/beam) I to III, IV, V a, V b, VI a, VI b, VI c, VII	Minimum requirement: class IV CEMT
Parameter_3	Nr of single locks		
Parameter_4	Nr of double locks		
Parameter_5	Chamber lock width (m.)	Smallest on the section	
Parameter_6	Chamber lock length (m.)		Length of vessels and barges: from 80-85m
Parameter_7	Minimum width (m.)	maximum width of a vessel/convoy for the narrowest part of the section	
Parameter_8	Min Draught (m.)	maximum draught of a vessel/convoy for the part of the section with the lowest water level	Minimum draught: from 2.50m
Parameter_9	Min height under bridge (m.)		Minimum height under bridges: from 5.25/7.00m
Parameter_10	Navigation reliability (%)	Number of days per year, on which the waterway is available for navigation and meets the minimum requirements for draught, for height under bridges for three-layer container transport and for beam of the respective CEMT class (for waterways of class IV and higher, the parameters of pushed convoys apply, for class I-III the requirements of vessels and barges apply	
Parameter_13	Passengers traffic flow (pax per year)		
Parameter_14	Freight traffic flow (tons per year)		
Parameter_17	Intelligent Transport Systems (RIS)	In operation, YES/NO	

Table 14 TENtec IWW compulsory parameters

Apart from these matching between TEN-t compulsory parameters and Regulation requirements, it should be underlined that TEN-T regulation (EU) No 1315/2013 art. 15 states:

1. Member States shall ensure that inland ports are connected with the road or rail infrastructure.

2. Inland ports shall offer at least one freight terminal open to all operators in a non-discriminatory way and shall apply transparent charges.

3. Member States shall ensure that:

(a) rivers, canals and lakes comply with the minimum requirements for class IV waterways as laid down in the new classification of inland waterways established by the European Conference of Ministers of Transport (ECMT) and that there is continuous bridge clearance, without prejudice to Articles 35 and 36 of this Regulation. At the request of a Member State, in duly justified cases, exemptions shall be granted by the Commission from the minimum requirements on draught (less than 2.50 m.) and on minimum height under bridges (less than 5.25 m.);

(b) rivers, canals and lakes are maintained so as to preserve good navigation status, while respecting the applicable environmental law;

(c) rivers, canals and lakes are equipped with RIS.

For data gathering, most of the missing data have been gathered using studies provided by stakeholders or published on the infrastructure managers' web sites.[13]

As for rail and road, in some cases, the given TENtec sections do not match with the sections presented in the available data sources; therefore an aggregation has been performed, taking into account the most restrictive parameter in order to calculate the related data.

About the most critical data can be mentioned the navigation reliability rate, difficult to gather at section level by consulting official documents.

As result of the undertaken data collection the only missing data is related to the parameter 13 "Passengers traffic flow (pax per year)".

[13] As an example, about the Italian inland waterway system, we used reports such as: "Studies for the Development of the RIS Operability along the Northern Italy Waterway System"(2010, AIPO), "General Plan of the Italian waterway System" (2012, Aipo)

Focus on Road rail terminals

For road rail terminals, data were required for three parameters. The following table identifies compulsory parameters and their description according to the Glossary. Parameters requirements are also stated, according to Regulations n° 1315-1316/2013.

Parameters	Type	Definition	The TEN-t compulsory parameters versus the regulation requirements
Parameter_2	Freight traffic flow (tons per year)		
Parameter_4	Rail connection (no. of tracks)	Number of tracks connecting the rail/road terminal to the hinterland network	
Parameter_5	Road connection (no. of lanes)	Total no. of lanes (sum of forward-/backward lanes), connecting the rail/road terminal to the hinterland network.	

Table 15 TENtec RRT compulsory parameters

For data gathering, studies provided by relevant stakeholders, GIS system as well as railway network statements have been taken into account as data sources. As result of the undertaken data collection the following table shows the missing data.

MS	Missing data
Spain	▪ Parameter_2 - Freight traffic flow (tons per year) – partially completed ▪ Parameters_4 - Rail connection (no. of tracks) – partially completed ▪ Parameter_5 - Road connection (no. of lanes) – partially completed
France	*Lyon-Avignon-Marseille section and related nodes are covered by the North Sea-Mediterranean corridor.*
Italy	▪ Parameter_2-Freight traffic flow (tons per year) not collected for Cervignano and Milano Smistamento*
Slovenia	▪ None
Croatia	▪ None
Hungary	*Budapest node is covered by the Rhine-Danube corridor.*

** The Mediterranean corridor covers the following RRT: Cervignano (UD), Milano Sm. Nodo Milano, and Orbassano (TO), Verona, Novara, Bologna, and Padova.*

Table 16 Updating status on TENtec RRT compulsory parameters

Current data coverage

The following table presents the coverage of TENtec data as result of the undertaken data collection.

Mode	Type of data	ES	FR	IT	SI	HR	HU
Rail	Technical parameters	93%	97%	89%	97%	94%	94%
	Traffic data	86%	100%	83%	100%	50%	100%
Road	Technical parameters	100%	100%	100%	100%	100%	100%
	Traffic data	100%	100%	100%	100%	100%	100%
IWW	Technical parameters			93%			
	Traffic data			50%			
RRT	Technical parameters	78%		100%	100%	100%	
	Traffic data	85%		50%	100%	100%	
Ports	Technical parameters	100%				100%	
	Traffic data	100%				100%	
Airports	Technical parameters	100%		100%	100%	100%	
	Traffic data	100%		100%	100%	100%	

Table 17 TENtec current data coverage by mode and MS

As shown in the above table, and according to DG MOVE official communication dated 14th February 2014, sections overlapping with other corridors have been processed respecting the following instructions:

- The Mediterranean corridor does not cover any IWW Spanish section;
- Lyon-Avignon-Marseille section and related nodes are covered by the North Sea-Mediterranean corridor;
- Padova-Ravenna (rail), Bologna node, Venice node and Adriatic ports (Trieste, Venice, Ravenna) are covered by Baltic-Adriatic corridor, Novara node is included in the Rhine-Alpine corridor, Verona node is covered by the Scandinavian-Mediterranean corridor;
- Koper port is covered by Baltic-Adriatic corridor;
- The Mediterranean corridor does not cover any IWW Croatian section;
- Budapest node is covered by the Rhine-Danube corridor.

As a result of data identification and collection, **current data coverage has substantially increased** (a lower percentage in comparison to the initial one is due to the inclusion of new sections, additional parameters - i.e. junction nodes for rail), especially concerning traffic data, which presented the most critical issues.

The analysis of current data coverage shows that the most critical issue is the Rail Technical parameter 32 – Junction (for nodes) which is not available for almost all countries.

Data coverage analysis by mode shows that, **concerning rail**, technical parameters tend to full coverage in all countries and **gaps are mainly due to difficult conversion form national to TENtec standards** (e.g. Parameter_8 - Load gauge (UIC type) for Italy is only available in PC measure unit).

Yet, **rail traffic data are sometime missing** (i.e. Spain) because of no validated loading factors for passenger and freight trains (permitting to derive flows from available train frequency).

On the contrary, road data are complete both for infrastructural and traffic parameters for all counties and no particular coverage issues has been arisen.

Inland waterways data, relevant for Italy only, present an issue concerning Parameter_13 - Passenger traffic flow (pax per year), which is missing.

Regarding Rail-Road Terminal, some data are missing for Spain (technical Parameter_5 – Road connection (no. of lanes) is only partially completed) and for Italy (Parameter_2 – Freight traffic flow (tons per year) is not collected for Cervignano and Milano Smistamento).

Finally, Airports' data are complete for all countries both for technical and traffic data.

4.2.1.4 Verification the compliance of the infrastructure with the parameters of the TEN-T regulation

The description of the technical parameters of the infrastructure for each mode of transport detailed in the following table (and maps in Annex 5.6) allows the verification of the compliance of the infrastructure with the parameters of the TEN-T regulation, and consequently the identification of issues, which hinder a train/vessel/truck to use efficiently, and effectively the infrastructure (interoperability).

The parameters have been identified according to the Regulation 1315/2013 and annex 1 of the EC working document "Starting the core network corridors". The related data have been also included in the TENtec system according to the new version of the glossary.

Compliance of Railway corridor sections with the relevant TEN T regulation

The total length of the railway network belonging to the Mediterranean corridor is about 8,611 kilometres, half of which located in Spain, with Slovenia and Croatia covering just a little portion of the overall corridor.

The table below shows the compliance to the European requirements established by Regulation (UE) 1315/2013, in particular:

- Speed limits for freight trains (93%)
- Electrification (91%)
- Axle load (85%)
- Track gauge (71%)
- Train length (26%)

Regarding **speed limits**, four countries are nearly full compliant (ES, FR, IT and HU), while in Slovenia only 2/3 of sections are compliant and in Croatia 1/3. In both cases these physical bottlenecks concern the connections to ports of Koper and Rijeka respectively (a detailed description is presented in the paragraph dealing with countries critical issues).

Interventions are expected in order to overcome these speed limitations along Slovenian rail sections; also in Croatia, upgrades of the existing rail lines and new lines to increase freight train speed are foreseen.

Regarding **electrification,** four countries are fully compliant (FR, IT, HR and HU). Spain and Slovenia foresee interventions (e.g. Alicante-Murcia-Cartagena and Almería (Huéneja Dolar)-Granada, Bobadilla-Algeciras for Spain and Pragersko –Hodos for Slovenia).

Regarding **axle load,** all countries are compliant with the European requirement except for Hungary and Slovenia; it is important to mention that in France some sections have axle load of 17 tonnes but they are used for passenger services only. In Hungary and Slovenia, several interventions on rail sections aiming to solve physical bottlenecks are foreseen.

Track gauge is almost full compliant to the European requirements less for Spain that adopts the 1668 mm standard for the existing conventional lines; the recently built HS lines has the UIC gauge (thus ensuring full interoperability on these lines). Furthermore, several projects listed in the Spanish implementation Plan aim at solving this issue on the majority of the conventional lines part of the alignment (upgrading to mixed gauge and thir rail track between Reus and Vilaseca).

Train length parameter has low rate of compliance (26%), except France; the remaining countries foresee projects to standardize their sections to the European target. As examples: in Italy Bologna- Ravenna section (intervention foreseen);

Slovenia (Pragersko- Hodos); Croatia (Goljak – Skradnik); Spain (Conventional rail line FR border-Barcelona-Valencia-Alicante-Murcia-Cartagena;Madrid-Córdoba-Algeciras: Madrid-Barcelona).

Finally, regarding **ERTMS**, despite the lowest compliance shown in the table, it is important to mention that all countries foresee great effort to adopt the new European signalling system along the corridor sections.

Rail technical parameters		Spain	France	Italy	Slovenia	Croatia	Hungary	TOT
Parameter	**Requirement**							
Length of all sections	km	4,045	1,418	1,026	631	361	1,130	8,611
Electrification:	*Core network to be electrified by 2030 (including sidings where necessary)*	84%	100%	100%	76%	100%	100%	90%
Track gauge:	*New lines to be built in UIC standard gauge (1435mm), except in certain circumstances*	38%	100%	100%	100%	100%	100%	70%
Traffic management system	*(target: ERTMS level 1)*	25%	2%	13%	0%	0%[14]	0%	13%
Train length	*(target: 740 m.)*	9%	86%	0%	10%	0%	58%	24%
Axle load	*(target: 22.5 t)*	100%	68%	100%	70[15]%	100%	27%	84%
Speed limits	*(target: 100 km/h for freight)*	100%	98%	99%	68%	35%	90%	93%

Source TENtec

Table 18 Rail technical parameters

**This representation corresponds to the actual Mediterranean corridor alignment, thus not considering all the proposed modifications requested by Member States (these issues have been described in the annexes)*

[14] According to UIC map: "Ertms development plan_Slovenia"

[15] On the section Pragersko-Hodos, works are ongoing in order to increase the axle load up to 22.5 tonnes; they will be completed at the end of 2015. Therefore, the percentage of compliance to TEN-t standards will increase up to 95%.

Compliance of Road corridor sections with the relevant TEN T regulation

The table below shows the compliance to the European requirements established by Regulation (UE) 1315/2013.

Road technical parameters		Spain	France	Italy	Slovenia	Croatia	Hungary	TOT
Parameter	**Requirement**							
km		2,855	503[16]	823	433	293	596	5,503
Sections		49	18	33	15	9	19	
Motorway or Express roads	Roads have to be either an express road or a motorway by 2030	93%	100%	97%	100%	100%	96%	95%
Part of a tolled road	Use of tolling systems/ITS and their interoperability with other systems	30%	95% (474 km tolled road)	98%	100%[17]	100%	85%	61%

Source: TENtec

Table 19 Road technical parameters

According to the data uploaded on TENtec system, the total length of the road network included in the Mediterranean corridor is about 5,503 km with Spain covering more than 50% of the entire corridor.

As regard parameter "Motorway or Express roads", all countries are compliant. More specifically, few sections are not motorways: the western part of Spain (ex. Motril – Playa Cambriles, Motril-Nerja) and the Hungarian section close to Ukranian border. The Italian border sections with Slovenia and France are express roads.

Concerning the second parameter "Use of tolling systems/ITS and their interoperability with other systems", it is important to mention the particular case of the Spanish tolling systems. The Spanish high capacity roads are composed by Autopistas and Autovías; only Autopistas have a tolled system with toll barriers while Autovías are re-paid by the general tax system. The following picture indicates the part of high capacity roads with tolling system; it can be noted that the especially the corridor sections along the Mediterranean sea have a tolling system while the corridor sections passing in the inner part of the Iberian peninsula are mainly Autovías with free access.

[16] Missing data for 5 sections.

[17] Slovenian tolled system: vehicles under 3.5 tonnes are subject to time based toll system(vignette), while over 3.5 tonnes are subject to distance based system.

Figure 3 Spanish tolled roads (blue lines in the map)

Finally, regarding the toll system, it shall be highlighted that Slovenia and Hungary adopt the vignette system. More specifically, in Hungary cars, buses and trucks under 3.5 tonnes maximum weight are subject to a time-based system and large heavy good vehicles to a distance-based road user charge.

Availability of clean fuels and development of rest areas along the Road core sections of the Mediterranean Corridor

Besides the requirements described in the previous paragraph, the Regulation 1315/2013 art.39 also requires Member States to develop **rest areas** on motorways approximately every 100 km and improve the availability of **clean fuels** (along the roads part of the Core Network).

Alternative clean fuels means fuels such as electricity, hydrogen, biofuels (liquids), synthetic fuels, methane (natural gas (CNG and LNG) and bio methane) and liquefied petroleum gas (LPG) which serve, at least partly, as a substitute for fossil oil sources in the supply of energy to transport, contribute to its decarbonisation and enhance the environmental performance of the transport sector.

Parking areas should be developed in line with the needs of society, of the market and of the environment, in order inter alia to provide appropriate parking space for commercial road users with an appropriate level of safety and security.

In this respect, the following tables show the number of refuelling points offering LPG, CNG and the number of parking areas; together with the density per country and Corridor.

Country	Length (km)	N. of clean fuels LPG	density*100km	N. of clean fuels CNG	density*100km
ES	2855	43	2	10	0
FR	503	47	9	1	0
IT	823	86	10	31	4
SI	433	29	7	0	0
HR	293	26	9	0	0
HU	596	28	5	0	0
Corridor	5503	259	5	42	1

Table 20 LPG, CNG, and parking areas points in each country along the corridor
Sources: http://www.mylpg.eu/, http://www.ngvaeurope.eu/,

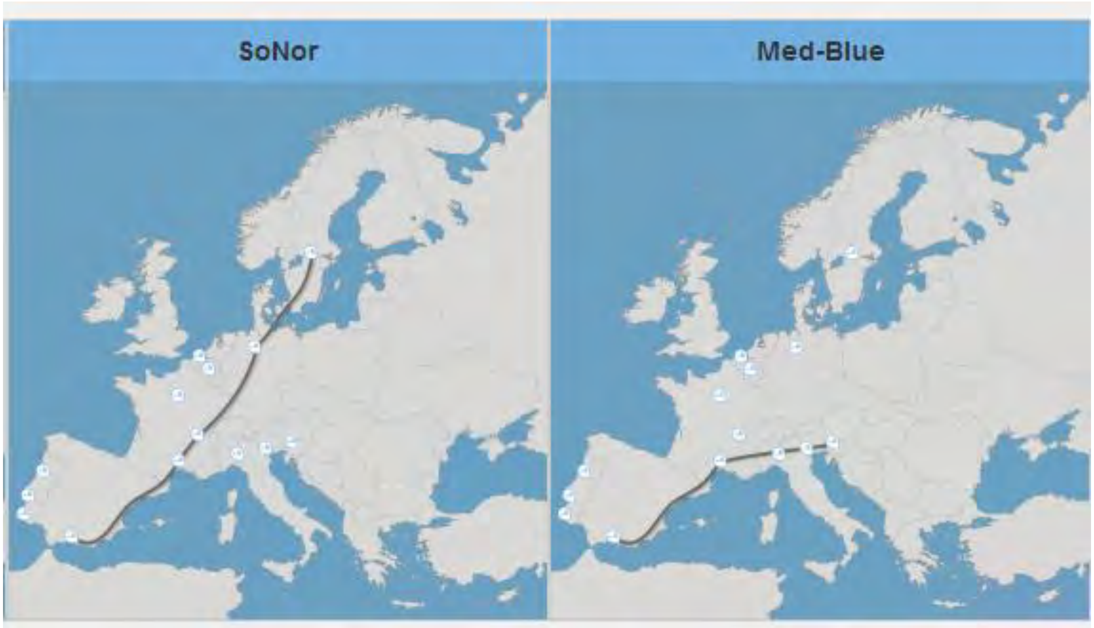
In this respect, it is possible to highlight that Italy has the highest number (also in comparison with density) of fuelling stations offering both LPG and CNG.

As regards the former, it is worth mentioning an EU project "Liquefied Natural Gas Blue corridors" that aims at establishing LNG as a real alternative source for medium and long distance transport first as a complementary fuel and later as an adequate substitute for diesel.

In particular, 14 new LNG or L-CNG stations will be built on critical locations along the Blue corridors; in addition it is expected the build up a fleet of approximately 100 Heavy Duty Vehicles powered by LNG.

It should be mentioned the participation of Algeciras Port in the European project "Flexible LNG bunkering value chain in the Spanish Mediterranean Coast: Bunker Logix".

Finally, in the comprehensive inland port of Rovigo (Italy), is planned a specific investment concerning the installation of an LNG equipment (see Italian investment table).



(source: NGVA Europe)

Figure 4 Two LNG corridors are overlapping with the Mediterranean corridor routing

As regards the CNG, its level of coverage is very low considering that is nearly not available in France and shall be completely implemented in the eastern part of the corridor (SI, HR and HU).

Nevertheless, recently, the European Council on 29 September 2014 adopted a directive on building up minimum infrastructure for alternative fuels across the EU (PE-CONS 79/14; statements: 13267/14 ADD 1). More specifically, under the directive, each member state has two years to draw up an alternative fuel deployment strategy and send it to the Commission. These strategies or "national policy frameworks" will set out the country's national targets for putting in place new recharge and refuelling points for the different types of "clean fuel", such as electricity, hydrogen and natural gas, as well as relevant supporting actions.

The Commission will assist Member States in ensuring the coordination and coherence of these measures. Together, the policy frameworks of all Member States will provide long-term security for private and public investment in vehicle and fuel technology and infrastructure roll-out.

The deadlines for having the infrastructure in place range from 2020 to 2030, depending in particular on the type of fuel, vehicle and deployment area. For instance, the directive stipulates that by the end of 2020, Member States should install enough recharge and refuelling points so that electric cars and cars using compressed natural gas (CNG) can circulate at least in cities and suburban areas.

Availability of parking areas

Parameters	ES	FR	IT	SI	HR	HU	Corridor
Km of road	2855	503	823	433	293	596	5503
Number of parking	25	19	15	24	1	3	87
Number of parking per 100 km	0,88	3,78	1,82	5,54	0,34	0,50	1,58
compliance with TEN-t requirement	88%	100%	100%	100%	34%	50%	79%
Target (n. of parking to be compliant	29	5	8	4	3	6	55

Table 21 number of resting areas along the Corridor
Source: IRU Trans park

Compliance of ports with the relevant TEN T regulation

The table below shows the compliance to the European requirements established by Regulation (UE) 1315/2013.

Ports technical parameters		Spain	France	Italy	Slovenia	Croatia	Hungary	TOT
Parameter	Requirement**							
N of relevant nodes		6[18]	2[19]	5[20]	1[21]	1[22]	1[23]	16
Connection to the rail network	Core ports to be connected to rail by 2030	100%	100%	100%	100%	100%	100%	100%

Source TENtec

Table 22 Port technical parameters

The total number of Port nodes belonging to the Mediterranean corridor is 16, mainly located in the western part of it. For ports, Regulation (EU) 1315 and 1316/2013 establish as requirement connection to the rail network to be fulfilled by 2030.

All ports are fully compliant. Nevertheless, it shall be highlighted that several ports are further empowering the rail connection.

Compliance of Airport nodes with the relevant TEN T regulation

The table below shows the compliance to the European requirements established by Regulation (UE) 1315/2013.

Airports technical parameters		Spain	France	Italy	Slovenia	Croatia	Hungary	TOT
Parameter	Requirement**							
N of relevant nodes		6[24]	2[25]	6[26]	1[27]	1[28]	1[29]	17
Connection to the rail network	Certain airports have to be connected to heavy rail by 2050	0[30]%	50%	0[31]	0%	0%	0%	20%

Source TENtec

Table 23 Airport technical parameters

The total number of Airport nodes belonging to the Mediterranean corridor is 17, mainly located in the western part of it. For Airports, Regulations (EU) 1315 and

[18] Bahia de Algeciras ,Cartagena ,Valencia ,Tarragona ,Barcelona (Maritime ports).Sevilla (Maritime and Inland Port).
[19] Marseille and Fos-sur-Mer (M. and IWW), Lyon (IWW).
[20] Cremona (IWW), Venice (M.and IWW), Mantua (IWW), Trieste (M.and IWW), Ravenna (M.and IWW).
[21] Koper (M.port).
[22] Rijeka (M port).
[23] Budapest (IWW port).
[24] Valencia, Alicante, Sevilla, Malaga, Barcelona, Madrid – Barajas.
[25] Lyon Saint-Exupery, Marseille-Provence.
[26] Bergamo (Orio al Serio), Milano – Malpensa, Venezia – Tessera, Milano – Linate, Torino – Caselle, Bologna - Borgo Panigale.
[27] Ljubljana.
[28] Zagreb.
[29] Budapest Airport.
[30] Barcelona-el Prat, Madrid- Barajas (Adolfo Suarez), Malaga (Costa del Sol).
[31] Milan Malpensa, Turin (Caselle).

1316/2013 establish, as requirement, the connection to the heavy rail network to be fulfilled by 2050. In accordance with the latest information provided EU Commission about the meaning of "connection with rail" for Airports (TENtec parameter_6 – connection with rail), only airports having direct rail services linking the airport with high speed lines or long distance TEN-t rail lines should be considered as "connected". Therefore, only Lyon airport can be considered directly connected to rail, as can be seen in the following table.

Nevertheless, three interventions are foreseen to connect Alicante, Sevilla and Valencia airports by heavy rail. In Italy Venice airport will be connected to the conventional and HS rail lines. Bologna and Milan Linate airports will be connected to the national rail line network by a people mover and Underground line 4, respectively.

For the East part of the corridor, at the moment, no projects are foreseen to foster these kinds of connections.

Compliance of IWW corridor sections with the relevant TEN T regulation

The alignment of the Inland Waterway network belonging to the Mediterranean corridor **consists in 9 inland ports (Sevilla, Marseille Fos-Sur-Mer, Lyon, Cremona, Mantua, Venice, Trieste, Ravenna and Budapest) and two rivers; the former is in France[32] (Rhone river from Lyon up to Marseille) and the latter in Italy corresponding mainly to the Po River**[33].

It should be noted that TENtec data for French inland waterway section (Rhone river) have been gathered and analysed under the North Sea-Mediterranean Corridor; for this reason their compliance with the TENtec parameters has not been evaluated under this study.

The Regulation (UE) 1315/2013 states the minimum requirement for the inland waterways of international importance: CEMT IV class[34], which means the fulfilment of the following parameters:

Class IV CEMT	Maximum length	Maximum beam	Draught	Tonnage
Motor vessels and Barges	80-85	9.5	2.5	1000-1500
Pushed convoys	85	9.5	2.5-2.8	1250-1450

Table 24 CEMT parameters

Concerning the compliance of the Mediterranean corridor network with these requirements, the table below shows that about 20% of the total length of the waterways sections does not meet the standard. More precisely these parts correspond to: Pavia-Casale Monferrato and Piacenza –Pavia covering about 150 km, where the minimum width is about 8 m. instead of 9.5 m. Another relevant issue concerns the limited bridge clearance over the section Ferrara- Porto Garibaldi where maximum height under bridge is 4.1m (Pontelagoscuro).

[32] This section is still not included in the official Mediterranean corridor alignment
[33] Further details about the network alignment are provided in the paragraph concerning Italian critical issue.
[34] From the classification of the European Conference of Ministers of Transport

IWW technical parameters*		**Italy**
Length	km	763[35]
CEMT class IV		80%
CEMT class III		20%

source TENtec

**Technical parameters concerning Rhone river have not been included (its compliance with Regulation requirements has been checked by the North Sea-Mediterranean Corridor)*

Table 25 IWW technical parameters

In order to solve these critical physical bottlenecks some interventions are planned, such as: the construction of the new lock Isola Serafini and the implementation to the class V standard of the segment Pontelagoscuro- Porto Garibaldi.
Regarding the other requirements stated by EU regulation 1315/2013, a more detailed analysis is provided in the paragraph 4.2.3.

[35] The following sections are not included:
Ten tec id (15316) Mantova <--> Foce Mincio.
Ten tec id (22400010) Milano <--> Pizzighettone.
Ten tec id (22400011) Pizzighettone <--> Cremona.

4.2.2 Transport Market Study

The Transport Market Study (TMS) intends to analyse the transport flows along the corridor by assessing the capacity and traffic flows on the respective parts of the infrastructure.

As input of the TMS, a socio economic analysis has been carried out in order to identify the "catchment area" as well as the drivers (i.e. GDP, added value, population) affecting the assessment of future transport flows.

Secondly, the analysis and evaluation of the existing and future transport has been carried out.

A comparison to the RFC6 market study is provided in Annex 5.10.

4.2.2.1 Socio economic analysis

Zoning and preliminary considerations

The spatial analysis of the corridor and its area of influence are fundamental for the understanding of transport needs, by identifying the main economic engines generating traffic and goods. Therefore, there will be a detailed description of the main physical and socio-economic aspects of the study area.

In this analysis, the main variables to consider are the following:

- **Demography** distinguishing urban and rural areas for the analysis of the main generators of consumer demand. Population has been analysed from several points of view such as: age, distribution by sector, occupation and others, including the historical evolution;
- **Economic and activity variables** such as: GDP, Gross Value Added by sectors and subsectors and jobs by sector. Other interesting variables have been also taken into account such as heavy vehicles or fuel prices as well as tourism offer (capacity in terms of beds places) and demand (overnight stays). In addition, in this case their historical evolution has been considered.

It is important to underline that, as shown below, different availabilities concerning the level of geographical disaggregation and time series between the different MS exist.

UNITS		Inhabitants	GDP at current market prices (Millions €)	GDP at constant prices (Millions €)	€	Active population		Employed population		Passenger cars	Rest of road vehicles such as buses, lorries, special cars, road tractors	Capacity (bed-places)	Overnight stays	€ per capita by group (Agriculture, industry, construction and services)
SPAIN	Level	NUTS3	NUTS3	International Monetary Fund databases por projections. Country level	RATIO BETWEEN A AND B (2010)	NUTS3	NUTS2	NUTS3	NUTS2	NUTS2	NUTS2	NUTS3	NUTS2	NUTS3
	Year	2008 - 2012	2008/2010			2008 - 2012	2008 - 2012	2008 - 2012	2008 - 2012	2008 - 2011	2008 - 2011	2008- 2011	2008- 2012	2010
	Source	EUROSTAT	EUROSTAT			INE	EUROSTAT	INE	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT
FRANCE	Level	NUTS3	NUTS3			NUTS3	NUTS2	NUTS3	NUTS2	NUTS2	NUTS2	NUTS3	NUTS2	NUTS3
	Year	2008 - 2012	2008/2010			2010	2008 - 2012	2010	2008 - 2012	2008 - 2009	2008 - 2009	2008- 2011	2008- 2012	2010
	Source	EUROSTAT	EUROSTAT			INSEE	EUROSTAT	INSEE	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT
ITALY	Level	NUTS3	NUTS2			NUTS3	NUTS2	NUTS3	NUTS2	NUTS2	NUTS2	NUTS3	NUTS2	NUTS2
	Year	2008 - 2012	2008/2010			2008 - 2012	2008 - 2012	2008 - 2012	2008 - 2012	2008 - 2011	2008 - 2011	2010 - 2011	2010- 2012	2010
	Source	EUROSTAT	EUROSTAT			ISTAT	EUROSTAT	ISTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT
HUNGARY	Level	NUTS3	NUTS3			NUTS2	NUTS2	NUTS2	NUTS2	NUTS2	NUTS2	NUTS3	NUTS2	NUTS3
	Year	2008 - 2012	2008/2010			2008/2012	2008 - 2012	2008/2012	2008 - 2012	2008 - 2011	2008 - 2011	2008- 2011	2008- 2012	2010
	Source	EUROSTAT	EUROSTAT			KSH	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT
CROATIA	Level	NUTS3	NUTS3			NUTS3	NUTS2	NUTS3	NUTS2	NUTS2	NUTS2	NUTS3	NUTS2	NUTS3
	Year	2008 - 2012	2008/2010			2010 - 2012	2008 - 2012	2010 - 2012	2008 - 2012	2008 - 2011	2008 - 2011	2008- 2011	2008- 2012	2010
	Source	EUROSTAT	EUROSTAT			CSP	EUROSTAT	CSP	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT
SLOVENIA	Level	NUTS3	NUTS3			NUTS3	NUTS2	NUTS3	NUTS2	NUTS2	NUTS2	NUTS3	NUTS2	NUTS3
	Year	2008 - 2012	2008/2010			2008 - 2012	2008 - 2012	2008 - 2012	2008 - 2012	2008 - 2011	2008 - 2011	2008- 2011	2008- 2012	2010
	Source	EUROSTAT	EUROSTAT			SORS	EUROSTAT	SORS	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT	EUROSTAT

Table 26 Availability of different socio economic variables

Therefore, for the zoning**, the corridor area is considered at NUTS3 level**.

For the rest of Europe, the zoning depends on the distance from the corridor and, therefore, on the degree of influence that the corridor has on each zone.

Thus, except the case of the Italian region of **Tuscany** (that is also maintained at NUTS3 level for its relationship with the corridor), zoning progressively loses detail according to the distance from the corridor.

Yet, the areas bordering the corridor are considered at NUTS2; remote regions are considered at NUTS0 level (i.e. the case in Scandinavia).

According to these criteria, **the final zoning is composed of 271 zones, of which 144 belong to the corridor.**

Figure 5 Proposed zoning for the Mediterranean corridor

<u>Overall socioeconomic context and long-term trends</u>

Some general socio-economic data for the current situation (2008 - 2012) are presented in this section as well as long-term forecasts (2040), in order to illustrate the socio-economic context of the MS of the corridor area. This area includes the MS served by the corridor, namely Spain, France, Italy, Slovenia, Croatia and Hungary.

Sources of analysis are Eurostat and national statistical services of each MS.

A summary of relevant socio-economic data characterizing the Corridor and the EU (28) are provided in the following tables.

CORRIDOR (144 zones directly touched by it)	2010	2012	Unit	Source
Population	89 468 193	90 108 939	Inhabitants	Eurostat/Istat
GDP	2 142 815	-	Millions €	Eurostat/Istat
GDP per capita	23 951 €	-	€	Eurostat/Istat
Unemployment rate	13.33%	15.84%	%	National Statistical Services

UE (28)	2010	2012	Unit	Source
Population	505 529 911	508 061 751	Inhabitants	Eurostat/Istat
GDP	12 324 448	-	Millions €	Eurostat/Istat
GDP per capita	24 379 €	-	€	Eurostat/Istat
Unemployment rate	9.77%	10.65%	-	Eurostat

COMPARISON	2010	2012	Unit
Population	17.70%	17.74%	-
GDP	17.39%	-	-
GDP per capita	98.24	-	EU (28) = 100
Unemployment rate	136.42	148.84	EU (28) = 100

Table 27 Main socio-economic data

Demography

The corridor as a whole has a total population of 90.1 million inhabitants. Most of this population is concentrated in the Italian and Spanish parts, which represent 66% of the total population of the corridor in 2012.

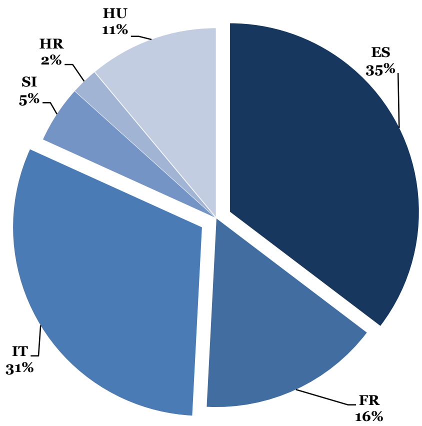


Figure 6 corridor population significance per MS at 2012

Since 2008, the representativeness of the population of each MS in the area of the corridor has remained largely stable.

Population	2008	2009	2010	2011	2012
Spain	31 052 754	31 507 324	31 646 515	31 793 217	31 846 305
France	13 581 860	13 673 983	13 766 196	13 859 221	13 952 823
Italy	27 116 943	27 390 496	27 568 435	27 763 261	27 898 434
Slovenia	2 010 269	2 032 362	2 046 976	2 050 189	2 055 496
Croatia	4 436 401	4 435 056	4 425 747	4 412 137	4 398 150
Hungary	10 045 401	10 030 975	10 014 324	9 985 722	9 957 731
Mediterranean	88 243 628	89 070 196	89 468 193	89 863 747	90 108 939

Table 28 Recent evolution of the corridor population

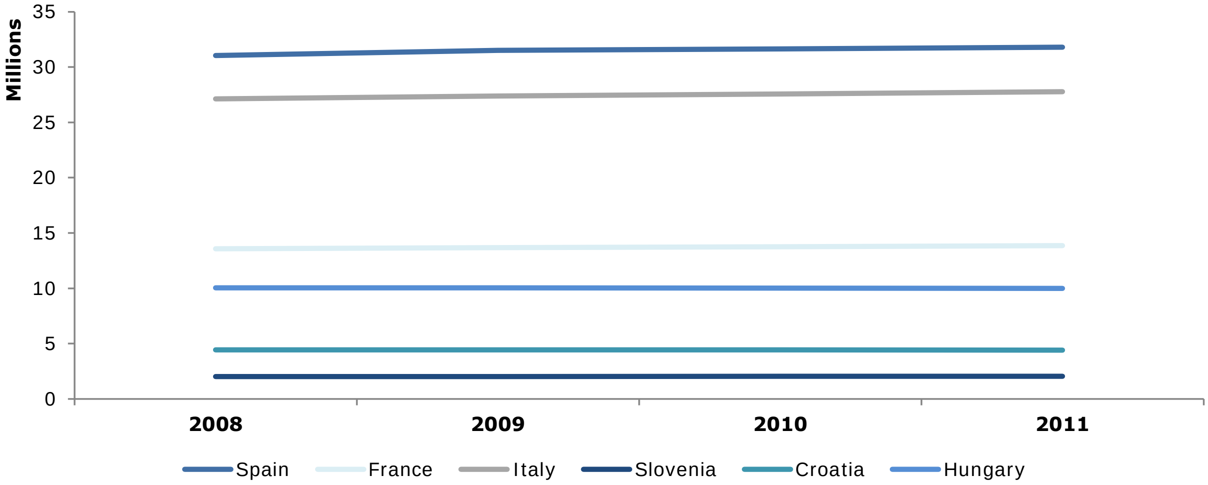


Figure 7 Recent evolution of the corridor population

Population growth rates in the area of the corridor show a homogeneous population growth in Spain, France, Italy and Slovenia (with an average growth of around 2 - 2.5% between 2008 and 2012). Only the populations of Croatia and Hungary have declined in the last five years.

Figure 8 Population growth rates in the corridor

In the following figures, **the main concentrations of population around urban areas in the corridor** (first figure)**, the total population and the relative population densities** (second and third figures) are represented.

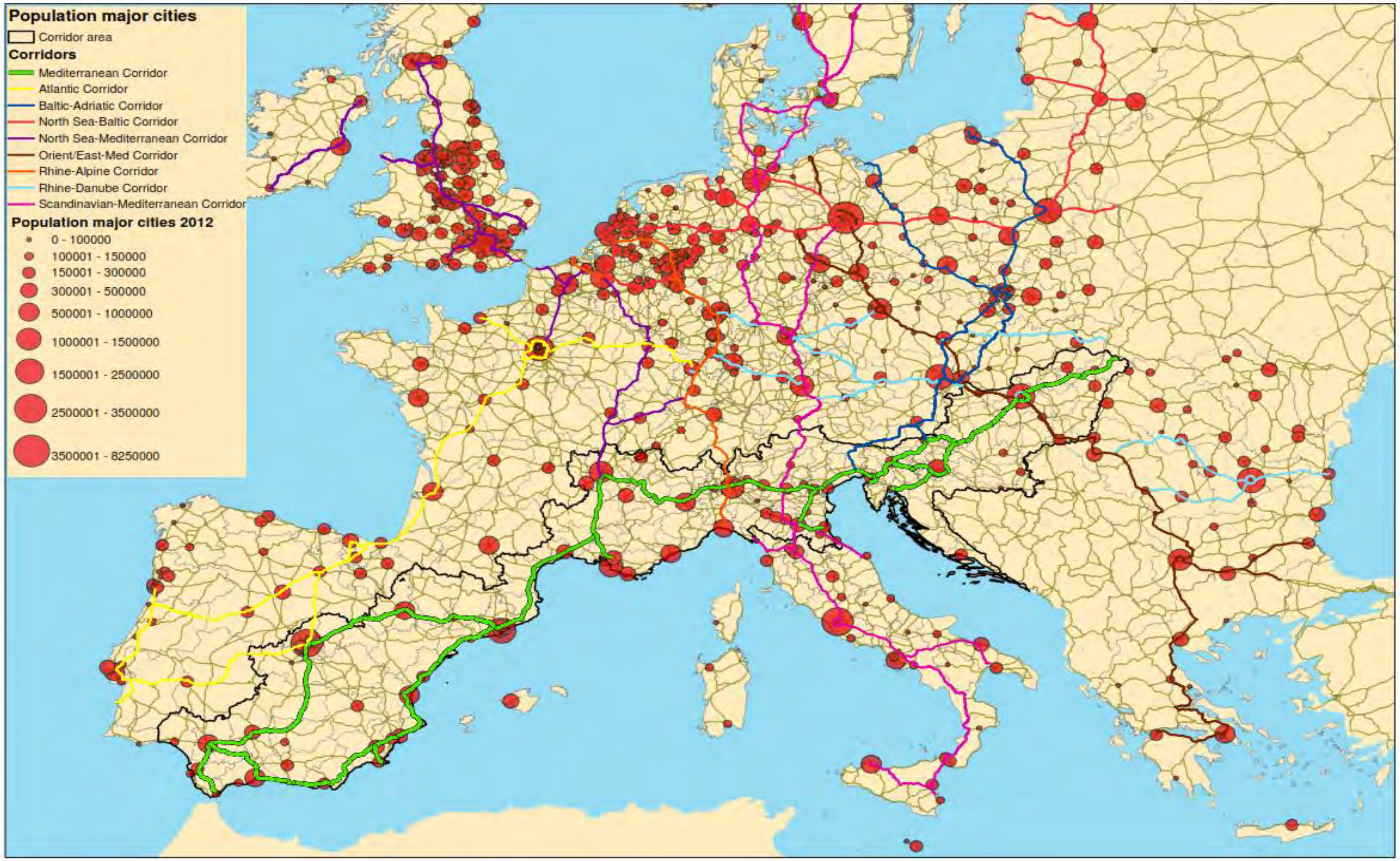


Figure 9 Main concentration of population along the Mediterranean corridor

**This representation corresponds to the actual Mediterranean corridor alignment, thus not considering all the proposed modifications requested by Member States (these issues have been described in the annexes)*

Figure 10 Total population

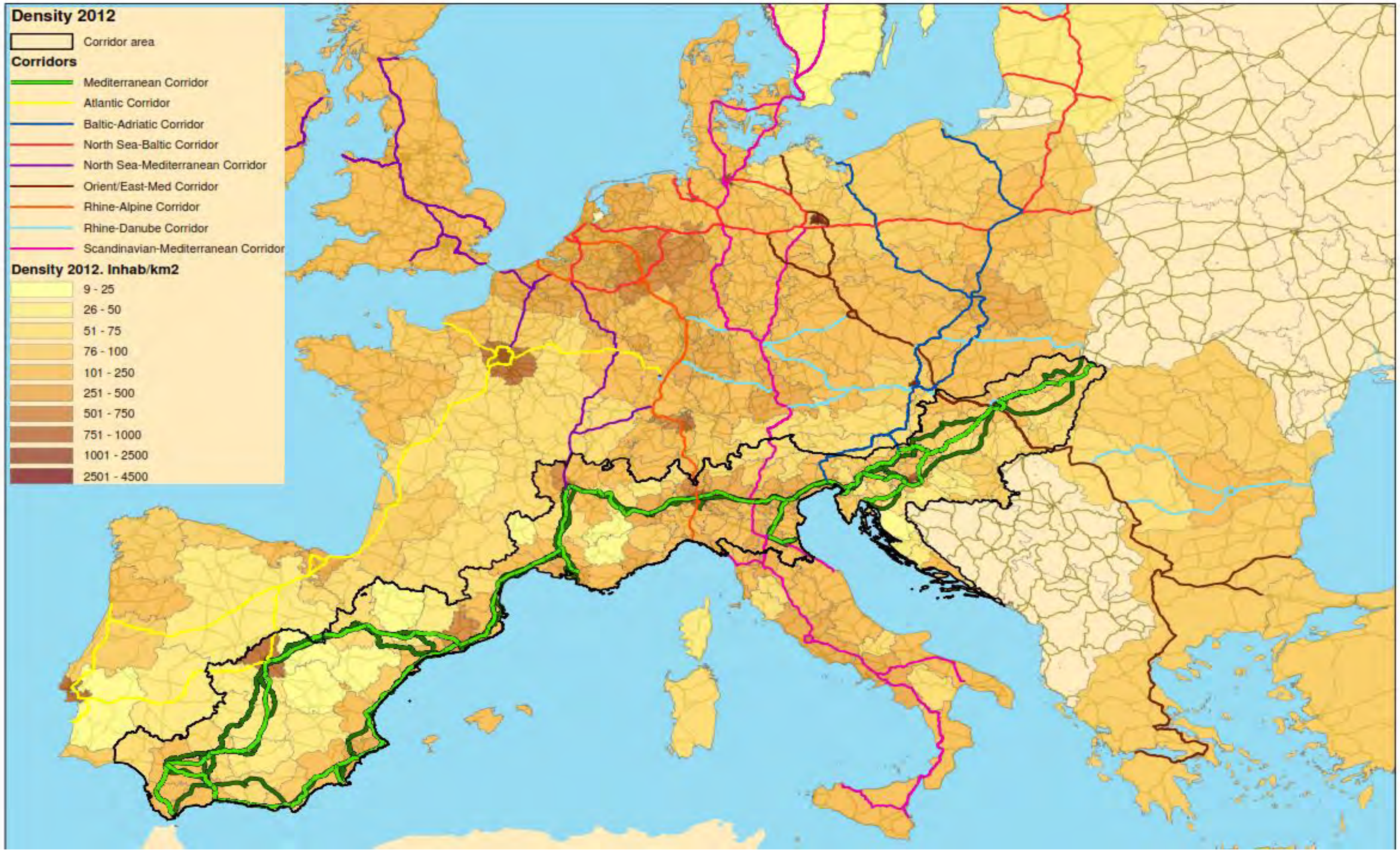


Figure 11 Population density

**This representation corresponds to the actual Mediterranean corridor alignment, thus not considering all the proposed modifications requested by Member States (these issues have been described in the annexes)*

The two major population centres are located in Spain (Madrid and Barcelona regions with 6.4 and 5.3 million inhabitants respectively). Milan region follows with 3.2 million inhabitants.

Globally, the Spanish and French Mediterranean coasts and northern Italy are the most populated areas. On the contrary, Croatia and Slovenia have the less populated.

Concerning **population density**, the highest values (referred to 2012) are recorded in the central regions of the corridor, mainly in Italy. **In fact, "Monza della Brianza" and Milano are the first two regions in terms of population density, with more than 2,000 inhabitants / km^2**. The third region with the highest density is Grad Zagreb Croatia with 1,200 inhabitants / km^2. Trieste is fourth with 1,100 inhabitants / km^2. Madrid is the fifth region in terms of population density with 795 inhabitants / km^2.

Regarding the distribution of population in major cities, the major volume is located in Madrid with 3.2 million inhabitants in the municipality. Budapest and Barcelona, with 1.7 and 1.6 million inhabitants respectively, come after Madrid.

Finally, Lyon, Marseille and Milan are the other three cities that have more than a million of inhabitants.

According to projections by Eurostat for 2040, the population of the MS along the corridor will increase, mainly in Spain and France, with increases of over 10% with respect to the current population (2012), except for Croatia, Slovenia and Hungary.

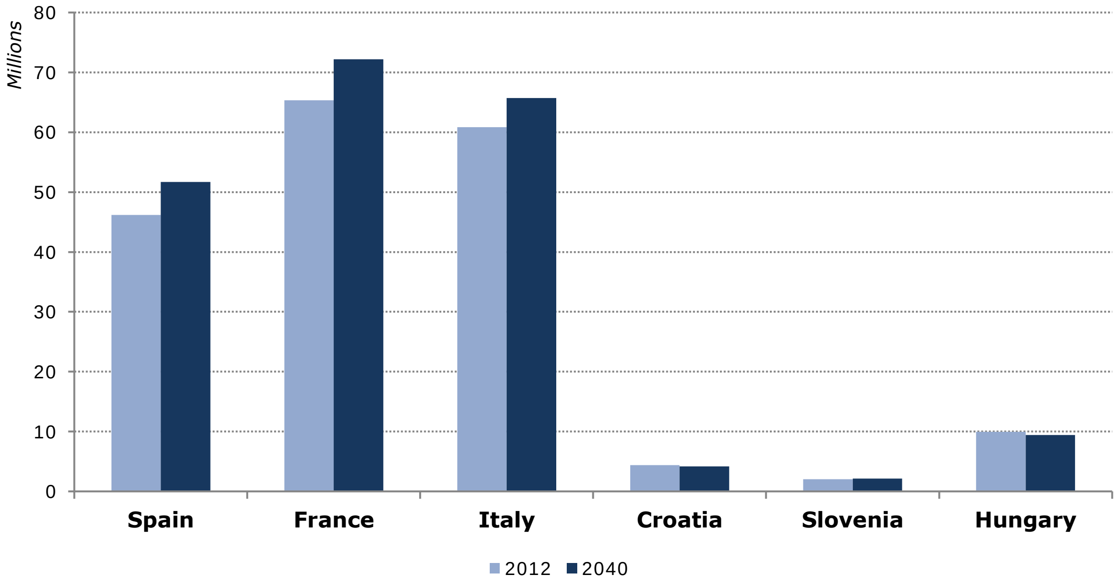


Figure 12 Population projections in the countries of the corridor

Detailed figures on the Eurostat population projections are provided below.

MS	2012	2040	2012-2040	Annual growth rate
Spain	46 196 276	51 713 930	11.94%	0.40%
France	65 327 724	72 186 344	10.50%	0.36%
Italy	60 820 696	65 694 307	8.01%	0.28%
Slovenia	2 055 496	2 141 070	4.16%	0.15%
Croatia	4 398 150	4 200 000*	-4.51%	-0.16%
Hungary	9 957 731	9 442 636	-5.17%	-0.19%

Source: World Bank ECAEXT Resources[36]

Table 29 Population projections in the countries of the corridor

Regarding the growth rates, the following figure shows the annual trend for all MS concerned.

Population growth from 2012 is supposed to be important mainly until 2015, with an annual growth rate of around 0.5%. The case of Slovenia, which would reach a population annual growth of 0.8% in 2015, is noteworthy.

From 2015, the trend will be steady.

Croatia and Hungary expect to record negative population annual growths during the period (except between 2012 and 2015, where a minimum population increase is expected to be recorded).

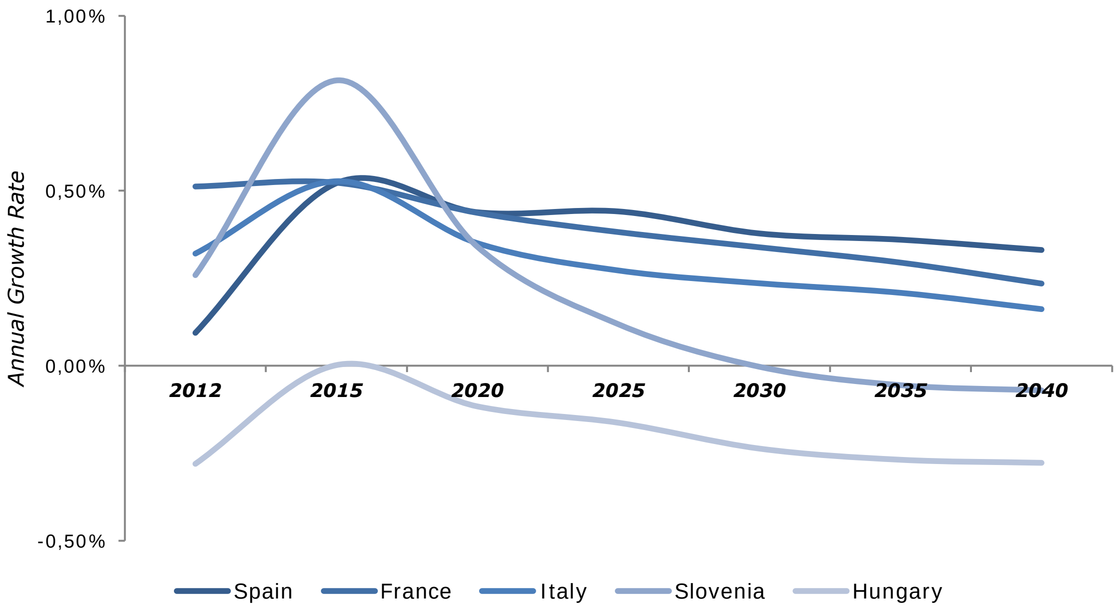


Figure 13 Population annual growth rates per country (2012-2040) GDP

[36] See: http://siteresources.worldbank.org/ECAEXT/Resources/Croatia_LTC.pdf

Economic and activity variables

GDP

Concerning the economic performances of the corridor in 2010, GDP at market prices reached the value of € 2,143 billion. This represents approximately 17% of total EU (28) GDP in that year.

This percentage has remained stable since 2008.

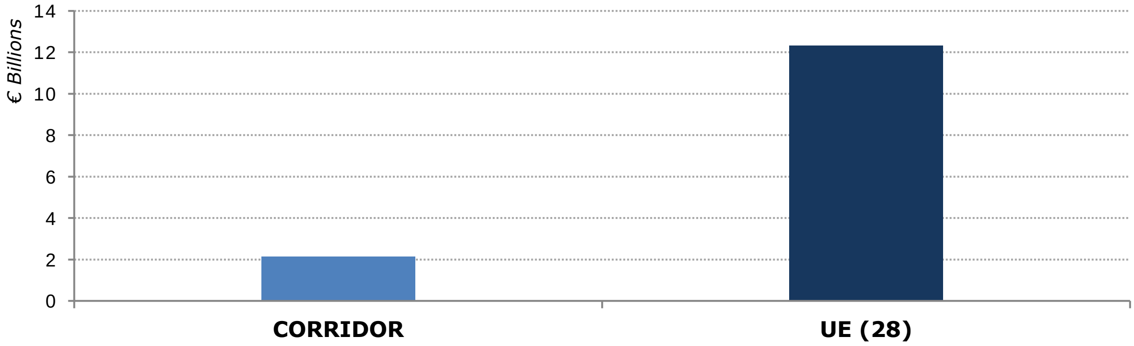


Figure 14 GDP current market prices 2010

As shown in the accompanying maps, an analysis of the significance of the GDP for each region has been performed in comparison to the entire corridor[37] that reveals the **predominance of northern Italy in terms of GDP contribution to the corridor (Lombardy region contributes to 15 % of corridor GDP). All Italian regions account for 40 %.**

Besides being Spanish contribution to the corridor closer to 34%, Spain and Italy provide three quarters of corridor GDP.

The attached map of the distribution of **GDP per capita i**n the corridor shows a clear predominance of the central part of the corridor, especially France and Italy with values between € 30,000 and € 40,000 GDP per capita.

The region with the highest value of GDP per capita is the French region of Rhone, reaching almost € 39,000 GDP per capita.

Among the 10 regions with the highest GDP per capita, we can find French and Italian regions and only one Spanish region (Madrid).

In Spain, in addition to Madrid, the highest values are found in the northern regions of Aragon and Catalonia.

The eastern part of the corridor is the one with lower levels of GDP per capita (especially Croatia and Hungary). The region with the lowest value is Brodsko - Posavska Zupanija with a € 5,400 GDP per capita.

[37] According to data available in Eurostat (GDP at 2010 market prices), the analysis was performed at NUTS3 level, except for Italy, where it is set at NUTS2 level.

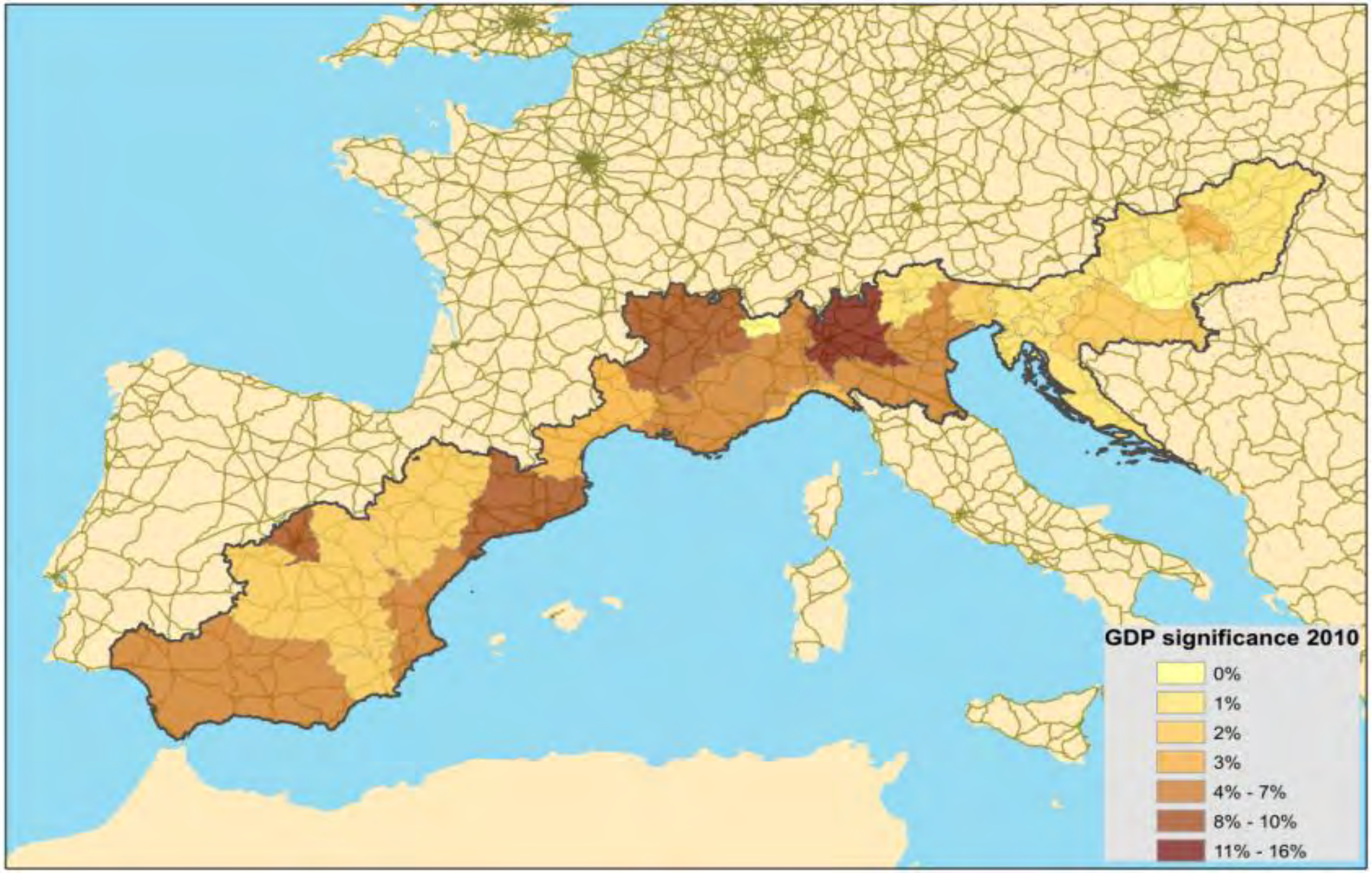


Figure 15 GDP significance along the corridor

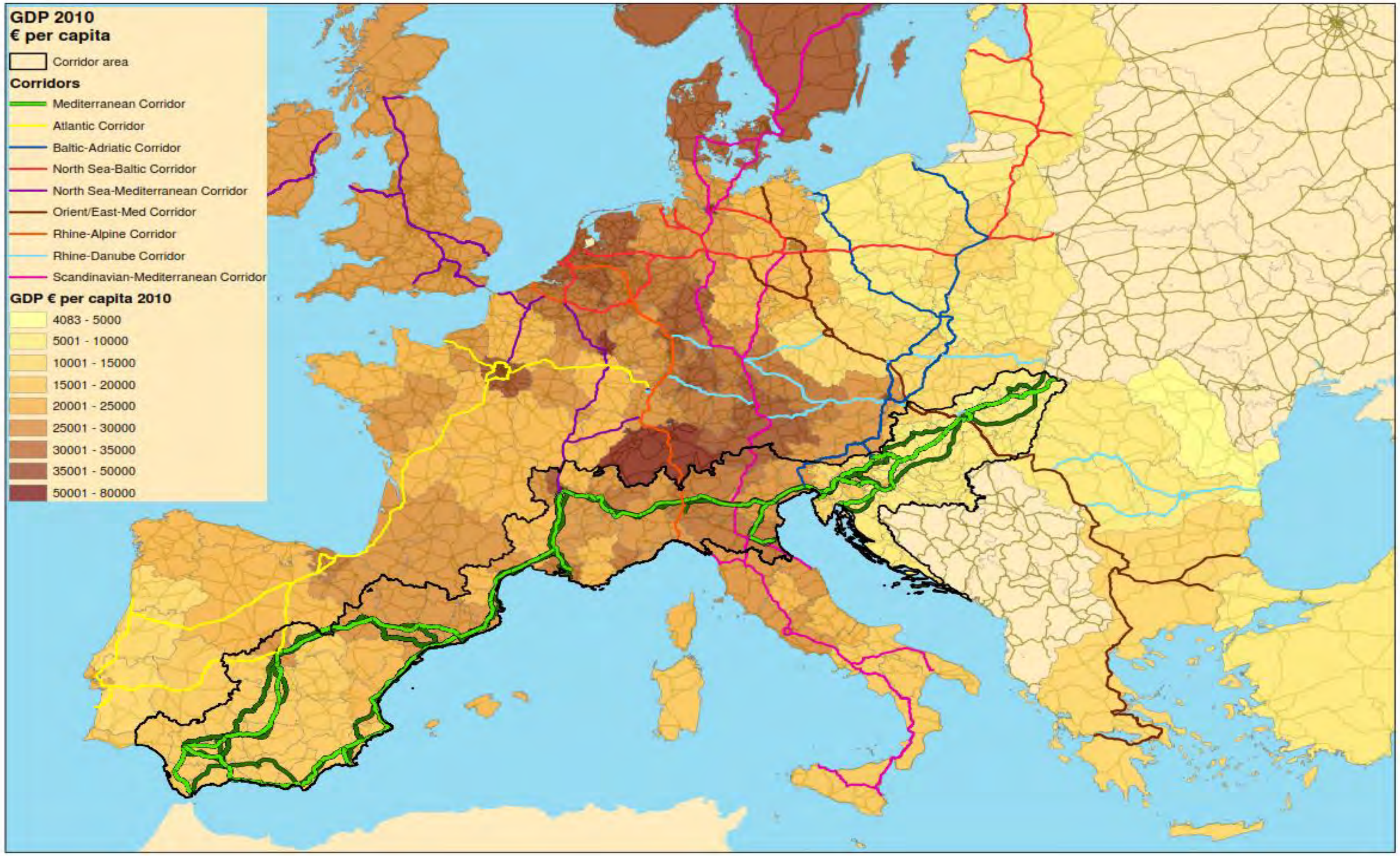


Figure 16 GDP per capita along the corridor

**This representation corresponds to the actual Mediterranean corridor alignment, thus not considering all the proposed modifications requested by Member States (these issues have been described in the annexes).*

A comparative analysis of country GDP has also been undertaken according to the data provided by the IMF, World Economic Outlook Database, October 2013.

Between 2002 and 2007, there was a strong growth of the economy in the MS along the corridor consistent with the European trend.

All MS along the corridor recorded annual growth rates above the EU (28) except Italy and France. An outstanding growth was recorded in Slovenia (4.8%), Croatia (4.7%) and Spain (3.5%).

In the period 2007 – 2012, the arrival of the economic crisis is clearly observed in all countries (except France), that recorded negative growth rates.

The impact of the crisis has been important in the corridor because in all countries (except France), the rate of decline has been higher than the EU (28) average. Notably, Croatia (-1.8%), Italy (-1.4%) and Slovenia (-1.1%) recorded negative GDP growth rates.

Economic projections until 2018 are positive for all countries of the corridor. The expected performances of Croatia (1.7%), France (1.4%) and Hungary (1.3%) are noteworthy. Italy, Slovenia and Spain will not exceed 1% annual growth rate.

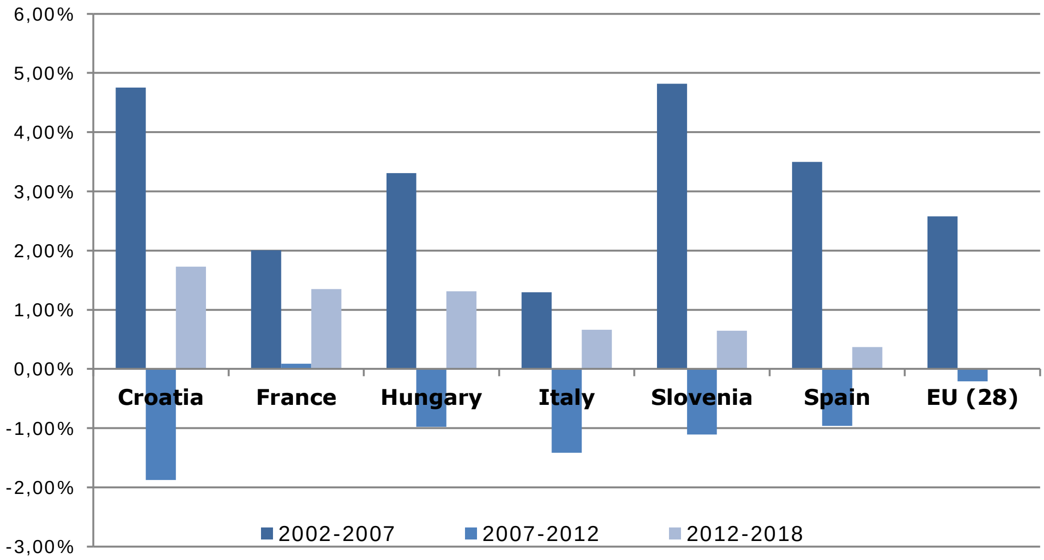


Figure 17 GDP evolution & projections for the countries of the corridor

Concerning GDP per capita, in the first part of the period, until 2006, a significant growth can be observed, especially in the smaller MS along the corridor.

The annual rate of growth in Hungary (4.4%), Croatia (4.3%) and Slovenia (3.9%) was very remarkable. For larger countries, Spain recorded a growth of 1.9%; French growth was 1%. Finally, Italy was the country with the lowest GDP per capita growth (0.7%).

In the period 2006 – 2012, the GDP per capita suffered a major decline due to the economic crisis, with special emphasis on Italy and Spain. Croatia and Hungary recorded lower declines (approximately -0.6%), while Slovenia and France recorded the smallest decreases with -0.2% and -0.1% respectively.

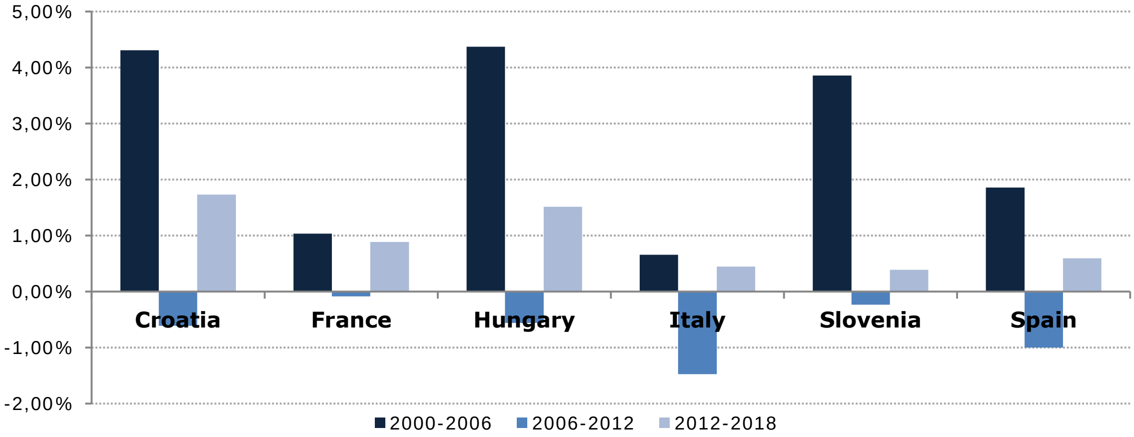


Figure 18 GDP evolution & projections for the MS of the corridor

EMPLOYMENT

Concerning the employment, analysis is focused on the following variables: labour force, employed population and unemployment rate.

In 2012, corridor labour force consisted in 41.6 million people. This was 46% of the entire population of the corridor.

Active population is concentrated mainly in large population centres such as Madrid, Barcelona, Milan, Budapest and Valencia.

In addition to these regions, Spanish and French coasts, northern Italy and Hungary have the highest amounts of active population.

People employed in 2012 were 35 million, representing 39% of the total population of the corridor. The evolution of this parameter clearly reflects the economic crisis in this period, in particular for Spain. As a result, the corridor recorded a decline of about 2.5 million people employed (2008-2012). This decrease was about 7%, with an annual rate of decline of 1.8%.

The distribution of the employed population follows the same pattern of the active population. Employed population is concentrated in Madrid, Barcelona and Milan, followed by Lyon, French coast and the rest of northern Italy.

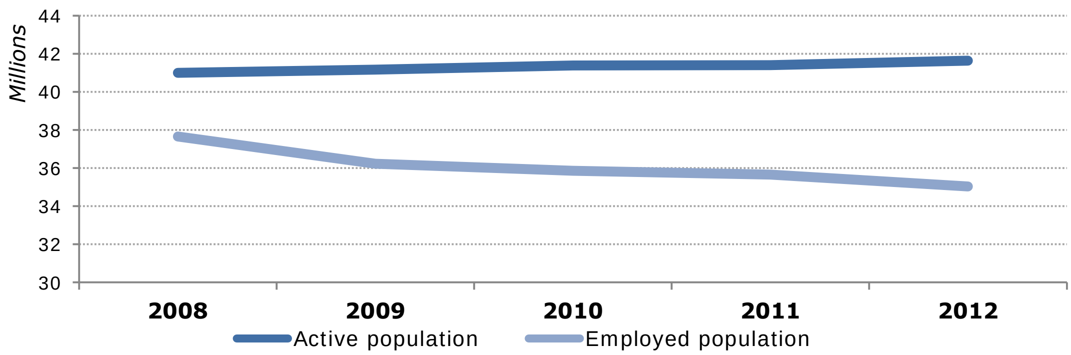


Figure 19 Labour force and employed population of the corridor (2008 – 2012)

While the labour force has remained relatively stable, assuming 46% of the entire population, the employed population represented 43% of the population in 2008 and only 39% in 2012.

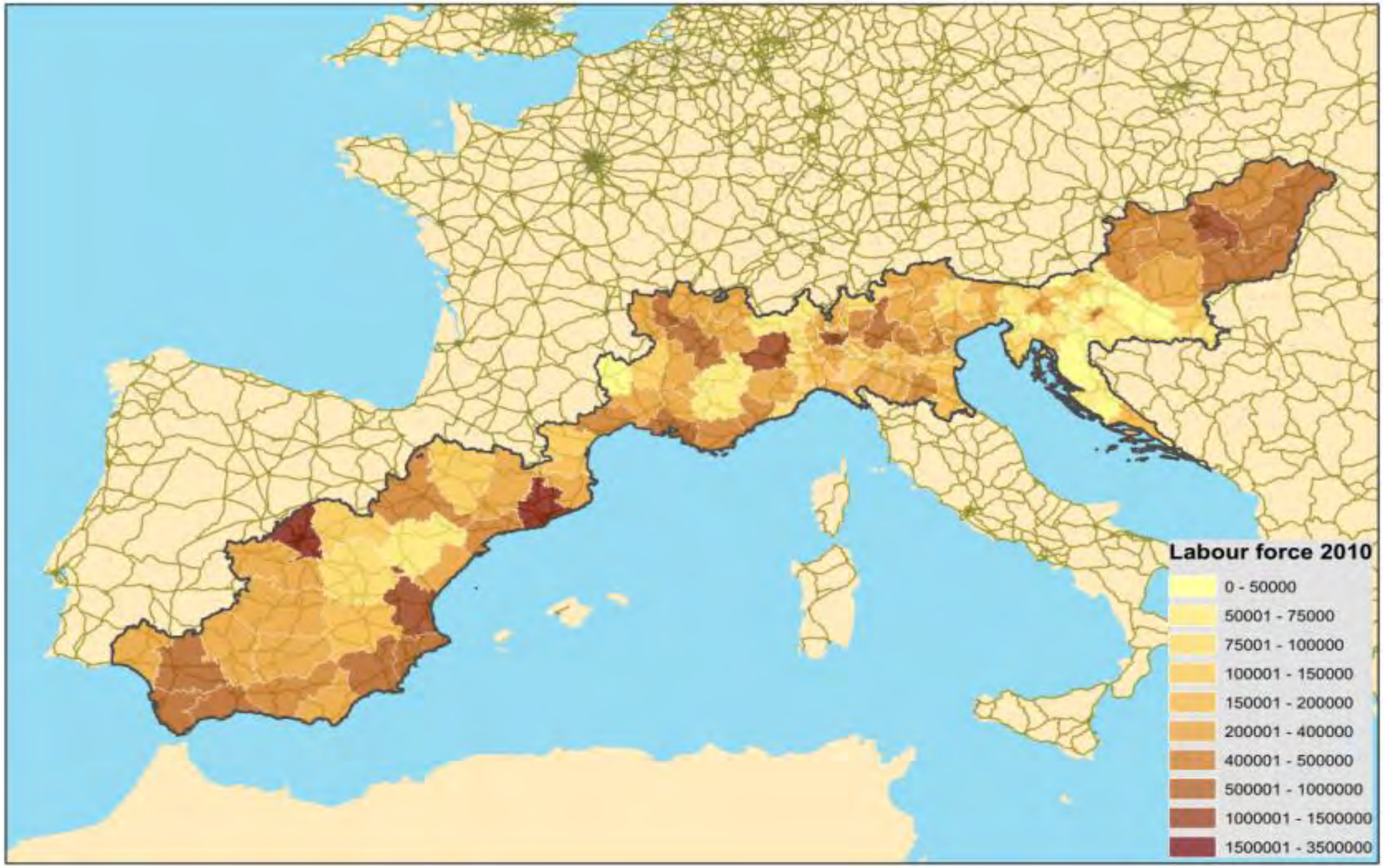


Figure 20 Labour force along the corridor

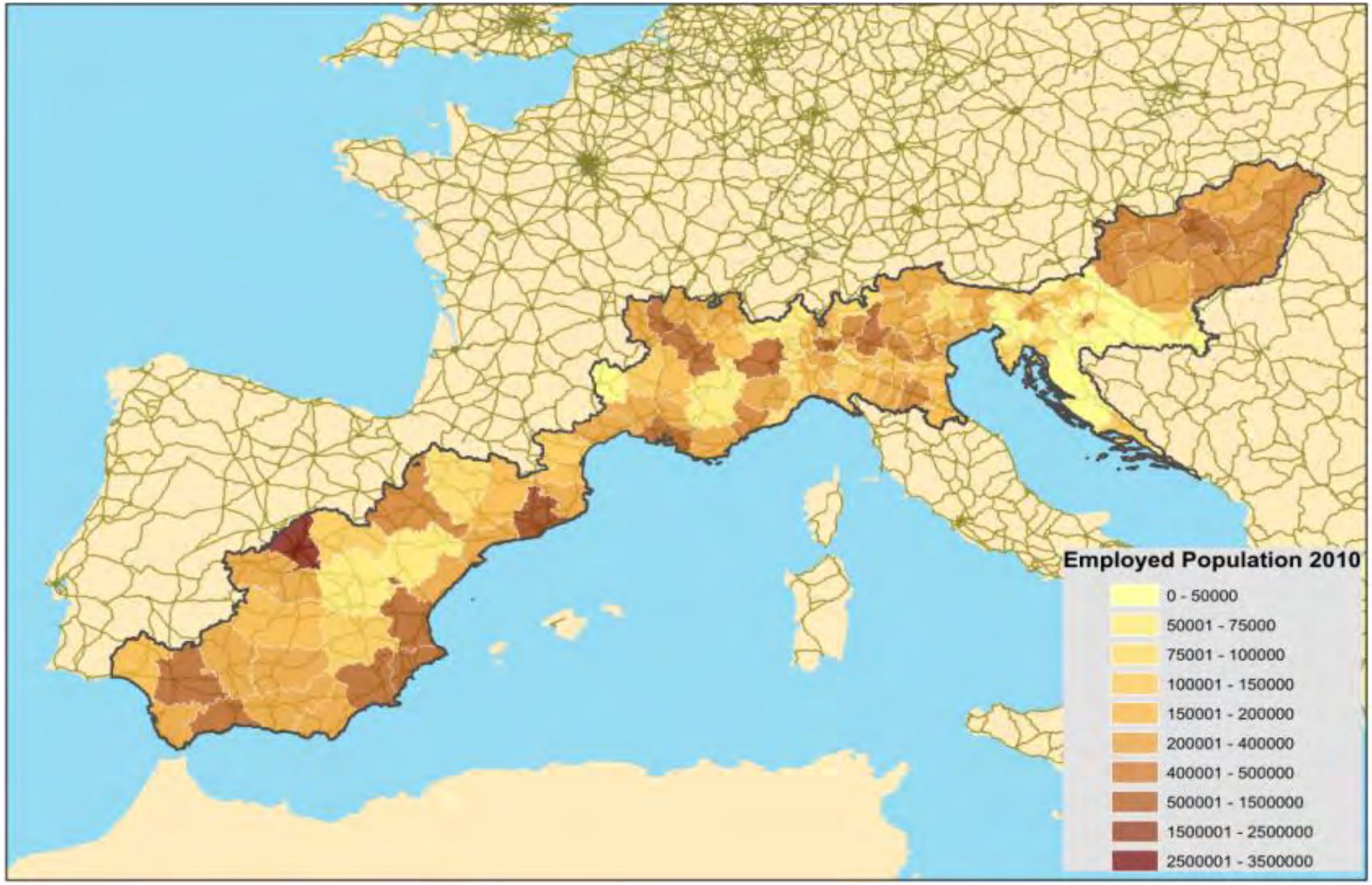


Figure 21 Employed population along the corridor

The unemployment rate has almost doubled in the period 2008-2012 because active population was constant while the employed population declined.

Around 3.3 million of unemployed people were recorded in 2008. Nearly 6.6 million of unemployed people were recorded in 2012.

This means that the unemployment rate has increased from 8% to 16% in the period 2008-2012.

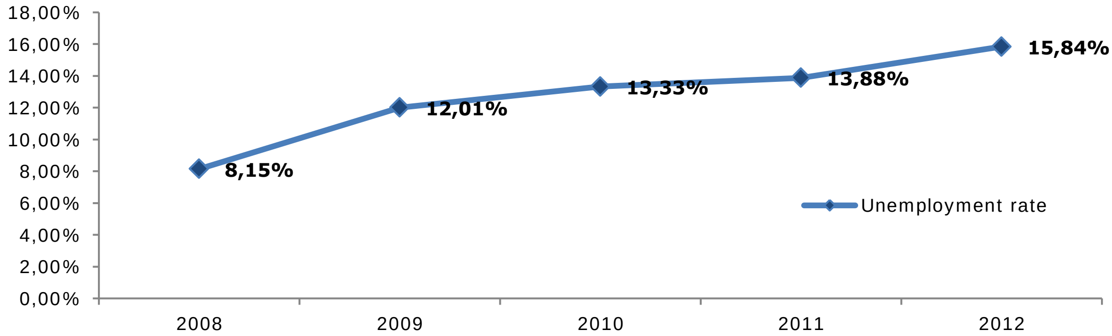


Figure 22 corridor unemployment rate

The distribution of unemployment in the corridor is not similar. High unemployment rates exist in Spain and eastern Croatia because of the economic crisis.

Around 63% of the unemployed population of the whole corridor is located in the Spanish part of the corridor. Around 4.2 million of unemployed people are located in Spain (out of the 6.6 million of unemployed people on the entire corridor).

A comparison of the two parameters (Unemployment rate along the corridor and unemployment significance along the corridor) is performed below.

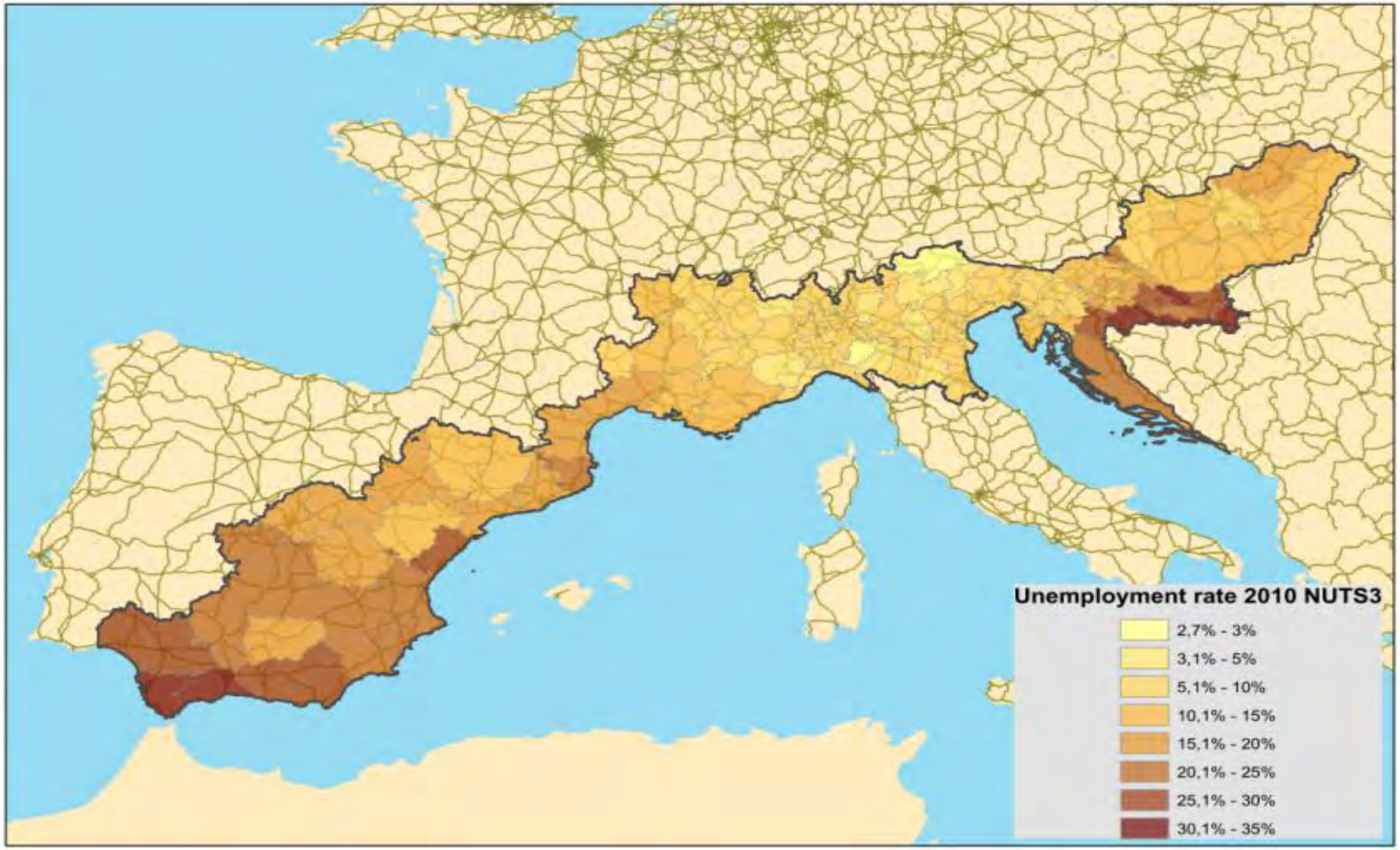


Figure 23 Unemployment rate along the corridor

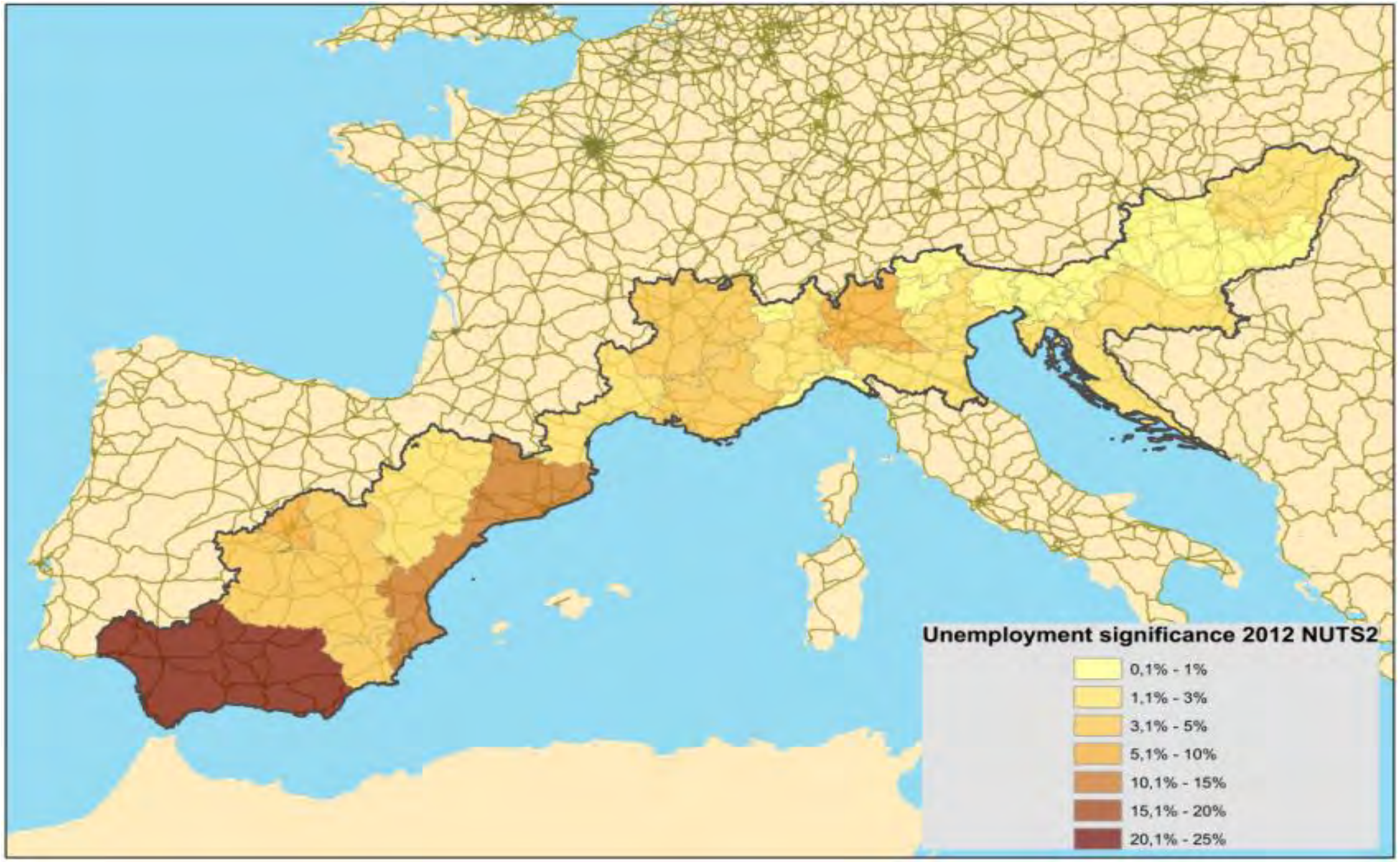


Figure 24 Unemployment significance along the corridor

In terms of growth of the labour force, the corridor trend is analogous to EU (28) average. Hungary is the country with the highest growth of the labour force while Croatia and Slovenia recorded a decline of their labour force.

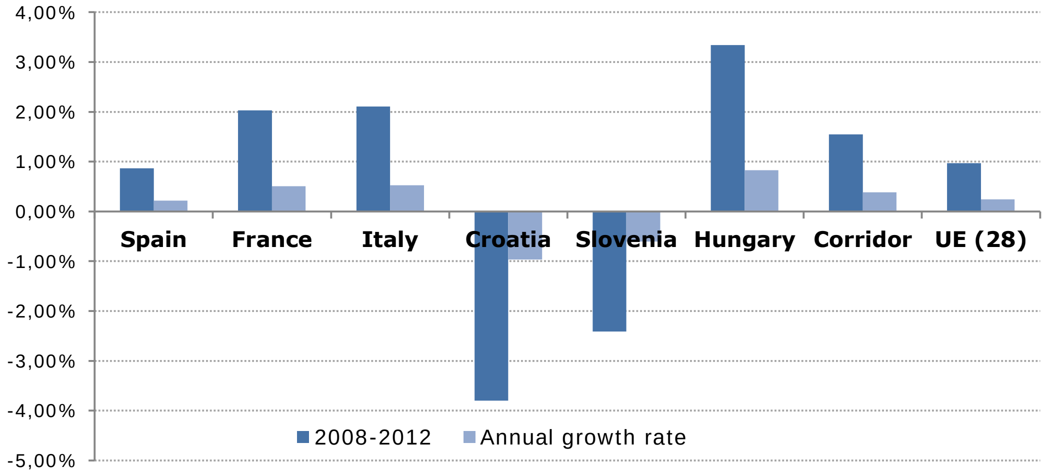


Figure 25 Labour force growths

The employed population, as presented in the figure below, clearly shows a decline in all areas.

The decrease of the corridor employed population is mainly due to Spanish decline of the employed population (nearly 15% from 2008 to 2012, with an annual rate of -4%).

France and Hungary are the countries with smaller decreases of the employed population (less than 1%).

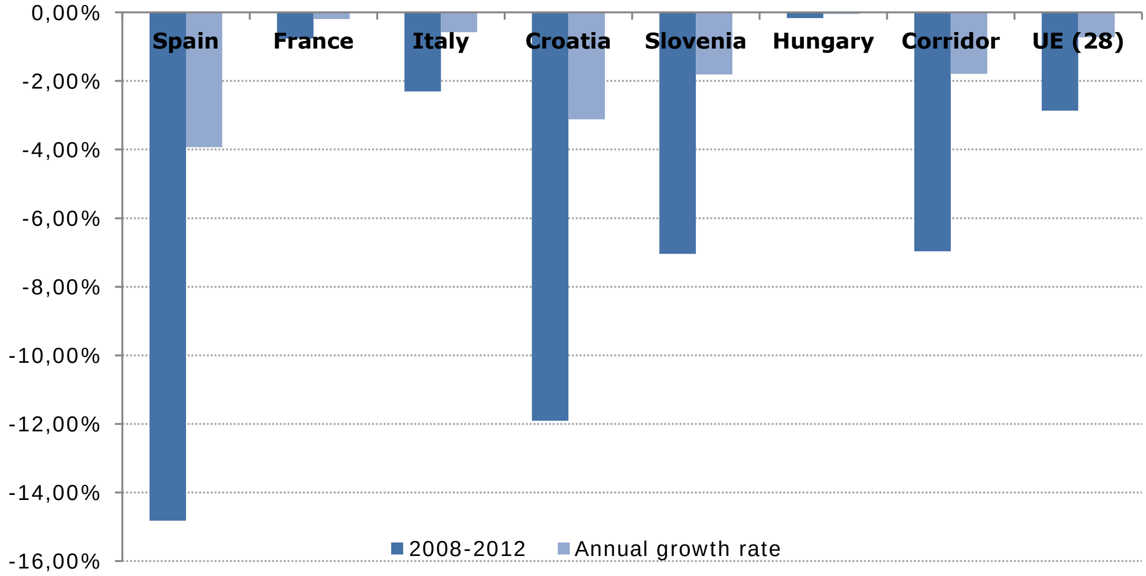


Figure 26 Employed population growths

Finally, by combining variables presented in the previous paragraphs, the unemployment rate is obtained.

As already mentioned, the decline of corridor employed population has resulted in the augmentation of the unemployment rate. In 2012, more than 15% of the active population of the corridor is unemployed.

Again, corridor unemployment rates for every year of the period are higher than EU (28) unemployment rates.

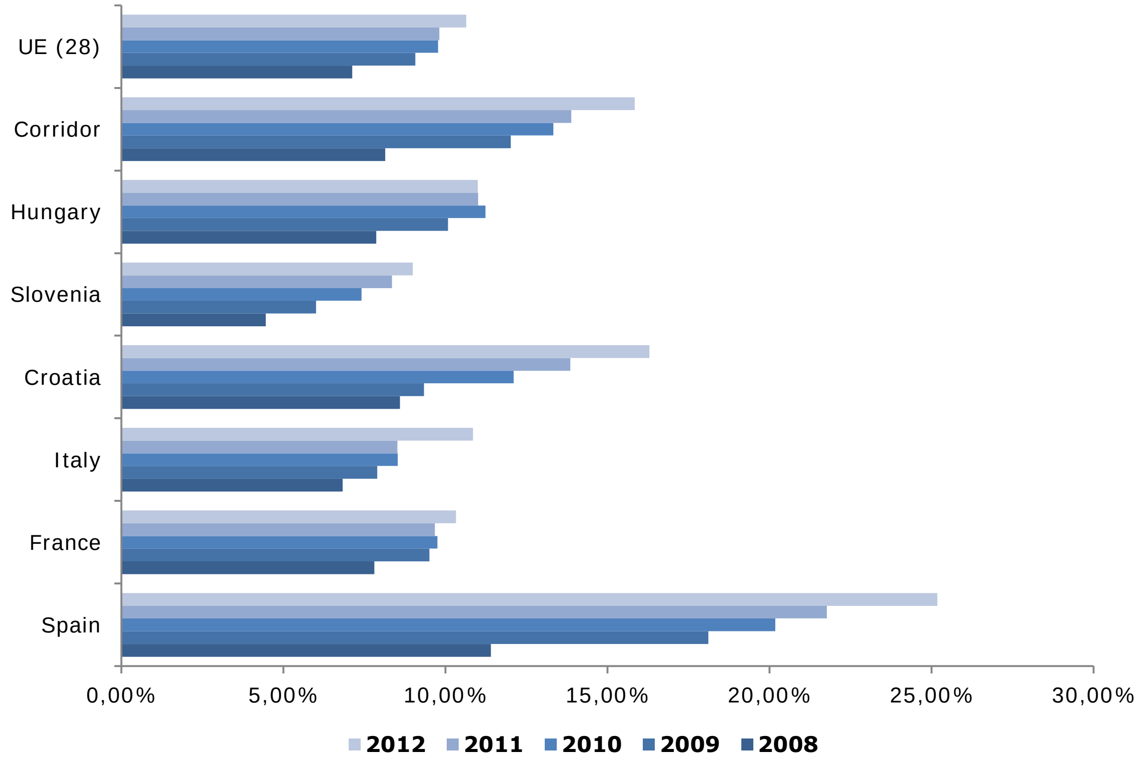


Figure 27 Unemployment rates

GROSS ADDED VALUE[38]

In 2010, the corridor had a GVA slightly lower than 2 billion €. In terms of GVA sector distribution, the service sector clearly dominates the GVA sector composition, providing 71% of corridor GVA. Industry (19%), construction (8%) and agriculture (2%) sectors follow.

[38] Data source: Eurostat at NUTS2 and NUTS3 level for the years 2008-2010.

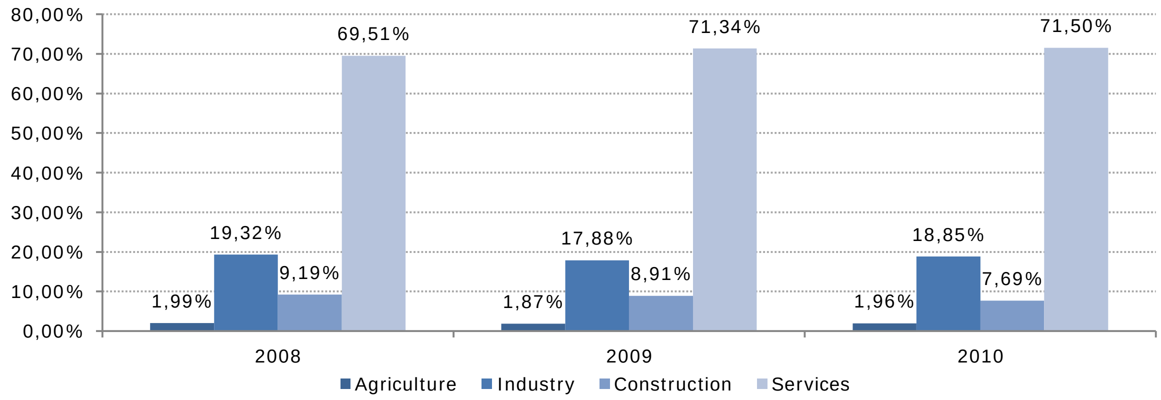


Figure 28 corridor GVA

In terms of corridor GVA by MS, France service sector is very significant.

The industrial sector mainly contributes to GVA in Hungary (26.47 % of GVA) and Italy (23.59% of GVA).

Agriculture sector contribution is the lowest in all countries.

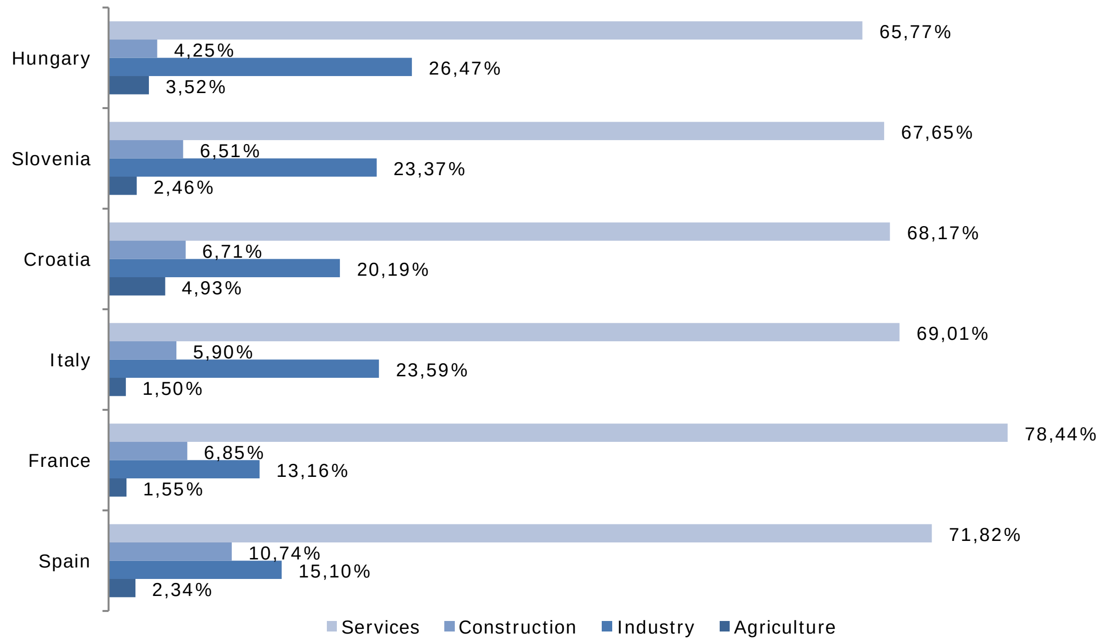


Figure 29 corridor GVA by country (only the regions of the corridor)

Considering the Gross Value Added per capita for 2010, it is possible to underline that the agricultural sector is more developed in the south of the corridor while, for the industrial sector, the predominance of northern Italy is marked.

French regions and northeaster Spain also reach important values (above € 4,000 per capita) in the industrial sector.

The construction sector is widely developed in Spain but it has been hit by the economic crisis.

Finally, the service sector reaches its peak in the central part of the corridor (mainly in France and Italy).

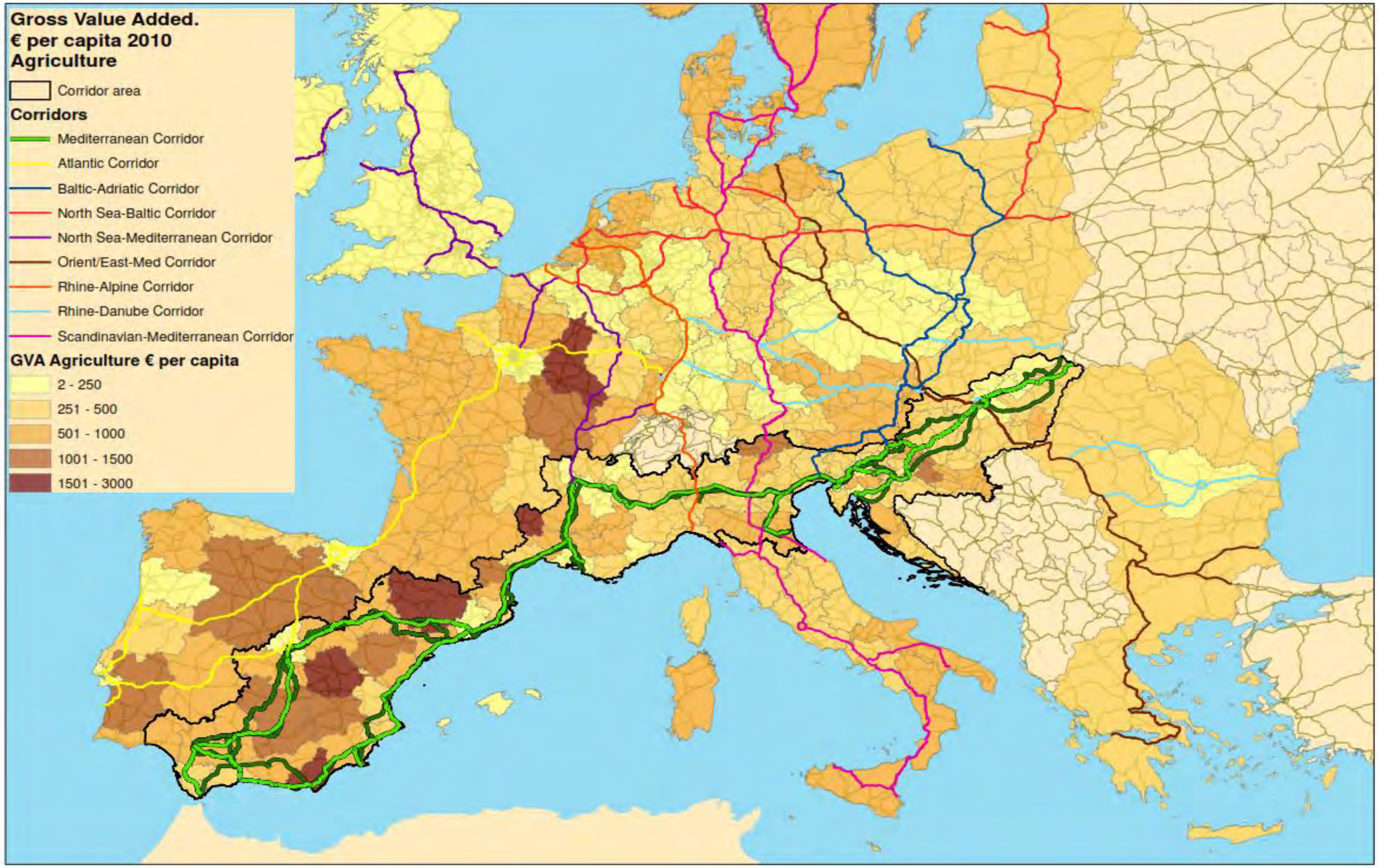


Figure 30 Gross value added/agriculture along the corridor

**This representation corresponds to the actual Mediterranean corridor alignment, thus not considering all the proposed modifications requested by Member States (these issues have been described in the annexes).*

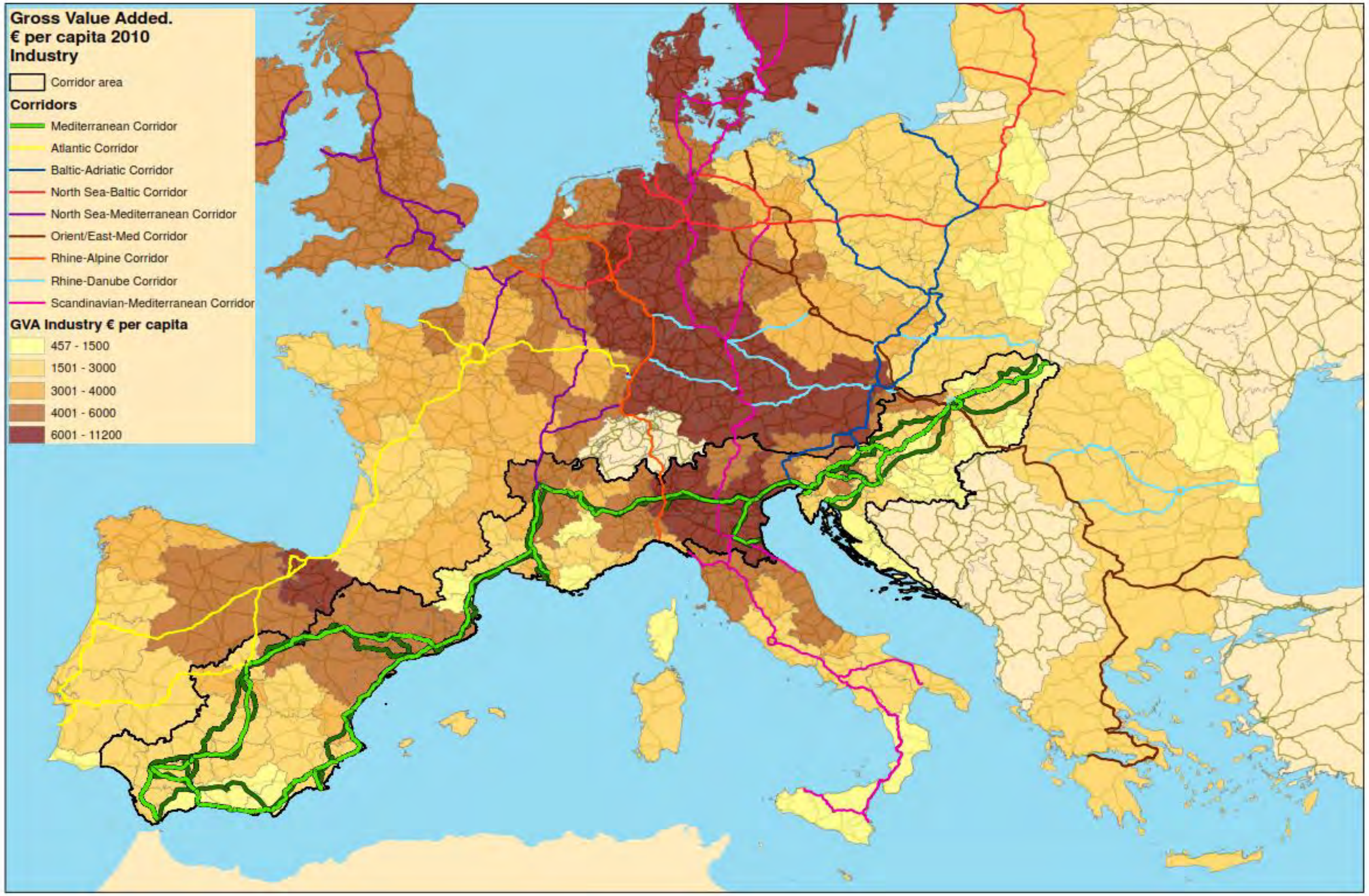


Figure 31 Gross value added/ industry along the corridor

**This representation corresponds to the actual Mediterranean corridor alignment, thus not considering all the proposed modifications requested by Member States (these issues have been described in the annexes).*

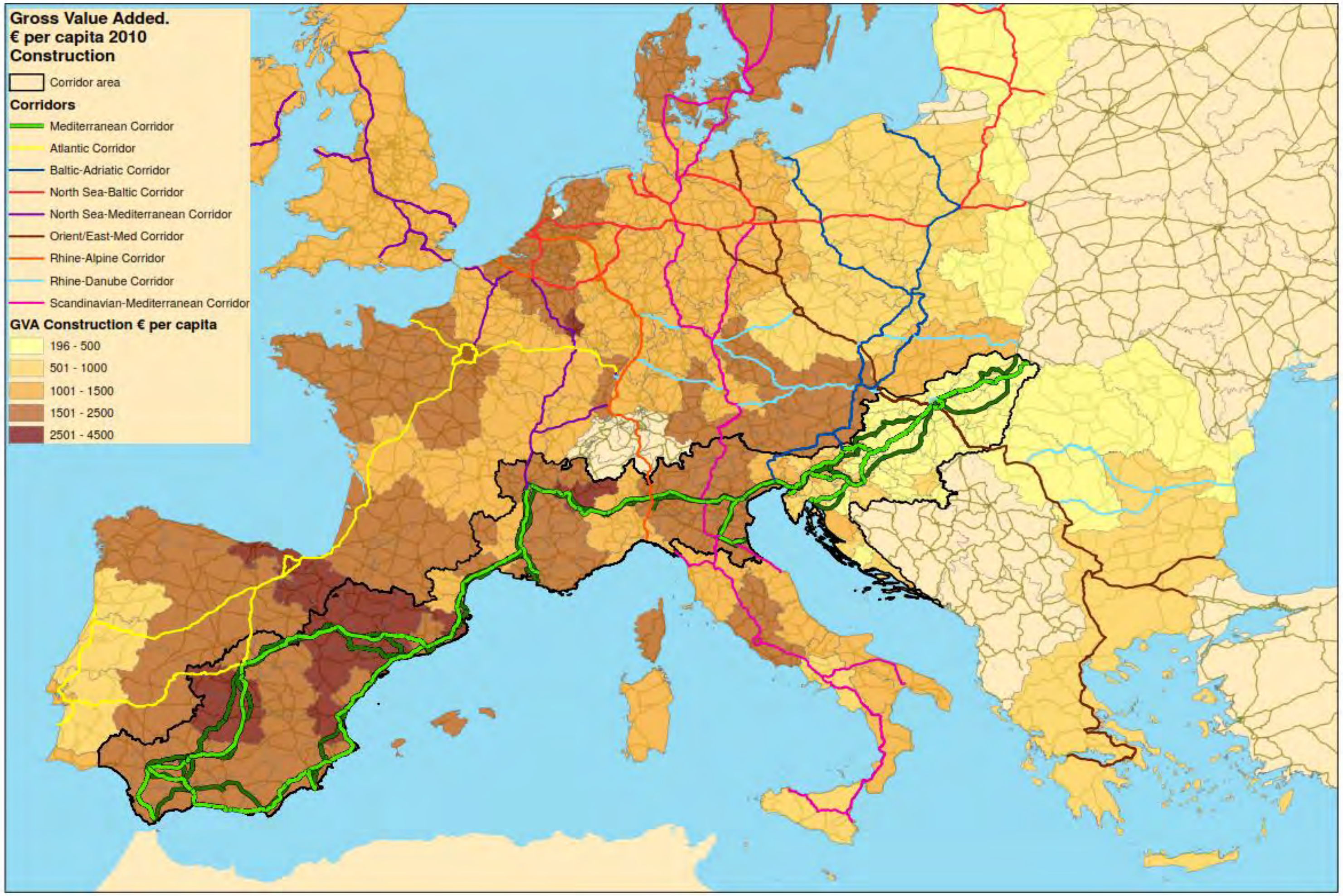


Figure 32 Gross value added/ construction along the corridor

**This representation corresponds to the actual Mediterranean corridor alignment, thus not considering all the proposed modifications requested by Member States (these issues have been described in the annexes).*

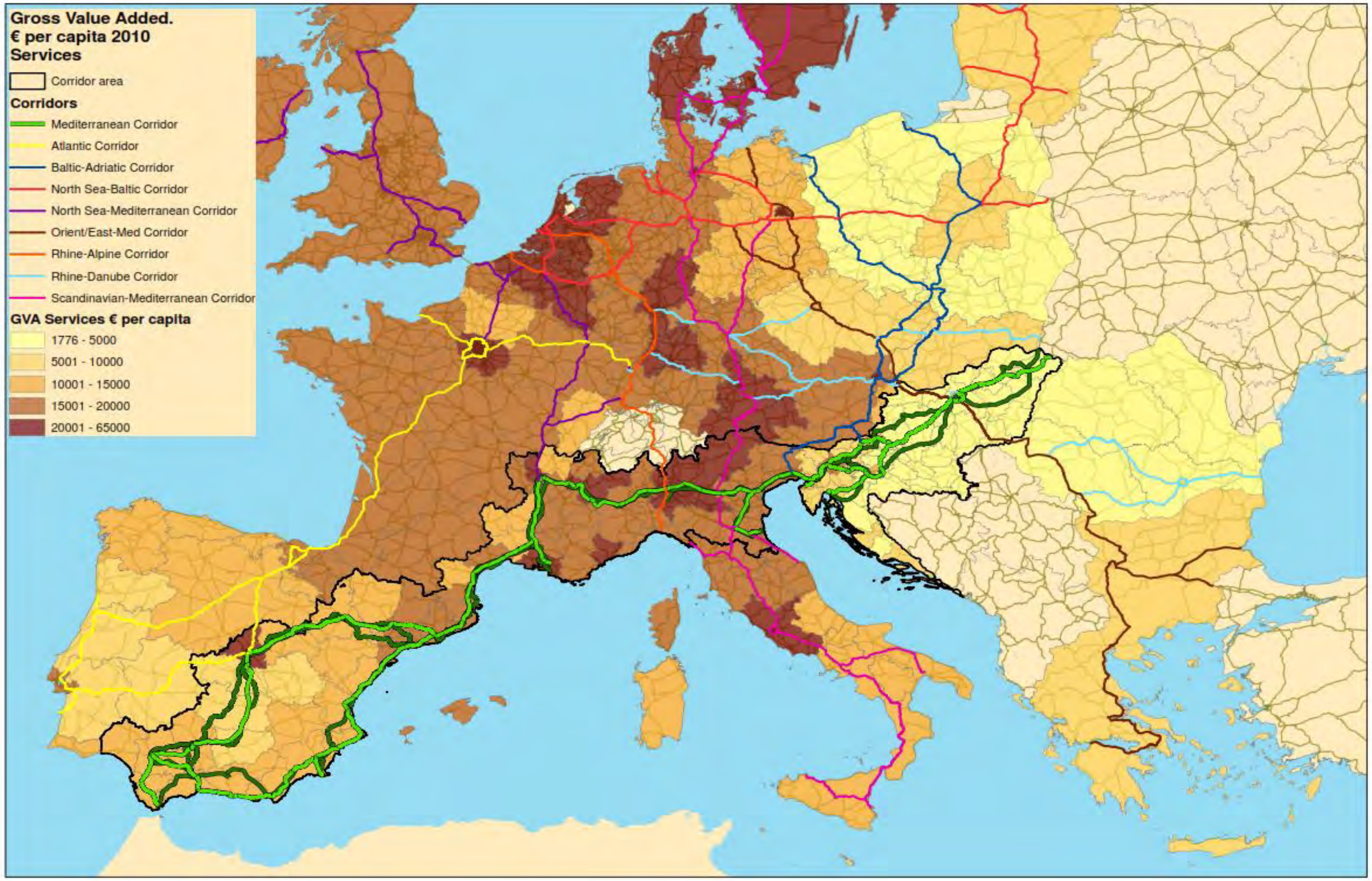


Figure 33 Gross value added/services along the corridor

**This representation corresponds to the actual Mediterranean corridor alignment, thus not considering all the proposed modifications requested by Member States (these issues have been described in the annexes).*

In the following graph, the composition of GVA 2010 of each MS is presented in comparison with the corridor and the EU (28).

The corridor has a similar GVA 2010 composition than EU (28).

Service sector in France reaches almost 80% of GVA 2010 composition against the smaller share (13%) of industrial sector. Hungarian industrial sector reached more than 25% of GVA 2010 composition. In the construction sector, Spain is the country with the highest values, reaching almost 11% of GVA 2010 composition.

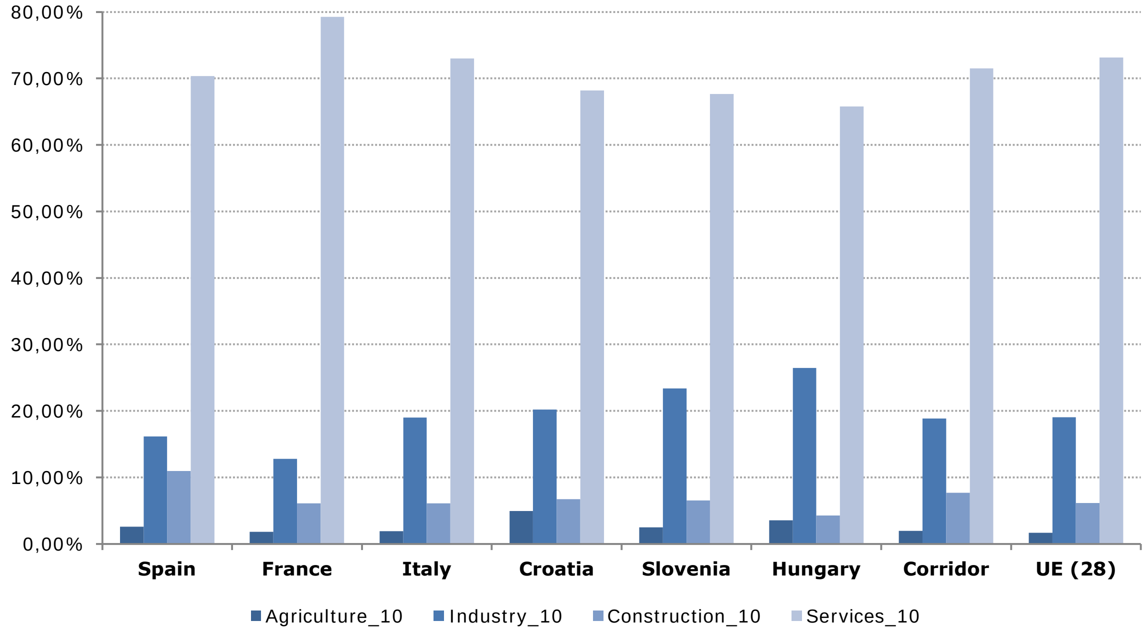


Figure 34 GVA 2010 split. MSs, corridor and EU (28)

Analysing the growth rates of all sectors, it is possible to note that construction sector growth is negative for the entire corridor and for EU (28). Industry and agriculture sectors generally recorded a generalized decline.

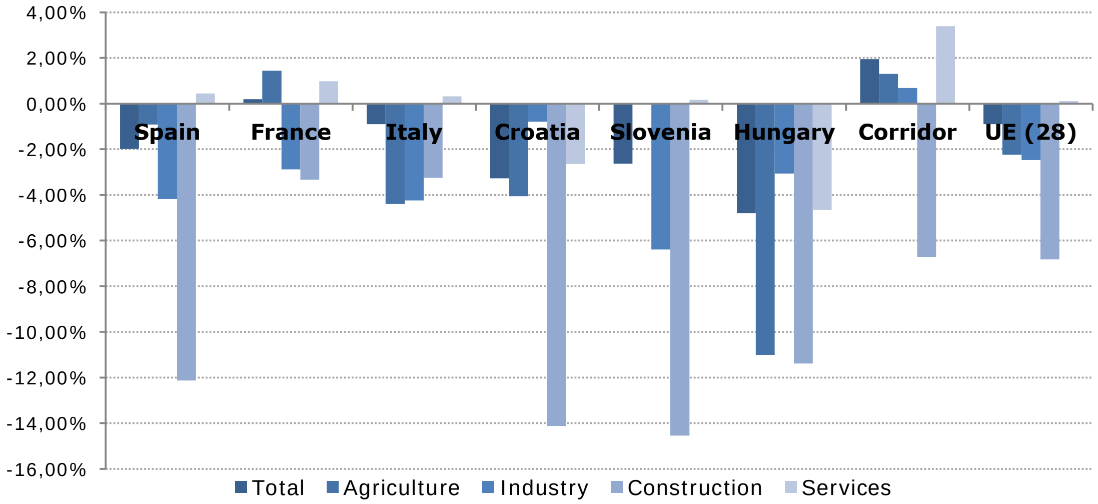


Figure 35 Annual growth rates

MOTORISATION

Concerning motorization, the following analysis is based on 2009 data since it has not been possible to obtain a complete set of data for a more recent year.In this respect, the Italian province of Emilia-Romagna is excluded, for which no data have been obtained for all the period 2008-2011. The total number of vehicles in the corridor in 2009 is 50.4 million (81.4% of vehicles light vehicles and 17.6% of heavy vehicles).

Light (1000)	2008	2009	2010	2011	2008-2011	Annual growth rate
Spain	22 146.0	21 984.0	22 148.0	22 277.0	0.59%	0.20%
France	31 109.0	31 394.0	-	-	-	-
Italy	36 074.0	36 344.0	36 725.0	37 095.0	2.83%	0.93%
Croatia	1 545.0	1 533.0	1 515.0	1 518.0	-1.75%	-0.59%
Slovenia	1 045.0	1 059.0	1 062.0	1 067.0	2.11%	0.70%
Hungary	3 055.0	3 014.0	2 984.0	2 968.0	-2.85%	-0.96%
Mediterranean	41 582.0	41 568.0	-	-	-	-

Table 30 Light vehicles

Heavy (1000)	2008	2009	2010	2011	2008-2011	Annual growth rate
Spain	6 323.0	6 266.0	6 232.0	6 194.0	-2.04%	-0.68%
France	6 036.0	6 073.0	-	-	-	-
Italy	5 608.0	5 180.0	5 240.0	5 303.0	-5.44%	-1.85%
Croatia	220.0	213.0	204.0	201.0	-8.64%	-2.97%
Slovenia	121.0	122.0	122.0	124.0	2.48%	0.82%
Hungary	885.0	880.0	877.0	878.0	-0.79%	-0.26%
Mediterranean	9 175.0	8 884.0	-	-	-	-

Table 31 Heavy vehicles

% heavy vehicles	2008	2009	2010	2011
Spain	22.21%	22.18%	21.96%	21.76%
France	16.25%	16.21%	-	-
Italy	13.45%	12.47%	12.49%	12.51%
Croatia	12.46%	12.20%	11.87%	11.69%
Slovenia	10.38%	10.33%	10.30%	10.41%
Hungary	22.46%	22.60%	22.71%	22.83%
Mediterranean	18.08%	17.61%	-	

Table 32 % Heavy vehicles

Elaborating the data in relation to the population, the rate of light vehicle for the corridor is 491 vehicles/1000 inhabitants in 2009. This value is close to the rates obtained for the corridor average. Italy is the country with the highest rate of light vehicles with a value of more than 600 vehicles / 1000 inhabitants.

Motorisation rate (Lights/1000 inhabitants)	2008	2009	2010	2011	2008-2011	Annual growth rate
Spain	489.1	479.7	481.6	482.7	-1.30%	-0.44%
France	486.0	487.9	-	-	-	-
Italy	605.1	605.3	608.6	611.9	1.12%	0.37%
Croatia	348.3	345.7	342.3	344.1	-1.21%	-0.40%
Slovenia	519.8	521.1	518.8	520.4	0.12%	0.04%
Hungary	304.1	300.5	298.0	297.2	-2.27%	-0.76%
Mediterranean	495.2	490.6	-	-	-	-

Table 33 Motorisation rate (Light vehicles/1000 inhabitants)

Figure 36 Motorisation/light vehicles

Regarding the rate of heavy vehicles, the value obtained for the corridor is 109 heavy vehicles/ 1,000 populations. Spain is the country with the highest rate of heavy vehicles while Croatia and Slovenia have rather low values of around 50-60 heavy vehicles / 1000 inhabitants.

Motorisation rate (Heavy/1000 inhabitants)	2008	2009	2010	2011	2008-2011	Annual growth rate
Spain	139.6	136.7	135.5	134.2	-3.89%	-1.31%
France	94.3	94.4	-	-	-	-
Italy	94.1	86.3	86.8	87.5	-7.01%	-2.39%
Croatia	49.6	48.0	46.1	45.6	-8.13%	-2.79%
Slovenia	60.2	60.0	59.6	60.5	0.48%	0.16%
Hungary	88.1	87.7	87.6	87.9	-0.20%	-0.07%
corridor	109.3	104.8	-	-	-	-

Table 34 Motorisation rate (Heavy vehicles/1000 inhabitants)

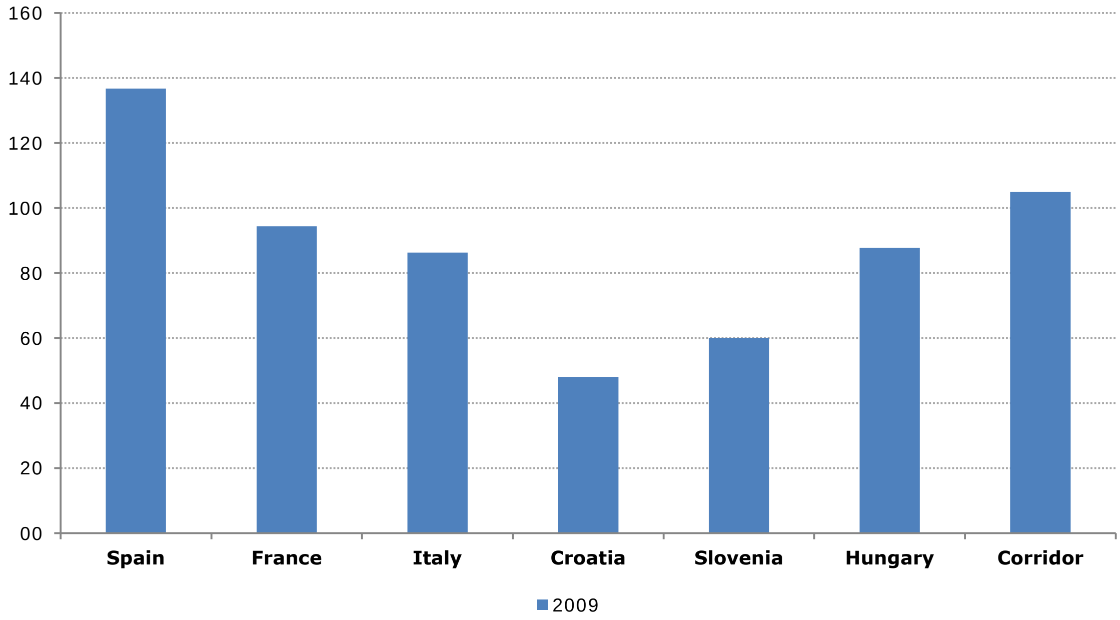


Figure 37 Motorisation rate (Heavy vehicles / 1000 inhabitants)

Figure 38 Motorisation/heavy vehicles

TOURISM[39]

Tourism is a particularly important variable in this corridor, since the Mediterranean region great demand of travellers and the consequent implications on transport at all levels.

Tourism is a key factor especially in Spain, France and Italy. It is also a growing sector in other countries of the corridor, mainly Croatia.

In terms of capacity, we obtained the number of available beds between 2008 and 2011 at NUTS3 level. With regard to the demand, data on overnight were consulted at NUTS2 level for the years 2008-2012.

The total number of beds in the corridor is 6.9 million in 2011, which means 24% of the total bed places available in the EU (28). From 2010 to 2011, bed places have experienced a decline of 0.56%.

The number of overnight stays is also very important in the region. Nearly 620 million of overnight stays were recorded in 2011 and 641 million in 2012.

This means that, in 2011, 25% of all overnight stays in the EU (28) were recorded in the corridor. **Despite the economic crisis, the growth of overnight stays between 2010 and 2012 has been quite important.**

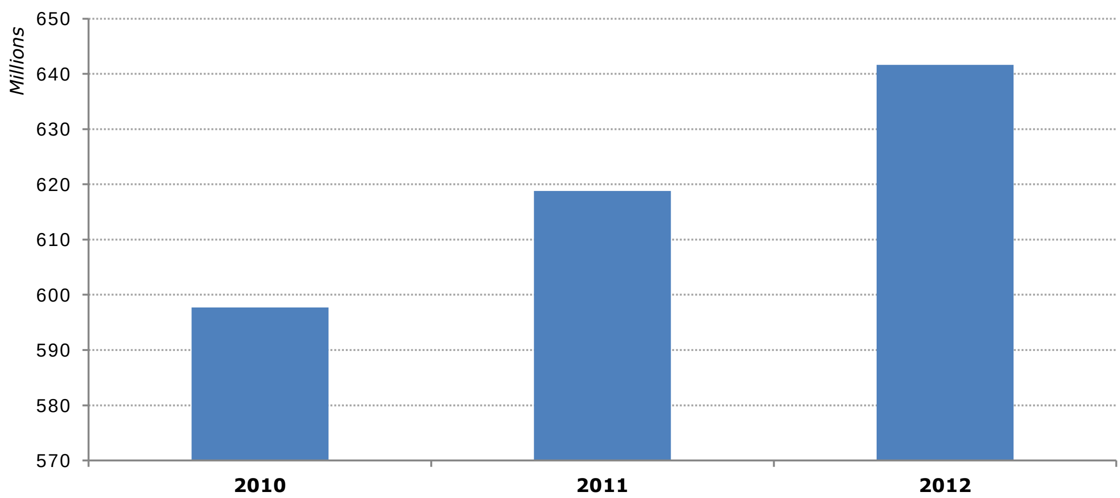


Figure 39 Overnights stays in the corridor

In terms of capacity (i.e. number of beds), there were significant increases in countries like Spain and Slovenia, while other countries recorded significant declines, as France and Croatia.

MS	2008	2009	2010	2011
Spain	3 159 053.0	3 237 810.0	3 301 576.0	3 390 704.0
France	5 769 307.0	5 865 238.0	5 020 463.0	5 014 118.0
Italy	4 649 050.0	4 598 682.0	4 698 852.0	4 742 064.0
Croatia	485 439.0	493 850.0	439 613.0	437 758.0
Slovenia	85 306.0	85 547.0	91 729.0	92 948.0
Hungary	302 889.0	301 873.0	311 441.0	304 087.0
Mediterranean	-	-	6 891 264.0	6 929 797.0
UE (28)	28 345 404.0	29 073 515.0	28 391 521.0	28 634 558.0

Table 35 Bed places 2008 – 2011

[39] Eurostat data have been used to analyse this variable.

MS	2008	2009	2010	2011	2012
Spain	375 693 309	348 554 453	364 863 944	389 858 477	382 670 976
France	301 042 789	294 689 672	391 222 795	401 006 928	400 525 558
Italy	373 666 688	370 762 377	375 542 550	386 894 732	380 711 483
Croatia	38 532 072	37 484 621	37 009 182	39 250 790	62 183 925
Slovenia	8 870 148	8 556 122	8 424 741	8 860 328	9 406 009
Hungary	19 974 414	18 709 746	19 030 734	19 434 914	23 169 533
corridor	-	-	597 693 279	618 807 772	641 634 780
UE (28)	2 337 334 296	2 289 338 820	2 395 948 566	2 476 053 672	-

Table 36 Overnights 2008 - 2011

The annual capacity is obtained by multiplying the number of beds by 365.

The higher occupancy rate is recorded in Spain with 30% and the lowest occupancy rate is recorded in Hungary with 16%.

The corridor has the same values than EU (28), i.e. an average occupancy rate of around 23%.

Occupancy	**2010**		
	Capacity	Demand	% Occupancy
Spain	1 205 075 240	364 863 944	30.28%
France	1 832 468 995	391 222 795	21.35%
Italy	1 715 080 980	375 542 550	21.90%
Croatia	160 458 745	37 009 182	23.06%
Slovenia	33 481 085	8 424 741	25.16%
Hungary	113 675 965	19 030 734	16.74%
corridor	2 515 311 360	597 693 279	23.76%
UE (28)	10 362 905 165	2 395 948 566	23.12%

Table 37 % Occupancy

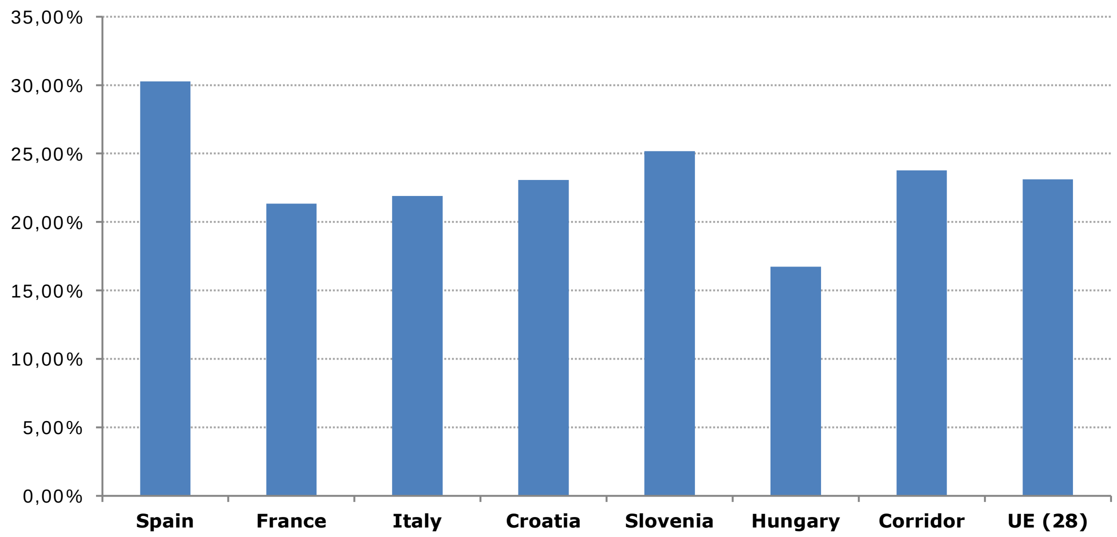


Figure 40 % Occupancy

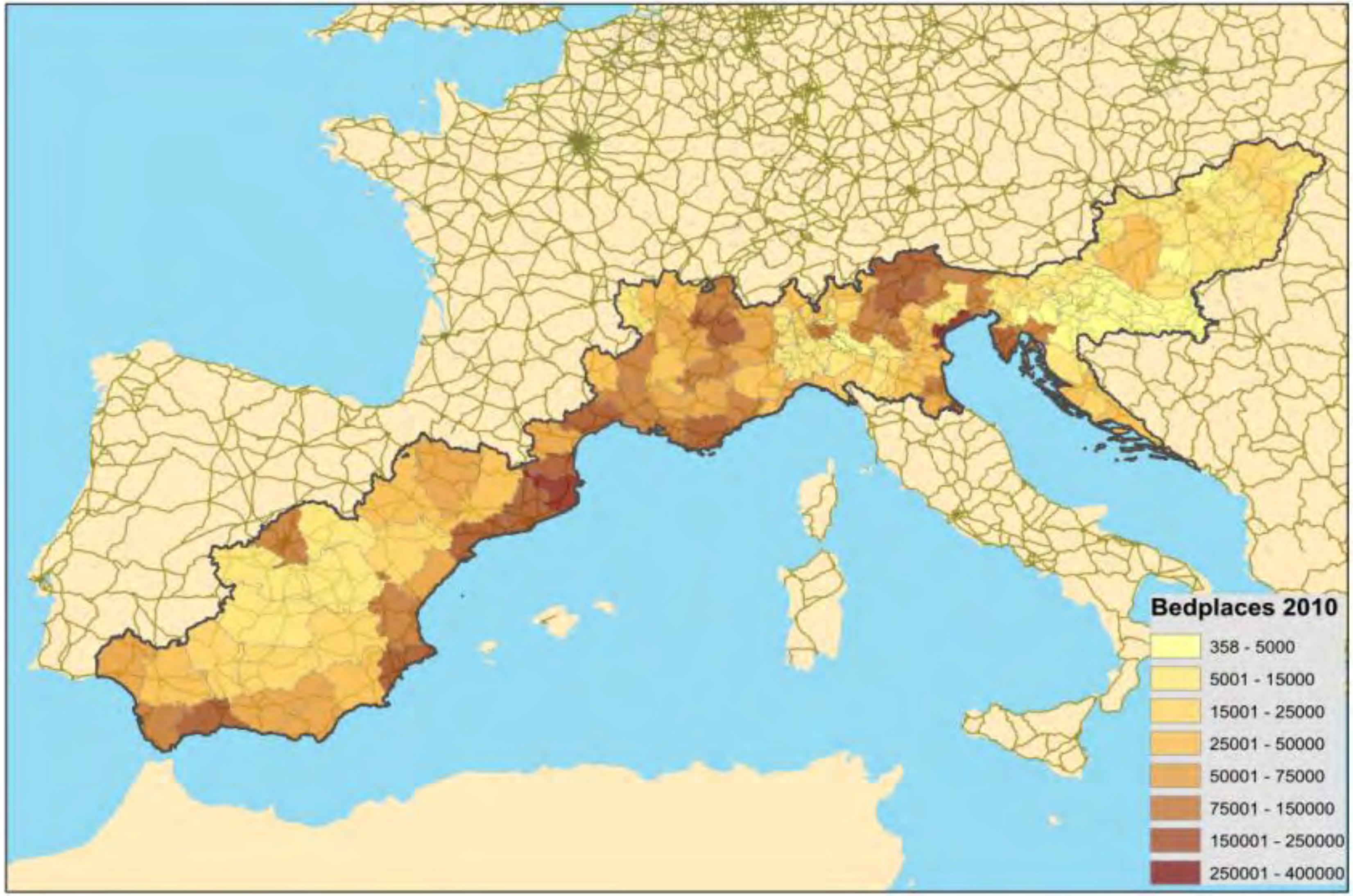


Figure 41 Bedplaces

Figure 42 Bed places per capita

4.2.2.2 Sources and data gathering for the transport market study

The transport market study (TMS) is based on the following **data sources**:

- traffic flow data gathered by consortium members on the corridor network sections in order to complete the TENtec database (passengers and freight data);
- CAFT (Cross alpine freight traffic survey) / Transit survey data on Pyrenean and alpine crossings, as well as data coming from alpine and Pyrenean transport observatories (OTP, Alpinfo);
- specific studies gathered by consortium members, especially on cross-border sections;
- ETISplus matrix and Eurostat sources on road, air, rail, passenger and freight traffic.
- Eurostat and port authorities' data for maritime traffic.

In order to create a consinstent baseline in 2010, **all the above mentioned sources has been taken into account and cross-checked.** It is important to underline that 2010 is the reference year for the Etisplus database, the most important and complete source on the whole corridor. Where possible, more recent evolutions of traffic has been taken into account and indicated.

Basing on the above evaluation and the collected studies, an overall transport market study along the corridor has been defined.

In particular, for **three types of freight flows** which can potentially using the corridor has been identified:

1. **land international flows**, crossing one or more borders between corridor countries by road or rail;
2. **traffic with seaports** of the corridors: maritime traffic and land traffic for approaching seaports by rail, road or IWW;
3. **national flows by rail, road or IWW**.

For **passenger flows**, the same categorisation has been applied, adding air traffic and neglecting IWW or traffic with the seaports.

This TMS is focused on **two types of traffic**: main international flows by mode and by origin and destination zones along the corridor and traffic in relation with the seaports, as the main flows on which the corridor's implementation could have a strong impact. **National flows has been taken into account mainly to assess their contribution to the network's capacity on key sections of the corridor**.

As a result, the first part of the TMS gives an overview of the current traffic flows on the corridor, with a focus on the main cross-border sections and a description of flows concerning the main seaports.

The second part consists of a forecasting exercise in 2030 mainly based on a critical review of the existing studies (if available) **and on the consortium's expertise elsewhere**.

Like all forecasts, it has a large part of uncertainty, emphasised by the current economic conditions. In this respect, as a third part of the study, conclusions regarding the implementation of the corridor and the key bottlenecks to be solved has been defined considering forecast flows as the potential market volumes and addressing the identified critical issues in order to achieve the expectations of the network's users and to **maximise the use of road-alternative modes**.

4.2.2.3 Analysis of the current transport market along the corridor

The databases defined for the TMS enable to analyse the transport market of the corridor from different perspectives.

First, basing mainly on CAFT and ETISplus databases, main origin-destination flows along the corridor are presented, with an overview at country per country and a description of the main flows at Nuts 2 level, for both passengers and goods.

Then a focus has been carried out on traffic of main seaports and of IWW flows.

Finally, flows on the network by mode has been shown (based on the available data derived from the TENtec database), with a focus on the cross-border sections.

On several key-sections of the corridor (beside cross-border), contributions of national and international traffic to the observed flows has been assessed.

International freight transport market along the corridor

Analysis at country level: total freight flows

The tables below present the total freight flows (in 1000 tons/year) **exchanged by road, rail and sea** (data source: Spanish ministry of infrastructure and port authority, ETISplus database) **between countries along the corridor**, without considering in this first step whether they are likely to use the corridor infrastructure or not.

It is important to underline that the following flows has not been considered:

- **IWW flows** does not support international traffic between countries along the corridor.
- **air freight flows** because of the related market share (estimates on tons) between countries along the corridor is inferior to 0,2%.

The six countries along the corridor exchanged nearly 160 million tons of goods in 2010. The two main flows are between France and Spain (45 million tons) and between France and Italy (36 million tons). These two flows represent 60% of the total weight of goods exchanged between the six corridor countries.

Overall mode shares for international freight flows are 66% for road, 9% for rail and 25% for maritime transport. More than 2/3 of the goods exchanged between Spain and Italy are transported by sea.

While the rail share for relations with Spain is close to zero, mainly because of the different track gauges between Spain and the rest of Europe, rail takes a 17% share in trade between France and Italy.

On the eastern part of the corridor, road data in Eurostat / Etisplus is missing or incomplete in several cases. To overcome this criticism, a rough estimate of these flows based on traffic volumes on cross-border sections and assumed composition of traffic at these borders has been provided[40].

Based on these estimations, it is possible to suppose that rail market share is very low (3%) for Italian-Slovenian flows and relatively high for flows between Hungary and Slovenia / Croatia. On the maritime side, flows between Italia and Slovenia / Croatia are significant.

Mode	1000 tons / year (2010)	%
Road	105.154	66%
Rail	13.866	9%
Sea	40.405	25%
Total	**159.425**	

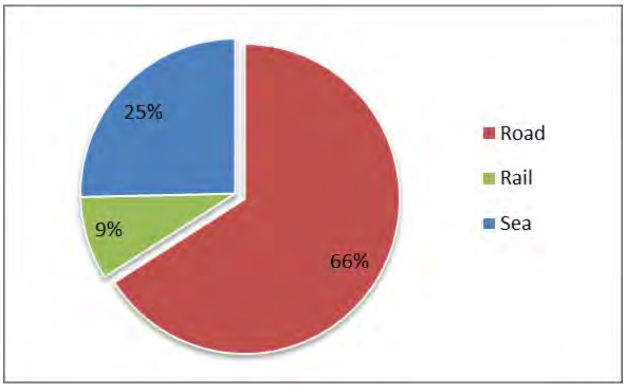


Table 38: 2010 Total freight demand between corridor countries (in 1000 tons/year)

[40] This is why traffic presented here may be slightly different from the one exposed in the RFC6 implementation plan ; see specific appendix for details

ROAD	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		36 503	7 407	152	88	387
France			25 238	724	124	654
Italy				5 677	*6 200*	*7 300*
Slovenia					*3 600*	*5 300*
Croatia						*5 800*
Hungary						

RAIL	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		843	177	0	0	6
France			5 350	34	6	17
Italy				176	1 225	1 716
Slovenia					319	2 096
Croatia						1 900
Hungary						

SEA	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		7 700	15 900	200	250	30
France			6 076	74	100	
Italy				4 234	5 755	
Slovenia					86	
Croatia						
Hungary						

TOTAL	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		45 046	23 484	352	338	423
France			36 664	832	230	672
Italy				10 087	13 180	9 016
Slovenia					4 005	7 396
Croatia						7 700
Hungary						

Rail share	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		2%	1%	0%	0%	1%
France			15%	4%	3%	3%
Italy				2%	9%	19%
Slovenia					8%	28%
Croatia						25%
Hungary						

CAFT/Etisplus data - *Estimated data in italic*

Table 39: 2010 Total Freight transport demand by mode between corridor countries (1000 tons / year)

The next tables provide an analysis of flows by type of goods, considering six commodity groups.

Agricultural products and manufactured products are the two main commodities exchanged between countries of the corridor, with shares of 28% and 34% respectively over total weight of exchanged goods.

Agricultural products are predominant in the exchanged flows between Spain and France, while manufactured products (including vehicles) are dominant between France and Italy or Spain and Italy. Mineral fuels like coal or petroleum products have a particular importance in flows between Hungary and Slovenia / Croatia. Metal products are strong (26%) between Hungary and Italy. Crude minerals and building materials have a high market share in flows between Italy, Slovenia and Croatia.

Good type	1000 Tons / year
1- Agricultural products and live animals, foodstuffs and animal fodder	41 235
2- Solid mineral fuels, Petroleum products	9 689
3- Metal products, Ores and metal waste	19 500
4- Crude and manufactured minerals, building materials	20 563
5- Fertilizers, Chemicals	16 296
6- Machinery, transport equipment, manufactured articles and miscellaneous articles	52 142
Total	159 425

Table 40: 2010 Freight flows between corridor countries by type of goods (1000 tons / year)

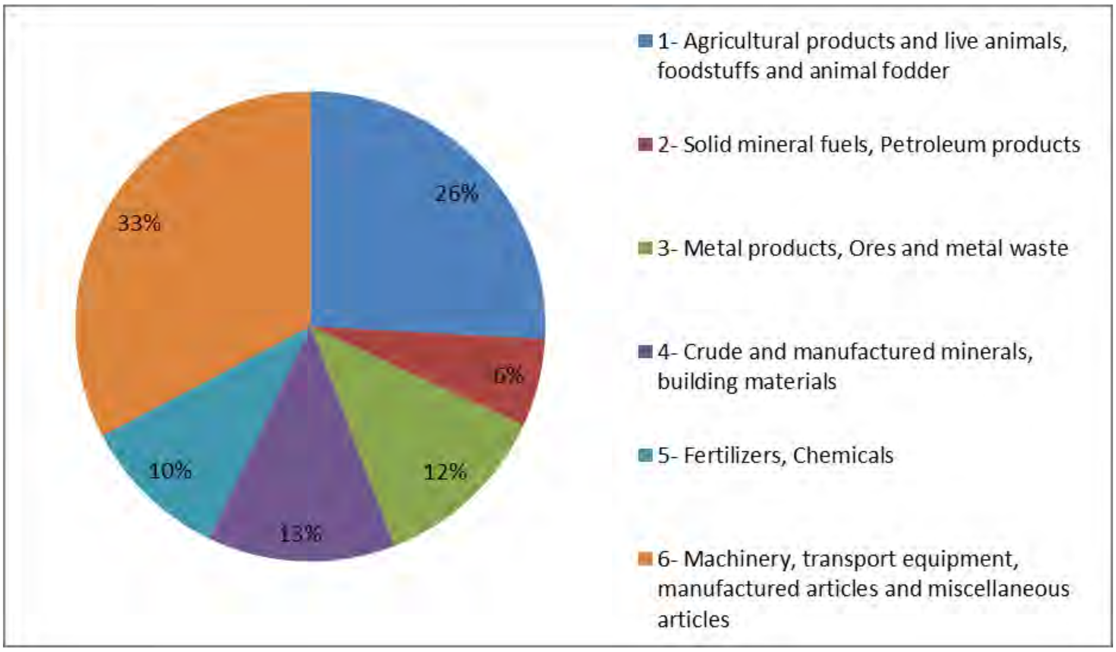


Figure 43: 2010 Freight flows between corridor countries by type of goods

1	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		36%	26%	19%	32%	30%
France			22%	1%	24%	18%
Italy				25%	13%	33%
Slovenia					19%	17%
Croatia						10%
Hungary						

2	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		2%	3%	0%	8%	1%
France			3%	0%	0%	1%
Italy				9%	1%	1%
Slovenia					6%	28%
Croatia						42%
Hungary						

3	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		11%	9%	3%	7%	4%
France			13%	10%	13%	5%
Italy				15%	13%	26%
Slovenia					10%	11%
Croatia						5%
Hungary						

4	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		8%	10%	4%	21%	5%
France			13%	1%	9%	2%
Italy				20%	42%	2%
Slovenia					26%	5%
Croatia						8%
Hungary						

5	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		12%	13%	9%	20%	6%
France			6%	6%	9%	9%
Italy				7%	12%	6%
Slovenia					14%	9%
Croatia						16%
Hungary						

6	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		29%	40%	65%	12%	55%
France			42%	81%	45%	65%
Italy				23%	18%	32%
Slovenia					26%	31%
Croatia						19%
Hungary						

Table 41: 2010 Freight transport demand between corridor countries by commodity group (source: elaboration on CAFT and Etisplus)

The following tables show the exchange of goods between the countries of the corridor and the other MSs, aggregated in 11 groups.

Flows have been sorted in 3 categories (from bold to pale grey) according to their probability of using the corridor infrastructure on a significant section. **These flows represent 450 million tons, but only 150 million are likely to use the corridor infrastructure on a significant section.**

Among them, the most important volumes are those exchanged with Spain, for which the corridor represent the main land itinerary to Europe. Flows between Benelux and Italy are also significant (15 million tons / year); up to date these flows use preferably the Rhine-Alpine corridor, but there could be a partial itinerary shift if Alp crossing between France and Italy will be improved.

Rail market share is important for flows between Italy / Slovenia / Croatia / Hungary and countries of north-western and central Europe (Benelux, Germany, Switzerland, and Austria). Due to some problems related to the ETISplus road database, **rail share for the Eastern part of the corridor may be missing or overestimated** and then it is important to consider it with caution. **Also, due to some problems with the ETISplus maritime matrix, maritime flows are presented below only with relations to Spain.**

ROAD	Portugal	UK and Ireland	Benelux	Germany	Switzer-land	Austria	North Eastern Europe	Scandi-navia	Belarus-Russia	Ukraine	South Eastern Europe
Spain	19 306	2 641	6 292	10 530	516	620	3 768	847	129	0	251
France	2 471	9 559	74 161	46 290	6 215	1 880	8 699	900	188	0	1 257
Italy	1 040	3 150	6 490	24 716	2 520	12 082	10 546	937	200	58	3 808
Slovenia	0	137	457	2 084	81	3 228	1 610	117	70	0	449
Croatia	0	0	209	511	0	808	210	0	0	0	1 203
Hungary	38	396	1 072	5 005	149	4 417	10 294	370	75	150	3 629

RAIL	Portugal	UK and Ireland	Benelux	Germany	Switzer-land	Austria	North Eastern Europe	Scandi-navia	Belarus-Russia	Ukraine	South Eastern Europe
Spain	1 401	0	291	1 221	29	107	20	56	0	0	1
France	0	356	5 922	4 044	1 050	357	655	642	0	0	56
Italy	0	328	9 203	21 604	2 353	4 986	1 263	1 526	0	0	387
Slovenia	0	0	40	537	36	8 587	3 107	13	0	0	173
Croatia	0	3	5	42	16	605	906	0	0	0	2 989
Hungary	0	0	657	2 311	52	4 945	3 139	176	2 118	1 218	3 030

SEA	Portugal	UK and Ireland	Benelux	Germany	Switzer-land	Austria	North Eastern Europe	Scandi-navia	Belarus-Russia	Ukraine	South Eastern Europe
Spain		11 300	11 200	2 200			3 200	6 800	15 100	4 700	4 300

TOTAL	Portugal	UK and Ireland	Benelux	Germany	Switzer-land	Austria	North Eastern Europe	Scandi-navia	Belarus-Russia	Ukraine	South Eastern Europe
Spain	20 706	13 941	17 783	13 951	545	727	6 989	7 704	15 229	4 700	4 552
France	2 471	9 915	80 083	50 334	7 265	2 236	9 355	1 543	188	0	1 313
Italy	1 040	3 478	15 693	46 320	4 873	17 068	11 808	2 463	200	58	4 195
Slovenia	0	137	497	2 622	117	11 815	4 717	131	70	0	622
Croatia	0	3	214	553	16	1 413	1 116	0	0	0	4 191
Hungary	38	396	1 729	7 316	201	9 362	13 433	546	2 194	1 367	6 660

Rail share	Portugal	UK and Ireland	Benelux	Germany	Switzer-land	Austria	North Eastern Europe	Scandi-navia	Belarus-Russia	Ukraine	South Eastern Europe
Spain	7%	0%	2%	9%	5%	15%	0%	1%	0%		0%
France	0%	4%	7%	8%	14%	16%	7%	42%	0%		4%
Italy	0%	9%	59%	47%	48%	29%	11%	62%	0%	0%	9%
Slovenia		0%	8%	21%	31%	73%	66%	10%	0%		28%
Croatia		100%	2%	8%	100%	43%	81%				71%
Hungary	0%	0%	38%	32%	26%	53%	23%	32%	97%	89%	46%

Flow essentially using the corridor
Flow partially using the corridor
Flow potentially using the corridor only on a very short section

Table 42: 2010 Freight transport demand between countries of the Mediterranean corridor and other European countries (1000 tons / year, source: elaboration on CAFT and Etisplus)

Analysis at Nuts2 level

The current freight flows has been also estimated at regional (NUTS 2) level. **Only international flows having either origin or destination (or both) in the corridor regions has been taken into account**.

The following maps show main origin-destination pairs for road and railway freight. Traffic flows are highlighted:

- in green between 400.000 and 700.000 tons per year;
- in orange between 700.000 and 1.000.000 tons per year;
- in red over 1.000.000 tons per year.

In the following maps, it is important to note that only flows over 400.000 tons per year between two regions (NUTS 2) are shown thus absence of a link does not mean that there is no flow between the related regions.

As regard road freight, some regions located in the corridor such as Cataluña or Lombardia are noticeable for the intense international trading with neighbouring countries.

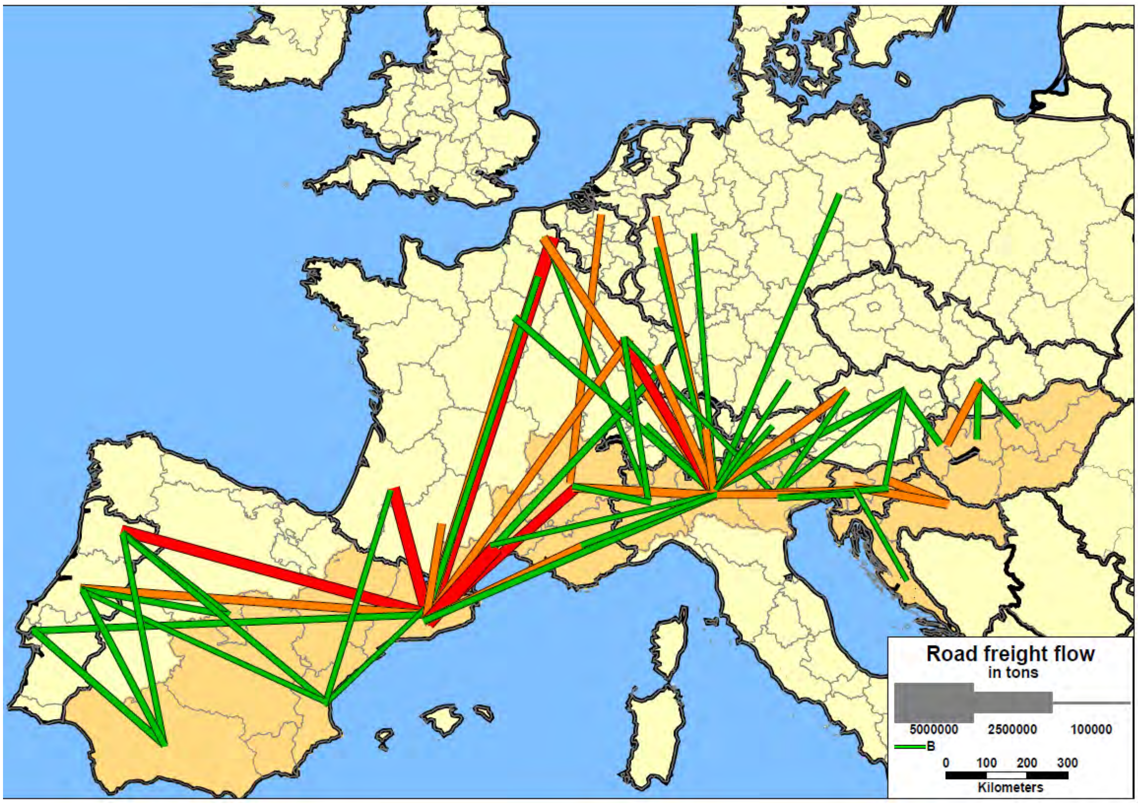


Figure 44 2010 Main road freight flows at NUTS2 level with corridor regions

Generally speaking, traffic between areas belonging to the corridor is important. Moreover, when we look at the table of the ten main origin-destination pairs involving regions of the corridors, five of them have itineraries essentially using the corridor.

Origin region	Origin state	Destination region	Destination state	Total flow
Cataluña	***ES***	**Languedoc-Roussillon**	***FR***	**1 642 417**
Cataluña	*ES*	Nord - Pas-de-Calais	*FR*	1 446 554
Cataluña	*ES*	Aquitaine	*FR*	1 280 064
Cataluña	*ES*	Norte	*PT*	1 161 896
Cataluña	***ES***	**Rhône-Alpes**	***FR***	**1 076 895**
Lorraine	*FR*	Lombardia	*IT*	1 008 598
Kontinentalna Hrvatska	***HR***	**Vzhodna Slovenija**	***SI***	**908 621**
Kontinentalna Hrvatska	***HR***	**Zahodna Slovenija**	***SI***	**907 558**
Nord - Pas-de-Calais	*FR*	Lombardia	*IT*	905 319
Rhône-Alpes	***FR***	**Lombardia**	***IT***	**903 689**

Legend: ***bold (flow essentially using the corridor),*** *regular (flow partially using the corridor)*

Table 43 2010 Road Freight flows at NUTS2 level - main origin and destination (tons / year)

On the contrary, **rail freight flows between regions of the corridor are low**.

Flows in the east-west direction are rarely important whereas they are significant in the north-south direction (especially between Italy or Slovenia and Austria, Germany or Benelux).

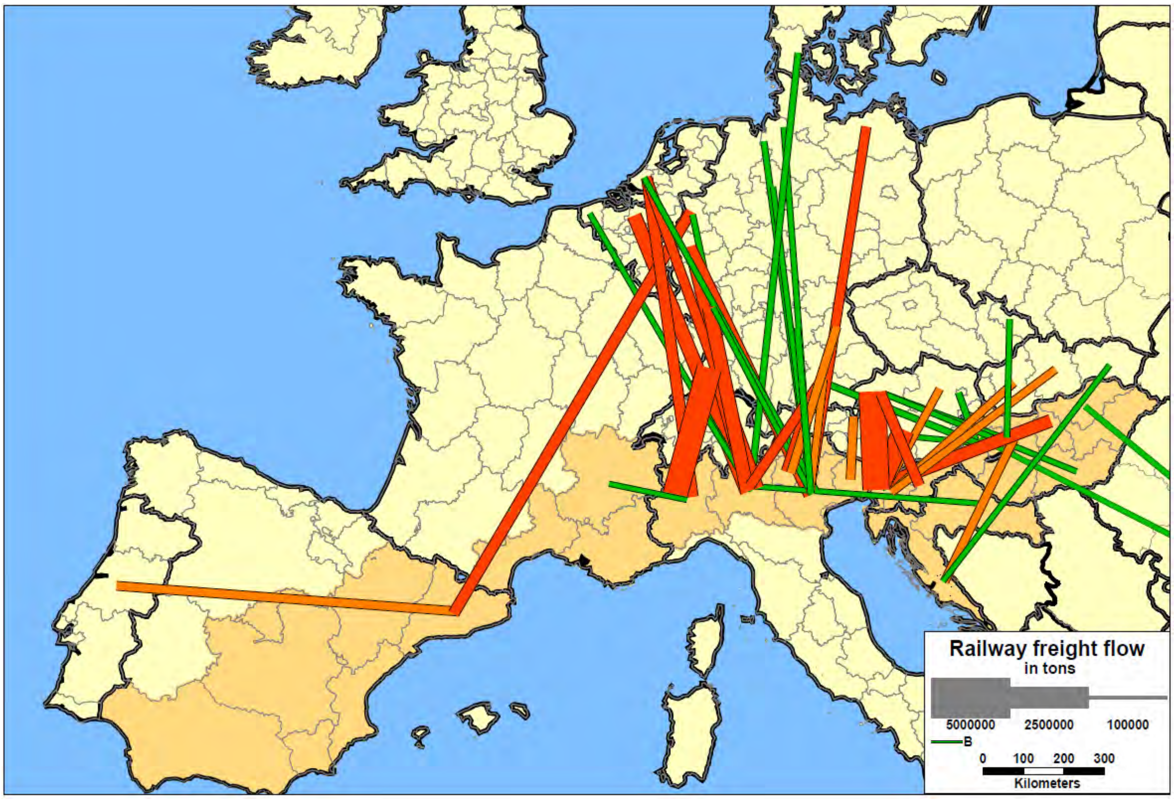


Figure 45 2010 Main rail freight flows at NUTS2 level with corridor regions

Moreover **only one of the ten main origin-destination pairs has an itinerary essentially using the corridor: between the port of Koper and the region of Budapest.**

Origin region	*Origin state*	Destination region	*Destination state*	Total flow
Oberösterreich	*AT*	Zahodna Slovenija	*SI*	3 286 091
Freiburg	*DE*	Piemonte	*IT*	3 052 573
Steiermark	*AT*	Zahodna Slovenija	*SI*	2 573 296
Tirol	*AT*	Provincia Autonoma di Trento	*IT*	1 647 428
Prov. Antwerpen	*BE*	Lombardia	*IT*	1 613 480
Rheinhessen-Pfalz	*DE*	Lombardia	*IT*	1 597 691
Közép-Magyarország	***HU***	**Zahodna Slovenija**	***SI***	**1 437 277**
Freiburg	*DE*	Lombardia	*IT*	1 296 439
Köln	*DE*	Lombardia	*IT*	1 278 926
Piemonte	*IT*	Zuid-Holland	*NL*	1 222 256

Figure 46 2010 2010 Rail Freight flows at NUTS2 level - main origin and destination (tons / year)

This analysis shows that the corridor is the backbone of an important international freight demand between regions of the southern Europe but this demand is, at present time, mostly served by the road transport (except for flows between the Adriatic ports of Koper and Rijeka and Hungary).

On the contrary, rail share is high for exchanges through the Alps in the north – south direction. Several reasons may be invoke in order to explain this difference, which has been explained in the conclusion of the TMS.

Flows with seaports of the Corridor

The twelve ports belonging to the corridor represent the main gateway for the related regions to exchange goods with non-European countries, but can be also a significant vector for the exchange of goods between European countries.

According to Eurostat data, the total volume of commodities passing through the 12 mediterranean ports represented nearly 400 million tons in 2010[41]. Among them around a quarter concerned goods shipping from a country of the European Union to another. The map below shows the total volume of goods handled in each port and the rate of EU-internal flows.

Figure 47 2010 Volume of total goods handled by port and rate of EU-internal flows (1000 tons / year).

2010 Flow *(thousands of tons)*	**Sevilla**	**Algeciras**	**Cartagena**	**Valencia**	**Tarragona**	**Barcelona**
Total	3 979	57 067	19 044	53 074	32 071	35 322
From which EU-28 internal	2 785	12 555	4 380	12 738	9 621	12 716
	70%	22%	23%	24%	30%	36%

2010 Flow *(thousands of tons)*	**Marseille/ Fos**	**Ravenna**	**Venezia**	**Trieste**	**Koper**	**Rijeka**	**Total**
Total	82 427	22 186	26 212	40 557	14 591	10 200	**396 730**
From which EU-28 internal	15 661	11 315	13 368	4 461	4 085	2 958	**106 644**
	19%	51%	51%	11%	28%	29%	**27%**

Table 44 2010 Ports flows and rate of EU-internal flows (source: Eurostat, port authority of Rijeka)

[41] In order to guarantee homogeneity, Eurostat data has been taken into account to present the ports' traffic (except for Rijeka, for which Eurostat data is incomplete). Port authorities' traffic data are in some cases higher than the Eurostat one, because they can include the weight of containers and some local or fishing traffic.

Use of the inland infrastructures by ports depends on two features which are the volume of goods by category (bulk, containers, and RoRo traffic) and the amount of goods which are eventually shipped into the hinterland. Traffic volume by category for each port is shown below.

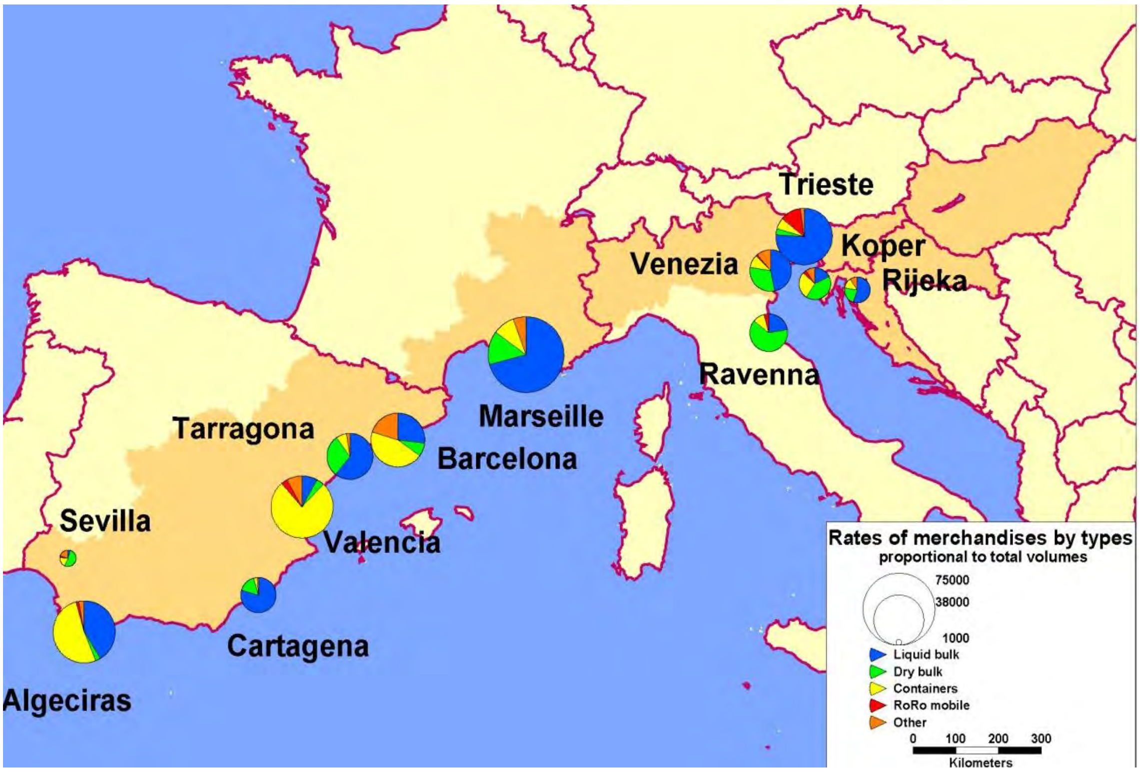


Figure 48 2010 Ports flows by categories of goods.

2010 data	Sevilla	Algeciras	Cartagena	Valencia	Tarragona	Barcelona
Total (M tons)	**4,0**	**57,1**	**19,0**	**53,1**	**32,1**	**35,3**
Liquid bulk	0,2	23,6	15,1	5,2	19,5	11,6
Dry bulk	2,1	1,5	3,1	2,6	9,5	3,5
Containers	0,8	29,6	0,6	40,4	2,3	15,2
RoRo, Other	0,8	2,4	0,2	4,9	0,8	5,0
Liquid bulk	*6%*	*41%*	*79%*	*10%*	*61%*	*33%*
Dry bulk	*54%*	*3%*	*16%*	*5%*	*29%*	*10%*
Containers	*21%*	*52%*	*3%*	*76%*	*7%*	*43%*
RoRo, Other	*20%*	*4%*	*1%*	*9%*	*2%*	*14%*

2010 data	Marseille/ Fos	Ravenna	Venezia	Trieste	Koper	Rijeka	Total
Total (M tons)	82,4	22,2	26,2	40,6	14,6	10,2	**396,7**
Liquid bulk	58,4	6,1	12,3	28,0	2,8	5,6	**188,3**
Dry bulk	11,8	9,6	8,0	0,7	6,2	2,3	**60,8**
Containers	7,6	1,6	2,7	2,5	3,7	1,4	**108,4**
RoRo, Other	4,6	5,0	3,2	9,4	2,0	1,0	**39,2**
Liquid bulk	71%	27%	47%	69%	19%	55%	**47%**
Dry bulk	14%	43%	31%	2%	43%	22%	**15%**
Containers	9%	7%	10%	6%	25%	13%	**27%**
RoRo, Other	6%	22%	12%	23%	13%	9%	**10%**

(The port of Genova, while not being part of the Mediterranean corridor, is an important port of the Mediterranean handling 47 Mt in 2010 from which 8,7 Mt in containers)

Table 45 2010 Ports' flows of goods in thousands of tons by category (source: Eurostat, port authority of Rijeka)

A significant part of containers is directly moved to another port by transhipment and as a consequence does not impact on the inland infrastructures. Rates of transhipped merchandises and modal shares for hinterland flows are shown below.

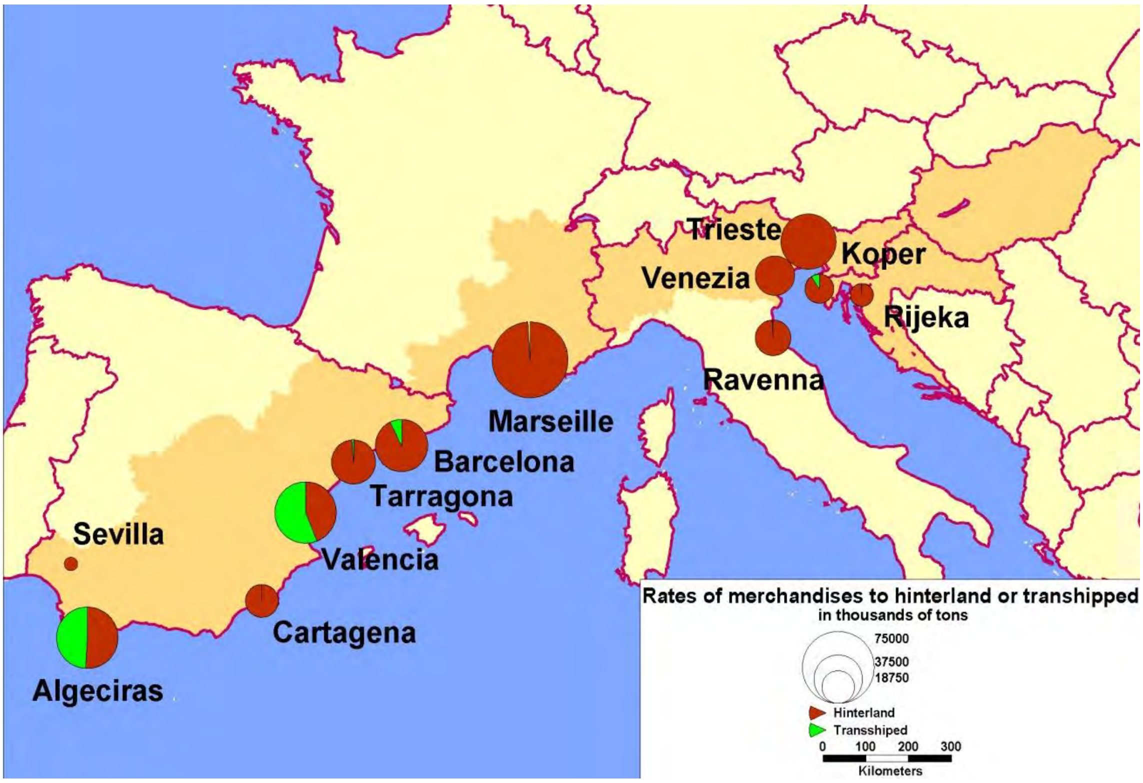


Figure 49 2010 Rates of transhipped merchandises

2010 data	**Sevilla**	**Algeciras**	**Cartagena**	**Valencia**	**Tarragona**	**Barcelona**
Total (M tons)	**4,0**	**57,1**	**19,0**	**53,1**	**32,1**	**35,3**
% Transhipped	*0%*	*49%*	*0%*	*56%*	*1%*	*7%*
% with land transport	*100%*	*51%*	*100%*	*44%*	*99%*	*93%*
MTons with land transport (including pipe)	4,0	29,0	19,0	23,4	26,6	35,5
% pipe	*0%*	*81%*	*80%*	*0%*	*73%*	*14%*
% rest land	*100%*	*19%*	*20%*	*100%*	*27%*	*86%*
Mtons with land transport (except pipe)	4,0	5,4	3,6	23,4	7,0	30,4
%road	*93%*	*98%*	*100%*	*97%*	*87%*	*96%*
%rail	*7%*	*2%*	*0%*	*4%*	*13%*	*4%*
%IWW	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Mtons road	3,8	5,3	3,6	22,5	6,1	29,0
Mtons rail	0,3	0,1	0,0	0,9	0,9	1,3
Mtons IWW	0,0	0,0	0,0	0,0	0,0	0,0

2010 data	Marseille/ Fos	Ravenna	Venezia	Trieste	Koper	Rijeka	Total 12 ports
Total (M tons)	**82,4**	**22,2**	**26,2**	**40,6**	**14,6**	**10,2**	**396,7**
% Transhipped	*1%*	*1%*	*0%*	*0%*	*9%*	*1%*	***18%***
% with land transport	*99%*	*99%*	*100%*	*100%*	*91%*	*99%*	***82%***
MTons with land transport (including pipe)	81,6	22,0	26,2	40,6	13,3	10,1	**327,1**
% pipe	*70%*	*0%*	*47%*	*87%*	*0%*	*51%*	***53%***
% rest land	*30%*	*100%*	*53%*	*13%*	*100%*	*49%*	***47%***
Mtons with land transport (except pipe)	24,4	22,0	13,9	5,4	13,3	4,9	**153,7**
%road	*84%*	*90%*	*85%*	*80%*	*37%*	*74%*	***80%***
%rail	*10%*	*10%*	*10%*	*20%*	*63%*	*26%*	***12%***
%IWW	*6%*	*0%*	*5%*	*0%*	*0%*	*0%*	***1%***
Mtons road	20,5	19,8	11,8	4,4	4,9	3,7	**131,6**
Mtons rail	2,4	2,2	1,4	1,1	8,4	1,3	**20,0**
Mtons IWW	1,5	0,0	0,7	0,0	0,0	0,0	**2,2**

Table 46 Volumes of goods by port going to hinterland or transhipped (source: Eurostat, annual reports and various documents)

The core ports of the Mediterranean corridor are very important traffic generators, since they all together handled nearly 400 million tons of merchandises in 2010 from which about 327 millions (80% of the total) generate flows to the hinterland. The remaining part is transhipped.

Excluding pipe traffic, about 154 million tons use road, rail or IWW infrastructure of the corridor.

As shown in the table above, **ports along the corridor have different traffic compositions**:

- **the port of Marseille, which is the most important in global volumes of merchandises**, has various types of traffic, with an important rate of oil products in terms of tonnage, similar to Cartagena, Tarragona, Trieste or Rijeka;
- **the ports of Algeciras and Valencia are the two major ports of the corridor for container traffic** with a high rate of transhipment; in fact, they are the main international hubs for container traffic in the Mediterranean;
- **the port of Barcelona** has also an important container traffic, but with a more various composition and less transhipment;
- **the ports Koper and Ravenna** have mainly dry bulk traffic;
- **globally**, rail shares for the hinterland flows are relatively low, except for the port of Koper.

Concerning the modal shares for the hinterland flows, once excluded pipe traffic, road is dominant in comparison with rail for all ports except Koper; **generally speaking rail share for port hinterland traffic is higher on the Eastern part of the corridor (Trieste, Koper, Rijeka) than in the Western part.**

Recent evolution of port traffic

As already mentioned, traffic data in 2010 is the baseline for forecasting because of it is the most recent horizon provided by the ETISplus database.

Nevertheless, the observation of the recent trend is important in order to estimate the possible evolutions of traffic in the coming years. The following graphs provide the evolution of the overall ports' total traffic (including cointaners) traffic between 2006 and 2012.

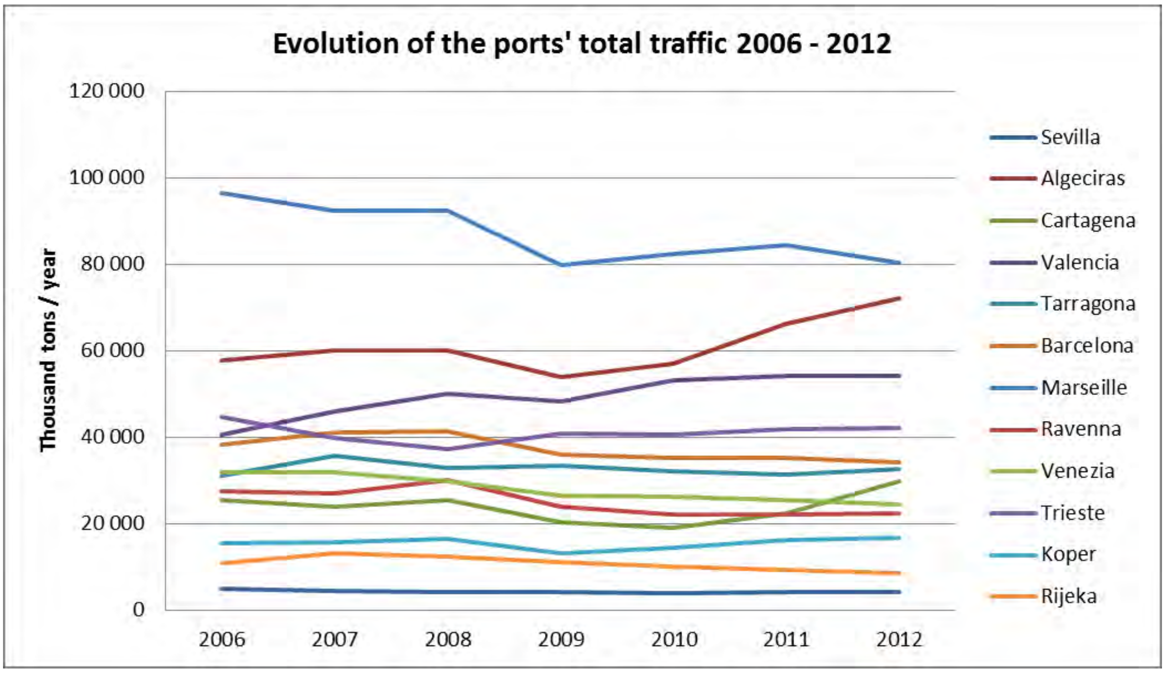


Figure 50 Evolution of the total traffic of the ports of the corridor, 2006 – 2012 (source: Eurostat, port authorities)

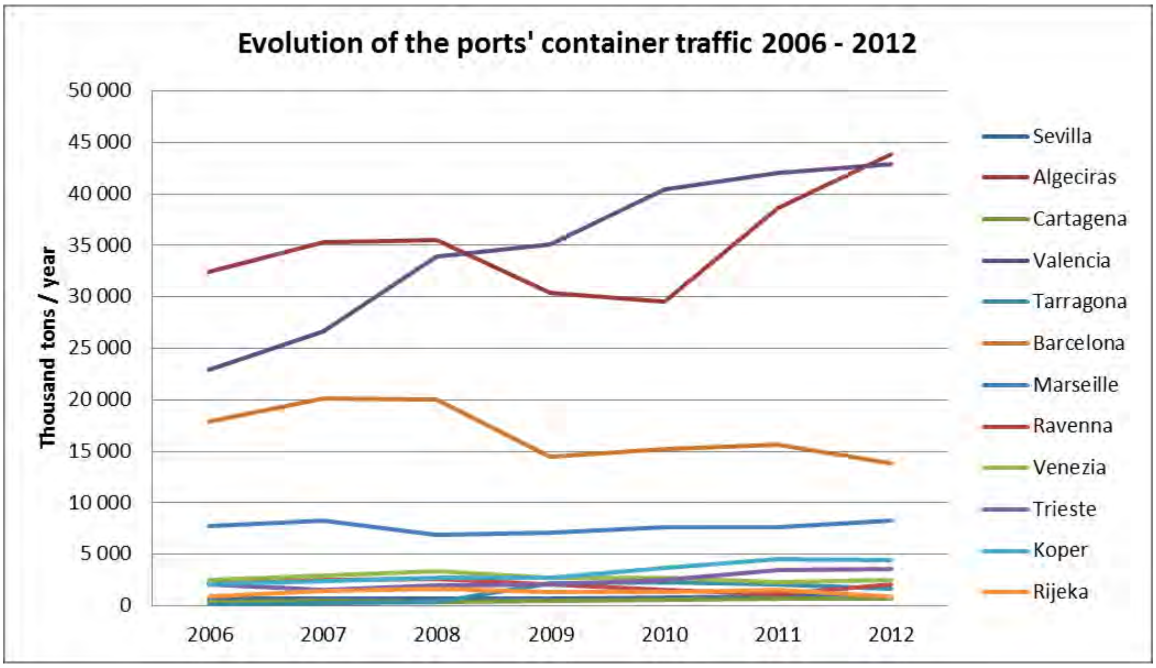


Figure 51 Evolution of the container traffic of the ports of the corridor, 2006 – 2012 (source: Eurostat, port authorities)

Looking at the total traffic of the ports, it is possible to underline that all ports (except Valencia and Tarragona) have lost traffic between 2006 and 2009 due to the economic crisis. Since 2009, traffic is growing again and has reached in 2012 its level of 2006; but the situation is very different: **rapid growth for Algeciras, Cartagena and Koper, decrease for Rijeka and more or less stability for the other ports.**

More specifically, container traffic is in constant growth despite the crisis (+10% between 2006 and 2009, +23% between 2009 and 2012 for the 12 ports globally). Since 2009, the growth is particularly strong in Trieste, Koper and Algeciras.

Inland waterways and Inland ports

The two main navigable inland waterways along the corridor are:

- The Rhône river, between Lyon and Fos sur Mer, with extensions to the Port of Sète (by the "canal du Rhône à Sète") and to the north (outside the corridor) with the Saône river until Chalon-sur-Saône[42];
- The Po river and IWW system of northern Italy, connecting inland ports of Cremona and Mantova to Ferrara / Porto Garibaldi and Venice / Porto Nogaro / Monfalcone.

In 2010, freight traffic on these two waterways was:

- **5,8 million tons on the Rhône;**
- **1,6 million tons in northern Italy**, from which 0,4 million on the Po river and 1,2 million between Venice and Porto Nogaro.

The main inland port on the Rhône is the Port Edouard Herriot of Lyon, which had an IWW traffic of 1,3 million tons in 2010.

In Italy Mantova had 0,2 million tons, Cremona 0,08 million tons and Rovigo 0,09 million tons of IWW traffic in 2010. Porto Nogaro had 1,2 million tons. It is imoportant to note that IWW traffic in Italy has registereda severe decrease between 2008 and 2010. In 2007 the port of Cremona had an IWW traffic of nearly 0,5 million.

It is important to take into account that the inland ports are also multimodal platforms linked to the industrial facilities, which do not receive only IWW traffic. For example, considering all road, rail, IWW and pipe traffic, the Port of Lyon had a total traffic of 10,2 million tons in 2010 and the Italian inland ports a total traffic of 6 million tons. Traffic on the Rhône is evolving fast, with nearly 7 Mtons in 2013.

Comparing with the other transport modes, IWW in the area of the Mediterranean corridor registered a low traffic flows in 2010, for different reasons:

- The Rhône river has excellent navigation standards, but needs of both a better connection to the ports of Fos sur Mer and Sète and enhancement of its inland port facilities (improvement of the port of Lyon, development of new multimodal logistics platforms along the river); its traffic is evolving fast and it is an important hinterland connection for the port of Marseille-Fos;
- The Italian IWW system suffers from various physical bottlenecks and navigation constraints which affects its competitiveness. **Most of all, the missing link between Cremona and Milano prevents the connection of a major economic and industrial centre to the system.**

[42] This section is still not included in the official Mediterranean corridor alignment

International passenger transport market along the corridor

Analysis at country level: total passenger flows

The tables below present the total passenger traffic (in 1000 passengers/year) on road, rail and air between the countries along the corridor, without considering, at this stage, whether they use corridor infrastructure or not.

The total international passenger traffic between the six countries of the corridor is 81 million passengers per year. The two main flows are between France and Spain and France and Italy: these two relations represent 80% of the considered international traffic.

Overall mode shares for the international traffic between the corridor countries are 64% for road, 33% for air and only 3% for rail transport.

Spain – France and Italy – France relations are characterized by strong road traffic, consisting mainly of short-distance trips around border points of Irun, Le Perthus (ES-FR) and Ventimiglia (IT-FR). Regarding air traffic, the first "country per country" relation is between Italy and Spain, with almost 10 million passengers per year. France – Italy and France – Spain have both similar air traffic volumes (7,5 million).

Rail market share is generally weak, in particular for flows with Spain; those between Hungary and Slovenia / Croatia have significantly higher rail market shares (15-20%) than the other ones, but on relatively small volumes of demand.

Mode	1000 pax / year (2010)	%
Road	51.687	64%
Rail	2.514	3%
Air	26.627	33%
Total	**80.828**	

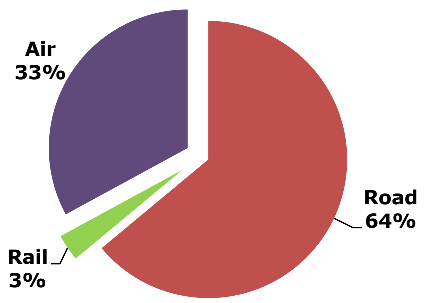


Table 47 2010 Total passenger demand between corridor countries (in 1000 passengers/year)

ROAD	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		26 680	563	10	12	12
France			20 934	91	117	120
Italy				1 480	439	198
Slovenia					541	182
Croatia						305
Hungary						

RAIL	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		812	103	1	1	0
France			1 162	14	22	4
Italy				132	85	35
Slovenia					22	32
Croatia						87
Hungary						

AIR	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		7 375	9 315	67	70	423
France			7 545	123	192	664
Italy				65	170	542
Slovenia					39	2
Croatia						34
Hungary						

TOTAL	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		34 868	9 982	79	84	436
France			29 642	228	331	788
Italy				1 678	694	775
Slovenia					603	216
Croatia						426
Hungary						

Rail share	Spain	France	Italy	Slovenia	Croatia	Hungary
Spain		2%	1%	2%	2%	0%
France			4%	6%	7%	1%
Italy				8%	12%	4%
Slovenia					4%	15%
Croatia						20%
Hungary						

Table 48 2010 Passenger transport demand by mode between the six countries of the Mediterranean corridor (1000 passenger / year, source: elaboration on bilateral observatories and Etisplus)

The following tables show passenger traffic by mode between the countries of the corridor and other European countries, aggregated in 11 groups.

As for freight, flows have been **sorted in 3 categories** (from bold to pale grey) according to their probability of using the corridor infrastructure on a significant section.

These flows represent 280 million passengers per year, but only 125 million are likely to use the corridor infrastructure on a significant section.

Among them, **the most important volumes are those exchanged with Spain (including air traffic with Baleares and Canaries islands), but flows between Italy and UK or Benelux are also noteworthy**.

Rail share is generally very low (<3%), except for some relations which affects the corridor very marginally (for example France – Benelux or Switzerland – Italy).

ROAD	Portugal	UK and Ireland	Benelux	Germany	Switzer-land	Austria	North Eastern Europe	Scandi-navia	Belarus-Russia	Ukraine	South Eastern Europe
Spain	11 941	69	349	**951**	**191**	**54**	**60**	**30**	**0**	**1**	**19**
France	565	1 956	27 988	14 443	10 866	812	811	422	20	53	309
Italy	**33**	93	701	3 201	2 142	9 506	543	112	22	**62**	**630**
Slovenia	**1**	3	34	386	25	3 294	130	8	**4**	**14**	157
Croatia	**1**	4	38	317	27	160	149	9	**3**	**23**	1 151
Hungary	**0**	9	68	554	27	2 175	1 209	32	37	**334**	2 354

RAIL	Portugal	UK and Ireland	Benelux	Germany	Switzerland	Austria	North Eastern Europe	Scandinavia	Belarus-Russia	Ukraine	South Eastern Europe
Spain	721	25	43	**102**	**23**	**5**	**6**	**3**	**0**	**0**	**1**
France	113	2 224	7 891	1 595	1 174	51	11	26	0	1	4
Italy	**1**	33	69	1 331	1 605	326	65	5	2	**2**	**45**
Slovenia	**0**	0	0	28	3	200	1	0	**0**	**0**	11
Croatia	**0**	0	0	114	4	72	5	0	**0**	**0**	41
Hungary	**0**	0	0	46	1	1 148	235	0	2	**15**	193

AIR	Portugal	UK and Ireland	Benelux	Germany	Switzerland	Austria	North Eastern Europe	Scandinavia	Belarus-Russia	Ukraine	South Eastern Europe
Spain	2 065	31 707	8 384	**18 727**	**2 482**	**815**	**2 226**	**6 890**	**1 104**	**119**	**2 699**
France	2 689	10 729	3 015	4 800	2 094	554	2 390	3 360	922	136	4 532
Italy	**1 031**	9 915	4 904	7 343	1 609	651	2 757	3 069	1 261	**257**	**5 188**
Slovenia	**8**	155	67	178	21	38	31	38	**41**	**3**	275
Croatia	**25**	476	211	610	50	105	68	281	**80**	**8**	377
Hungary	**74**	1 132	563	883	261	22	250	754	159	**111**	818

TOTAL	Portugal	UK and Ireland	Benelux	Germany	Switzerland	Austria	North Eastern Europe	Scandinavia	Belarus-Russia	Ukraine	South Eastern Europe
Spain	14 727	31 800	8 776	**19 780**	**2 695**	**875**	**2 291**	**6 923**	**1 104**	**121**	**2 719**
France	3 366	14 908	38 894	20 839	14 134	1 417	3 212	3 808	942	190	4 845
Italy	**1 065**	10 041	5 674	11 875	5 357	10 483	3 365	3 187	1 284	**321**	**5 863**
Slovenia	**9**	159	101	591	48	3 532	163	46	**45**	**17**	443
Croatia	**26**	479	249	1 041	80	337	222	290	**83**	**32**	1 570
Hungary	**75**	1 141	631	1 482	289	3 344	1 693	786	197	**460**	3 365

Rail share	Portugal	UK and Ireland	Benelux	Germany	Switzerland	Austria	North Eastern Europe	Scandinavia	Belarus-Russia	Ukraine	South Eastern Europe
Spain	5%	0%	0%	**1%**	**1%**	**1%**	**0%**	**0%**	**0%**	**0%**	**0%**
France	3%	15%	20%	8%	8%	4%	0%	1%	0%	0%	0%
Italy	**0%**	0%	1%	11%	30%	3%	2%	0%	0%	**1%**	**1%**
Slovenia	**0%**	0%	0%	5%	5%	6%	1%	0%	**1%**	**0%**	3%
Croatia	**0%**	0%	0%	11%	4%	21%	2%	0%	**0%**	**1%**	3%
Hungary	**0%**	0%	0%	3%	0%	34%	14%	0%	1%	**3%**	6%

Table 49 Passenger transport demand by mode between the countries of the Mediterranean corridor and other European countries (1000 passenger / year, source: elaboration on bilateral observatories and Etisplus)

Analysis at Nuts2 level

As for freight, **in this section,** analysis of passengers' flows is **detailed at NUTS 2 level**, for flows having origin and/or destination in the regions of the corridor.

The road passengers flows map below shows that **main traffic are carried out between the south of France and the north of Italy.**

Other major origin-destination pairs exist between two areas of the corridor such as Cataluña and Languedoc-Roussillon or Friuli-Venezia Giulia and Western Slovenia. Generally speaking, the major international flows by road concern short-distance relations between border regions.

The colours of the flows are:

- dark red for flows between 200.000 and 500.000 passengers a year;
- purple for flows over 500.000 passengers a year.

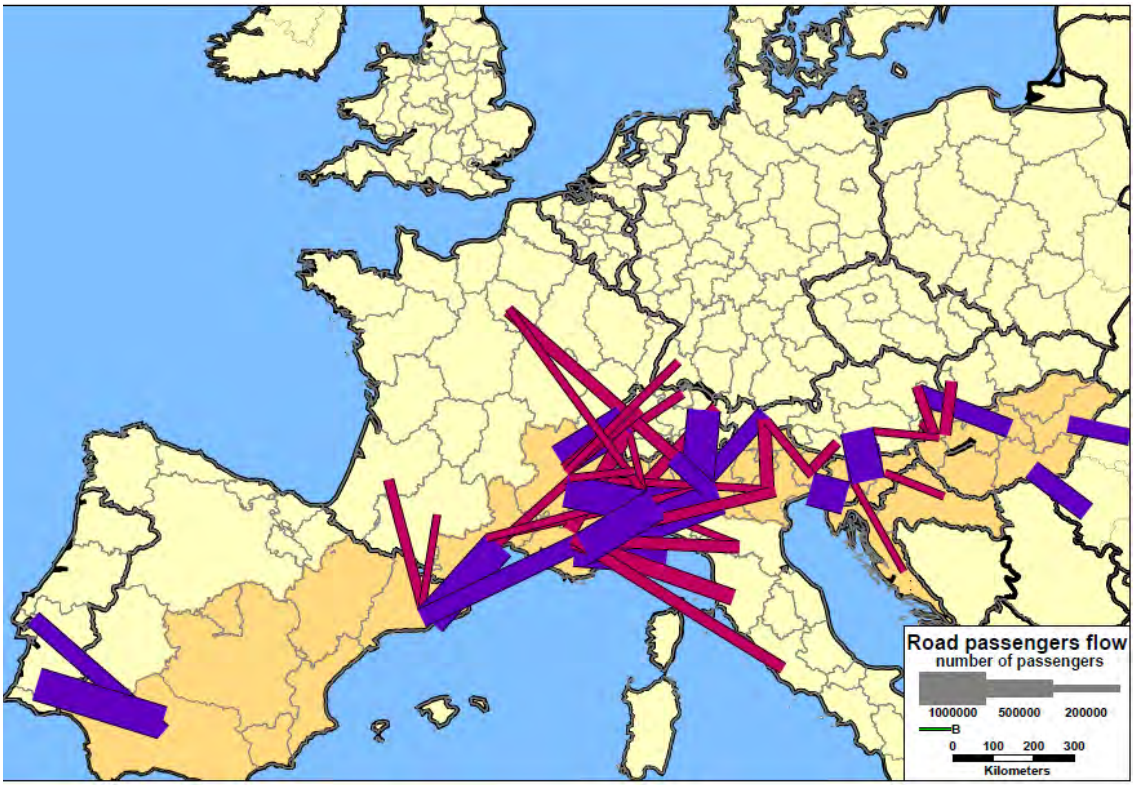


Figure 52 2010 Main road passengers flows at NUTS2 level with corridor regions

Origin region	*Origin state*	Destination region	*Destination state*	Total flow
Provence-Alpes-Côte d'Azur	*FR*	Liguria	*IT*	4 390 244
Lake Genova Region	*CH*	Rhône-Alpes	*FR*	3 973 021
Steiermark	*AT*	Vzhodna Slovenija	*SI*	2 633 449
Provence-Alpes-Côte d'Azur	***FR***	**Piemonte**	***IT***	**2 428 803**
Cataluña	***ES***	**Languedoc-Roussillon**	***FR***	**1 634 349**
Andalucía	*ES*	Algarve	*PT*	1 380 945
Provence-Alpes-Côte d'Azur	***FR***	**Lombardia**	***IT***	**1 329 067**
Rhône-Alpes	***FR***	**Piemonte**	***IT***	**1 185 502**
Friuli-Venezia Giulia	***IT***	**Zahodna Slovenija**	***SI***	**1 165 655**
Vorarlberg	*AT*	Lombardia	*IT*	1 080 776

Table 50 2010 Road passengers flows at NUTS2 level – main origins and destinations (passengers / year,)

Rail passengers traffic volumes are generally lower than the road traffic ones that explains the traffic threshold shown in the map below.
Colours of links symbolize traffic values:

- in green flows between 30.000 and 70.000 passengers a year
- in orange flows between 70.000 and 100.000 passengers a year
- in red flows over 100.000 passengers a year.

Although railway and road traffic values are very different, areas with most important traffic are more or less the same for both modes of transport, in fact five of the main origin-destination pairs are common.

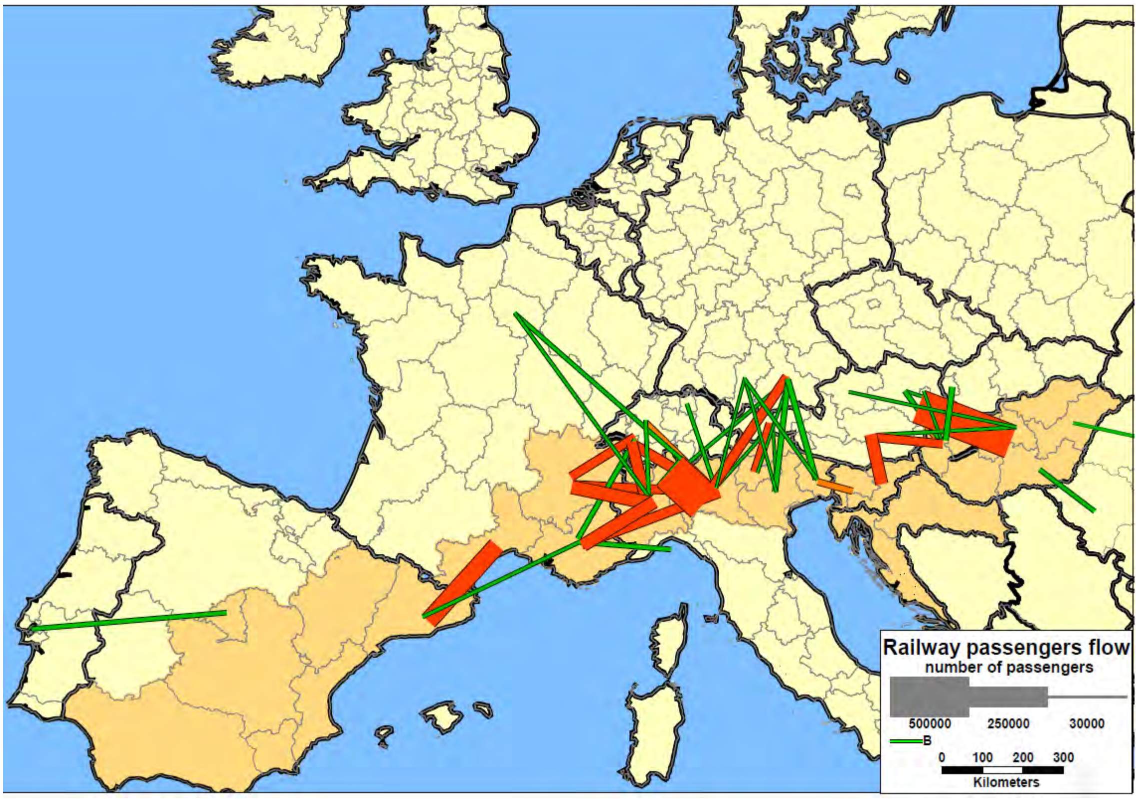


Figure 53 2010 Main rail passengers flows at NUTS2 level with corridor regions

Origin region	*Origin state*	Destination region	*Destination state*	Total flow
Ticino	*CH*	Lombardia	*IT*	611 580
Wien	*AT*	Közép-Magyarország	*HU*	428 759
Cataluña	***ES***	**Languedoc-Roussillon**	***FR***	**219 803**
Rhône-Alpes	***FR***	**Piemonte**	***IT***	**168 163**
Provence-Alpes-Côte d'Azur	***FR***	**Piemonte**	***IT***	**156 144**
Steiermark	*AT*	Vzhodna Slovenija	*SI*	153 413
Lake Genova Region	*CH*	Piemonte	*IT*	139 709
Lake Genova Region	*CH*	Lombardia	*IT*	126 792
Provence-Alpes-Côte d'Azur	***FR***	**Lombardia**	***IT***	**120 970**
Oberbayern	*DE*	Lombardia	*IT*	116 005

Table 51 2010 Rail passengers flows at NUTS2 level – main origins and destinations (passengers / year)

Map of the main air passengers flows below shows an important gap of traffic intensity between the Western part and the Eastern part of the corridor. Indeed, there is no region in Slovenia, Croatia or Hungary which belongs to an origin-destination pair with more than 250.000 air passengers per year. Of course, the variable size of Nuts2 regions must be taken into account when analysing this map and it does not mean that total flows with these regions should be neglected.

Colours of the links mean:

- in green flows between 250.000 and 350.000 passengers per year;
- in orange flows between 350.000 and 450.000 passengers per year;
- in red flows over 450.000 passengers per year.

Taking apart flows between Spain and UK/Ireland, the main air flows along the corridor are between regions of:

- Barcelona and Paris;
- Madrid and Rome;
- Barcelona and Milano;
- Paris and Milano;
- Barcelona and Rome;
- Madrid and Paris (likely to pass on the Atlantic corridor) ;
- Venice and Paris.

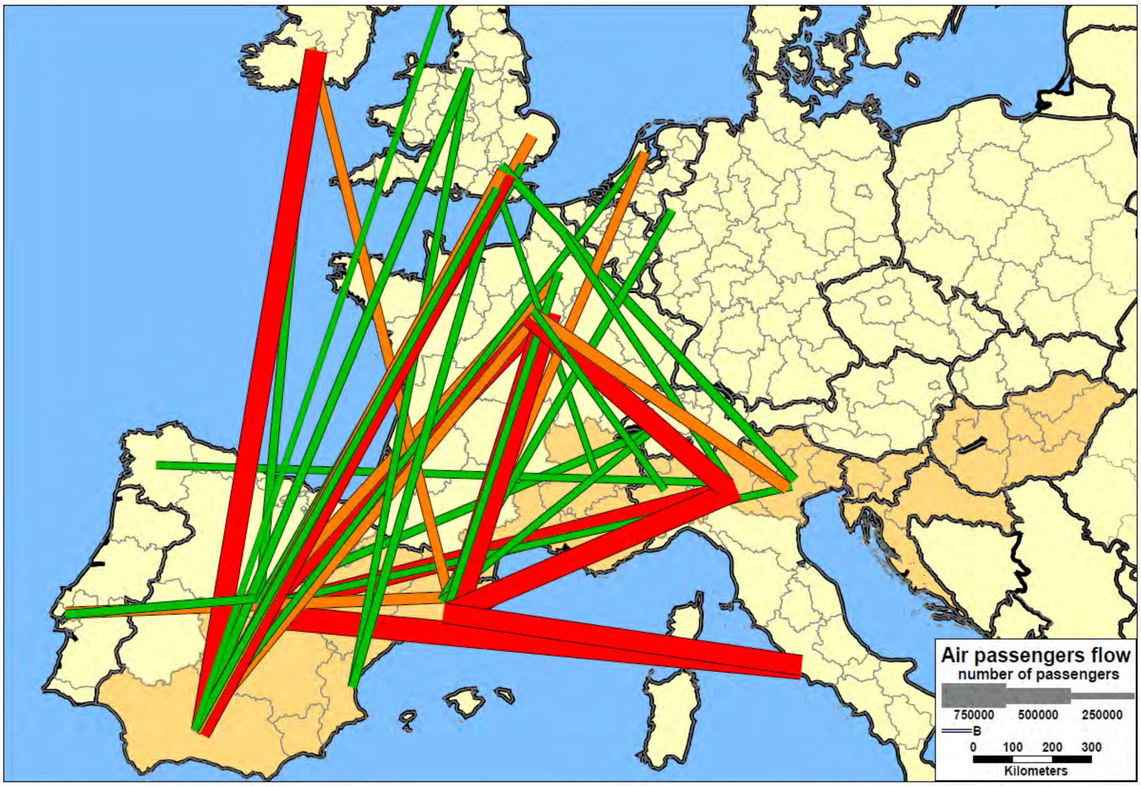


Figure 54 2010 Main air passengers flows at NUTS2 level with corridor regions

Origin region	*Origin state*	Destination region	*Destination state*	Total flow
Cataluña	*ES*	Île de France	*FR*	783 580
Comunidad de Madrid	*ES*	Lazio	*IT*	755 610
Cataluña	***ES***	**Lombardia**	***IT***	**692 086**
Andalucía	*ES*	Southern and Eastern	*IE*	681 552
Île de France	*FR*	Lombardia	*IT*	666 922
Cataluña	*ES*	Lazio	*IT*	643 622
Andalucía	*ES*	Inner London	*UK*	634 382
Comunidad de Madrid	*ES*	Île de France	*FR*	624 192
Comunidad de Madrid	***ES***	**Lombardia**	***IT***	**542 974**
Île de France	*FR*	Veneto	*IT*	424 858

Table 52: 2010 2010 Air passengers flows at NUTS2 level – main origins and destinations (passengers / year)

Besides, this analysis shows that the most important air traffic is observed between:

- **largest metropolitan areas (within & outside the corridor)**
- **the main metropolitan and the touristic areas along the Corridor.**

Traffic flows on the corridor network

After describing the volume of international traffic in relation with the corridor, in terms of origin-destinations and traffic with ports, it is important to analyse traffic flows on the existing corridor infrastructure, with a focus on cross-border sections and major nodes.

General overview by mode

The following maps describe volumes of freight transport (tons of commodities) and passengers transport (number of passengers) on the existing sections of the most relevant infrastructures of the corridor.

These data have been derived by the TENtec information system.

Figure 55 Annual road freight traffic on the corridor in tons of commodities transported (source: TENtec database)

In particular, this map shows that there is an important local traffic around major nodes; furthermore a costant heavy volume of freight traffic is recorded **from Barcelona to Lyon and from Torino to Maribor**.

This main road axis links are characterised by the major population and industrial centres and support both long-distance national and international traffic. The relatively low traffic link between France and Italy shown by this map (Frejus tunnel) is due to the fact that two other majors roads connecting France and Italy are located outside the corridor: the coast motorway at Ventimiglia and the Mont-Blanc tunnel; these itineraries must be considered in the analysis (as done in the following cross-border focus) and show that freight road transport between France and Italy has overall important volumes.

Globally, the busiest road sections are located in the Rhône valley, in Cataluña as well as in the North of Italy, as shown in the following figure.

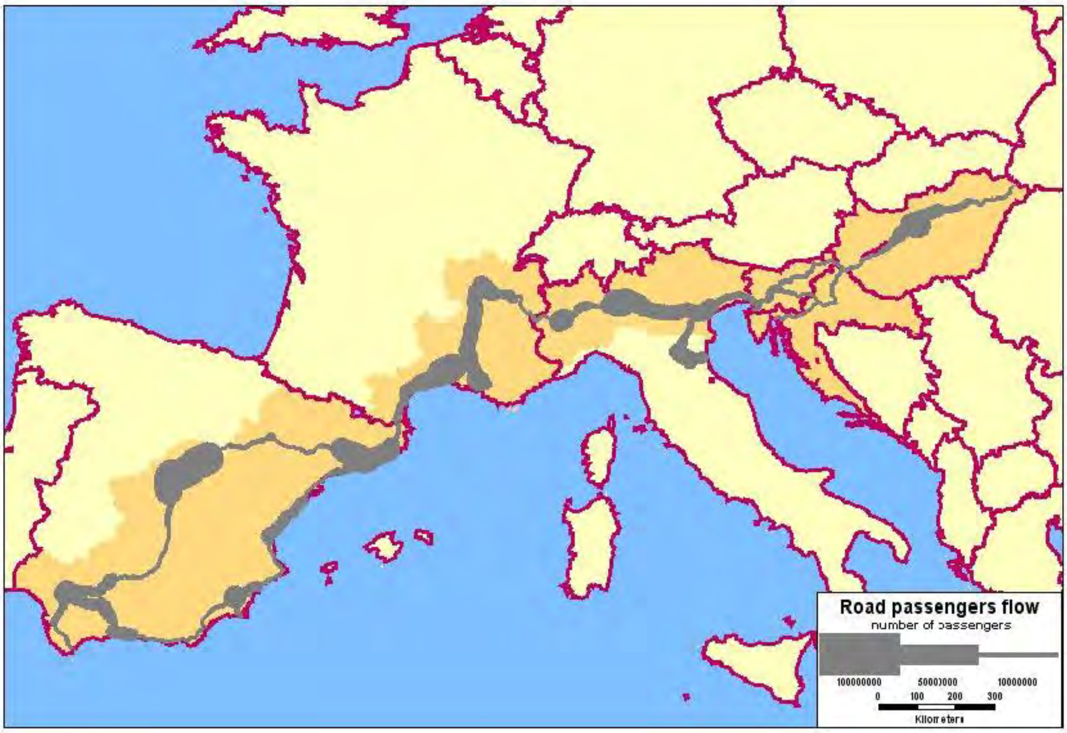


Figure 56 Annual road passengers traffic in number of passengers (source: TENtec database)

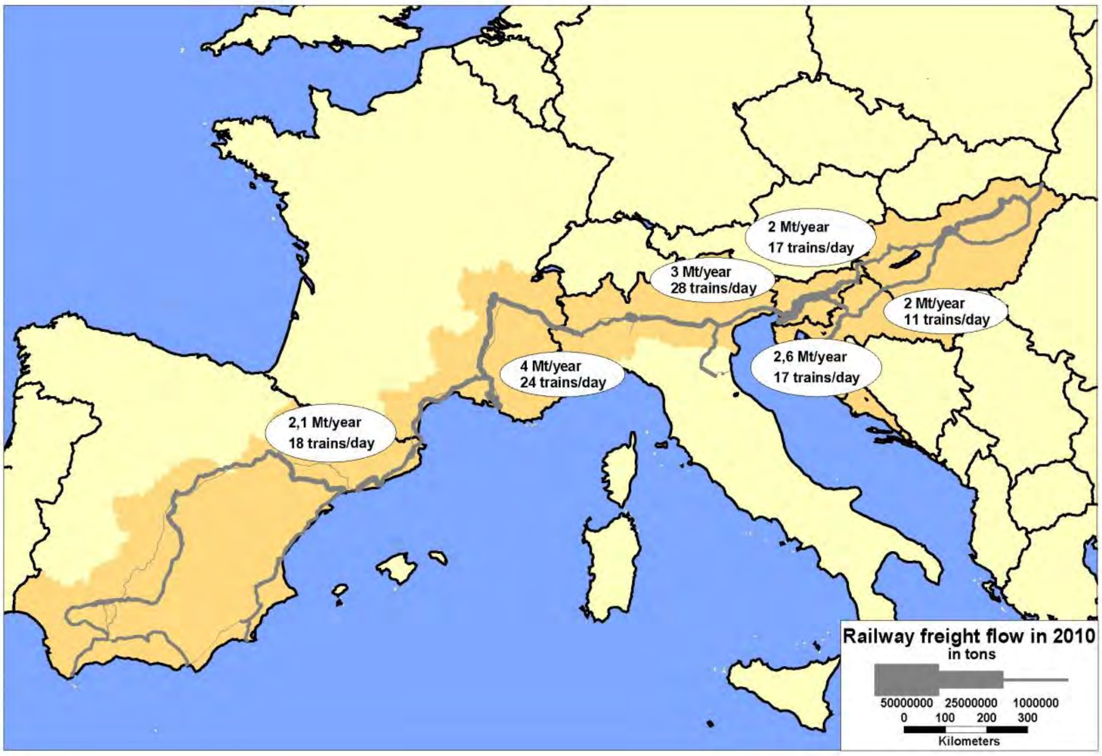


Figure 57 Annual railway freight traffic (source: TENtec database)

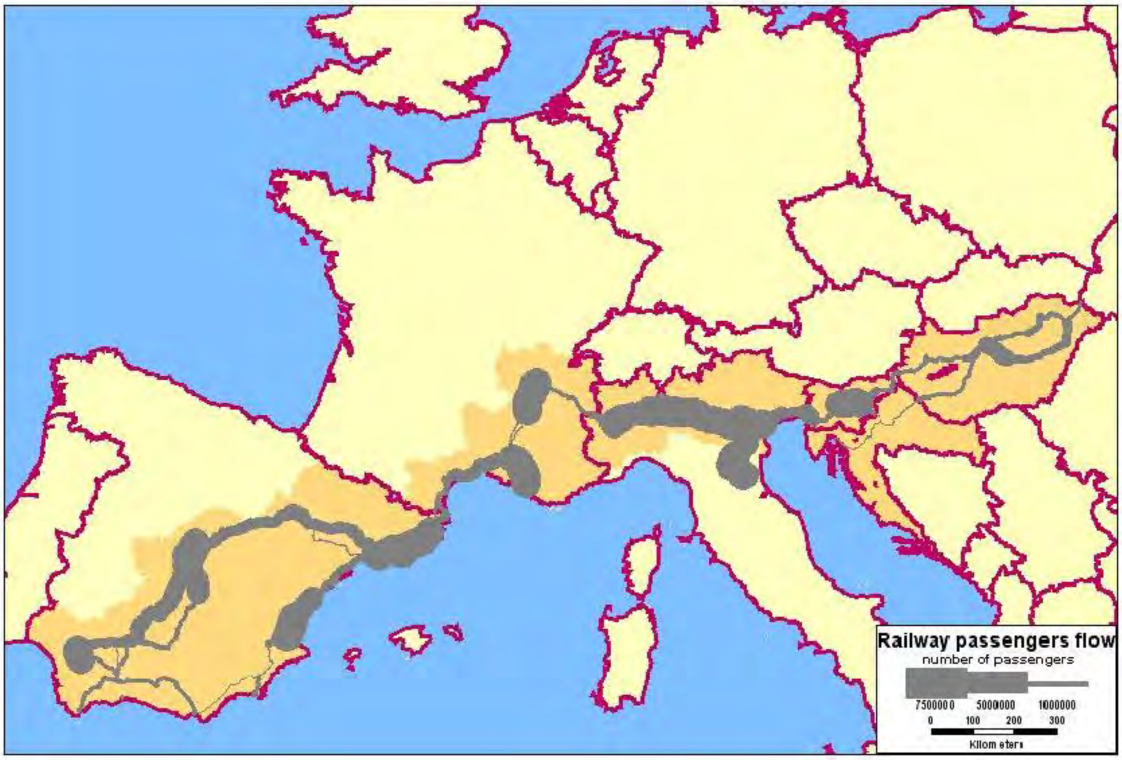


Figure 58 Annual railway passengers traffic (source: TENtec database)

As depicted in the previous figures, the rail flows between France and Italy appear to be very low because of the alternative southern railway connection (Ventimiglia-Nice).

The busiest railway sections (but volumes are much lower than the road ones) **are located in Cataluña and North Italy for passengers traffic and in the Rhône Valley and Slovenia for freight traffic.**

Focus on freight traffic at cross-border sections of the corridor

ES/FR border

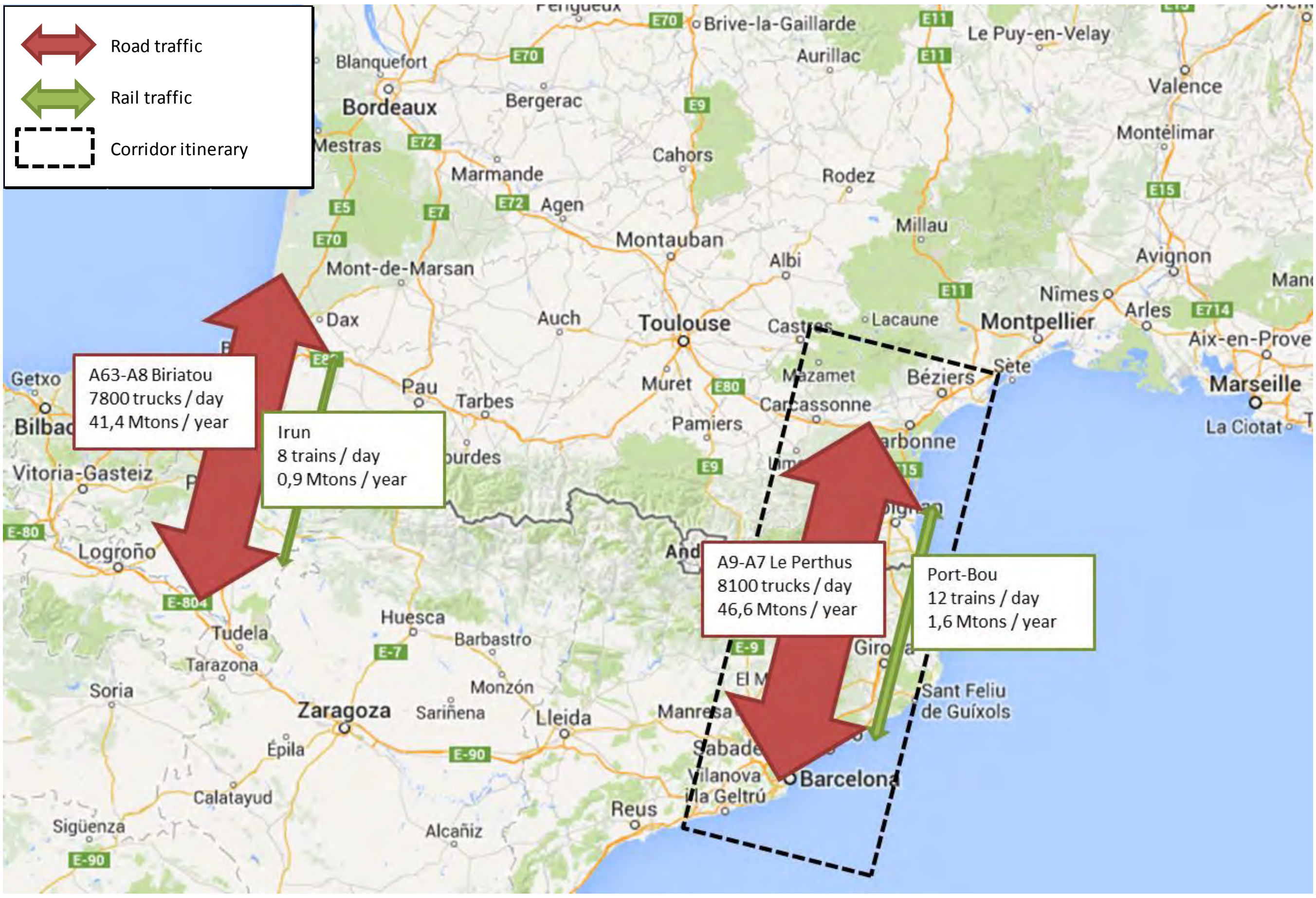


Figure 59 Cross-border traffic at ES – FR border

Freight traffic at the Pyrenean crossings is characterized by a very low rail share due to the track gauge change at the border. Some goods are carried by road in Spain and are transferred on rail in France; since they cross the border on the road, they are identified as belonging to the latter mode. It is also noteworthy the similarity of volumes on the two main crossings, on the Atlantic side and on the Mediterranean one. Central crossings can be neglected as they have not significant freight traffic (trucks are forbidden in most of them).

The motorway of the Mediterranean corridor (A9-A7) has a very strong freight traffic with over 8000 trucks / day (3 million / year) for 46 million tons of goods in 2010.

Almost half of the Trans Pyrenean freight road traffic consists mostly of flows between France and Spain; the two other main flows are Spain – Germany and Spain – Italy.

In 2010, rail traffic at Portbou border was 1.6 million tons. This traffic is mainly composed by an important flow of vehicles and manufactured products between Spain and Germany (1.4 Mtons / year); the rest is mainly traffic between France and Spain (chemical products and building materials for 0.2 Mtons / year).

Important development of rail traffic on the eastern side of the Pyrenees is expected with the opening of the new UIC gauge line between Perpignan and Figueras since 2011.

On the other hand, the **lack of continuous UIC connections until the main loading / unloading points in Spain makes this development slower than expected.**

Nevertheless, with the port being connected since 2013, traffic of maritime containers between the port of Barcelona and France has being carried by the new line.

FR/IT border

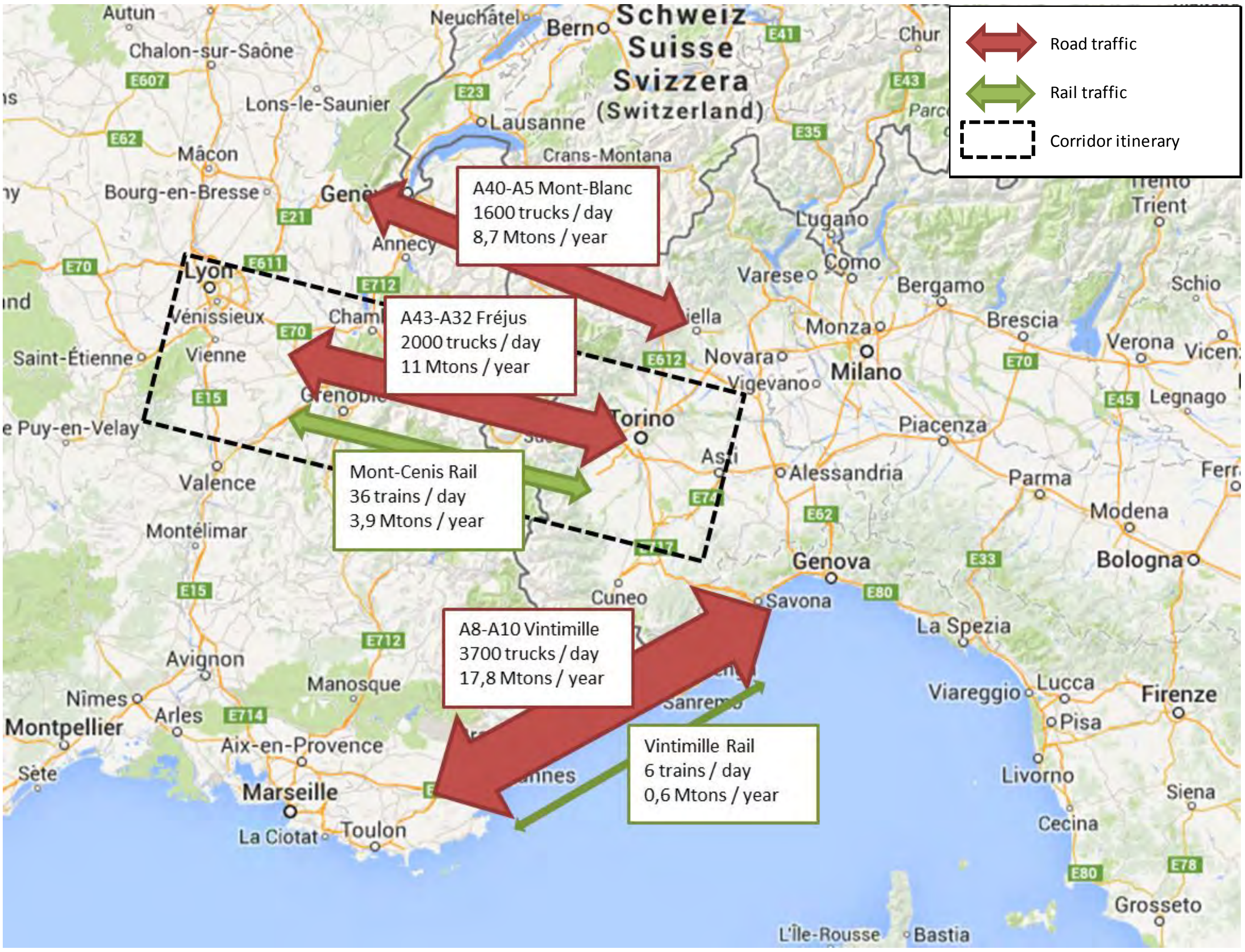


Figure 60 Cross-border traffic at IT – FR border

In 2010, 36 million tons of road freight crossed the French-Italian border. The main road crossing is the motorway on the coast with about 3.700 trucks / day of international freight on this very congested axis, in particular around Nice.

This motorway is not included in the Mediterranean corridor but it cannot be neglected in the analysis: half of the road traffic at the border is passing there (18 Mtons), in particular 95% of the road traffic between the Iberian peninsula and Italy (8,3 Mtons); other traffic at Ventimiglia are mainly French-Italian flows (6,3 Mtons) and flows that are in transit through Italy, so potentially using large parts of the corridor (3 Mtons).

Rail freight traffic on the coast line is, on the contrary, very weak, with only half a million tons in 2010. This line is indeed not very efficient for freight traffic, being very busy with regional trains and having many single-track sections on the Italian side.

At the border points included in our corridor (Frejus tunnel for road and Mont-Cenis for rail), total traffic in 2010 was about 15 million tons / year, from which 11 million on the road tunnel. Road freight traffic at the Frejus tunnel is 90% French-Italian, the remaining part is mainly traffic between Benelux and Italy.

Rail traffic at the Mont-Cenis was about 4 million tons in 2010, 100% French-Italian ODs. About 0,5 million tons of this traffic is done with the Aiton-Orbassano rolling motorway (4 trains per day and per direction).

Road freight traffic is also noteworthy at the Mont-Blanc tunnel (about 9 million tons / year). This traffic is mainly composed of French-Italian flows but has also about 1,5 million tons of traffic between UK and Italy. Traffic in transit through Italy at the Frejus and Mont-Blanc tunnel represents less than 1 million tons / year.

It is also important to note that a significant part of the French-Italian freight traffic is passing through Switzerland (1 million tons of rail traffic and 1.5 million tons of road traffic), as well as the major parts of flows between Benelux or UK and Italy.

Comments on recent evolution of freight flows at the French-Italian border

The evolution of freight flows crossing the southern part of the Alps in the last 10-15 years has been object of controversial analysis, in particular regarding the justification of the Lyon-Turin project.

Two different periods have to be considered when looking at the evolution of this traffic. **Between 2000 and 2007, road freight flows on French-Italian crossings kept increasing** (from 38 million tons in 2000 to 41 million in 2007), in the context of a global cross-alpine traffic in rapid growth. The motorway at Ventimiglia has recorded an important traffic development (from 14,5 million tons in 2000 to 20 million in 2007), due to the strong dynamics of traffic with Spain and to itinerary shifts from the alpine tunnels of Frejus and Mont-Blanc which suffered from major accidents and important toll cost increase. Itinerary shifts were also observed towards Switzerland, with its opening to transit traffic from 2004.

At the same time, a reduction of rail traffic at the Mont-Cenis was observed: from 9,5 million tons in 2000 to 6,6 in 2007. The causes of this evolution are complex:

There was a loss of competitiveness observed in the French railway freight system due to restructuration within the monopolistic operator; rail market share in France in this period was constantly decreasing.

At the same time, quality of service was improving in Switzerland, in particular for combined transport, resulting in itinerary shifts from Mont-Cenis to Simplon and Gothard crossings. In particular, all rail flows between UK or Benelux and Italy shifted to Swiss crossings in 2007, while a significant part of them was using the Mont-Cenis in 2000.

This movement was amplified from 2004 with the works made to improve the Mont-Cenis tunnel. These works, which lasted until 2012, affected considerably capacity and quality of paths on the itinerary.

In 2008 – 2009, global freight traffic in Europe was strongly reduced by the economic and financial crisis. This resulted in a 15%-20% decrease of freight traffic in 2009 with respect to 2007 at French-Italian border, but also at the French-Spanish border. In particular, traffic between Spain and Italy, which had been rapidly increasing until 2007, suffered very much from the crisis.

From 2010 and on, traffic at the Pyrenean and alpine borders seem to have again positive (yet still fragile) evolutions. In particular, ending of works at Mont-Cenis tunnel with improvement of the rolling motorway (accepting now 4 meter-high trucks) and market opening for rail freight seem to have positive effects on rail share.

IT/SI – SI/HR border

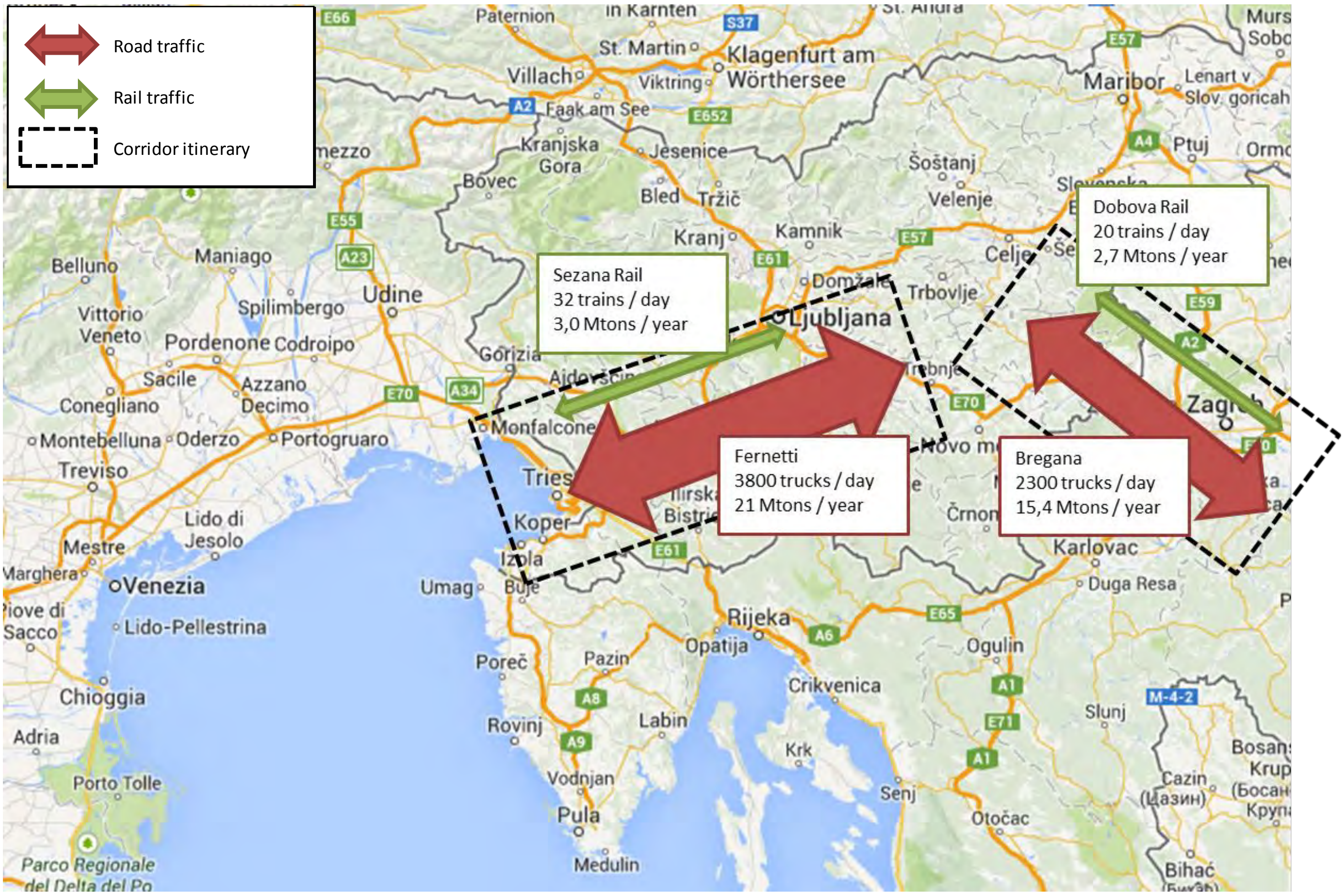


Figure 61 Cross-border traffic at IT – SI and SI - HR borders

In 2010, freight road traffic between Villa Opicina (near Trieste) and the Slovenian border was 21 million tons. The Croatian-Slovenian border of Bregana has a road traffic of 15 million tons, with probably a lot of transit traffic (e.g. traffic between central / north-western Europe and Romania, Bulgaria, Balkans area, Greece or Turkey).

Rail traffic at the Italian-Slovenian border is 3 million tons per year and 2.7 million tons per year at the Slovenian – Croatian border.

SI/HU – HR/HU border

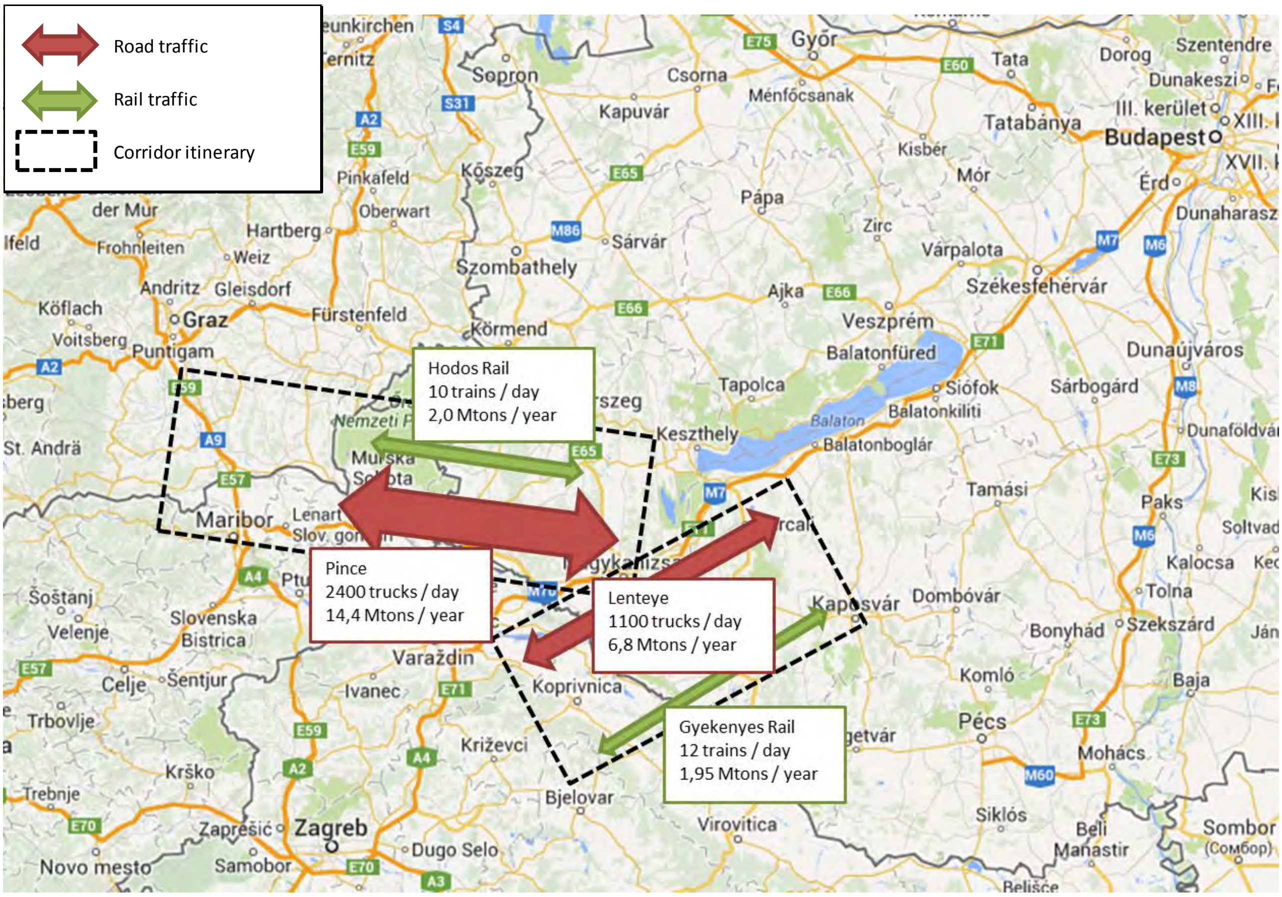


Figure 62 Cross-border traffic at HU – SI and HU - HR borders

In 2010, about 14 million tons of road freight was observed near the Hungarian – Slovenian border at Pince. 7 million tons of road freight was also observed near Lenteye at the Hungarian – Croatian border. Rail traffic at these crossing was significantly inferior, with about 2 million tons at the Slovenian – Hungarian border at Hodos and also almost 2 million tons at the Hungarian – Croatian border at Gyekenyes.

4.2.2.4 Overall conclusions on current transport market on the corridor

In order to summarize the description of the current transport market on the corridor and prepare the forecasting exercise, **it is necessary to identify the international origin-destination pairs constituting the "market area" of the corridor**. In this respect, **an assignment to a simplified network of 2030**, considering corridor implementation has been carried out.

The assignment identifies the minimum cost path between all origins and destinations at Nuts2 level in Europe and allow to select the origin-destination pairs which cross at least one of the following borders:

- ES / FR on the Mediterranean side;
- FR / IT entire border (since itinerary shifts from Ventimiglia are probable);
- IT / SI entire border;
- SI / HU entire border;
- SI / HR entire border;
- HU / HR northern part of the border.

This will provide a better understanding of the market area of the major international flows along the corridor in terms of origin-destination, including possible itinerary shifts with corridor implementation. **This analysis focuses on rail and road flows, while maritime traffic between the corridor countries will be analysed globally in the ports section.**

Freight flows in corridor market area

The freight flows in the corridor market area in 2010 are the following:

Total market area (1000 tons / year)	2010
Road	129.623
Rail	22.206
Total *(except sea)*	**151.829**
Rail share	**14,6%**

Table 53 Freight Flows in the corridor's market area for 2010 (1000 tons / year)

ROAD	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		18 989	7 407	152	88	387	250	1 803	10 173
France			25 238	724	124	571	1 126	135	383
Italy				5 677	6 200	7 300	3 717	1 645	5 732
Slovenia					3 600	5 300	673	4 476	15
Croatia						5 800	711	3 214	2 894
Hungary							350	0	111
South-Eastern Europe								0	4 659
North-Eastern Europe									
Western Europe									

RAIL	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		289	177	0	0	6	1	4	1 389
France			5 350	34	6	17	56	1	115
Italy				176	1 225	1 716	387	128	3 015
Slovenia					319	2 096	173	1 132	0
Croatia						1 900	122	635	628
Hungary							133	0	40
South-Eastern Europe									934
North-Eastern Europe									
Western Europe									

OTAL (except sea traffi	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		19 278	7 584	152	88	393	252	1 807	11 561
France			30 588	758	130	588	1 182	136	499
Italy				5 853	7 425	9 016	4 104	1 772	8 747
Slovenia					3 919	7 396	846	5 608	15
Croatia						7 700	833	3 850	3 522
Hungary							483	0	151
South-Eastern Europe								0	5 592
North-Eastern Europe									
Western Europe									

RAIL SHARE	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		2%	2%	0%	0%	1%	1%	0%	12%
France			17%	5%	5%	3%	5%	1%	23%
Italy				3%	16%	19%	9%	7%	34%
Slovenia					8%	28%	20%	20%	0%
Croatia						25%	15%	16%	18%
Hungary							28%		26%
South-Eastern Europe									17%
North-Eastern Europe									
Western Europe									

Table 54 Freight international flows on the corridor's market area for 2010 (1000 tons / year)

Analysis of the above tables and the comparison with the ones of total flows by countries (see paragraph 4.2.2.3) shows **that almost all of the traffic between corridor countries is in the scope of the potential market**, except for Spain – France (in overlap with the Atlantic corridor).

Countries outside the corridor have been aggregated in three groups: South-eastern Europe, North-Eastern Europe and Western Europe (mainly UK, Benelux, Scandinavia, Germany and Austria).

Looking at international freight flows on the corridor, it can be observed:

- **relatively strong exchange flows** (about 150 million tons of potential market);

- **relatively low market shares for rail transport** (14%), especially in the East-West direction (in comparison to the other international flows in Europe, in particular between Benelux or Germany and Northern Italy).

Two groups of reasons can explain this phenomenon:

- **structure of the traffic**: industrial density of the North-Western Europe and strong traffic of the North ports allow frequent services of combined transport. Even if there are important industrial nodes and ports along the corridor, flows tend to be more diffused in the North-South direction.
- **transport policy and infrastructure**: congestion in main nodes, lack of interoperability (the main problem is the track gauge change at the Spain-French border) and insufficient performances on some sections causes the low rail market share but also transport policies and organizational issues within railways undertakings should be improved in order to enhance the modal shift.

Passenger flows in corridor market area

As shown below, **passenger international flows in the corridor's market area represent about 129 million passengers per year in 2010**.

Total market area (1000 pax / year)	2010
Road	46 261
Rail	3 001
Air	79 659
Total	**128 921**
Rail share	***2,3%***

Table 55 Passenger flows in the corridor's market area for 2010 (1000 passengers / year)

These flows are considerably more important in the Western part of the corridor than in the Eastern side: more developed European integration and presence of major touristic zones as well as business centres explain this phenomenon.
Rail share was very low (just above 2%), which is mainly causes by structural reasons: the **short-distance cross-border trips are**, up to date, much more efficient by road than by rail. The other important flows are **between major cities and to touristic zones** of the corridor countries or neighbouring countries; the distance between these major nodes is generally really high (over 1.000 km in most of the cases), which gives to the air transport an important market advantage.

ROAD	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		15 868	563	10	12	12	19	52	889
France			20 263	70	117	108	309	0	279
Italy				1 480	439	198	630	382	1 176
Slovenia					541	182	157	148	13
Croatia						37	412	95	516
Hungary							203	0	1 081
South-East Europe									
East Europe									
West Europe									

RAIL	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		486	103	1	1	0	1	5	106
France			1 142	14	22	4	4	0	35
Italy				132	85	35	45	27	76
Slovenia					22	32	11	2	1
Croatia						12	9	2	174
Hungary							14	0	399
South-East Europe									
East Europe									
West Europe									

AIR	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		3 195	9 315	67	70	423	2 699	2 685	25 947
France			7 337	73	192	636	4 532	0	22
Italy				65	170	542	5 188	617	11 065
Slovenia					39	2	275	76	14
Croatia						16	55	90	1 673
Hungary							46	0	2 534
South-East Europe									
East Europe									
West Europe									

TOTAL	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		19 549	9 981	78	83	435	2 719	2 742	26 942
France			28 742	156	331	748	4 845	0	335
Italy				1 677	694	775	5 863	1 025	12 317
Slovenia					602	216	443	226	29
Croatia						65	476	187	2 363
Hungary							263	0	4 014
South-East Europe									
East Europe									
West Europe									

Rail share	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		2%	1%	1%	1%	0%	0%	0%	0%
France			4%	9%	7%	1%	0%		10%
Italy				8%	12%	5%	1%	3%	1%
Slovenia					4%	15%	2%	1%	4%
Croatia						19%	2%	1%	7%
Hungary							5%		10%
South-East Europe									
East Europe									
West Europe									

Table 56 Passenger international flows in the corridor's market area for 2010 (1000 passengers / year)

4.2.2.5 Forecasting exercise for 2030

Forecasting methodology and assumptions for freight demand

After defining the origin-destination pairs of the international traffic constituting the market area of the corridor in 2010, **the forecasting methodology consists in two steps:**

- create a growth matrix for global demand by commodity group and country per country relation;
- define a modal shift matrix in order to estimate the new potential market share for rail considering the complete achievement of the corridor objectives.

For the global demand, growth coefficients have been obtained by using econometric formulations linking freight demand and GDP growth (considering eight commodity groups).

Most of these formulations were adjusted in the previous studies on major projects in the corridor, such as the Lyon-Turin freight traffic forecasts or Trans-Pyrenean studies.

As regard the remaining flows in the Eastern part of the corridor, specific regressions basing on Eurostat data has been developed.

The latest long-term forecast produced by the European Commission (Ageing Report 2012, DG ECOFIN) has been taken into account in order to determine GDP projections (see the following table).

Pays	2007 - 2010 (obs)	2011- 2020	2021-2030	2031-2040	2041-2050	2051-2060	2011-2025	2026-2060
Belgique	0,8%	1,5%	1,5%	1,7%	1,7%	1,7%	1,5%	1,7%
Bulgarie	1,8%	1,9%	1,3%	1,4%	0,9%	0,9%	1,7%	1,1%
Rep. Tchèque	1,6%	2,0%	1,7%	1,6%	1,3%	1,1%	1,9%	1,4%
Danemark	-1,0%	1,0%	1,5%	1,5%	1,7%	1,6%	1,2%	1,6%
Allemagne	0,7%	1,2%	0,7%	0,6%	0,8%	0,8%	1,0%	0,7%
Grèce	-1,0%	0,2%	1,2%	1,2%	1,1%	1,3%	0,5%	1,2%
Espagne	0,1%	1,3%	2,6%	1,5%	1,1%	1,4%	1,7%	1,5%
France	0,2%	1,7%	1,8%	1,6%	1,6%	1,6%	1,7%	1,6%
Italie	-0,8%	0,8%	1,4%	1,2%	1,3%	1,4%	1,0%	1,3%
Luxembourg	1,1%	2,6%	1,8%	1,8%	1,7%	1,7%	2,3%	1,7%
Hongrie	-1,2%	0,8%	1,8%	1,4%	1,0%	0,9%	1,1%	1,2%
Pays-Bas	0,9%	1,4%	1,1%	1,2%	1,4%	1,3%	1,3%	1,3%
Autriche	0,9%	1,6%	1,3%	1,4%	1,4%	1,3%	1,5%	1,4%
Pologne	4,3%	3,1%	1,7%	1,4%	0,8%	0,6%	2,6%	1,0%
Portugal	0,2%	0,4%	1,9%	1,5%	1,2%	1,1%	0,9%	1,4%
Roumanie	1,2%	1,7%	1,3%	1,2%	0,7%	0,5%	1,6%	0,9%
Slovénie	0,8%	1,8%	1,5%	1,2%	0,9%	1,1%	1,7%	1,1%
Slovaquie	3,7%	3,1%	2,3%	1,2%	0,7%	0,8%	2,8%	1,1%
Finlande	0,1%	1,7%	1,4%	1,6%	1,5%	1,4%	1,6%	1,5%
Suède	0,9%	1,9%	1,8%	1,8%	1,7%	1,6%	1,9%	1,7%
Royaume-Uni	0,1%	1,8%	1,9%	1,9%	1,9%	1,7%	1,8%	1,8%
Norvège	0,4%	2,4%	1,9%	1,8%	1,8%	1,7%	2,2%	1,8%
Suisse	1,8%	1,2%	0,7%	0,5%	0,6%	0,6%	1,0%	0,6%
UE27	0,3%	1,4%	1,6%	1,4%	1,4%	1,4%	1,5%	1,4%

Table 57 GdP assumptions (source DG ECOFIN, Ageing report 2012)

Modal shift estimations are based on the existing studies, when available, and on the consortium’s expertise elsewhere.

These studies provide precise calculations of the expected evolutions of costs, travel time and reliability by mode. Based on these evolutions, **a logit modal split model derives the estimated modal shift. Therefore, assumptions related to the evolution of the travel time, costs and reliability by mode are the key determinant of forecast.**

For instance, the **assumptions made for the Lyon-Turin forecasts** are the following (evolutions given in 2030 with respect to 2010 value, in constant euros):

For road:

- 22% increase of fuel costs;
- 8% increase of tolls (except specific sections where already decided evolutions are considered);
- stability of other operating costs.
- travel times are generally increasing in relation with the road congestion.

For rail:

- 750m trains (increasing average net weight of goods per train),
- interoperability improvements (reducing border-crossing time),
- main Spanish traffic generators connected to the UIC gauge tracks,
- overcoming of the gradient issues of the Lyon-Turin base tunnel,
- general improvement of competitiveness of the railway undertakings in a context of market opening,
- improvement of efficiency and reliability of the rail services.

These assumptions result in a significant cost decreases of the rail transport; for example cost of the rail transport decreases by 17% for a Marseille – Milano trip, and by almost 30% for a trip between Barcelona and Torino, including cost related to the suppression of the track gauge change at the Spanish border.

Such an improvement of the rail competitiveness is what can be expected if the corridor will be fully implemented by 2030, and if the appropriate services will be created on the upgraded and standardized infrastructure (in particular, efficient combined transport and rolling motorways).

The fully implementation means that the:

- **corridor's infrastructure has to be in compliance with TEN-T standards;**
- **main bottlenecks have to be solved;**
- **appropriate services should be able to run on the corridor in a efficient way.**

Obviously, in the case of the Lyon – Turin a significant part of cost decrease is related to elimination of the severe gradient.

This is why projections have been based on a sligh cost decreases for traffics remaining on the Eastern side of the Alps in the corridor.

Results of 2030 market volumes with no changes in market shares by mode with respect to 2010 has also been shown, in order to present the "do-nothing" scenario and to better identify (by comparison) the potential effects of the fully corridor's implementation.

Forecasting results in terms of the overall transport demand along the corridor for freight

Based on the GDP growth assumptions, the total freight flows (except maritime traffic) in the market area in 2030 would be the following.

Total Market area	road + rail
2010	151 829
2030	267 605
Annual growth rate	2,9%

TOTAL 2030 (except sea traffic)	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		27 406	13 388	420	218	1 086	655	4 569	16 195
France			49 524	2 271	418	1 838	3 389	392	822
Italy				10 981	17 883	17 766	8 089	3 601	12 409
Slovenia					6 990	13 563	1 578	10 459	34
Croatia						13 485	1 396	6 910	7 619
Hungary							864	0	429
South-Eastern Europe								0	10 958
North-Eastern Europe									
Western Europe									

Annual traffic growth (2010 - 2030)	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		1,8%	2,9%	5,2%	4,6%	5,2%	4,9%	4,7%	1,7%
France			2,4%	5,6%	6,0%	5,9%	5,4%	5,4%	2,5%
Italy				3,2%	4,5%	3,4%	3,5%	3,6%	1,8%
Slovenia					2,9%	3,1%	3,2%	3,2%	4,3%
Croatia						2,8%	2,6%	3,0%	3,9%
Hungary							2,9%		5,3%
South-Eastern Europe									3,4%
North-Eastern Europe									
Western Europe									

Table 58 Total freight flows on the market area in 2030 (thousand tons / year) and average annual growths rates from 2010, trend scenario

According to the GdP assumptions and econometric models, **the total demand in the market area of the corridor would increase from 151 million tons in 2010 to 267 million tons in 2030, with an average annual growth rate of 2,9%**.

Traffic elasticity to GdP growth vary from 1,3 – 1,7 for relations between Western European countries to much higher values for traffics with Eastern Europe. This is explained by the different levels of integration in the European Union.

Forecasting results in terms of potential market shares by mode for freight

Do-nothing (trend) scenario

Assuming no variation of the rail market shares by zone and commodity group in 2030 with respect to 2010, rail flows in the corridor's market area would be the following.

RAIL 2030 (trend scenario)	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		399	291	0	0	17	6	11	2 159
France			7 922	107	18	60	233	4	174
Italy				223	4 060	2 693	1 241	221	4 342
Slovenia					523	3 538	288	1 944	0
Croatia						3 166	219	927	1 535
Hungary							193		101
South-Eastern Europe									2 343
North-Eastern Europe									
Western Europe									

RAIL SHARE (2030, trend scenario)	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		1%	2%	0%	0%	2%	1%	0%	13%
France			16%	5%	4%	3%	7%	1%	21%
Italy				2%	23%	15%	15%	6%	35%
Slovenia					7%	26%	18%	19%	0%
Croatia						23%	16%	13%	20%
Hungary							22%		24%
South-Eastern Europe									21%
North-Eastern Europe									
Western Europe									

Table 59 Rail freight flows on the market area in 2030 (thousand tons / year) and rail market shares

In 2030, the international rail flows in the market area of the corridor would be 38,9 million tons against 22,2 million tons in 2010. The overall rail market share would stay around 14%, but it would vary among relations due to the different growth rates of the commodity groups.

With corridor implementation

With complete fulfilment of the TEN-T standards on the corridor and adequate level of services, the potential rail market on the corridor would be the following:

RAIL 2030 (With implemented corridor)	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		6 154	2 695	96	53	305	149	1 068	4 588
France			15 415	615	81	537	798	73	215
Italy				2 090	5 133	5 003	2 131	653	5 086
Slovenia					1 257	4 623	398	2 572	2
Croatia						3 705	289	1 480	1 840
Hungary							245		124
South-Eastern Europe									3 000
North-Eastern Europe									
Western Europe									

RAIL SHARE 2030 (With implemented corridor)	Spain	France	Italy	Slovenia	Croatia	Hungary	South-Eastern Europe	North-Eastern Europe	Western Europe
Spain		22%	20%	23%	24%	28%	23%	23%	28%
France			31%	27%	19%	29%	24%	19%	26%
Italy				19%	29%	28%	26%	18%	41%
Slovenia					18%	34%	25%	25%	6%
Croatia						27%	21%	21%	24%
Hungary							28%		29%
South-Eastern Europe									27%
North-Eastern Europe									
Western Europe									

Table 60 Rail freight flows on the market area in 2030 (thousand tons / year) and rail market shares, with implementation of the corridor

With the implementation of the corridor, **rail market share could potentially increase up to 27%, reaching about 72 million tons a year. In particular, as Spain is considered to be almost fully connected with UIC gauge, exchanges with Spain could have similar rail shares with other flows.**

These results take into account the development of unaccompanied combined transport services along the corridor. Short-distance accompanied rolling motorway services between Lyon and Turin has been considered separately.

The following tables summarize the forecasting results for the market area:

Total Market area	2010	2030 Trend (do-nothing)	2030 Corridor implemented	2030 Corridor Implemented (including accompanied rolling motorway)
Road	129 623	228 647	195 131	186 431
Rail	22 206	38 958	72 474	81 174
Total (except sea)	151 829	267 605	267 605	267 605
Rail share	*14,6%*	*14,6%*	*27,1%*	*29,4%*

Table 61 Summarizing main results of the traffic forecast for international goods flows (thousand tons / year)

These forecasts show that there is a strong potential for international Rail traffic development on the Mediterranean corridor until 2030.

First, **the global demand can be expected to have a solid dynamic if GdP growth in Europe turns back to "normal" rates** (as in the EC projections) on a long term average. **It is, in particular, related to the exchanges of goods with countries of Eastern Europe.**

Secondly, starting from a relatively low base in 2010, the final rail shares given by the forecasting model (between 20% and 30% for most of the relations considered) are not excessively high for international, continental rail transport as long as it offers competitive performances; they remain below observed rail shares in Europe on the North – South direction.

Thus, implementing the corridor could potentially shift about 33 million tons / year from road to rail (about 2,3 million trucks / year equivalent) or even 41 million tons / year (3 million trucks) if we consider accompanied rolling motorway.

But it is important to stress that these forecasts express the *potential* market of the corridor, meaning that reaching these effects imply the complete implementation of the corridor with fulfilment of the TEN-T standards and resolution of bottlenecks as well as the creation of adequate transport services along the infrastructure, particularly in the combined transport.

Focus on the ports of the corridor: expected evolution of their traffic by 2030

The last element of forecasting which is of particular relevance for analysing the corridor's evolution is related to the **twelve core seaports**, **which are the major freight traffic generators, representing the gateway of the corridor's region for the intercontinental trade and reveal the maritime dimensions of the corridor**, **also for EU-internal traffic.**

The TMS presents forecasts directly provided by the port authorities, and also shows the modelled forecasts results estimated by the consortium.

First of all, forecasts developed by the each maritime ports in the corridor are presented, where available, for 2018/2020 and 2030. Several ports have provided detailed forecasts, others have provided overall forecasts (given the short deadline available for communicating the needed inputs).

In order to present forecasts of port authorities, it is important to remember that 2010 data according to them can be different from the Eurostat values due to inclusion of weight of containers or special traffics like fishing.

Forecasts for 2018 and 2020 are shown below for Algeciras, Valencia, Barcelona, Marseille, Ravenna, Trieste and Koper. These ports handled 330 million tonnes in 2010 and foresee a growth of 150 million tonnes by 2020.

port forecast 2020	Algeciras	Valencia	Barcelona	Marseille	Ravenna	Trieste	Koper
2010 data Total (Mtons)	71,1	56,9	43,0	82,4	21,9	47,6	15,4
Forecast year	**2018**	**2018**	**2020**	**2020**	**2020**	**2020**	**2020**
Total (M tons)	114,2	66,0	67,5	123,0	27,1	56,9	24,0
Liquid bulk	32,7		18,0	70,0	4,6	36,5	
Dry bulk	1,6		6,0	19,0	11,5	3,5	
Containers	63,7		30,0	27,5	2,5	7,0	
Other	16,2		13,5	6,5	8,5	9,9	
% Transhipped	*51%*	*53%*	*17%*	*3%*	*1%*	*0%*	*6%*
% with land transport	*49%*	*47%*	*83%*	*97%*	*99%*	*100%*	*94%*
MTons with land transport (including pipe)	56,0	31,0	56,0	119,3	26,8	56,9	22,6
% pipe	*58%*	*0%*	*7%*	*57%*	*0%*	*62%*	*0%*
% rest land	*42%*	*100%*	*93%*	*43%*	*100%*	*38%*	*100%*
Mtons with land transport (except pipe)	23,3	31,0	52,0	50,7	26,8	21,9	22,6
%road	*70%*	*95%*	*91%*	*74%*	*82%*	*77%*	*31%*
%rail	*30%*	*5%*	*9%*	*18%*	*18%*	*23%*	*69%*
%IWW	*0%*	*0%*	*0%*	*8%*	*0%*	*0%*	*0%*
Mtons road	16,3	29,5	47,5	37,5	22,0	16,9	7,0
Mtons rail	7,0	1,6	4,5	9,1	4,8	5,0	15,6
Mtons IWW	0,0	0,0	0,0	4,1	0,0	0,0	0,0

Table 62 Detailed port forecasts until 2020. (source: official port forecast and various documents).

Forecast results for 2030 are less detailed and not all hinterland forecasts are available.

Venice port has provided a forecast only for the container traffic (1.400.000-1.600.000 TEU in 2030 equivalent to 14-16 million tons).

Koper port aims at handling more than 30 million tons after 2030. It also supports a favourable modal split of more than 60% of all traffics using railway infrastructure.

In the port plans of Rijeka a total throughput of 21 million tons is estimated for 2030 of which 4% will be transhipped. It is estimated that 35% of total throughput will be transported by pipe (approx. 7 million tons). The remaining 65% will be transported by rail and road (approx. 13 million tons). The target of the port is to increase share of the rail transport to 60% that means approximately 7,8 million tons.

Ports of Barcelona, Marseille, Ravenna and Trieste have provided forecasts up to 2030, that have been summarised below. Further traffic growth of 107 million tonnes is expected between the years 2020-2030, of which 80 million tonnes would be inland transport. This implies a higher growth rate than for the years 2010-2020 for these ports. The most prominent hinterland transport change is for the port of Barcelona which forecasts a higher hinterland rail share in future, with the rail share of 9% in 2020 increasing to a share of 16% in 2030.

port forecast 2030	Barcelona	Marseille/ Fos	Ravenna	Trieste
forecast year	2030	2030	2030	2030
Total (M tons)	105,0	156,0	38,6	83,3
Liquid bulk	28,0	75,0	5,5	36,5
Dry bulk	8,0	21,0	15,0	3,5
Containers	50,0	50,0	7,2	30,0
Other	19,0	10,0	10,9	13,3

Table 63 Port commodity forecasts until 2030. (source: official port forecast).

If the port authorities' growth rates are applied across the whole range, it would imply that total throughput for all corridor ports would increase from 400 million tons in 2010 to more than 850 million in 2030.

It is reasonable to consider that with improvements of their capacity and land connections, like those foreseen in the corridor's investment plan, the Mediterranean ports could attract some traffics that are reaching the ports of the North Sea at present time. This could concern in particular container traffic between Europe and Asia, which has grown in the past decade (from 9,7 MTEU in 2002 to 20 MTEU in 2013). For this flows, mainly passing through Suez canal, ports of the Mediterranean represent a more efficient gateway than the ports of the North sea in order to reach markets of the Central and Southern Europe, avoiding a long route in the Atlantic and reducing length of land transport between port and the final destination. This shift is an important goal for ensuring a more sustainable trade between Europe and Asia.

Nevertheless, the provided port forecasts may assume a mix of market growth and market share growth, not only considering competition between Mediterranean and North Sea ports, but also among Mediterranean ports themselves. When considering a wide range of ports it is necessary to separate these effects, since the sum of every port's traffic cannot grow faster than the underlying trade volumes.

This is why, in a separate exercise, and with a more cautious approach, a trade model has been used by the consultants to estimate the port traffic growth for 2030 across a broader range of ports.

This also allows us to harmonise assumptions within the forecast, to prevent inconsistency. **The same model results were used for the Atlantic corridor.**

The basic assumptions for the future port volumes are:

- **trend in the trade data is an important driver for the future port volumes**. Volume growth in the model is derived from trade growth, using macro-economic assumptions based on the EU 2013 Reference Scenario.
- in 2010 the market shares were known. Future volumes are expected and most ports expect this additional volume share to be theirs in the future, such that market share is increased. The sum of all the port forecast can lead to high results with double counts of future market volume. To provide a harmonized result, **no significant shift of market share is assumed between ports, but all ports receive a portion of the additional future volume in the model[43].**
- **no specific growth for transhipment included.** This is mostly relevant for the Spanish ports of Algeciras, Valencia and Barcelona. If ports expect specific growth in transhipment, this is not reflected in the model figures.

A consistency check with the Update of NAPA Container Market Study" report of MDST 2013 was also done. The report indicates 30 million additional container tonnes in the business as usual (BAU) scenario for the NAPA ports plus Ravenna. By comparison, this modelled scenario indicates 29 million tonnes growth in the container sector for the same ports.

Container growth for the ports of Valencia and Algeciras has been adjusted. The reason is that the situation from the base year 2010 has changed in 2013 and the adjusted growth rates represent the current situation better and give roughly an equal volume growth by 2030.

[43] Expected growth being different for each route and type of goods, overall market shares of individual ports may vary anyway between 2010 and 2030.

2030 MED forecast	Liquid bulk	Dry bulk	Containers	Other	Total (M tons)
Sevilla	2.4%	1.7%	2.6%	1.9%	2.0%
Algeciras	2.9%	2.0%	5.5%	2.8%	4.4%
Cartagena	2.2%	2.0%	3.3%	2.1%	2.2%
Valencia	2.4%	1.8%	3.5%	3.0%	3.3%
Tarragona	1.3%	1.6%	2.7%	2.4%	1.5%
Barcelona	2.1%	1.7%	4.4%	3.1%	3.4%
Marseille/ Fos	1.2%	1.2%	3.6%	3.0%	1.6%
Ravenna	2.5%	2.0%	4.5%	4.4%	2.2%
Venezia	2.8%	3.6%	4.5%	4.4%	3.5%
Trieste	1.3%	3.0%	4.2%	3.1%	1.9%
Koper	2.9%	2.1%	3.0%	3.0%	2.6%
Rijeka	3.4%	2.6%	3.2%	3.4%	3.2%
Total	1.9%	1.9%	4.2%	3.2%	2.8%
Genova	*1.2%*	*1.3%*	*4.0%*	*2.8%*	*2.4%*

Table 64 Port commodity growth rates 2010-2030 (source: Consortium).

All ports and all commodity types are expected to grow in the period of 2010-2030, in particular container traffic (about 4%) without assuming a port shift and without specific growth of transhipment traffic.

Comparing the 2030 modelled results to the port's own forecasts:

- **Barcelona forecast** is structurally higher than the modelled result. The largest gap is for liquid bulk. The port expects a yearly volume growth of 4.5% for liquid bulk;
- **Marseille forecast** is also structurally higher. There is a very large gap for container traffic. Annual growth of 9.8% for container volumes is expected by the port.
- **Trieste forecast** is again structurally higher. There is a very large gap is for container traffic. Annual growth of 12% container volume is expected by the port.

This reflects that the ports have strong ambitions to attract container traffic from other ports, mainly from the north.

Compared to the 2020 port data:

- For the port of **Valencia** the growth rates of the model are higher than the actual port forecast. This is perhaps not surprising since the port growth in the period 2010-2018 is dampened by the low growth or decrease in the period 2010-2013, leading to the relative low forecast growth rates.
- The port of **Ravenna** has a growth pattern similar to the model outcomes. The largest difference is the 7.1% annual container growth expected by the port. The other commodity groups are estimated to have higher growth rates in the model than the port growth rates.
- The port of **Koper** has indicated a growth rate of 4.5% per annum for total traffic. This is higher than the model result. In 2010 the largest commodity group was dry bulk and the growth rate is 2.1% in the model.

It is also important to note that the consortium's forecast is based on 2010 Eurostat data, in order to start with consistent data throughout the corridor, while individual port data can be different.

Basing on the model's results for the ports' traffic and the consortium assumptions for evolution of the modal shares in inland traffic, the volume of rail, road and IWW freight coming and going from the ports in 2030 has been assessed and shown in the table below:

2030 MED forecast	Sevilla	Algeciras	Cartagena	Valencia	Tarragona	Barcelona
Total (M tons)	5,9	134,1	29,5	100,5	43,4	67,8
Liquid bulk	0,4	42,2	23,5	8,3	25,1	17,5
Dry bulk	3,0	2,2	4,6	3,7	13,1	4,9
Containers	1,4	85,4	1,2	79,7	4,0	36,2
Other	1,2	4,2	0,3	8,8	1,3	9,2
% Transhipped	*0%*	*54%*	*0%*	*53%*	*2%*	*25%*
% with land transport	*100%*	*46%*	*100%*	*47%*	*98%*	*75%*
MTons with land transport (including pipe)	5,9	61,5	29,5	47,3	42,7	50,8
% pipe	*0%*	*69%*	*80%*	*0%*	*59%*	*8%*
% rest land	*100%*	*31%*	*20%*	*100%*	*41%*	*92%*
Mtons with land transport (except pipe)	5,9	19,2	6,0	47,3	17,6	46,8
%road	*90%*	*85%*	*92%*	*84%*	*82%*	*84%*
%rail	*10%*	*15%*	*8%*	*16%*	*18%*	*16%*
%IWW	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Mtons road	5,3	16,3	5,5	39,7	14,4	39,3
Mtons rail	0,6	2,9	0,5	7,6	3,2	7,5
Mtons IWW	0,0	0,0	0,0	0,0	0,0	0,0
Trains / Day in 2010	0	0	0	9	9	13
Trains / Day in 2030	4	17	3	45	19	45

2030 MED forecast	Marseille/ Fos	Ravenna	Venezia	Trieste	Koper	Rijeka	Total
Total (M tons)	113,4	39,9	52,0	60,6	24,5	19,2	684,9
Liquid bulk	74,5	10,1	21,5	36,4	4,9	11,0	274,9
Dry bulk	15,0	14,2	16,4	1,2	9,5	3,7	88,6
Containers	15,6	3,8	6,5	5,8	6,6	2,6	247,4
Other	8,3	11,8	7,6	17,3	3,5	1,9	74,1
% Transhipped	*1%*	*1%*	*0%*	*0%*	*4%*	*4%*	*22%*
% with land transport	*99%*	*99%*	*100%*	*100%*	*96%*	*96%*	*78%*
MTons with land transport (including pipe)	111,8	39,5	52,0	60,6	23,5	18,4	537,5
% pipe	*65%*	*0%*	*41%*	*60%*	*0%*	*35%*	*43%*
% rest land	*35%*	*100%*	*59%*	*40%*	*100%*	*65%*	*57%*
Mtons with land transport (except pipe)	38,9	39,5	30,5	24,2	23,5	12,0	305,4
%road	*74%*	*78%*	*70%*	*74%*	*32%*	*60%*	*77%*
%rail	*18%*	*22%*	*20%*	*26%*	*68%*	*40%*	*23%*
%IWW	*8%*	*0%*	*10%*	*0%*	*0%*	*0%*	*2%*
Mtons road	28,8	30,8	21,3	17,9	7,5	7,2	234,1
Mtons rail	7,0	8,7	6,1	6,3	16,0	4,8	71,0
Mtons IWW	3,1	0,0	3,0	0,0	0,0	0,0	6,2
Trains / Day in 2010	23	21	13	24	85	12	210
Trains / Day in 2030	42	52	36	37	95	28	423

Table 65 Port inland traffic by mode in 2030 (source: Consortium)

This analysis shows that it is reasonable to consider that the number of train generated by the ports of the corridor could double by 2030 with respect to 2010, even taking into account an increase of the trains' length and weight of goods. **The ports of Algeciras, Valencia and Barcelona, which combine traffic growth with important modal-shift expectations and rail connection improvements, will benefit of the full effects of these estimations**

Considering additional growth from shifting traffic from ports of the North range (which is reasonable to consider, as mentioned before, even if not in the proportions of the single port's ambitions), this rail traffic increase could be even more important.

Considerations on maritime flows between corridor countries and short-sea shipping in Mediterranean ports in general

While the previous analysis gives global trends for Mediterranean ports, some specific comments should be made on the role of these ports for intra EU maritime traffic and traffic with northern Africa.

The description of the present situation showed that intra-EU flows are an important part of the volumes of the corridor's ports (about 27%) and that the maritime mode represents 25% of the exchanges of goods between the corridor's countries, with high shares in particular between Spain and Italy and through the Adriatic, for reasons that can easily be explained by geography.

Although intra-EU exchanges are growing generally slower than flows with third countries, they will remain a significative part of the flows of the corridor's ports in the future. With the development of the Motorways of the Sea, Short Sea shipping lines and Ro-Ro services are expected to be more attractive and could generate some modal shift from the road. Regarding this aspect, it should be noted that:

- The analysis of potential shift from road to rail for the corridor's market area made in the previous paragraph remains globally valid even considering the maritime mode in play, as competition between rail and road is addressing different O/D flows than the competition between sea and road ; for example, there is a strong competition between rail and road between Spain and northern Italy or between northern Italy and Slovenia / Croatia whereas the maritime mode should be competes with road on flows between Spain and Central or Southern Italy and between Central or Southern Italy and Slovenia / Croatia.
- While reducing road traffic on long distances, the development of the motorways of the sea will increase road traffic on the connections to the ports, therefore the importance of improving both rail and road connections to the ports is to be underlined.

Another important aspect of the Mediterranean ports is their strong relation with Africa, a continent that is both near from Europe and rapidly growing. In particular, important short sea and ro-ro services with Africa are available in Algeciras and Marseille, with a strong growth potential.

Forecasting methodology and assumptions for passenger demand

Based on Etisplus 2010 matrix, the **overall demand for 2030 has been estimated using a GdP elasticity of 0,9.**

This hypothesis is usually assumed to link long distance mobility with the economic growth. Of course, this GdP assumption has been also used for freight.

Then, basing on the existing studies (if available) or on the common elasticity to travel time reduction, the impact of the corridor implementation on the rail demand has been estimated.

The following main sources have been used for this forecasting exercise:

- the passenger traffic studies for the Montpellier – Perpignan new line (RFF);
- the passenger traffic studies for the Lyon – Turin new line (LTF).
- on the **Eastern side of the corridor**, the absence of relevant studies has required some estimation. Moreover, the very low level of the current rail flows on this part of the corridor makes the exercise even more difficult. Therefore, **forecast** figures presented below for the Eastern part of the corridor should be considered **with caution**.

Forecasting results in terms of overall demand and potential market shares by mode for passengers

Based on the GDP growth assumptions, the total passenger flows in the market area in 2030 would be the following:

Total market area (1000 pax / year)	All modes
2010	128 921
2030	177 779
Annual growth rate	*1,6%*

TOTAL market area (2030, trend scenario)	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		28 202	13 506	111	123	600	4 020	4 134	37 665
France			38 142	219	480	1 012	7 025	0	463
Italy				2 204	944	984	7 975	1 422	16 381
Slovenia					864	289	636	331	38
Croatia						90	708	283	3 297
Hungary							365	0	5 264
South-East Europe									
East Europe									
West Europe									

Annual growth rates 2010 - 2030	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		1,8%	1,5%	1,8%	2,0%	1,6%	2,0%	2,1%	1,7%
France			1,4%	1,7%	1,9%	1,5%	1,9%		1,6%
Italy				1,4%	1,5%	1,2%	1,5%	1,6%	1,4%
Slovenia					1,8%	1,5%	1,8%	1,9%	1,5%
Croatia						1,6%	2,0%	2,1%	1,7%
Hungary							1,6%		1,4%
South-East Europe									
East Europe									
West Europe									

Table 66 Total passenger flows on the market area in 2030 (thousand passengers / year) and average annual growths rates from 2010, trend scenario

It is important to note that these figures reflect the demand in a trend (or do-nothing) scenario, **based only on mobility evolution linked to the GdP growth**.

Unlike for freight, it is considered that the improvement of the transport supply will generate not only modal shift but also mobility increase on the considered axis: this phenomenon is called **"traffic induction".** That is why different figures for total demand with the corridor's implementation will be shown.

Implementing the corridor will significantly reduce rail travel time, and consequently increase frequency of train services on various international relations along the corridor, therefore generating shifts from road or air to rail but also, as already mentioned, traffic induction.

Regarding potential impact of the corridor for **modal shift from air to rail**, it is important to remind that the main air flows along the corridor are between Nuts2 regions of:

- **Barcelona and Paris;**
- Madrid and Rome;
- **Barcelona and Milano;**
- **Paris and Milano;**
- Barcelona and Rome;
- **Venice and Paris**.

Among these flows, the main streams with significant potential of modal shift towards rail with the corridor's implementation have been outlined in bold.

Indeed, **rail travel time by 2030 could decrease to less than 5 hours between Barcelona and Paris**, just **over 4 hours between Paris and Milano**, **5:30 hours between Paris and Venice and 6 hours between Barcelona and Milano**.

Rail travel time on other main relations should remain significantly higher and thus offer limited opportunities for modal shift to rail.

Shorter relations, constituting the major part of cross-border road traffic on the corridor, should not be neglected as they generate shift from road and traffic induction with efficient rail services.

With the corridor's implementation, rail flows and market shares for international passenger traffic is estimated in the following tables.

RAIL 2030 with implemented corridor	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		3 580	554	2	2	0	2	10	438
France			2 924	23	38	6	7	0	69
Italy				368	210	90	73	45	422
Slovenia					125	75	19	4	2
Croatia						20	17	3	286
Hungary							23	0	575
South-East Europe									
East Europe									
West Europe									

RAIL SHARE 2030 with implemented corridor	Spain	France	Italy	Slovenia	Croatia	Hungary	Other South-East Europe	East Europe	West Europe
Spain		12%	4%	2%	1%	0%	0%	0%	1%
France			8%	11%	8%	1%	0%		15%
Italy				16%	22%	9%	1%	3%	3%
Slovenia					14%	25%	3%	1%	5%
Croatia						22%	2%	1%	9%
Hungary							6%		11%
South-East Europe									
East Europe									
West Europe									

Table 67 Rail passenger flows on the market area in 2030 (thousand passengers / year) and rail market shares, with implementation of the corridor

The corridor's implementation would increase rail shares in particular for traffic between France and Spain (from 2% in 2010 to 12% in the scenario 2030 "with corridor implementation") **and between France and Italy** (from 4% in 2010 to 8% in the scenario 2030 "with corridor implementation")**.**

The following table summarizes the results for the whole market area.

Total market area (1000 pax / year)	2010	2030 trend scenario	2030 with corridor implementation	Diff. Corridor - trend
Road	46 261	63 539	61 125	-2 413
Rail	3 001	4 061	10 011	5 950
Air	79 659	110 179	108 153	-2 026
Total	**128 921**	**177 779**	**179 289**	**1 510**
Rail share	***2,3%***	***2,3%***	***5,6%***	

Table 68 Summarizing main results of the traffic forecast for international goods flows (thousand tons / year)

This forecast shows that implementing the corridor could increase the international rail traffic by nearly 6 million passengers / year in 2030. This increase would come from modal shifts from air (2 Mpax), modal shifts from road (2,4 Mpax) and traffic induction (1,5 Mpax). Rail share would go from 2,3% to 5,6% on the overall market area, which represents more than a doubling of the rail traffic with respect to the do-nothing scenario.

Given the considerable volumes of air traffic, the modal shift from air may seem small; but again, a lot of air traffic flows on the corridor concern very long distances on which rail, even in high speed, cannot compete.

4.2.2.6 Assessment of future demand

In order to assess the potential future traffic on the corridor rail infrastructure, in particular for cross-border sections, **an assessment to the network**, **of the 2030 potential market rail freight matrix, considering corridor implementation has been performed**.

This assessment takes into account:

- The traffic growth derived from the analysis of the international flows on corridor market area;
- The traffic generated by the ports, according to the consortium's forecasts;
- The traffic growth of national traffic on corridor sections, estimated with a simplified assumption linking traffic growth and GdP.

The result of this assessment is shown on the map below:

According to this assessment, potential rail traffic on the cross-border sections of the corridor in 2030 could be the following. It is important to underline that also potential number of passenger trains deriving from the forecasting exercise presented before for international passenger demand has been included.

Section	M tons / year	Freight trains / day	Passenger trains / day	Total trains / day
ES – FR (Le Perthus, new line)	14,8	101	31	132
FR – IT (Modane, new line)	25,3 + 8,7 (RM)	160 + 90 (RM)	27	187+90 (RM)
IT – SI (Sezana)	13,2	97	6	103
SI – HU (Hodos)	10,5	70	3	73
SI – HR (Dobova)	15,6	95	2	97
HR – HU (Gyekenyes)	7,6	45	0	45

Table 69 Estimated number of trains on the corridor's cross-border sections by 2030 with the corridor's implementation

On all sections of corridor rail infrastructure, the estimation made with this assessment, compared with present traffic values, provide a rough estimation of the global evolution of demand on the rail system of the corridor and the amin capacity bottlenecks to be solved in order to reach the potential volumes assessed.

4.2.2.7 Transport market study conclusions

The transport market study helps drawing both general and specific conclusions on several bottleneck issues.

General conclusions of the analysis could be the following:

1. **The implementation of the Mediterranean corridor represents a major opportunity to shift important volumes of freight from road to rail**, with a potential shifting of 40 million tons of goods from road to rail by 2030. Nevertheless, the realization of this objective needs a fully upgraded and interoperable infrastructure with adapted services and rail-road terminal.
2. **The connections to the ports are a key element for the success of the corrido**r. All ports of the corridor have great ambitions of development in the 10-20 coming years, with various projects regarding especially improvement of capacities for container traffic and rail connections. In fact, intercontinental container traffic in Europe is still handled above all in the ports of the north range, generating very long-distance hinterland flows. The development of the ports of the Mediterranean, together with an efficient rail connection of these ports to the core network, could help **reaching a better balance between north and south range and an enhanced sustainability** (reducing the costs in time and fuel as well as the related emissions) of Europe's international trade with other continents**. The short sea services between European countries or with northern Africa is also a strong and growing element of the maritime dimension of the corridor**.
3. **Even if they have for the moment relatively low traffic, IWW could play an important role in the future for the Mediterranean corridor**. By connecting major industrial zones to seaports, they could offer an interesting alternative to road or rail transport for certain types of goods, which is important to develop as road and rail networks will increasingly suffer from congestion in particular around seaports and urban nodes. In Italy, the IWW system could reach a completely different dimension if Milano and Piacenza were to be properly connected to the network; in France, the development of the traffic on the Rhône, which is growing rapidly in the last years, is a major opportunity for the port of Marseille / Fos and for enhancing multimodality along a very congestioned valley, supporting strong container traffic growth.
4. **The corridor developments are also likely to improve significantly the competiveness of rail for international passenger traffic**, with a potential increase of 6 million passengers per year by 2030, 2 million of which shifted from air traffic. **The corridor implementation could also have important effects for national and regional traffic**, improving travel time on sections with strong national flows (Nîmes – Montpellier - Perpignan, Lyon – Chambéry / Grenoble, Milano – Venezia - Trieste…) and creating opportunities for new performant regional services where congestioned nodes are relieved.

Regarding specific critical issues and bottlenecks, the following conclusions could be highlighted.

Capacity issues

- **The realization of the potential traffic of the Lyon – Turin international section needs the solving of major capacity issues in the Lyon node and from Lyon to Saint-Jean de Maurienne**. For example, there could be potentially about 200 passenger trains per day on the existing 2-tracks line between Chambéry and Montmélian in 2030. This is clearly not compatible with the expected number of freight and rolling motorway trains potentially using the cross-border section if no new link is created.

The Lyon node is already critical today and its situation prevents any significant development of rail traffic coming from Spain or from the port of Marseille to northern Europe, Switzerland or to Italy. An alternative path to Switzerland or Italy might be available in the short term via the newly electrified line between Valence, Grenoble and Chambéry but with quite limited capacity.

The Turin Node is an essential point of the national railway system, both concerning its function as a node for the HS/HC system and for the Turin-Lyon corridor and its metropolitan mobility value. The planned interventions for the node, both infrastructural and technological, are essential in order to increase its capacity and enhance the intermodal integration.

- In relation to the **urban nodes** (i.e. Madrid, Barcelona, Marseille, Lyon, Torino, Milano, Venice, Ljubljana, Zagreb and Budapest), it is important to underline bottlenecks related to the overlapping of different types of rail traffic (metropolitan, regional, long distance and freight). The planned investments are necessary to relax such constraints. For example, once all major generators connected, there could be **some capacity issues in the urban area of Barcelona**, with about 100 – 150 freight trains per days on some sections having to share tracks with heavy commuter rail traffic; **this issue would require a more in-depth analysis of local traffic.**
- **Capacity issues between Montpellier and Perpignan will become critical in case of all connections to Spanish seaport, industrial plants and the other logistic terminals will be upgraded at UIC gauge. In addition, the new line will become necessary to realize the potential demand of the corridor**, since between Montpellier and Beziers by 2030 there is an expected could be a demand equivalent to 140 freight trains, 100 regional trains and about 60 high-speed passenger trains. The total resulting traffic is not possible on the existing line alone.
- **Traffics between Trieste and Divaca are expected to be compatible with a two-track upgraded line**.
- **Given the present traffic and its potential development, the upgrade of the line between Divaca and Koper is an absolute priority**: 80 trains / day on a single-track line in the present situation, with an expected increase according to our projections to 19 million tons and 135 trains per day by 2030.
- **The need for a new line is also clear in the central part of Slovenia**, where freight traffic could reach over 200 trains a day. Such traffic does not appear to be easily mixed with the passenger traffic in the Ljubljana area.

Interoperability and intermodality issues

- **Accesses of main factories, ports and intermodal logistics terminals to the main transport network (in particular rail or IWW where appropriate) have to be guaranteed and / or enhanced** in order to ensure appropriate capacity and service level in comparison to their needs and assure that the development of the transport system has an impact on the socio-economic growth of regions. Thus, the issue of the last mile linking the core network to production, exchange or consumption sites is among the first priorities to be addressed
- **The realization of the rail potential international traffic in Spain could only be achieved by a full UIC gauge connection from the main traffic generators to the border**.
- **In order to enhance the modal shift, a substantial improvement of the corridor interoperability has to be ensured removing the remaining**

restrictions in particular in terms of train length, axle load and signalling system needed to meet the market needs (especially on the Eastern part of the corridor)**.** While this effort can only be made gradually, this kind of issue is only solved when the whole corridor has reached the common standards, and even a very small section remaining with lower standards in the central part of the corridor has enormous negative effects on its potential.

4.2.3 Review of critical issues

The development of the corridor shall address, in a coordinated way, the aspects that are **critical for ensuring the efficient and sustainable use of the infrastructure capacity and the full interoperability**, in particular for international traffic, such as:

- **harmonization of the technical parameters** along the corridor to the standard (for further details please see paragraph 4.2.1.4), **and elimination of physical bottlenecks** (existing or foreseen) in the infrastructure of the relevant modes;
- **enhancement of the integration of the different transport modes along the corridor** as well as with the other multimodal corridors, through the coordinated development of the intermodal terminals (& "last mile" sections) with adequate capacity and service level, as well as related supporting systems;
- **consideration and prevention of risks** e.g. negative impacts on the environment (e.g. air pollution, climate change, noise), safety on the involved transport links etc.

Hereinafter, a review of the identified critical issues per MS and mode of transport is presented, mainly based on the studies detailed in Chapter 3.

Detailed description per MS is provided in the following paragraphs and related maps are shown in Annex 5.7.

4.2.3.1 Spain

In terms of infrastructures limitations, the following main points can be noted:

- the **lack of standard gauge** in most of the Spanish sections prevents from dispatching international direct rail freight trains, and forces to car load changing maneuvers, which penalizes rail transportation competitiveness and increases costs, due to:
  - the necessity of transhipping the cargo from an Iberian train to an UIC train at Portbou terminal,
  - or, alternatively using the axles changer at Cèrbère, and the two single tracks (UIC and Iberian) between Portbou and Cerbère.
- the **existing limitations to train length** (550 to 600m) does not allow, in most of the Spanish corridor, the operation of freight trains with the maximum interoperable length of 740 m., which penalizes rail transportation competitiveness;
- the maximum grades reaching 18‰, requiring additional traction depending on the gross load hauled (e.g. regarding the stretch Algeciras-Bobadilla-Granada-Moreda-Almeria, conventional line, the maximum grade varies between 22 and 28 ‰).
- the sections with **single-track lines** (i.e. Vandellós-Tarragona, Algeciras-Bobadilla) limiting its potential development, the available capacity and/or conditioning timetabling;
- the sections with **heavy commuter train traffic** (i.e. Martorell- Castelbisbal) penalizes freight trains, limiting its potential development because the few available windows cannot host competitive paths;
- the sections with **non-electrified lines** requiring, when appropriate, the exchange of the locomotive;
- the **disparity in the signalling systems** (ERTMS in UIC gauge tracks and ASFA in conventional Spanish network and KVB in France – for the cross border) is a problem, because it implies the use of new tri-standard locomotives (much more expensive) or the adaptation of existing ones to ensure international continuity. Currently, locomotives are changed at the border;
- the **disparity of the power supply** (3KV in mixed gauges and 25 KV in high speed in Spain and 1.5 KV in France) requiring new tri-standard locomotives (much more expensive) or the adaptation of the existing ones. Therefore, the short-term problem is the lack of adapted locomotives to the special features of rail link from Spain to French border. In addition, in case of power outage in the line between Mollet and TP Ferro, which is electrified in 25kV in alternating current, it would be necessary to interrupt train traffics in both directions due to induced current;
- the high gradient recorded in six of the analysed stretches causes:
  - reduction of the (maximum) load of the freight train, or
  - need of two locomotives (more power),
  - reinforced couplings (higher strength)

  These solutions would suppose a cost increase of the freight service (€/tonne).

Railways

Sections	Description
ES/FR Border section (Cataluña area)	The critical issues shown for this stretch of the Mediterranean corridor have been differentiated between the HS line and the conventional one. ▪ **HS section: Lleida – Tarragona – Barcelona – Girona - Figueres** This is a double-track line with UIC gauge with 25 kV CA electrification, 5 operating stations (Lleida-Pyrenees, Camp de Tarragona, Barcelona-Sants, Girona, Figueres-Vilafant) and one station being built (Barcelona-La Sagrera). It is a **passenger line**, except for the stretch between Mollet (near Barcelona) and Figueres, which allows mixed operation (open for both passenger and freight trains). Despite the line Mollet-TP Ferro has been designed for 740 m. long trains, the current maximum length allowed for safety reasons is 500 m. ▪ **Conventional section: Castellón – Tarragona – Barcelona – Girona – French border (via- Portbou)** This is a double-track line (except for the 45 km single-track stretch from Vandellós to Tarragona, on which works to duplicate the line were started in 2000 and are not finished yet) with **Iberian gauge** (the Castellbisbal-Mollet and Girona-Vilamalla sections also have a third track for running in the UIC standard gauge) and 3 kV CC electrification, open for mixed operation (passengers and freight trains). It is important to note that, according to the information provided by the "Generalita Catalunya", in 2013, almost 9 million tons of goods were transported by rail in Catalonia, which, in respect of the European average, signifies a meagre share for the railway, representing only 3.5% of the quota for land transport, the road taking the remaining 96.5%. By type of traffic, it should be stressed that although the flows between Catalonia and the rest of the Spanish State attained quotas of nearly 8% -, a value that could in any event be improved on - the flows between Catalonia and the centre of Europe and the flows in transit through Catalonia reach quotas of only 5% and 3% respectively, through problems of capacity, interoperability and intermodality. ▪ **Main interoperability issues for freight trains running from the yard closed to Le Soler through the new HS line on the ES/FR border section (Figueres-Le Perthus/ES-Le Soler/FR) up to the Barcelona Port** The new HS line (opened January the 1st 2013) offers capacity, fluidity and safety; but it is still **underutilized** (<5 trains dispatched per day). There are many reasons to explain why the freight traffic is not taking advantage of the infrastructure (while more than 11 thousands lorries are running daily on the parallel motorway), such as: Different power supply: ▪ **1.5 kV dc** from France to the freight yard close to Le Soler (included); ▪ **25 kV ac** from the exit of the freight yard to Mollet Junction (close to BCN) -112 km; ▪ **3 kV dc** from Mollet Junction to Barcelona Port (end of the line) - 45km; Different signalling systems: ▪ **RFF/SNCF existing KVB system** and French radio sol train (Mesa 23) from France to the freight trains yard close to Le Soler (included): ▪ **ERTMS level 1 and 2 with GSM-R** from the exit of the freight yard to Figueres (international section,- 45 km); ▪ both **ERTMS and the Spanish ASFA system**, **with GSM-R** from Figueres to Mollet junction -108.5 km; ▪ only Spanish ASFA system, with Spanish "tren-tierra" radio system from Mollet Junction to Barcelona Port -45.0 km. Currently, **there are three options to cross the rail border**: ▪ Transhipping the cargo between UIC and Iberian trains at Portbou terminal. ▪ Using the axle's changer for freight trains at Cerbère, and the two single tracks (UIC and Iberian) between Portbou and Cerbère.

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<tr><th>Sections</th><th>Description</th></tr>
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- Using the UIC connection through the Le Perthus Tunnel (only from/to Barcelona).

Variable gauge axles are developed for passenger trains only, but this technology is not available for freight trains yet.

Consequently, in order to run on the line, **all freight locomotives need to be equipped with at least three different power supply voltages and three different signalling systems**.

Nevertheless, **this problem does not affect passenger trains** (10 trains per day on the peak season) as all the French and Spanish TGVs running on the line have the 1.5 kV and the 25 kV needed and are fitted with ERTMS (running over 200 km/h).

Focus on locomotives able to use this cross border section:

The few freight trains running on the cross-border section are hauled by few (4) RENFE tri-tension locomotives S-252 equipped with ERTMS (originally equipped only with 3 kV DC and 25kV AC, they have been modified to circulate also under 1.5 kV DC tension existing in Southern France e.g. in Perpignan station). However, they do not have the French KVB signalling system, so they cannot operate beyond Perpignan.

Apart from such locomotives, there are no available locomotives on the market fulfilling the technical requirements to run on this line. The locomotive manufacturers are ready to build a specific locomotive for this line, but they do not want to take any commercial risk on the development cost neither on the homologation (two countries – i.e. 2 different railway safety agencies – are involved), because of the limited size of the market.

The expected development cost per locomotive (independent of the number ordered) is around 7.4 Million of euro, plus all the homologation (two countries) costs. Time needed is at least three years after the order is accepted. For this reason, Renfe –with its limited fleet- is in fact taking the "technical" monopoly of the line operation and there are no other railway undertakings allowed to run on this section, limiting the infrastructure success and even putting in risk the financials of the international section Concessionaire.

Others main infrastructural bottlenecks:

- At the moment, the main restriction for freight traffic is the limitation about the maximum admissible train length (500m) on the **Barcelona-Figueres** section.
- Section between **Vandellós and Tarragona (conventional) is a single track line.** The large passenger traffic limits the capacity of the entire corridor between Tarragona and Castellón. In this section, a new double-track line (HS) is under construction, planned to be ready for 2015.
- Limitations of capacity in the metropolitan areas exist, **especially Barcelona**, where the interaction with local traffic is particularly significant, especially in Martorell (where a bypass is expected to be built).

Finally, some interventions are needed in order to upgrade the connections to logistic platforms, ports and factories to UIC gauge (1,435).

Most of the traffic still using the old conventional cross-border line via Portbou – Cerbère (100-120 freight trains / week) has origin or destination in terminals or sidings that are not equipped and connected with UIC gauge tracks (SEAT factory in Martollers, Ford factory in Valencia, Tarragona chemical industry plants, ports of Valencia and Tarragona etc.). Even the UIC gauge connection with the Barcelona port is a provisional one. The lack of physical connection at UIC gauge of the most important freight traffic generators / attractors represents a very significant obstacle to develop the traffic over the corridor, since large installations allowing change of gauge are available only on the historic line via Portbou / Cerbère (wheel-sets change equipment, and transhipment facilities for intermodal units, steel products and cars).

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<tr><td>Castellbisball Agujas Llobregat - San Vincenc de Calders-Tarragona (Cataluña area)</td><td>

Physical bottlenecks

Martorell-Castelbisbal: Double track section with heavy commuter train traffic that penalizes freight trains, limiting its potential development because of the few available windows cannot host competitive paths.

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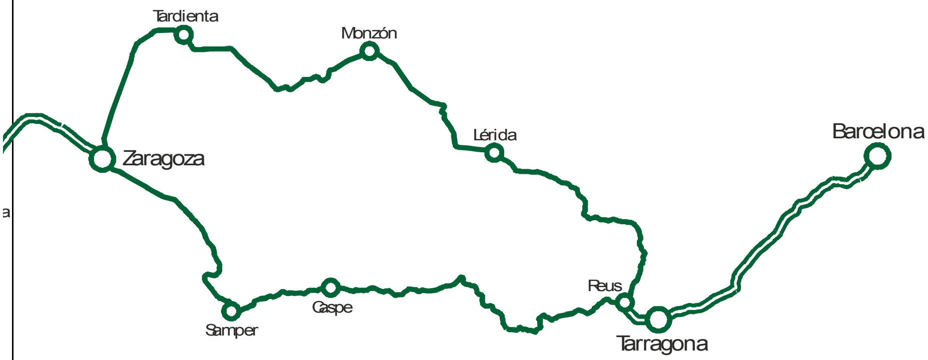
Sections	Description
	Low technical standards This section is equipped with **Iberian gauge** (1,668 mm) so change in width is necessary to provide continuity to the tours. This bottleneck reduces the capacity of the infrastructure. Existing limitations to train length (450 m.) exist, which penalizes rail transportation competitiveness. **Need of improved Traffic Management Systems** Several traffic management systems different than ERTMS exist, which limit the operation of some tracks. for section equipped with Land Train, GSM-R has not been installed.
Zaragoza-Reus-Tarragona (Conventional line-passing through Caspe)	**Low technical standards (per section):** ▪ Single track: this section has two single-track lines working as double track one, which serve to different territories. It would be desirable to adapt both lines to UIC gauge in the future. ▪ Existing limitation to train length for freight (500 m.) ▪ High gradient 19‰ ▪ Iberian gauge (1,668 mm) ▪ No ERTMS (ASFA is the available signalling system) **Zaragoza-Reus** This crucial section, connecting the two main cities of Spain, Madrid and Barcelona **is single tracked between Zaragoza and Reus**, while the remaining part of the line between Madrid and Barcelona is double tracked. Nevertheless, these cities are connected by two different railway routes (both single-tracked) as shown in the following map:  **In order to maximise the running capacity, these routes are used as a single double tracked railway line (forming an integrated system);** which means that on each route trains run on a single direction (trough Caspe for trains coming from Barcelona, and through Lerida for trains coming from Barcelona). Furthermore, it should be underlined that these routes are used mainly by freight operators while passengers use the HS line. Said that, **the Mediterranean corridor alignment follows only one of these two sections (the one which goes through Caspe); this choice should be changed; because it would be more efficient to include also the second one (as requested by the Ministry see Annex 6).**
Tarragona-Valencia (conventional line)	▪ Single track between Vandellos y Tarragona. ▪ Existing limitation to train length (500 m.) ▪ Iberian gauge (1,668 mm)
Vandellos-Castellon de la Plana-Valencia (HS line planned/under construction)	Castellon de la Plana-Vandellos (Planned, source Adif 2014) Castellon de la Plana- Valencia (Planned, source Adif 2014)
Valencia-Xativa-La Encima (Conventional line)	**Low technical standards (per section):** ▪ Iberian gauge ▪ No ERTMS Valencia port, problems related to the conventional line problems: freight traffic flows run on the Iberian gauge, interventions for mixed gauges are needed
Valencia-Xativa-La Encima (HS line under construction)	HS line is under construction (source ADIF 2013)

Sections	Description
La Encima-Alicante (HS line)	New HS line (only for passengers) works ended in 2013 (source ADIF 2014)
La Encima-Alicante (Conventional line)	**Low technical standards (per section):** ▪ Single track ▪ Existing limitation to train length (< 450 m.) ▪ High gradient (17 ‰) ▪ Iberian gauge (it is planned to be built a third track with the UIC gauge) ▪ No ERTMS (ASFA is the available signalling system)
Alicante-Murcia-Cartagena (Conventional)	**Low technical standards (per section):** ▪ Single track ▪ Existing limitation to train length (500 m.) ▪ Not electrified (electrification of the line has been already planned) ▪ Iberian gauge (1,668 mm) ▪ No ERTMS (ASFA is the available signalling system)
Murcia-Almeria (missing section; HS line already planned)	Link between Algeciras port and the Eastern Part of the corridor is restrained also by this missing section; there is no direct link between Murcia and Almeria, forcing the journey to Alcazar de San Juan, in Castilla la Mancha.
Andalucia area: Almeria-Moreda-Granada-Sevilla **(conventional line)** **Almeria-Moreda-Granada-Sevilla (planned/under construction HS)**	**Low technical standards (per section):** ▪ Not electrified tracks: Almeria-Moreda-Granada-Bobadilla-Utrera (Conventional line) ▪ Existing limitation to train length: Almeria-Moreda (430m.), Moreda-Granada (400m.), Granada- Bobadilla (360m.), Bobadilla-Utrera (400m.) ▪ Single track causing capacity reductions ▪ High gradient 22-28 ‰ ▪ Iberian gauge (1,668 mm) ▪ No ERTMS: at the moment line is equipped with Land Train, GSM-R is not available. The new high speed line between Granada and Antequera will be only for passengers, a project for the upgrading of the conventional line (where we will run freight trains) is under evaluation by the Ministry but it has not been included in this version of the Implementation Plan.
Andalucia área: Algeciras-Bobadilla (Conventional line) **Algeciras-Bobadilla (planned/under construction HS)**	Conventional line: This section connects the Core port of Algeciras to the national railway network, nevertheless this part of the Mediterranean corridor suffers from low technical standards, penalizing the freight flows departing from or arriving to the Port, such as in particular: ▪ Section with a non-electrified line over 176 km ▪ Section with a 305.3 km single-track line, (potential bottleneck) ▪ Maximum admissible train length for freight trains: 500m.; (this constraint concern all the conventional sections up to Madrid). ▪ Different traffic management systems than ERTMS exists, which limit the operation of some tracks. Section equipped with Land Train, no GSM-R. No ERTMS (BT type signalling system is available) ▪ Iberian gauge (1,668 mm). ▪ There are a significant load limitations with values ranging between 920 - 960 t / train connected to grades with 24 ‰ It is worth remembering that this railway line connects two European corridors (Atlantic and Mediterranean); the upgrading of this stretch to the European requirements could generate a **Network effect**. If the above mentioned upgrading of the single rail track to the TEN-t standards will tackle also the "high gradient issue" (24 ‰), the actual investment could be sufficient at least in **the short-medium run**. If capacity problems will arise, the doubling of the section could be evaluated in the **long run.**
Sevilla-Cordoba-Linares- Santa Cruz de Mudela (conventional line)	**Low technical standards (per section):** ▪ Single track: except for few elementary sections ▪ Existing limitation to train length for freight: 500-550m. ▪ High gradient: on elementary sections such as: Linares-Santa Cruz de Mudela (16%) ▪ Iberian gauge (1,668 mm) ▪ No ERTMS (ASFA is the available signalling system)
Cordoba-Bobadilla (Conventional line)	**Low technical standards** ▪ High gradient:17% ▪ Gross load hauled ranging between 920 and 1,980 t, with a

Sections	Description
	▪ Single electric locomotive class 253 ▪ Existing limitation to train length for freight: 500m. ▪ Iberian gauge (1,668 mm). ▪ No ERTMS (ASFA is the available signalling system)
Sevilla-Cordoba-Puertollano-Ciudad Real-Madrid (HS line)	High speed line in UIC gauge, exclusive for passenger traffics. ERTMS is not available (GSM-R and LZB as well as ASFA).
Santa Cruz de Mudela-Alcazar de San Juan-Madrid (Conventional line)	**Low technical standards (per section):** ▪ Existing limitation to train length for freight: 500m except form Alcázar de San Juan – Madrid which allows 740 m. ▪ The switch to Iberian gauge (1,668 mm) is necessary to provide continuity to the tours ▪ No ERTMS (ASFA is the available signalling system)
Madrid-Casetas-Zaragoza (Conventional line)	**Low technical standards (per section):** ▪ Single track in a short section between Calatayud and Ricla ▪ Existing limitation to train length for freight (500 m.) ▪ High gradient (Guadalajara Torralba 14‰) ▪ Iberian gauge (1,668 mm) ▪ No ERTMS (ASFA is the available signalling system) The upgrade of the Madrid-Zaragoza-Tarragona conventional line is not yet defined and planned. Delays in the development of ERTMS have also been recorded.
Madrid-Guadalajara-Calatayud-Zaragoza-Lleida (HS line)	High speed line in UIC gauge, exclusive for passenger traffics.
All sections	*Insufficient integration among transport modes* The Spanish rail network has numerous logistical platforms with modal interchange between rail and road mode, although the capacity of these in many cases is very limited. There are not any freight access to airports, and insufficient capacity of railway access to ports and logistics platform (e.g. access to the Port of Barcelona, Madrid Logistic Terminal). There are other problems affecting most of the terminals in the corridor (track length, electrification, etc.). In terms of capacity, nodes should be managed as a whole because, in many cases, one terminal has problems but at the same time a close terminal is less-than-expected used. Finally, in the Andalucía Region, several sections connecting Algeciras Core port to the National railway network, suffers from bad technical conditions (not electrified single track lines with Iberian gauge) *Environmental and safety risks* Currently in Spain, although is one of the countries with less level crossings/km, it would necessary to remove them.

Table 70 Railways critical issues in Spain

Source: RFC4 Implementation plan, RFC6 Implementation Plan & ADIF Declaration on the network

Figure 63 Spain-France Cross-Border

Roads

Critical issue	Description
Physical bottlenecks	There is an important bottleneck at the French border between Spain and France. The main connection is the existing highway in La Junquera. This is a toll road dual carriageway with three lanes in the Spanish section south-north direction from La Junquera to France, and two lanes in the other sections. In addition to the A-7 motorway, the old national N-II (single lane in each direction) runs through the same path. Consequently, there is a duplicated section between Zaragoza and the French Border: toll option (always high capacity) and free one (which combines conventional stretches with high capacity roads). Therefore, an alternative itinerary of conventional road stretches exists to avoid tolls. Existing bottlenecks in N-II/A2 Girona and in A7 Vandellós-Castellón. **Limitation of capacity due to single lane road in each direction**. This is the case of the discontinuity of the A-7 in Motril, in the vicinity of Granada; the A-7 has an unfinished section of about 50 km in length where there is only one lane road in each direction. Finally, the limitation of capacity and related congestions (at peak hour in road sections around Madrid (M-50 Motorway), Valencia (A-7 Motorway) and especially Barcelona (AP-7 Motorway).
Low technical standards (compared to TEN-T Regulation)	All the roads included in the corridor are motorways, **except the incomplete section of the A-7 in Motril**.
Environmental and safety risks	**Emission of CO_2, and car accidents** Currently, the modal split in the Mediterranean corridor is very favourable for road transport. Moreover, although progress has been made in reducing other externalities in recent years in Spain, the current modal split continues to pose serious problems in some areas such as security. **Environmental impacts on sensitive areas** (Pyreneans) IMD recorded in La Junquera: 29,000 with 33% of heavy traffic. **Parking areas** Their spatial concentration is not regular: 11 of them are situated in Catalonia which 5 are next to the French border (between Girona and La Jonquera).
Slow implementation of actions & projects	Discontinuity of the A-7 in Motril, in the vicinity of Granada, the A-7 has an unfinished section (about 50 km in length), where there is only one lane road in each direction.

Table 71 Roads critical issues in Spain

Source: Ministerio de Fomento Road Database & Traffic Database

Airports

Critical issue	Description
Administrative and operational barriers	-
Insufficient integration among transport modes	Considering intermodality between air and rail, it is noteworthy that rail freight has no presence in the airport corridor. From passenger side, most of airports are connected with subway or commuter railways. For Madrid and Barcelona airports, a HS stop is foreseen. At the contrary, highways network has a very good coverage in the area of the corridor, reaching 100% of the ports, airports and main railway stations.

Table 72 Airports critical issues in Spain

Source: AENA & Ministerio de Fomento

The following table shows available connection to the Mediterranean corridor airports in Spain.

Airport	Nº airport runway	Passenger rail access	Freight access	Road access	Parking
Madrid-Barajas (Adolfo Suarez)	4	Commuter Train C-1 / Subway (L-8) / Future Ave Stop	NO	Highways (M-11, M-12, M-14)	21800
Barcelona-El Prat	3	Commuter Train R-2 (only for Terminal 2 and by a single track. Terminal 1, the one receiving the most of the traffic, has not rail connection) / Future Ave Stop	NO	Highway (C-31)	24000
Valencia	1	Subway (L3 - L5)	NO	Highway (A-3)	1550
Malaga-Costa del Sol	1	Commuter Train C-1	Small goods stop near Load Terminal	Highway (A-7)	1208
Sevilla	1	AVE by BUS (35 Min)	NO	Highway (A-4)	1800
Alicante-Elche	1	No	NO	Highway (A-7)	4139

Table 73 Connection to the Mediterranean airports in Spain

Seaports and Rail road terminal

Critical investments have been made in Spain in order to provide a **standard gauge access** to some logistics and freight rail facilities along the corridor.
Anyhow, the capacity and the performance of these links have shown insufficiencies in order to absorb significant traffic growths, as those expected in the corridor.
It is critical to endow ports in the Mediterranean corridor with the logistics road and railway connections and installations required to ensure their intermodality and competitiveness.

Critical issue	Description
Physical bottlenecks	As general issue related to Spanish ports and rail-road terminals, it is important to underline that the adaptation to UIC of the related rail connection will allow the increase of the share of freight rail vis-à-vis road on the short term all along the two main sections of the Mediterranean corridor
Insufficient integration among transport modes	Major investments have been made over the last few years, all resulting in a significant growth in the use of ports and of their influence areas (hinterlands). In order to complete the hinterland connections and therefore achieving the highest returns from the measures implemented, it is necessary to complete the pending road and railway accesses. In particular, as regard rail, proper connections with hinterland are the most relevant critical issue. Rail connection should be addressed in terms of: (1) developments inside the port in order to connect the different terminals with the port rail access; (2) connection between port and rail network (i.e. "last mail connection"); (3) long distance connections because of their bottlenecks and missing sections affect the development of services with origin and destination in the port. The rail access to the **port of Barcelona** has a temporary and deficient UIC connection, producing important operation problems and reducing load capacity. Investment is necessary to facilitate maneuvers, shorten travel times and increase available paths. Some rail connections with freight terminals and sidings are built at the same level of the roads of the Port (4 level crossings). The new rail access to the Port (works scheduled in November[44]) is going to improve the efficiency of operations. As regards road connection, access is currently done by urban roads. Rail access to the **port of Tarragona** needs to be improved. In particular, the renovation of the Clasificación Adif railway terminal located between Tarragona and Vila-seca, to allow the dispatching/reception of trains of 740 m. in length, and the construction of a new railway, mixed gauge, to connect Clasificación with the loading/unloading railway terminals of the southern area of the port. At a physical level, the solution to improve intermodality in the **port of Valencia** requires the necessary space and capacity of existing rail-port infrastructure, as well as guaranteeing that such infrastructure is designed coherently with the TENt standards. In particular, the implementation of a third railway track in the existing railway network permitting a 740 m. train length as well as the connection of the ports with UIC broad gauge European transport networks. With regard to railway connections of **Bahia de Algeciras port**, the improvement and the electrification of the **Algeciras-Bobadilla line** (single track, Iberian gauge, high gradient 23‰, no electrification and train length inferior of 500m) continues to be very important for supporting the excepted traffic growth. In this respect, it is important to take into account that Algeciras is the first port in Spain in terms of handled tonnes (100 Million in 2013) and one of the most important in Europe. Yet, Algeciras port is the main connection between Europe and Africa, Morocco, principally.

[44] In September 2012, a provisional rail link to Prat Pier was put into operation to serve the new Tercat railway terminal. In September 2013, the Ministry of Development, ADIF, the APB, the Generalitat de Catalunya and FGC signed a protocol to provide the impetus for the activities of the initial phase, which also established co-financing for 50% of the activity by the Ministry of Development and the APB. This year, Ministry of Development awaiting tenders for the works of the 1st phase of the new rail link.

Critical issue	Description
	The implementation of the UIC gauge both on the conventional line Sevilla-Cordoba-Linares-Santa Cruz de Mudela and on conventional line Alicante-Murcia-Cartagena is critical in order to improve the land connections of **Sevilla and Cartagena seaports** respectively; these interventions are complementary with respect to the deployment of the standard gauge on the last mile connections to the above mentioned ports. Furthermore **the rail linkage to Cartagena** port needs an improvement in order to comply with the European technical standards (at the moment this railway section is not electrified, with admissible train length of about 500 m., with Iberian gauge). Finally **the Port of Sevilla** needs also an upgrading of the Road Last mile connection. In addition, actions are necessary to provide accessible UIC railway **to the main industrial sites located along the corridor.** Generally speaking, accesses of these terminals to the main transport network must be ensured, to guarantee that the development of the transport system has an impact on the socio-economic growth of a region. (i.e. rail standard gauge and road link road link to replace the level crossing for the chemical industry of Tarragona). According to the information provided by the "Generalitat de Catalunya", in 2012, 71% of large industrial plants in Catalonia have a favourable location for the use of rail intermodal services, in the metropolitan area of Barcelona and Tarragona, although the lack of direct connections in UIC gauge and the capacity and the service that the existing intermodal terminals offer are not the most appropriate to meet their needs. Mainly for **Alcazar de San Juan, Murcia, Córdoba and Antequera RRTs** it would be necessary to: ▪ improve the road access ▪ increase the intermodality rail-road ▪ increase terminals' capacity They don't allow 740m. trains length nowadays (Alcázar de San Juan does it, as special length for trains) **Zaragoza PLAZA** is a terminus station. Rail connection is double and electrified track but with the Iberian gauge. Moreover, **Madrid Logistic Terminal** lacks of capacity in its facilities to absorb the foreseen traffic demand. It also presents some restrictions due to limited usable track lengths as well as lack of UIC gauge reducing rail potential competitiveness in the transport market. **Vicálvaro** terminal is going to be adapted to Intermodal traffic.
Lack of interoperability	The development of a Port Community system[45] in order to enhance the traceability of the load could be a great opportunity for all the Spanish ports.

Table 74 Ports critical issues in Spain

Source: CLYMA Technical diagnosis of Madrid-Lyon axis infrastructure, RFC6 Implementation Plan, ADIF Declaration on the network and Catalan Agenda of the Mediterranean corridor 2014

[45]The Port Community system is a neutral and open electronic platform enabling intelligent and secure exchange of information between public and private stakeholders in order to improve the efficiency and competitive position of the seaports. Furthermore, this instrument also allows the optimization and the automatization of the port and the logistics processes through a single submission of data and by connecting transport and logistics chains.

4.2.3.2 France

Railways

As shown below, the most relevant critical issues are related to:

- **the Lyon - Turin rail link,** where the current standards penalise especially freight trains in terms of productivity, but also passenger trains with a slow, single track between Lyon and Chambéry;
- **the Lyon rail bottleneck**, where trains suffer every day from delays due to intensive and mixed use of the infrastructure inside one of the most important railway hubs in Europe, preventing further development of regional or freight traffic;
- **the link between Spain – Perpignan – Montpellier and Nîmes**, where mixed traffic and limited passenger speed affects particularly the development of international freight trains and high-speed passenger trains. A new section of HSL between Nîmes and Montpellier is currently under construction, with the particularity of being designed to accept also freight trains; and another line is in project between Montpellier and Perpignan, where the existing line is a bottleneck both in terms of capacity and standards (level crossings, low speed and mixed traffic);
- the rail bottleneck of Marseille and the **rail linkage of the port of Marseille**, which suffers from insufficient standards and complexity which affects the productivity of freight trains[46];
- congested railways that link **Valence, Grenoble and Chambéry**.

Sections	Description of the critical issue
Lyon – Turin (existing line).	In addition to the description made for the cross-border link in the Italian section (very high gradient, train length and loading gauge limitations affecting international freight trains' productivity), other major bottlenecks exist on the French section, thus underlining the necessity of a new access line from Lyon. The Chambery – Montmélian section is the most critical section in terms of capacity, because all traffics in the North-South and West-East directions are crossing here, with intense regional train traffic. In addition, passenger trains use a slow, single-track line between St-André le Gas and Chambéry, with strong technical and environmental issues that prevents its on-site doubling. This single-track section is causing uncompetitive travel time and frequent delays for international, long-distance and regional trains between Lyon and Chambéry. The first and second phase of the new access line (Lyon – Chambéry – St-Jean-de-Maurienne) have been recently declared of public utility, thus authorizing expropriations and works to be done. However, the decision is still undergoing legal actions and financing is still uncertain. The "Mobilité 21" commission has declared this project of "second priority", meaning that completing this work could be postponed after 2030. Nevertheless, this position is said to be reviewed in light of the progress of the international section.
Lyon Bottleneck	Lyon is combining the attractiveness of a major city, regional capital, with a central position in connecting north-south and east-west long distance flows, which makes a Lyon one of the most important railway hub in Europe. Today, the railway infrastructure of this node is clearly identified as insufficient to ensure good service quality and allow further development of the traffic. Three sections in particular are raising the most serious capacity constraints: ▪ The St-Clair – Guillotière section passing through the city centre and receiving almost all train traffic on four tracks only. ▪ The St-Fons – Grenay section (connecting Lyon to the East) with only two tracks and a complex connection with the North-South axis. ▪ The Lyon Part-Dieu station with a complex track system and insufficient number of platforms. The first idea to relieve this bottleneck was to build a new freight line outside Lyon to allow freight traffic to avoid passing through the city centre and connect directly to the future Lyon – Turin line (CFAL project, which northern part has been declared of public

[46] the port became recently manager of the railway system inside the port area and plans important investments

Sections	Description of the critical issue
	utility in 2011). However, it has become recently clear that a global approach is necessary, combining short, medium and long term works to improve the whole system. The long-term project foresees two more tracks from St-Clair to Grenay, which may be underground between St-Clair and Guillotière inside Lyon.
Nimes – Montpellier – Spain Border	The conventional railway line between Nîmes and the Spanish border suffers from mixed traffic (TGV trains, regional, freight) and insufficient capacity in particular in urban nodes and between Montpellier and Perpignan. Due to the mixed traffic, the remaining capacity is likely to be allocated to the additional demand for high-speed services triggered by the CNM and the high-speed line Barcelona-French border. Therefore, the provision of high-speed passenger services will affect the capacity for freight. The new HSL Line between Nimes and Montpellier is currently under construction and will be operational by 2017. It will accept passenger and freight traffic. The studies on the section between Montpellier and Perpignan are still on-going, with a recent ministerial decision that identified the project. Nevertheless, this section has been declared of "second priority" by the "Mobilité 21" Commission. In case of delays the government should upgrade the existing conventional line with GSM-R and ERMTS systems in order to make it interoperable and offer more traffic capacity.
Valence, Grenoble and Chambéry	This line has been recently widely upgraded with track regeneration, electrification and partial doubling of single-track sections. It has also been connected to the Lyon – Marseille High Speed Line. This will allow considering the path from Valence to Montmélian as an interesting itinerary along the corridor, skipping the bottleneck of Lyon and reducing journey times. Nevertheless, its capacity will still be limited by remaining single-track sections and heavy regional train traffic around Grenoble

Table 75 Railways critical issues in France

Roads

The most relevant critical issues are related to:

- the Fréjus tunnel (assessed in the Italian section);
- road congestion around Lyon and in the Rhône Valley, Montpellier and between Perpignan and the Spanish border;
- road access to the port of Marseille.

Harmonization of the technical standards and elimination of physical bottlenecks

Sections	Descriptions
Lyon and the Rhône Valley (A7 motorway)	The A7 motorway is the most circulated motorway in France. It suffers regularly from congestion, especially in the summer holiday time. In Lyon, the A6/A7 axis goes through the city centre causing congestion and major pollution problems, despite the existence of a bypass (motorways A46 and A432) at the East of the city. Two projects are on-going : ▪ Completing the Lyon ring road ("Anneau des sciences"), with reconfiguration of the A6/A7 axis in Lyon into an urban boulevard ▪ Making a new motorway bypass for major transit flows. These projects are in early phases, the "Anneau des sciences" is foreseen for 2030 and a new motorway bypass is even considered for after 2030. In the Rhône Valley, after a public debate in 2006-2007, it has been decided not to enlarge the A7 but to strengthen the potential of modal shift by different kind of actions (developing rolling motorways, developing IWW transport).
A9 motorway in Montpellier	In Montpellier, the A9 motorway cumulates the functions of urban highway for local traffic and major long distance transit motorway with a high rate of trucks, causing regular congestion. Works are beginning to double the motorway for about 25 km (on-site for 13 km and with a new route for 12 km, joined with the future HSL and connecting the new Montpellier railway station). End of works is expected in 2017.
A9 motorway between Perpignan and	From 2x3 lanes in Northern Perpignan, the A9 shrinks to 2x2 between Perpignan and the Spanish border, causing strong congestion, particularly in the summer. Section between Perpignan – North and Perpignan – South has already been enlarged to

Sections	Descriptions
the Spanish border	2x3 lanes; works are on-going until 2016 between Perpignan South and Le Boulou while studies are on-going for the last section between Le Boulou and the Spanish border.
Road access to the ports of Fos and Marseille	The port of Marseille is situated in a very dense urban area with regular congestion problems on the A55 and last mile roads to the ports' entries. In Fos-sur-Mer, motorways are situated far from the port, generating heavy truck traffic on local roads and urban areas between the port and the nearest motorways

Table 76 Roads critical issues in France

Airports

Two core network airports are situated in the corridor. The Lyon Saint-Exupéry Airport is connected by rail directly on the Paris - Marseille high-speed line. It has also a tram-train connection with the city centre since 2011. Currently, works are on-going to enhance the terminal for low cost airlines. Works are also to begin before end of 2014 to create a new terminal 1. The airport has an ambitious long-term development program aiming at a capacity of 20-25 million passengers per year, with a third runway and a freight zone connected with the future railway bypass of Lyon.

The airport of Marseille – Provence has recently opened a second terminal, dedicated to the low cost airlines. It is connected to the regional trains between Marseille and Miramas – Avignon but the train station is not directly situated near the terminals (5min with bus shuttle); the high speed trains can be reached at Aix-en-Provence TGV station (12 min with bus shuttle).

Ports

The rail and road accesses to the port facilities of Fos and Marseille are penalized by the inadequacy of the infrastructures to the freight exploitation modes in the conditioning of the containers and in the volumes to be handled. The port authority has several projects to overcome this issue:

On Fos terminal projects concern the automation of the signalization and the creation of a supplementary crossing zone; on Marseille the program includes three independent functional phases, including the reopening of the Mourepiane link, and the update to the high and low gauges in the link Avignon-Mourepiane.

These projects will increase by 60% the rail tonnage capacity at all Marseille / Fos Port facilities.

In addition, two rail-road terminals (one in Fos and the other in Mourepiane) and one rolling motorway terminal (in Marseille) are also being projected, with the objective of improving rail system productivity by putting in common the port's container and ro-ro flows and the flows from the surrounding industrial zones.

The IWW link between the port of Fos and the Rhône is also insufficient because the container terminal of Fos is not directly connected to the IWW system; therefore a project of direct IWW link between this terminal and the Rhône is under study.

The port must also adapt to increasing maritime traffic and vessel sizes, therefore it has several projects to improve capacity and adequacy of both maritime terminals in Fos and Marseille, including improvement of facilities for the motorways of the sea.

Road rail terminals

The most important technical bottleneck regarding rail road terminals on the corridor is the length of the tracks, which often obliges train assembly to make 740m long trains and therefore affecting productivity and competitiveness of combined transport.

For example, the maximum available track length at rail road terminals on the corridor is:

- 400 m. at Avignon – Courtine;
- 320 m. at Le Boulou;
- 400 m. at Perpignan;
- 320 m. at Marseille – Canet;
- 350 m. at Lyon – Venissieux.

Two rolling motorway terminals are on the corridor, in Perpignan and in Aiton (Aiton is connected with Orbassano in Italy). They are both dedicated to the Modalohr system.

In the framework of the Lyon – Turin project, a new terminal for classic rolling motorway system will be created near Lyon. The precise localisation of this terminal is not determined yet. This terminal could be joined with a new classic combined transport terminal with 740m long tracks, thus replacing or completing the Lyon – Venissieux terminal.

Inland waterways and inland ports[47]

The Rhône river between Fos-sur-Mer and Lyon is efficient and allows the navigation of large vessels. However, ports and terminals along the river can be described as insufficient and lack of intermodal facilities:

- The container terminal of Fos sur Mer is not directly connected with the Rhône;
- The Port of Lyon (Edouard Herriot) needs improvement of its rail and road access: rail access in particular is not electrified and generates complex train manoeuvres. Its situation in the heart of the city of Lyon is an asset but makes further development of port facilities difficult.

A way of improving the use of the Rhône as major freight transport infrastructure would be to create new intermodal facilities. In fact, two projects along the Rhône have the objective of linking new or extended industrial zones with intermodal terminals combining road, rail and waterway: the Salaise-Sablons platform (just south of Lyon) and the Avignon – Courtine platform.

The canal linking the Rhône near Fos-sur-Mer and the port of Sète is also part of the TEN-T core network. This canal needs several improvements to reach TEN-T standards (from CEMT class III to IV) and to increase its performances.

[47] Although the French inland waterways are not part of the Mediterranean corridor, they have been analysed because included in the scope of the study.

4.2.3.3 Italy

Railways

As shown below, the most relevant critical issues are related to[48]:

- **Turin – Lyon rail** line (conventional line), where the current standards penalise especially the freight trains in terms of productivity[49];
- **the existing double track line Treviglio – Brescia** that is facing a capacity shortage, in particular along the section Rovato – Brescia. A part from already on-going initiatives to increase the capacity on the existing infrastructure, the actual situation is creating serious barriers to the development of the passenger and freight traffic;
- **the western part of the corridor from the Italian/French border up to Pioltello** (conventional line), where the standard for the loading gauge is limited to PC45 [50] whereas on eastern sections after Pioltello the available loading gauge is up to PC80;
- **the urban nodes (Venezia, Torino, and Milano)** are characterized by a high promiscuity of rail traffic due to overlapping of metropolitan, regional, long distance and freight traffic.
  The careful planning and renewal of infrastructure (including a rationalization of traffic management for Milano and the deployment of new lines to separate passenger from freight traffic by limiting as much as possible interference in case of Milano Lambrate or Venezia Mestre "linea dei bivi") is aiming to solve such issue.
  Concerning the node of Torino, the main critical issue is the infrastructural organisation of the node, which hampers the capacity of the node and the smooth functioning of rail freight transport.
- **the connection Venezia-Trieste** that is affected by low performance for freight (maximum train length) and passenger (speed) trains.
- **the railway infrastructure of Trieste port** that shows a capacity lack.

[48] Rail Freight corridor 6 – Implementation plan, 2013.
[49] Concerning this issue, the results of Turin-Lyon Cost/benefit Analysis, realyzed by the Lyon Turin Ferroviaire S.A.S., have been considered (i.e. "Revisione progetto definitive della Torino-Lione, LTF").
[50] Implying the impossibility to exploit the rolling motorways with swap trailers higher than 4 m. .

Sections	Description
All (Torino – Villa Opicina)	Reduced interoperability of trains travelling on sections composing the core of different European corridors due to the used signalling system. Such issue will be solved thanks to the implementation of ERTMS along all the line.
Turin-Lyon section and Turin railway bypass	The current technological standards penalise especially the freight traffic. The steep gradient impose the double pushing[51] locomotives in case of trains composed by 20-25 wagons otherwise the maximum admissible weight (with single loco) is around 600 – 650 t. In addition the available sidings, passing tracks and extra tracks length not capable to accommodate longer trains. Finally, according to the information provided by Piemonte region, an issue related to the slow implementation of the new HS rail linkage Turin-Lyon should be underlined; even though the final project has been presented in 2011, it has not yet been approved by CIPE. 
Node of Turin	As assessed by the publication realized by the Lion-Turin Observatory (i.e. "I quaderni dell'Osservatorio ferroviario Lione-Torino") the current infrastructural organisation of the node does not permit to exploit its potential capacity in terms of rail traffic. This issue will be partially removed after the completion of the quadruplication of Porta Susa – Stura, which is one of the interventions currently undertaken by RFI (by means of Italferr S.p.A.)[52].
Torino – Milano (conventional line)	Sections with loading gauge code PC 45 not permitting to exploit the rolling motorway with swap trailers higher than 4 m. or Modalohr wagons (as it happens in the sections from Pioltello to Trieste having PC 80. The section needs a technological upgrade, currently undertaken by RFI
Milano – Venezia Venezia – Trieste	Regarding the Conventional line the main physical bottlenecks (for freight operators) concern the following technical parameters: The section needs a technological upgrade, currently undertaken by RFI 1. Loading gauge limitations per line Milano – Bologna: PC 45 Milano-Pioltello: PC45 The other sections allow a P/C80 gauge. 2. Maximum permissible train length: Approximately between 550m and 625m along entire Mediterranean corridor, with all urban nodes as critical points. Moreover, from Milan to Venice, because of the increasing of the traffic foreseen, a lack of capacity will affect the entire line, especially on the existing double track Treviglio-Brescia, in the next future, creating serious barriers to the development of the passenger and freight traffic. A possible solution is the building of a High Speed line fostering competitive

[51] To effectively exploit heavy trains (with a tonnage range between 650 – 1.150 t) on the Fréjus axis between France and Italy, the multiple double heading at the front of a train is used and for heavier trains (1,300 – 1,600 t) even a third locomotive is necessary.
[52] For the current works commissioned by RFI on the node of Turin, please refer to:
http://www.italferr.it/cms/v/index.jsp?vgnextoid=f6869fa19e4ca110VgnVCM1000003f16f90aRCRD

Sections	Description
	connections (in comparison with road and plane) among the main cities in the north of Italy (with the possibility of separate passenger and freight traffic). Currently there is a lack of funding for the project. In the Venice node, infrastructure (new Railway Master Plan of Venezia SL Station, completion of linea dei Bivi) and technological/signalling upgrading of the existing line have been planned (station traffic control and management system) in order to increase the available capacity and to separate passenger traffic from freight traffic by limiting possible interferences. However, there are the following issues regarding the realisation of this infrastructure: ▪ interference during the construction phase with the newly realised motorway Brescia – Bergamo – Milano (BreBeMi); ▪ funding of Brescia – Padua is still to be completed; ▪ lack of approved preliminary project between Venice and Trieste. Concerning the administrative procedures, the preliminary project (Venice – Trieste) has not been approved up today. The Environmental evaluation undertaken by the Ministry of Environment is currently stopped waiting for clear indications about the expected routing of this infrastructure.
Trieste - Divača	The possible shorting of capacity (even if expected after 2020) suggests the need of starting the project of a High Speed line, fostering competitive connections (in comparison with road and plane) among the main cities in the north of Italy permitting also cross - border connection with neighbouring countries. Concerning the alignment the situation is as follows: A first alignment parallel to the coastal line was developed at feasibility study level in 2008. However, the study showed that this alignment would have resulted in a considerable impact as far as karst geology and hydrogeology were concerned and, for this reason, Italy proposed to abandon it. In January 2011, agreement was found on a new alignment, which runs through the karst highland in places where the presence of underground caves is lower compared to the 2008 solution. For this new alignment, known as the "high corridor", three different solutions were studied on the Italian and Slovenian side, all running not far from the route of the existing railway line which connects Bivio di Aurisina to Opicina, Sežana and Divača. At the end of June 2011, Italy and Slovenia decided on one optimised alignment for which the new project promoter will elaborate the preliminary design. The elaboration of the preliminary design and other preparatory work required for the adoption of the National Spatial Plan on the Slovene section of Trieste-Divača line is foreseen to be carried out in 2013 and 2014. At the end of 2014, it is planned to start the definitive design, which should be completed by the end of 2015.
Rail nodes of: Turin, Milan, Treviglio, Verona, Venice and Trieste	Overlapping of different types of rail traffic (metropolitan, regional, long distance and freight) within nodes.
All (Modane - Torino – Villa Opicina)	Line performance for freight and passenger traffic (train length, speed) has to be improved.
Verona Porta Nova station	Lack of a dedicated station granting access to the High Speed rail line services.

Table 77 Most relevant critical issues for Italian rail sections

The issues mentioned in the table have been identified during the desk research phase in the following documents and shared with the relevant stakeholders:

* RFC 6 implementation plan (December 2013)

** PP6 Annual Report of the coordinator Laurens Jan Brinkhorst (October 2013)

***OTI (Osservatorio Territoriale Infrastrutture) – Mediterranean corridor (December 2013) and other relevant documents published on the related website

**** PP6 Annual Report of the Coordinator (October 2013)

***** PIR 2014 - ed. 2013

Roads

As shown below, the most relevant critical issues are related to:

- **Fréjus tunnel:** currently with a single tube accommodating both traffic directions creating potential safety concerns as it happened in 2005 when an accident in the tunnel caused two fatalities. However, the increase of capacity, as it could be generated by the opening of the second tube, is also source of concern as unsuitable improvement of road capacity.
- **In Northern Italy**: the high population density coupled with many small firms and residences spread all over the territory **generate a large amount of transport demand that gives rise to congestion problems**. For this reason, especially around Milan, additional road infrastructures are planned for the next future (mostly funded by private resources), namely:
  - the "Bre.Be.Mi" motorway, linking the city of Milan to Brescia via Bergamo;
  - the "Pedemontana" motorway, connecting the A4 motorway from Dalmine to the Malpensa airport crossing the provinces of Lecco, Monza and Como;
  - the Outer Ring Road in the eastern part of Milan, planned to relieve the traffic on the A1 motorway directed towards the A4 motorway and vice versa.
  - the improvement of the Cross-border Road section between Italy and Slovenia (R.A. 14 motorway);
  - On Turin node two projects are foreseen: the multimodal connection of Corso Marche in Turin and the Turin Eastern beltway.

***Airports*[53]**

The critical issues of the Italian airports can be mainly clustered in three different categories of infrastructures: airside, landside and intermodal connections.

- **Airside infrastructures**: the growing traffic expected in the next ten years will lead to airport capacity shortage; therefore, the expansion of infrastructures is mandatory in order to avoid congestion[54] in peak hours. In the two airports of Milan Malpensa and Venice the realization of a new runway is foreseen, indicating the constraints to handle the growing traffic with the current runways endowment.
  This intervention is also linked to the enlargement of others airside facilities such as terminals, aprons and taxiways. If present in the airport, the upgrade of freight facilities is generally expected too.
  In the other airports, terminal enlargements are expected in order to cope with the growing passenger and freight demands of the following years; in some cases, such as Turin and Bergamo, the specialization of the available infrastructures is expected in order to manage freight, passengers, etc..
  In Brescia (specialized airports for freight only), the extension of the existing runway is expected to cope with the wide body plane used for freight activities. Funding of the proposed interventions are often uncompleted, indicating potential constraint in their realisation;
- **Landside infrastructures** previous air side interventions are related to the enlargement of the landside infrastructures, such as shops, bar and restaurant open to public, parking spaces etc.;

[53] The issues mentioned have been identified during the desk research phase in the following documents and web sites:
* Airports infrastructure managers web sites
**National Plan for the Italian Airports (February 2012)
[54] On this point shall also be considered that the new regulation about airport slot allocation arising from Single Sky 2 will impose the exact respect of each slot timing otherwise the flight will be cancelled. The rationale behind this decision is to avoid that capacity shortage in an airport would cause disruptions in within the entire air transport system in Europe.

- **Intermodal connections:** the accessibility by rail in Italy is currently present only in few airports (within the corridor only in Malpensa and Turin). In particular:
  - Bologna airport: the rail link is currently unavailable, but it is planned. The link will be carried out from the Central Bologna station with the People Mover system.
  - Bergamo airport: the rail link is currently unavailable (a feasibility study has been carried out);
  - Milano Linate airport: the rail link is currently unavailable;
  - Milano Malpensa: the rail connection is available;
  - Turin Caselle: rail connection existing;
  - Venice airport: the rail link is currently unavailable, but it is planned.

Offering new connections seriously challenging the road transport on travel time is mandatory. For main airports, such as Milan and Venice, to realise the metropolitan connection (to easily reach the airport from the city) is important; long distance connections further enlarging the airport catchment area and finally increasing the potential airport passengers are important too.

Therefore, the further development of the connections of Malpensa with the existing High Speed rail and the realisation of the new intermodal connection in Venice Tessera airport (with the metropolitan rail service and the planned High speed services) is a priority.

For Bologna and Linate, the completion of the on - going works is mandatory to realise the people mover and the underground line; for all the others airports it will be necessary to start the works (where already projected/planned) or to study the potential connections (e.g. Verona).

The funding of the proposed interventions is not often completed, indicating potential constraint in their realisation.

All the proposed interventions will be examined during the study, according to the traffic volumes expected at different time horizons.

Ports

Critical issues	Description
Physical bottlenecks and Low technical standards (compared to TEN-T Regulation) and lack of interoperability	**The limited available draughts** of **Venice port** (due to the lagoon) pose some limitations for certain types of traffic (requiring vessel of big dimensions). Yet, the available warehouses spaces for some commodities within the Port are not sufficient. In this respect, a project related to the construction of an off shore platform has been approved. It will allow largest vessels dock at the Port of Venice. Thanks to this new terminal, the Northern-Adriatic ports will grow in importance as the multi-port gateway for Central and Eastern Europe. Finally, a new container terminal in the petro-chemical area is foreseen, in this respect a strengthening of the rail connection (currently a single electrified track) between Mestre and the industrial area should be needed. The development of rail infrastructure inside the port and their links to the national railway network are planned in order to give an answer to the traffic increase. **The freight traffic for Trieste port** is served by distinct rail transport facilities interconnected and connected to the external international network (in the port area there are about 70 km of tracks). However the freight traffic flow is inadequate in comparison to the available draught (deep enough to allow huge ships to dock), due to the following critical issues: ▪ **Limited warehouse space**: Existing transport infrastructures have almost reached its operational and capacity limits and could soon become a corridor bottlenecks for freight traffic capacity because of the increasing traffic and potential traffic demand due to the investments planned by the Authority in order to expand the maritime service to Central and Eastern Europe and to the Balkans in the near future. The urban contexts pose issues in terms of limited spaces and congestion problems for some terminals causing an increase in the operating costs. The main interventions needed have already been planned (to be realized by 2020-2030); they are meant to expand and accommodate new commercial and tertiary services, such as: - the completion of a new multipurpose terminal - so called *Piattaforma Logistica* - which has to be directly connected to the belt-road and the off-port rail network, with a wharf of about 600 meters in length and a depth of 14 meters; - the enlargement of the existing container terminal (increasing the potential up to a maximum of 1,200,000 TEU) - the increase of the cruise and passenger traffic; - the renovation of the ancient port to be used as yacht harbour and small shipyard activities; - the upgrade of railway station (arrival/departure tracks) and the realization of a new intermodal rail-road Terminal in Trieste Campo Marzio to serve piers and increase inter-modality consisting of an external rail ramp with four lines served by RMGG crane. - the realization of a new Ro-Ro terminal in the Noghere valley area with a 'working' draught of no less than 12 meters for berthing RO-RO vessels. ▪ **Reduced road / rail accessibility**, linked to a high overlap of traffics on the line "Monfalcone (S. Polo's Junction)-Bivio Aurisina-Trieste Centrale". In this context, it would be important to (source: Italian Ministry of Infrastructure and Transport): - upgrade the railway line "Venice - Trieste", increasing also the speed of the historical line, and remove bottlenecks:: "Linea dei Bivi (VE)", "Bivio S. Polo (TS)", doubling of the single track section "Udine – Cervignano" and removing of the numerous rail crossings along the "Venice – Trieste" line; - Re-functioning of the Trieste Campo Marzio station and increasing the capacity of terminalisation of the station. - Increase the length module of the trains operating in the port and outside, which is currently limited to 550m. - Enhance the operational capacity of the rail yard of Aquilina, where 740m. trains can be handled already, in order to shift Ro-la traffic to trains. - Improve road accessibility to the port by upgrading State Road 202, which is the road connecting the port to the Italian and Slovenian motorway network. The requalification is especially needed in view of the new Piattaforma Logistica and new Molo VIII. The project of a new connection of the Piattaforma Logistica to the SS202 is included in the "Regional Plan for transport and logistics" of Regione FVG, Nov.2011.

Critical issues	Description
	A critical issue of the **Ravenna port is the limited draught** (structural problem since Ravenna is a canal-harbour). Yet, Ravenna's port physical bottlenecks would require several works for the upgrading of port infrastructure. The Port of Ravenna is interconnected to the main national road and railway network. Both road and rail accessibility and internal infrastructure have been and are still subject of improvements. Specifically regarding railways, infrastructure has been already expanded within the Port area and is expected to be further developed to serve the port terminals (i.e. New Container Terminal under implementation). Additional investment is planned for upgrading railway connections to the national rail network (technological/infrastructural upgrade between the port and the Ravenna station in order to increase the capacity of the link); works for the elimination of two railway crossings are also foreseen, to solve safety issues as well as traffic congestion which may become critical once the New Container Terminal will be in operation. The relevance of these interventions is also reflected in the recently updated *Piano Nazionale delle Infrastrutture Strategiche*, which includes railway works at the Port of Ravenna, in addition to the construction of the New Container Terminal. **Last mile connections (interventions needed):** - Track extension on the right side of the ports' channel - Removing of the rail and road crossing in the urban area (road underpass "Via Canale Molinetto") **Administrative burdens:** - Increase the efficiency of the administrative procedures - Upgrading of the ICT systems.
Administrative and operational barriers	The access to piloting and towing services is generally provided on monopolistic basis. On this point, it shall be mentioned that the EC has started to foster a progressive opening aiming to reduce related costs.
Need of improved traffic management Systems	For many Italian ports (Trieste and Ravenna included), a consistent issue concerns the adopted IT platforms and the absence of a common platform for all Players/entities (e.g. there is no IT connections with Custom offices and/or other control entities).
Insufficient integration among transport modes	**Accesses** from and to the three ports (**Venice, Trieste and Ravenna)** would need an increase of the actual rail infrastructure endowment, in order to ensure full intermodality. Moreover, road connectivity shall need infrastructure upgrading as well. Regarding Venice port last mile connection, it is important to underline the single track linkage (800 m.) to Mestre station. In this respect, a project of doubling the rail track is foreseen. Moreover, in addition, the first part of historic line "Linea dei Bivi" has been recently restored (double electrified track) allowing the bypass of Mestre node, in particular for freight traffic, only to Venezia-Treviso line. Also for Mestre and Marghera ports, the existing of a single track with low speed (average of 30 km/h) causes capacity limitation in terms of flows per hour. Yet, several intersections between railway line and roads hinder the smooth functioning of combined freight transport services.

Table 78 Most relevant critical issues about Italian ports

Rail road terminals

As shown below, the most relevant critical issues are related to:

- the **Orbassano node,** that now is facing a lack of accessibility to HS rail (the access to conventional rail exists); this will be solved with the new Lyon Turin line and the related works in the node of Turin. The project foresees a dedicated connection of the rail road terminal with the new line.
  The direct access from the HS line would enhance capacity on the existing conventional rail line where it is expected to be activated a metropolitan rail service. Some critical voices indicate that to fully use the access along the HS line it would be necessary to use dual voltage locomotives (not so common among the rail freight undertakings). Otherwise, in case of old locomotives it would be used the conventional line (thus may lead to manage priorities between metropolitan and freight trains using the same line); finally, a serious problem concerns the maximum admissible train length in the Ro-La terminal.
- the **Milano Smistamento node**, characterised by a lack of capacity. According to the CERTeT Bocconi analysis, the proposed project to overcome this problem requires a budget of 300 million euro, but still not funded. The same issue arise for the intermodal terminal of Novara CIM. In Milan Segrate the extension of track capacity, through shifting of the signals, has already been completed.

Finally, considering the issue of expected capacity shortage, it can be said that no common consensus on the solution to solve the physical bottlenecks has been individuated.

Inland waterways

As shown below, the most relevant critical issues on inland waterways are related to (source: General plan for the Italian north side IWW - 2011):

- **limited draught of waterways** subject to seasonal variations (only in the summer season);
- **lack of direct transhipment** between inland and sea ports;
- **lack of a direct rail connection** up to the quay in the main inland ports (i.e. Cremona);
- **accessibility** of the western part of the corridor (between Cremona Milan and Casale Monferrato) is limited to main vessel due to **a missing lock**; the channel linking Milan with the existing IWW is currently under construction;
- **low navigability reliability,** the low rate (60%) is due to the constant variations in hydraulic conditions. This constraint provokes a limited draught and a consequently reduction of the transported tonnes per vessel. In particular, about twenty critical points have been identified, five of them are along the Cremona-Mincio section;
- **not adequate fleet,** the current Italian fleet is not sufficient in terms of units and qualitative standards because there are no vessels which meet Class V requirements; on the contrary, the majority of the convoys follow Class IV standards because of the infrastructural constraints such as limitation of lock measure. In the next future, with the improvement of the lock, it will be possible to use a class Vb vessels increasing the efficiency of this transport mode.

Critical issue	Description
Physical bottlenecks and low technical standards (compared to TEN-T Regulation)	Technical features needed to ensure river navigability: * river depth decreasing in several points (e.g. Volta Grimana-Foce Mincio); * lock adjustment as well as dredging and signalling constraints (e.g. Cremona-Piacenza); * minimum width (e.g. Volta Grimana-Po Brondolo); * height of bridges does not meet the required standard (e.g. Pontelagoscuro) The next paragraph shows a detailed description of the TEN-t requirements set by Regulation 1315/2013.
Administrative and operational barriers	Administrative barriers: *Slow administrative process (long terms to obtain a certificate); *A single basin Authority needed; *Lack of a system of data gathering; Operational barrier: no resources for the renewal of the ship fleet.
Lack of interoperability	Lack of physical infrastructure for transhipment sea ships - river ships (e.g. Ravenna, Venice, Levante ports).
Insufficient integration among transport modes	Lack of last "mile" connection to Milan needed in order to increase the freight inland waterway traffic (e.g. Muzza-Truccazzano) Lack of direct rail link (e.g. Mantova port)
Need of improved traffic management Systems	Please see paragraph on the RIS application.

Table 79 Most relevant critical issues for Italian IWW

A more detailed overview of the critical issues related to the physical bottlenecks is provided in the following table.

	Mediterranean inland waterways sections	Length	CEMT Class	Lock	Bottlenecks	Interventions*
Mincio river: from Mantua to Po river	Mantova <--> Foce Mincio**	19 km	Va	➢ *Governolo*		IWW renewal of the navigable line in Mincio River to the connection of Mantova lakes. Elimination of physical bottleneck in Masetti Lock, and connected industrial quay.
Po river (from Casal Monferrato to Polesine Camerini)*	Pavia <--> Casale Monferrato	85 km	III		No freight traffic due to Isola Serafini lock. Infrastructural works needed.	On-going improvement to class Va (construction of new lock Isola Serafini: procurement process on-going)
	Piacenza <--> Pavia	65 km	III			
	Cremona <--> Piacenza	37 km	IV	➢ *Isola Serafini*		
	Cremona <--> Casalmaggiore	54 km	IV	➢ *Cremona double lock*	Free stream works needed in the short run-up to date navigability is not assured during the summer season (Po river regulation needed in the long run); Dredging works needed	
	Casalmaggiore <--> Foce Mincio	77 km	IV			
	Mincio <--> Ferrara	60 km	IV	➢ *S.Leone double lock*		
	Ferrara <--> Volta Grimana	53 km	IV			
	Volta Grimana <--> Polesine Camerini	20 km	Va	➢ *Volta Grimana double lock*		
Waterway Po-Brondolo (From Volta Grimana to lagoon Venice – Conca di Brondolo)	Volta Grimana <--> Cavanella d'Adige	13 km	IV	➢ *Cavanella destra*	➢ Lock with insufficient standard	Cavanella d'Adige right lock under construction (Class Va)
	Cavanella d'Adige <--> Chioggia	16 km	IV	➢ *Cavanella Sinistra* ➢ *Brondolo*	➢ Rosolina railway bridge (4.6 height)	Cavanella d'Adige left and Brondolo locks are under construction (Class Va)
	Chioggia <--> Venezia	31 km	Va			
Ferrarese waterway (From Po river to Garibaldi port)	Ferrara <--> Porto Garibaldi	72 km	IV	➢ *Pontelagoscuro* ➢ *Valpagliara* ➢ *Vallelepri*	➢ Pontelagoscuro represents the main limitation	Work in progress – Ferrara Waterway: works for the implementation of class V standards of the segment Pontelagoscuro-Portogaribaldi, including a better connection with the sea in Portogaribaldi
From Venice to Monfalcone	Porto Nogaro <--> Monfalcone	60 km	VII			
	Venezia <--> Porto Nogaro	120 km	IV	➢ *Cavallino* ➢ *Cortellazzo* ➢ *Revedolo* ➢ *Bavazzana*		

	Mediterranean inland waterways sections	Length	CEMT Class	Lock	Bottlenecks	Interventions*
Waterway Milano – Cremona (from Milan to Cremona)	Milano <--> Pizzighettone **	60 km	Missing link		Realisation of a new canal linking Milan East area in Truccazzano, in which new road (Bre-Be-Mi, external east Milan motorway) and rail (HS speed and High capacity rail) development axis will intersect, and the area of the main existing inland port of North Italy, Cremona, already provided with rail and road connection. (LENGTH 60km).	New canals under development
	Pizzighettone <--> Cremona**	14 km	Va	➢ *Acquanegra*		New canals

Table 80 Italian IWW alignment and CEMT Class per section

** For the whole Italian IWW section, the following interventions are on-going: implementation of RIS, creation of a system of remote control and management of the lock chambers and the upgrading of the installation is on-going.*

*** These sections are not part of the corridor; nevertheless, it would be important to include them in the scope of the study, as proposed in the paragraph 5.4.*

Compliance with TEN-t requirements

The Regulation 1315/2013 states the minimum requirements which should be fulfilled by the inland waterways systems (also for the Fissero-Tartaro-Canal Bianco Core channel, not yet part of the official alignment, please note that its inclusion has been proposed by the Italian Ministry and AIPO). More specifically:

1. Member States shall ensure that inland ports are connected with the road or rail infrastructure.
2. Inland ports shall offer at least one freight terminal open to all operators in a non-discriminatory way and shall apply transparent charges.
3. Member States shall ensure that:
   a) rivers, canals and lakes comply with the minimum requirements for class IV waterways as laid down in the new classification of inland waterways established by the European Conference of Ministers of Transport (ECMT) and that there is continuous bridge clearance, without prejudice to Articles 35 and 36 of this Regulation.
   b) At the request of a Member State, in duly justified cases, exemptions shall be granted by the Commission from the minimum requirements on draught (less than 2.50 m.) and on minimum height under bridges (less than 5.25 m.);
   c) rivers, canals and lakes are maintained so as to preserve good navigation status, while respecting the applicable environmental law;
   d) rivers, canals and lakes are equipped with RIS.

The tables hereunder specify the compliance of the Mediterranean corridor IWW sections regarding: **the CEMT Class, the Minimum Height under bridges, last mile connection to inland ports and the presence of freight terminals opened to all operators in a non-discriminatory way.**

IWW Core sections included in the Mediterranean alignment	CEMT class EU requirement: minimum Class IV CEMT	Minimum Height under bridges EU requirement: Continuous bridge clearance (5.25 metres or higher)
Po river (from Casal Monferrato to Polesine Camerini)	<u>Some sections comply with Class III:</u> Pavia - Casale Monferrato, Piacenza - Pavia <u>Others with Class IV:</u> Cremona – Piacenza, Cremona – Casalmaggiore, Casalmaggiore - Foce Mincio, Mincio – Ferrara, Ferrara - Volta Grimana <u>One with Class Va:</u> Volta Grimana -Polesine Camerini	Compliant to the minimum bridge clearance (5.25 m.)
Waterway Po-Brondolo (From Volta Grimana to lagoon Venice – Conca di Brondolo)	<u>Some sections comply with Class IV:</u> Volta Grimana <--> Cavanella d'Adige Cavanella d'Adige <--> Chioggia <u>One with Class Va:</u> Chioggia <--> Venezia	Not Compliant to the minimum bridge clearance: Rosolina railway bridge (4.70 m.)
From Venice to Monfalcone	<u>One section complies with Class IV:</u> Venezia <--> Porto Nogaro <u>One section complies with Class VII:</u> Porto Nogaro <--> Monfalcone	Compliant to the minimum bridge clearance (5.25 m.)
Ferrarese waterway (From Po river to Garibaldi port)	<u>One section complies with Class IV:</u> Ferrara <--> Porto Garibaldi	Not Compliant to the minimum bridge clearance: railway bridge 4.18 m. (between Pontelagoscuro and Valpagliaro lock)

Source: AIPO website, TENtec data

IWW Core sections not included in the Mediterranean alignment (proposal of inclusion is on-going see paragraph 5.5.2)	CEMT class EU requirement: minimum Class IV CEMT	Minimum Height under bridges EU requirement: Continuous bridge clearance (5.25 metres or higher)
Mincio river: from Mantua to Po river	<u>One section complies with Class Va:</u> Mantova <--> Foce Mincio	Compliant to the minimum bridge clearance (5.25 m.)
Waterway Milano – Cremona (from Milan to Cremona)	<u>One section complies with Class Va:</u> Pizzighettone <--> Cremona <u>One section corresponds to a missing link:</u> Milano <--> Pizzighettone	Compliant to the minimum bridge clearance (5.25 m.)
Fissero-Tartaro-Canal Bianco (connecting Mantua core port to Venice core port)	<u>Some sections comply with Class IV:</u> Ostiglia <--> Rovigo Rovigo <--> Baricetta <u>Others comply with Class Va:</u> Baricetta <--> Porto Levante Mantova (South) <--> Ostiglia	Compliant to the minimum bridge clearance (5.25 m.)

Source: AIPO website, TENtec data

**If the Rhône river will be included in the Mediterranean Corridor alignment; concerning the CEMT class requirement it should be said that it is compliant except for the channel "canal du Rhône à Sète".*

Inland core ports included in the corridor alignment	***Connection with road***	***Connection with rail***
Cremona core inland port	*Yes*	*Yes*
Mantua core inland port	*Yes*	*Yes*
Venice core inland/maritime port	*Yes*	*Yes*
Ravenna core inland/maritime port	*Yes*	*Yes*
Trieste core inland/maritime port	*Yes*	*Yes*

**based on TENtec data*

<u>Furthermore, the following table shows the rail/road connections to core inland ports not localized in Italy.</u>

Others Inland core ports included in the corridor alignment	***Connection with road***	***Connection with rail***
Sevilla core inland port	*Yes*	*Yes*
Lyon core inland port	*Yes*	*Yes*
Budapest core inland port	*Yes*	*Yes*

**based on TENtec data*

<u>Focus on freight terminals:</u> According to the information provided by AIPO, the Core inland ports of Cremona and Mantua offer at least one freight terminal open to all operators in a non-discriminatory way; a similar situation exists the comprehensive port of Rovigo.

<u>Focus on LNG terminals:</u> the only two projects related to the installation of an LNG terminal concern the comprehensive port of Rovigo and the Core port of Venice (see the Investment table, Annex 6).

4.2.3.4 Slovenia

Railways

In the 2014-2020, the orientation given by the EC gives high importance to the development of rail transport (especially for cargo) in order to reduce environmental impacts.

Additionally, the general orientation is to invest into rail service because of possible ecological issues. Rails should take over most of the imported cargo; otherwise the roads will be over occupied and the emissions above acceptable levels.

Thus, the removal of existing bottlenecks for upgrading of existing infrastructure concerns: Divača – Koper (second track); Divača – Trieste (in progress); Divača – Ljubljana (upgrade of the current infrastructure); Ljubljana node (short-term solution: track deepening, Tivoli arc); Zidani Most – Celje (increase in capacity); Pragersko – Hodoš; Pragersko – Hungarian board (project in progress, electric traction); Šentilj – Maribor (upgrade of the existing track).

As far as passenger transport is concerned, only 5% of the population is using rail service as a mean of transport. It should be pointed out that adequate infrastructure and good rail connections are of great importance to attract foreigners to Slovenia, in particular tourists during the summer period. There is a relatively poor connection with Italy and apparently limited interests to improve it.

Sections	Description
All sections	All the Slovenian railway sections forming part of the Mediterranean corridor alignment are not equipped with ERTMS systems (Signalling System Etcs level 1 is going to be developed up to the end of 2015); moreover, the maximum admissible train length is below 740m. ; the only sections compliant to the EU requirement are: ▪ Puconci –Hodos ▪ Puconci-Ormoz Finally, several sections are facing problems in terms of maximum admissible operating speed, as well as axle load limitations. Specific issues per section are listed hereunder.
Trieste – Divaca (SI/IT Border):	Speed limitation (maximum admissible operating speed 75km/h) The possible shorting of capacity (even if expected after 2020) suggests the need of starting the project of a High Speed line fostering competitive cross border connection. Train length limitation
Divaca – Koper (Port last mile connection included)	In the existing operation schedule on the mountainous (severe gradient) single track Divača – Koper section, preference was given (based on energy consumption consideration) to the upstream trains against the downstream trains. That means that the downstream running trains have to wait until the upstream running train have passed. There are 3 side-tracks on the whole line where the trains can pass. This limits railway capacity in this 48 km section, so that the existing 80 trains (in both directions) are near the maximum capacity of this section. This operation schedule decreases the speed of the freight trains. From the designed speed of 80 km/h the speed of the running trains is 34 km/h. Compared with that, speed of passenger trains is about 60 km/h. Lack of capacity with a congestion rate of about 92% Speed limitations (70km/h) Train length limitation
Divaca - Ljubljana:	Speed limitation on the elementary section Divaca-Pivka (maximum operating speed of 80 km/h); moreover, on the elementary section Gornje Ležeče – Pivka, because of tunnel restriction, codification for combined transport reduced on profile P/C 82/412. Lack of capacity on the section Pivka-Ljubliana with a congestion rate of about 87% Finally this section suffers train length limitations.
Ljubljana - Zidani Most	Speed limitations (80km/h) Train length limitations

Sections	Description
Zidani Most – Pragersko	Axle loads and train weight limitation On the following elementary sections the axle load European requirement is not met: ▪ Zidani Most-Celje (20 tonnes) Speed limitation (maximum admissible operating speed 80km/h) Lack of capacity with a congestion rate of about 65%
Pragersko-Hodos (SI/HU Border)	Single track line Diesel traction Axle loads and train weight limitations On the following elementary sections the axle load European requirement is not met: ▪ Cirkovice Pragersko (20 tonnes) ▪ Cirkovice-Ormoz (20 tonnes) ▪ Ormoz-Puconci (20 tonnes) ▪ Puconci Hodos (20 tonnes) Neverthless works are on-going and will be completed in 2015 (in order to solve axle load limitations) Lack of capacity with a congestion rate of about 65%
Railway nodes (e.g. Pragersko, Ljubljana, Poljčane)	Ljubljana node: an intervention of traffic diversion is needed. According to the traffic data, 30% of journeys on railway section Primorska continue its path, or come from, railway section Gorenjska. Since there is no direct rail line connection between them, all train compositions must be directed to the train station in Ljubljana, stop and change the direction and continue on the other section (in the program plan a proposal of 30% traffic diversion to arc of Tivoli is proposed as a temporary solution).

Table 81 Railways critical issues in Slovenia

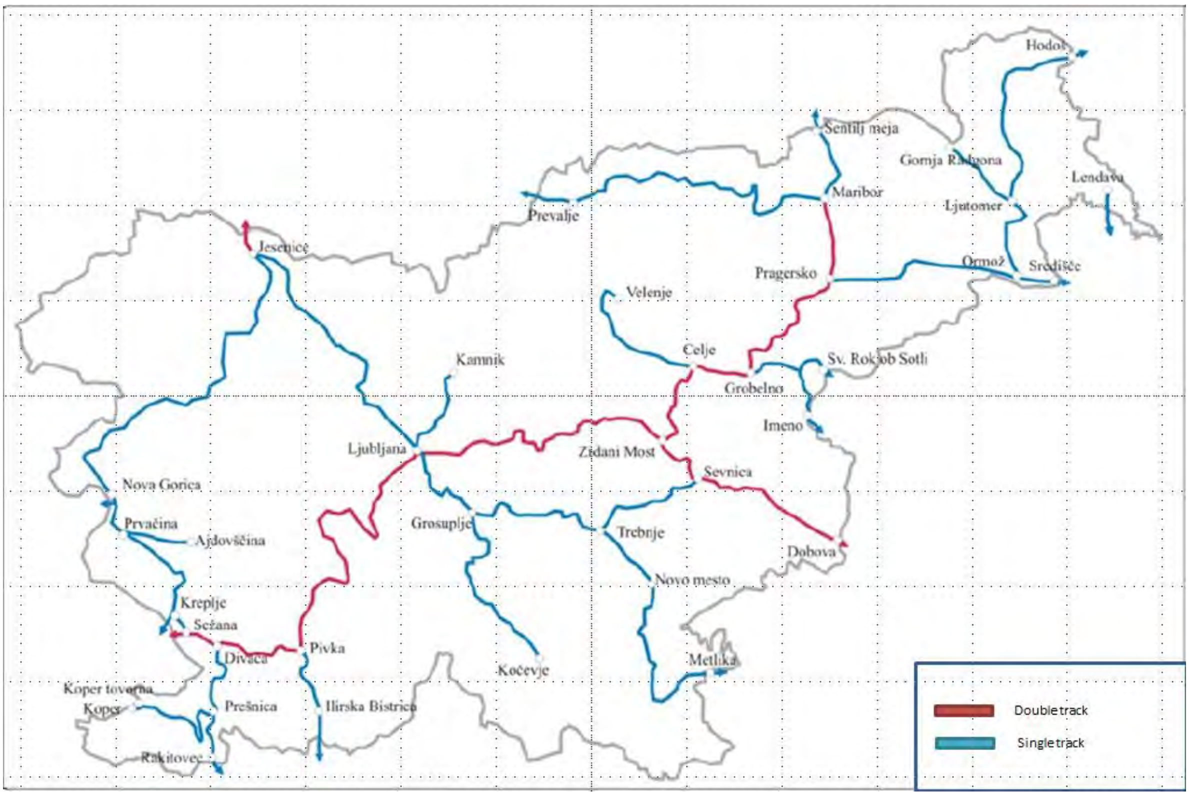


Figure 64 Slovenian railway Network

Roads

From 1994, more than 500 km of motorway have been completed, including sections among the Mediterranean corridor.

Thus, in the 2014-2020, the activity regarding road construction will be limited.

Most of the plans are related to the termination of the existing projects and the improvements on the road section Draženci-Gruškovje (planned to be completed until 2020).

Other plans covering this period refer to the construction of bypasses around the main cities and north ring road.

Concerning passenger transport, in Ljubljana and Maribor, a park & ride system will be established. According to recent studies, however, no more than 25% of the population will be using public transport.

In addition, high traffic volumes are observed during the rush hours in Ljubljana node. So, the Ljubljana ring road could be considered as the main bottleneck, suffering from capacity limitations especially during peak hours. At the moment, a specific action in order to reduce noise pollution on the Ljubljana bypass is going to be addressed by the road infrastructure manager (DARS, a state-owned company), which is studying possible changes to the traffic regime (a reduction of the speed limit from 100 to 80 km/h). Measures are also directed at diverting transit traffic from the very busy northern towards the eastern bypass, which has fewer residential buildings in its direct vicinity.

Figure 65 Ljubljana Ring Road

Airports

The most important planned activity in the near future for the country's main airport (Letališče Jožeta Pučnika, Ljubljana) is the construction of a new passenger terminal (EUR 17m of European, funds obtained, project currently on stand-by). Meanwhile, the key point regarding the unification of infrastructure would be to connect the airport to rail service and to improve road infrastructure around the airport and in the region (planned in 2040, local roads between Štajerska and Gorenjska with an emphasis on the section Želodnik-Vodice).

It needs to be taken into account that Aerodrom Ljubljana it is currently sold, hence its development depends a lot on its new owners (investments on passenger and freight terminals are needed).

Critical issues	Description
Insufficient integration among transport modes	Connection between airport and rail network and improved road infrastructure (highway) around the airport and in the region (planned in 2040, local roads between Štajerska and Gorenjska with an emphasis on the section Želodnik-Vodice).

Table 82 Airports critical issues in Slovenia

Ports

Luka Koper's main infrastructure activities in the future are the extension of piers, the deepening of waterways and the construction of a third pier, which would allow the reorganization of works and improved operational flexibility.

One of the priority projects is also an increase in the capacity of cargo transferred from the port to rail. In order to maintain the 60% modal split, a second track on the track Divača-Koper needs to be implemented.

Critical issues	Description
Physical bottlenecks	Potential lack of port infrastructure considering the expected growth of cargo volumes. Dredging port's basins and port's accessing canals according needs; extension of Pier I and Pier II, new berthing facilities in Basins I, II and III, passenger terminal infrastructure, new port entry and supporting road infrastructure, additional connecting rail infrastructure network within the port, construction of the Pier III and arrangement of hinterland areas for port activities use are needed in order to achieve increase of annual cargo traffic above 20 mio tons until 2015, above 24 mio tons until 2020 and above 30 mio tons after 2030.
Insufficient integration among transport modes	Main physical bottleneck is about the rail section **Koper-Divača** (a new - shortest rail link is under construction), in the meanwhile, the major transport infrastructure is the A1 highroad connecting Koper to Divača and Ljubljana. As mentioned above, Divača-Koper Port is a single rail track-electrified connection (48km), situated in a mountainous region with operational real speed for freight transportation of 34 km/h.

Table 83 Ports critical issues in Slovenia

Road rail terminals

Critical issues	Description
Physical bottlenecks	Railway intermodal terminal located in Ljubljana (operated by Slovenske Železnice) needs more capacity (new investments have been programmed in 2013)

Table 84 Intermodal terminals critical issues in Slovenia

4.2.3.5 Croatia
Railways

Sections	Description
All sections	Entire Croatian section equipped with single track except Dugo Selo-Zagreb section, which is double track. Section DugoSelo -Zagreb suffers from overlapping of traffic flows, corridor X and Vb (Mediterranean) thus being an important bottleneck. Moreover, all sections are not equipped with ERTMS, suffering from train length limitations (average train length allowed is in the range of 400-700m.) and train speed limitations for freight. About safety equipment the auto stop device (AS) of the INDUSI (I 60) type is in use on the entire network. About Gabarit: loading gauge PC 80/410 (UIC Type: C) except Dreznica-Rijeka and Ostarije-Dreznica which have a class A (UIC type). About Max admissible axle load: all sections permits to exploit 22.5 ton About electrification System: all sections are equipped with 25kV, 50 Hz
Dobova-Zagreb (SI/HR Border)	▪ Double rail track ▪ Train speed limitations for freight (<100km/h) ▪ Train length limitations (400-500m.)
Zagreb-Rijeka port	**General description:** This line was built 135 years ago, it has unfavourable route (hard shapes etc.), completely contrary to the modern traffic requirements, especially the section Karlovac-Rijeka (70% of its length is in curves) that is the direct connection to Rijeka port. **Detailed description:** Construction length of the railway is 227,847 km. Longitudinal grade on individual sections of the railway line is as follows: In Zagreb Main station – Moravice section, up to 8 mm/m., in Moravice – Lokve section, up to 17 mm/m. and in Lokve – Rijeka section, up to 26 mm/m. Besides some shorter railway line sections, design geometry in Karlovac - Rijeka section, and especially in Moravice - Rijeka section, is very unfavourable. It consists of a lot of consecutive curves with radius of 240 to 400 m. and opposite directions with no intermediate straights, curves with shortened transition curves and sets of points located in parts of the railway line with a greater longitudinal grade or at alignment breaks. Horizontal geometric properties allow the following design speeds for conventional trains: 80 km/h between Zagreb Main Station and Remetinec, 160 km/h in Remetinec – Karlovac section with speed limited in individual curves to 85 - 140 km/h, between 70 and 90 km/h in Karlovac – Moravice section and 70 km/h in Moravice – Rijeka section. In railway line sections which have been upgraded, in the last ten years, passenger trains with tilting mechanisms applied in curves may achieve speeds 10 to 20% greater than those specified for conventional trains. **Interventions needed:** Construction of the second track and reconstruction of the railway line within the existing route, which would conform to requirements of interoperability demanded from combined traffic railways of the Trans-European conventional railway system, is virtually impossible, with an exception of section between Zagreb Main railway station and Karlovac. From the above, it follows that lasting improvements are only possible if the railway line is relocated. **Low technical standards and other restrictions to freight traffic movements:** ▪ Single rail track ▪ Train speed limitations for freight (<100km/h) ▪ Train length limitations (400-500m.) The maximum weight of freight trains in Moravice – Lokve section and especially in Lokve - Rijeka railway line section is limited due to large longitudinal grade and specific resistance due to the grades and small curve radii. Throughput and transport capacity of the railway varies by section and equals 72 to 99 trains per day.
Zagreb node	In Zagreb railway node system, there are 15 existing railway lines and railway line sections, including connecting and linking sections, of overall length of 192.6 km. They are all classified as railways of international significance. The mainstay of the railway node consists of the following railway lines: M101 state border - Savski Marof – Zagreb Main railway station and M102 Zagreb Main railway station – Dugo Selo, which are double track railways, as well as railway line sections: Hrvatski Leskovac - Zagreb Main railway station, Velika Gorica - Zagreb Main railway station and the eastern bypass section: Velika Gorica - Sesvete (consisting of M401 Sesvete – Sava

Sections	Description
	and M407 Sava – Velika Gorica railways). The node also contains a number of shorter, connecting railways. In principle, it may be said that the railway infrastructure is well blended with urban structure of the city of Zagreb. The main railway lines run through the central area of the city thereby providing a large number of residents with good communications using railway transportation. That particularly pertains to Dugo Selo – Zagreb – Zaprešić railway line, which is nearly ideally positioned relative to city and suburban passenger transport demands. Zagreb railway node is located within an area delimited by Dugo Selo, Velika Gorica, Hrvatski Leskovac and Zaprešić railway stations. Transport activities are performed in 14 stations within Zagreb node, all of them handling cargo, while arrival and departure of passengers is performed in 8 of the stations. 10 stops are available for passenger transport. Passenger transport in the node is organized to have all passenger trains originate/terminate at Zagreb Main railway station or transit through the station. Zagreb Main railway station is the central station of the node in terms of passenger transport. It is point of origin or destination for trains travelling on domestic and international lines, while a portion of the international trains transit through the station following a stopover for embarkation and alighting of passengers. On May 2, 2013, at Zagreb Central Station, a new electronic security signaling device was released. Therefore Zagreb Central Station completely fits in the modern system of traffic management. **Critical bottleneck: lack of capacity in the short-medium run (by pass for freight trains needed):** The most intensive long-distance cargo and passenger transport takes place along this sector, as well as the most intensive suburban area in the Republic of Croatia. Barring any large and radical efforts, Zagreb railway node shall not have sufficient capabilities to receive planned increased railway transport (inner suburban passenger transport and local cargo transport, inbound or outbound long distance passenger and cargo transport, transit passenger and cargo transport). There are requests regarding increase of frequency and volume of suburban passenger transport in Zagreb area, and needs shall continue to grow. Thus, in order to accommodate all those demands and allow transit of the expected volume of transport through Zagreb railway node, it is necessary to expand the existing and build new facilities to match construction and expansion of the corridor railways connecting to the node. Interventions are needed within **Zagreb railway node**, passenger transport on the state **border – Botovo – Zagreb – Rijeka** railway corridor should be carried out along a four-track **Dugo Selo – Sesvete – Zagreb** main railway station section and further on via a double track **Zagreb Main railway station – Hrvatski Leskovac – Horvati railway section**, while cargo transport shall be routed to Dugo Selo railway station bypass and further on via double track Dugo Selo – Zaprešić railway until it reaches Horvati junction. A new marshaling yard is expected to be constructed on that section.
Zagreb-Dugo Selo	The most intensive passenger transport in international, inter-city and city-suburban transport is performed along this section. In terms of passenger transport, the Mediterranean corridor runs through Zagreb node following a route from Rijeka and Karlovac through Hrvatski Leskovac, Zagreb Main railway station and Dugo Selo, where one arm of the railway diverges towards Koprivnica and Botovo (state border with Hungary), and another one towards Novska. The cargo traffic originates from this node to Rijeka and Karlovac, passing through Hrvatski Leskovac, Remetinec, branching to Zagreb Klara and entering Zagreb marshalling yard. Following processing within marshalling yard (shunting or transit – change of locomotive, partial rearrangement of trains), the route leads on through Zagreb Žitnjak, Zagreb Resnik and Sesvete railway stations to Dugo Selo railway station, and further on towards Botovo (and state border with Hungary). **Services running on this section:** The railway is used for combined transport, except for Zagreb Main railway station – Zagreb Borongaj section, which is mostly used for passenger transport. Sesvete – Dugo Selo railway section carries the largest volume of transport in entire Croatia today. Average daily volume of transport on that section comprises 159 passenger trains, including 114 city transport trains which run to Dugo Selo as the node boundary railway station, and 30 suburban trains (with service extending to larger cities in vicinity of Zagreb, towards the node boundary stations) and 31 freight trains. Finally, this is a double track section which permits to run trains with max axle load 22.5 ton and loading gauge of PC 80 (UIC GB, GC) (compliant to TEN-T

Sections	Description
	requirements). **Low technical standard:** ▪ Train speed limitations for freight (<100km/h) ▪ Train length limitations (400-500m.) Overlap of traffic flows, in case of increased volume of freight traffic, there could be a bottleneck in Zara Clara Zagreb station.
Dugo Selo-Botovo (HR/HU Border)	▪ Single rail track ▪ Train speed limitations for freight (<100km/h) ▪ Train length limitations (400-500m.)

Table 85 Railways critical issues in Croatia

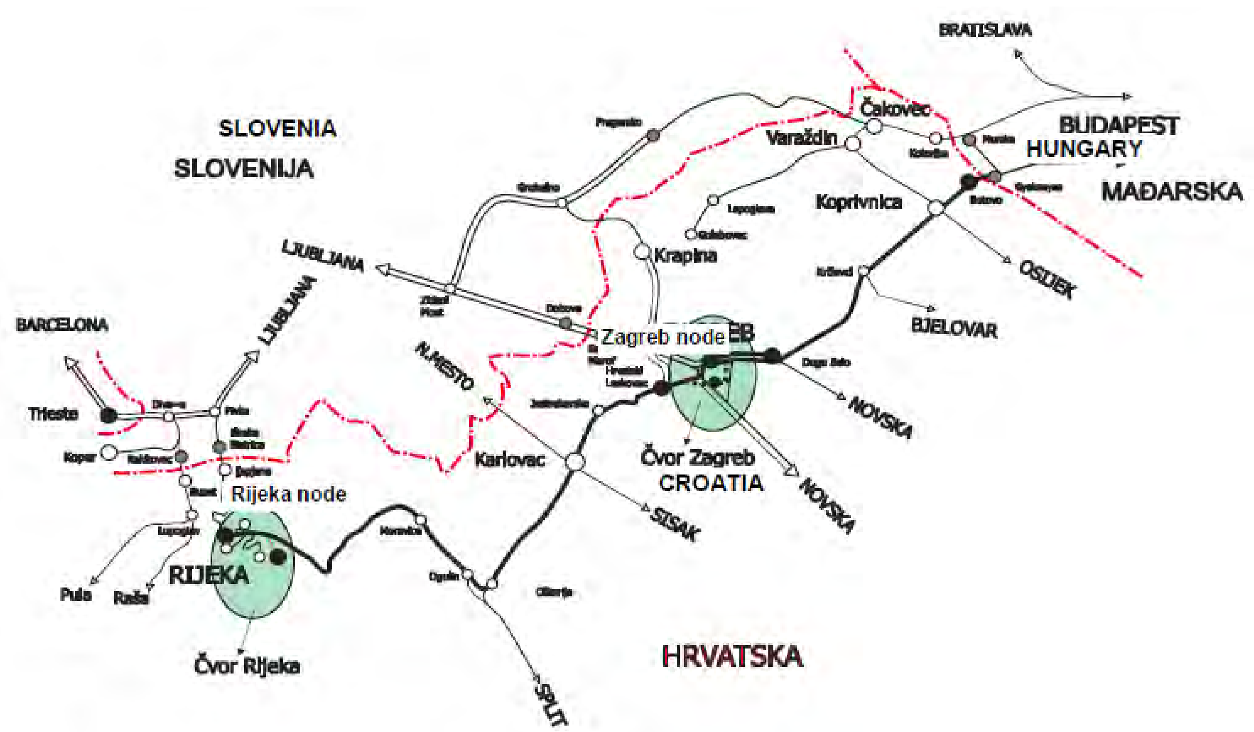


Figure 66 Mediterranean corridor alignment in the Croatian railway network

Figure 67 Zagreb Railway node
**The V.b corridor overlaps with the Mediterranean corridor alignment*

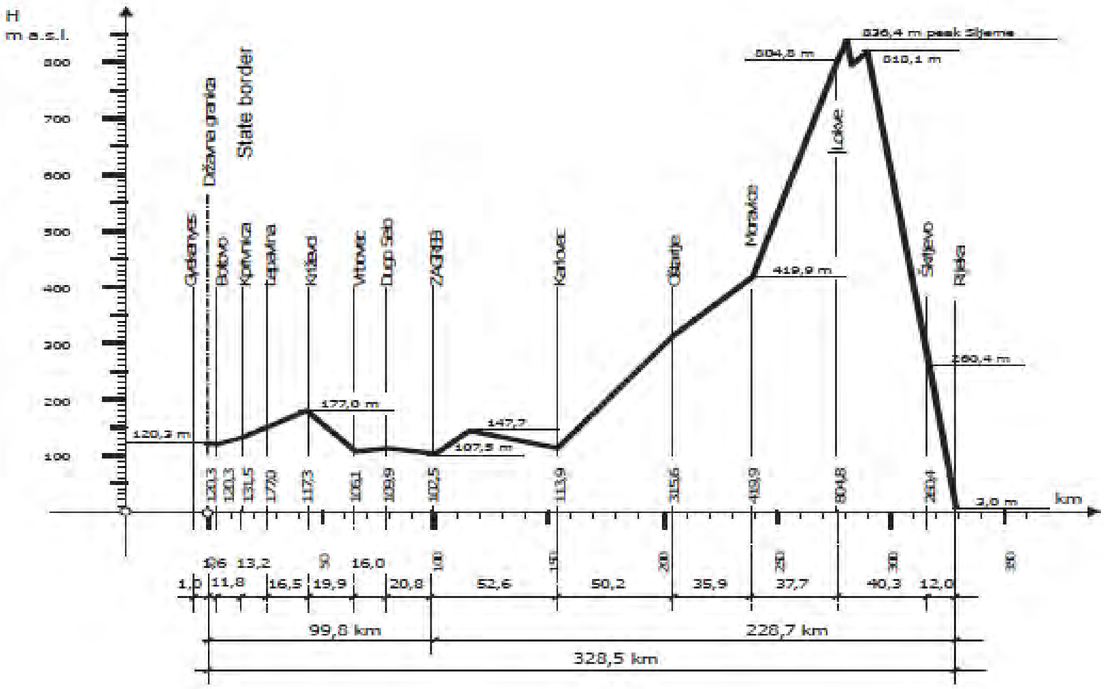


Figure 68 Simplified longitudinal section of the Croatian Railway line

Roads

Critical issues	Description
Physical bottlenecks	Global condition of pavement on the national roads according to operating program for transport for period 2007 to 2013 is acceptable for 44%, fair for 26% and poor for 30%. Quarter of state roads have insufficient fund capabilities.
Administrative and operational barriers	Recent traffic counting system was provided for some motorways and state roads. The plan is to expand the system in upcoming years.
Need of improved traffic management Systems	Weather station for measuring weather conditions on motorway section A1 was not functioning in 2012, which resulted in three deaths, due to poor maintenance.
Environmental and safety risks	Risk of pollution increases, although progressively older cars are being replaced by new vehicles equipped with catalytic converters. Potential problem in terms of safety area rising, likely due to the reduction of resources for maintenance due to the economic crisis.

Table 86 Road critical issues in Croatia

Airports

Critical issues	Description
Physical bottlenecks	Traffic in Croatian airspace is highly seasonal and the main flows run in South East - North West direction. The volume of traffic in the period May-October is almost double than the volume in the rest of the year. This seasonality of traffic provides challenges in achieving a balance between the required capacity and use of resources throughout the year.
Low technical standards (compared to TEN-T Regulation)	Croatia, as a member of EUROCONTROL, shall comply with the European Single Sky Implementation Plan (ESSIP) / Local Single Sky Implementation Plan (LSSIP). The current five-year plans include the actions to be taken by ECAC countries with a view to achieve the ESSIP objectives and improve the performance of their respective ATM systems.
Administrative and operational barriers	The International Airport of Zagreb has only one runway, which is being used for civil and military purposes. Currently, Zagreb airport is being redeveloped by a concessionaire. In order to comply with the regulation of runway width, it is essential to buy an additional of 135 ha of land. To ensure long-term strategy goals (2040), the airport of Rijeka has to have 210 ha of space.
Lack of interoperability	Currently there is a project that should enable the transition of existing AFTN and CIDIN users and systems to a more modern technology, using the ATSMHS application, defined by ICAO to replace the AFTN telegraphic style of working with a store-and-forward Message Handling System based on international Standards and providing enhanced functionality. Actually, this is an upgrade of the existing AFTN system with AMHS functionality with AMHS GW.
Need of improved traffic MANAGEMENT Systems	Croatia Control (CCL) has in place a plan for the modernization and replacement of capital equipment required for the provision of its services. This plan covers critical facilities including: Navigation aids; Communications; Ground links; Surveillance sensors and processors; and Central ATM system comprising all tools used by CCL's ATCOs for the provision of ATC services.
Insufficient integration among transport modes	The peripheral location of cargo terminals in broad area of Zagreb from the runway supplements on the current railroad and a road bypass. Therefore, it is possible to integrate road, railroad and air transport of cargo. Lack of rail connection between Zagreb airport and city.
Lack of coordination among national policies	The air navigation equipment requires modernisation. Thanks to a EBRD loan of €47 Million with sovereign guarantee, Croatia will make the technical and operational steps to meet the standards set by the Single European Sky initiative.

Table 87 Airports critical issues in Croatia

Ports

Critical issues	Description
Physical bottlenecks	Rijeka: Container storage area is rather narrow, and space is limited, so that is a severe bottleneck of the port of Rijeka. Increasing of container transhipment requires the construction of dry ports in the port hinterland and efficient railway connections. General comments on sea ports: Long vessel waiting times re-scheduling due to port congestion: In peak times, vessels have to wait offshore before they are unloaded, which is related to capacity bottlenecks. Insufficient berthing space: a capacity bottleneck that has to be reduced by (costly) extensions/new constructions of piers or through shortening of berthing time. Not available infrastructure flexibility for increasing ship size. Deep-sea berthing space is still missing.
Low technical standards (compared to TEN-T Regulation)	Research has shown that general cargo handling equipment in port of Rijeka, except few harbour cranes recently installed, is technologically old, and 80% of its historic cost is written off, which means that this kind of equipment is not reliable for attracting new amounts of cargo, and it is not possible to bid a competitive price for port – transport services. On the other hand, this even partly modernized port equipment makes good ground for development of modern intermodal system. New pier with recently modernised ship-to-shore and yard equipment at existing container terminal allow more competitive position of the terminal but further rehabilitation of terminal and development of intermodal facilities are still needed.
Administrative and operational barriers	Low level of information integration among port community: a port encloses a high number of stakeholders which are necessary to be integrated within local port community system. Lack of a strong national shipping line. Lack of common integrated development strategy of the seaports and atomised market. The concession system on the maritime property has to be clear and transparent, by determining the method in which the maritime property should be evaluated and determining the concession fees, but with stronger economic and legal safety of the concessionaires. Currently, there are number of issues involved due to lack of transparency of maritime property.
Insufficient integration among transport modes	At the container terminal in Rijeka, there are no conditions for achieving a higher significant usage of railway-short range gauge that goes through the city. On the other hand, there are good highway connections created through modernization in 2012. In order to have an undisturbed traffic flow for the Port of Rijeka, it requires road/rail infrastructure including a bridge to island KrK for development of cargo terminals; LNG Terminal on Krk with required traffic infrastructure; building of road section D-403; importance of rail infrastructure to integrate port of Rasa (one of port of Rijeka terminals at Istria peninsula) to the rest of Croatian railway network.

Table 88 Ports critical issues in Croatia

4.2.3.6 Hungary

Railways

Before moving to the detailed description of the critical issues, it is important to underline that MAV plans to eliminate bottlenecks on several sections belonging to the corridor. The related investments are under preparation and cover:

- **Track alignment** (lifting slow-down signs);
- **Energy supply system of catenary** (sub-stations and catenary);
- **Renewal of old bridges**;
- **Station reconstruction**, in particular the renewal of the three Budapest head-stations;
- **Intermodal investments** in Kaposvár and Debrecen in order to increase the quality of services as detailed below.
  - Debrecen plays an important role in its Euro-region and the Eastern part of the country. Its integration into transport systems should be developed accordingly. Part of the efforts is the creation of an intermodal node serving the city's population and its visitors. The main railway station in the centre of the town will be reconstructed.
  - Kaposvár sees the following investments: interconnection of the railway station, the local and inter-city bus terminals, PR, BR, joint platforms, information system, passenger facilities and other functions; two-level separation of roads and railways, separation of pedestrian movement and bike traffic. The related feasibility study is completed.

Critical issues	Description
Physical bottlenecks and Low technical standards (compared to TEN-T Regulation) and lack of interoperability	*General:* old average age of railway bridges; although plans for their reconstruction is under preparation now. ** Relatively high number of railway stations; Limited use of modern ETCS along lines and at stations (although ETCS L2 in under preparation on most of the sections belonging to Mediterranean. corridor); Outdated telecommunications systems in use (GSM-R, over corridor relevant sections, will be installed in two phases in the next future). Need for extension (widening) to 3 tracks of the Southern Rail Bridge in Budapest simultaneously with a full reconstruction of the existing, deteriorated bridge. This measure is needed due to extremely high traffic load. Issue is under study. *Specific:* Rákos - Hatvan line (Budapest-Miskolc-UA border) development needed to achieve 225 kN, 120 - 160 km/h, ETCS2 (authorisation plan complete for its reconstruction)*. Boba-Székesfehérvár section reconstruction to achieve 225 kN, 140/160 km/h, ETCS 2, 740 m.-long trains, and partial extension with 2nd track needed * Plans are ready. In order to increase investment cost efficiency, 80-100 km/hour speed is considered for this freight traffic section (22.5 t and 740 m. will be, however, applied). Reconstruction of Székesfehérvàr station is being undertaken. Section Székesfehérvàr-Budapest Kelenfold has been reconstructed and ETSC2 is going to be installed. Upgrade of railway bridge across Danube in the southern part of Budapest needed Kelenföld-Százhalombatta section development needed to achieve 225 kN, 120 km/h *. Százhalombatta - Pusztaszabolcs section development needed to achieve 225 kN, 160 km/h *. Plans for reconstructing section Pusztaszabolcs-Budapest have been completed. It will be important to have a clever coordination of reconstruction works (to avoid far-reaching section closures); which parts should be completed until 2020 remains questionable.

Critical issues	Description
	Szolnok railway junction complete development necessary (the authorisation plan for its reconstruction is completed)*. Budapest Ferencváros "C" - Székesfehérvár installation of ETCS 2 needed (contracts in recent times have been signed for its installation)*. Szajol - Püspökladány section reconstruction needed *(intervention under way). Szolnok-Szajol section reconstruction needed (interventions on-going)* (in particular, heavy mixed traffic on out-dated Szolnok-Szajol-Püspökladány section, including at worn-down Szolnok station). Anyway, there is an alternative line Szajol- Püspökladány under upgrading process that may overcome capacity issues). Szolnok Station will be reconstructed only after 2020. This is a priority considering the overlap of two corridors. Budapest-Szajol-Debrecen-Nyiregyhàza: there is mainly passenger traffic, so section Szajol-Puspokladàny will be for 160 km/hour; Puspokladàny-Debrecen will be reconstructed till 2020 (160 km/hour, double track, electrified, RTMS); Debrecen-Zàhony – only after 2020
Administrative and operational barriers	Worsening international market position of Zahony (HU-UA) trans-loading terminal **. "Zahony is a meeting point between the European standard and the Eastern (UA, RF) wide gauges and plays an important role in goods transport, marshalling and logistics (road-rail) for all types of cargo. It is the terminal station of the Mediterranean corridor as a link to the wide gauge network of almost 10 thousand kilometres reaching UA, BY, RF, Baltic States, Central Asia and China. HU government considers Zahony (total surface of the terminal: 80km2) as a priority for further developments. The wide gauge network of the station has been renewed in the last couple of years, thus access to trans-loading points is easy" (source: MAV).
Need of improved traffic management Systems	Limited use of modern ETCS along lines and at stations. ** Lack of modern railway telecommunications tools.** Safety sensitive rail installation exposed to recently growing number of thefts (metal pieces, etc.) **.
Insufficient integration among transport modes	Unjustified competition between state-owned Volan bus companies and a number of state-owned railway passenger services. ** Deteriorating aptitude of the Budapest urban and suburban transport system to adapt to changing settlement development and mobility patterns; growing split between the city and its suburbs; public mass transport losing terrain to individual modes of transport **.
Environmental and safety risks	Need to reduce railway noise levels **(this issue is part of all development projects).
Slow implementation of actions & projects	Inefficient management of tracks and that of railway transport companies, resulting in a weak international market position of HU railways, negative impact on the economy of peripheral regions and that of the whole country ** Railway liberalisation does not necessarily bring advantages due to small country size, small population and low level of effective demand. ** Lack of sufficient domestic financial means within the rail sector for further infrastructure development (such as extension of double-tracks, extension of electrified lines, introduction of high-speed traffic, timely construction of train movement control systems, lifting speed limitations, increasing 225 kN network, decreasing number of rail-road level crossings, reconstruction of rail bridges, reducing the average age of rolling stock). The only important financial resources are the EU programmes. **

**Source: Operative Programme of Integrated Transport Development (Integrált Közlekedésfejlesztési Operatív Program IKOP), 2013; ** Source: National Transport Strategy, Status Quo, 2nd vol., (Nemzeti Közlekedési Stratégia), 2013*

Table 89 Railways critical issues in Hungary

Figure 69 Budapest node representation

Roads

Critical issues	Description
Physical bottlenecks	M0 resurfacing of first carriageway needed between 0+000-29+500 km * The deteriorated asphalt pavement of the old carriageway on the Southern Section of M0 Ring Motorway between interchanges M1/M0 and M51/M0 will be replaced by concrete pavement (including the renewal of the bridge across the Danube). The missing second carriageway (2x3 traffic lanes + emergency lane) of the M0 ring motorway will be built between interchanges M1/M0 and M7/M0 (2.8 km) Construction of last 23 km of motorway to UA border crossing necessary as an extension of Motorway M3 **. M3 motorway section (2x2 traffic lanes + emergency lanes) Vàsàrosnamény-Nyiregyhàza has been already completed, while the section Vaja-Vàsàrosnamény (2x2 traffic lanes + emergency lanes) will be operational by the end of 2014; the last sections Vàsàrosnamény-UA border with two alternative alignments (30 km, via Beregsurány and also via Záhony/Csop) will be completed in 2018-2020 Lack of motorway connection to Slovenia (Letenye-SI/HU border).
Low technical standards (compared to TEN-T Regulation)	General lack of alternative clean fuel stations **.
Administrative and operational barriers	No break-through for domestic intermodal container transport, the bulk of this traffic is carried solely on roads **. Worsening international market position of Zahony[55] (HU-UA) trans-loading terminal **.
Lack of interoperability	Deteriorating aptitude of the Budapest urban and suburban transport system to adapt to changing settlement development and mobility patterns; growing split between the city and its suburbs; public mass transport loosing terrain to individual modes of transport **.
Need of improved traffic management Systems	Monitoring road traffic and registering / storing related information involves the need for legislative changes (regarding the protection of personal data). **
Insufficient integration among transport modes	Unjustified competition between state-owned Volan bus companies and a number of state-owned railway passenger services. **
Environmental and safety risks	Recently reducing accident rates and shrinking death toll but HU is still at the lower end of the EU scale. Insufficient lateral motorway protection (need to increase the width of lateral metallic protective installation in favour of motorcyclists) **. Need to curb speeding (main cause of accidents) by all available means, need to increase the use of safety belts Need to introduce car use limitation in Budapest (main urban agglomeration) and other city centres via a carefully selected method, phased-out introduction and awareness campaigns. ** Lack of motorway connection to Slovenia (Letenye-SI/HU border): the current M70 is actually a 2x1 lane half-profile motorway, to be upgraded to full-profile motorway because of mainly traffic safety reasons.
Slow implementation of actions & projects	Slow, permanently changing and complicated investment approval procedures. ** High level of dependence of EU resources for investments **.

** Source: Operative Programme of Integrated Transport Development (Integrált Közlekedésfejlesztési Operatív Program IKOP), 2013; ** Source: National Transport Strategy, Status Quo, 2nd vol., (Nemzeti Közlekedési Stratégia), 2013*

Table 90 Roads critical issues in Hungary

[55] Zahony is a meeting point between the European normal and the Eastern (UA, RF) wide gauges and plays an important role in goods transport, marshalling and logistics (road-rail) for all types of cargo. It is the terminal station of the Mediterranean corridor as a link to the wide gauge network of almost 10 thousand kilometres reaching UA, BY, RF, Baltic States, Central Asia and China. HU government considers Zahony (total surface of the terminal: 80km2) as a priority for further developments. The wide gauge network of the station has been renewed in the last couple of years, thus access to trans-loading points is easy.

Airports

Critical issues	Description
Lack of interoperability	Deteriorating aptitude of the Budapest urban and suburban transport system to adapt to changing settlement development and mobility patterns; growing split between the city and its suburbs; public mass transport loosing terrain to individual modes of transport **.
Insufficient integration among transport modes	Unjustified use of international truck transport instead of air cargo with destination of Budapest and other points in HU. Reasonable resources would be sufficient to reach 500 thousand tons of annual cargo traffic at Budapest Airport thus creating 5000 jobs at airport and further 15000 jobs in other support areas in the net 5-10 years. **
Slow implementation of actions & projects	No success in creating a new national airline after the collapse of MALEV. ** Slow adaptation process of domestic air transport regulations to changing international rules. ** Under-staffing and resource limitations for governmental bodies in charge of air transport development and administration. **
Lack of coordination among national policies	Low utilisation of Budapest Airport cargo facilities due to deficiencies of bilateral air transport agreements. **

** Source: Operative Programme of Integrated Transport Development (Integrált Közlekedésfejlesztési Operatív Program IKOP), 2013; ** Source: National Transport Strategy, Status Quo, 2nd vol., (Nemzeti Közlekedési Stratégia), 2013*

Table 91 Airports critical issues in Hungary

Road rail terminals

Critical issues	Description
Administrative and operational barriers	No break-through for domestic intermodal container transport; the bulk of this traffic is carried solely on roads **. Worsening international market position of Zahony (HU-UA) trans-loading terminal **.
Lack of interoperability	Need for minimum tri-modal cargo port facilities (e.g. IWW, rail, road), though not all recent state developments have followed this pattern. **

** Source: Operative Programme of Integrated Transport Development (Integrált Közlekedésfejlesztési Operatív Program IKOP), 2013;** Source: National Transport Strategy, Status Quo, 2nd vol., (Nemzeti Közlekedési Stratégia), 2013*

Table 92 Intermodal terminals bottlenecks in Hungary

IWW ports

Critical issues	Description
Physical bottlenecks and Low technical standards (compared to TEN-T Regulation)	Technical features (e.g. draught) of IWW (Danube) in HU are much worse than the EU average. Similar situation is true for ship loading capacity, port density, and port services. Insignificant investment expenditure spent on IWW in recent decades. ** Need to review legal regulations on the classification of HU IWW (Danube and Tisza) to better reflect realities (implications of international agreements, e.g. AGN). **
Administrative and operational barriers	No resources for the renewal of the passenger ship fleet. ** Poor marketing activities of IWW cargo ports, no public information available on services rendered **.

** Source: Operative Programme of Integrated Transport Development (Integrált Közlekedésfejlesztési Operatív Program IKOP), 2013; ** Source: National Transport Strategy, Status Quo, 2nd vol., (Nemzeti Közlekedési Stratégia), 2013*

Table 93 IWW critical issues in Hungary

4.3 Overview of corridor objectives and related measures

In order to allow the preparation of a coherent corridor strategy that will include a list of specific actions, it is important to:

- identify corridor **objectives** as coming from **EU regulation and specific policy orientation of the MSs** along the Mediterranean corridor. A focus on domestic transport policies is provided, given their crucial role;
- define an approach for assessing the performance of the corridor with respect to the achievement of such objectives translating the objectives in **specific KPI** and related target level to be achieved.

4.3.1 Policy orientation of the MSs along the Mediterranean corridor

This section provides a brief snapshot of the **current orientation of MSs along the corridor in terms of transport policy** related to modal shift and safety as well as to the enhancement of infrastructures.

Considering these variables into the implementation plan is important since the achievement of the main corridor objectives could be hindered / supported by the current policy regulatory framework, such us:

- fiscal measures penalising the use of more contaminating modes of transportation, as the "ecotax";
- the introduction of limits to the use of high sulphur bunker in the maritime transportation;
- measures promoting the use of multimodal transport services, as the "ecobonus" in Italy or the "coup de pince" subventions in France.

In fact, the policy makers have the responsibility to ensure the long term adequacy between the demand, in terms of trade volumes, and the offer, in terms of characteristics of the infrastructures and the logistics services delivery along the corridor.

4.3.1.1 Spain

MODAL SHIFT ROAD TO RAIL

1. **Liberalization of the rail passenger market (Royal decree 22/2010):** this measure will foster a better service and cost reduction by means of market competition between different railway undertakings; this policy started on July 2013.
2. **Port taxes reduction for freight using rail transport from/to the port area**. In force by law since 2003 (25% reduction on the freight tax) and recently upgraded up to 50%.
3. **Improvements in rail-port operation efficiency by mandatory agreements between ADIF and each PA to enhance coordination of rail traffic.** Since 2005 Port Authorities assume the role of railway infrastructure administrator of the rail network within the port, aiming at a better coordination also between port and rail operations.

MODAL SHIFT ROAD TO SEA

1. **Improve rail-sea intermodal transportation (Royal decree 2/2011)**: Puertos del Estado supports connection agreements between port authorities and ADIF with the aim to foster a constructive dialogue between these different public entities and to increase intermodal efficiency.
2. **Port taxes reduction for freight using motorways of the sea and short sea shipping services, especially for Ro-Ro cargo**. In force by law since 2010. Short sea shipping traffic grows at a 12% annual since 2010. More than 40% of the trade between Italy and Spain is driven by short sea shipping services.

SOFT TRANSPORT POLICY MEASURES

1. **Promoting sales of new vehicles and the renovation of the Spanish fleet, making it more efficient and secure; PIVE-5 Plan** (Royal decree 35/2014): The State funds anyone who purchases a new vehicle. This plan will run from July 2014 to July 2015, or until the funds are still available. The amount of the budget referred to this measure corresponds to 175 million euros.
2. **Legislative reform aims at reducing administrative burdens, which cause efficiency limitations (law 9/2013)**: this measure will allow online arrangements with national or regional transport authorities. Moreover, it has been established a one stop shop global license instead of several different administrative procedures.
3. **A series of measures to foster the introduction of electric vehicles in Spain; MOVELE Plan (several royal decrees)**: the goal is to reach a total of 250,000 electric vehicles by the end of 2014. This measure intends to: promote the demand of electric vehicles, support the industrialization and research of this technology, facilitate the adaptation of the electrical infrastructure for the correct charge and demand management, enhance a series of cross-cutting programs related to information, communication, training and standardization of these technologies.
4. Royal Decree- Law 8/2914 On July 5, 2014 the Official State Gazette published Royal Decree-Law 8/2014, of July 4, 2014, on the **approval of urgent measures for growth, competitiveness and efficiency.** This instrument makes important amendments concerning transport and the port infrastructure sector, adopted on an urgent basis within the program of measures for growth, competitiveness and efficiency, approved by the Cabinet of Ministers on June 6.

Concerning port infrastructure, several amendments have been made to the Revised State Ports and Merchant Navy Law (RSPMNL), aimed at promoting competitiveness in the port sector and increasing private investment in port infrastructure. Among the main new measures, the term for port concessions has been extended to up to 50 years, a new scenario has been added for an extraordinary extension associated with the contribution for funding port connectivity infrastructure and improvement of the goods transportation networks, a Financial Fund for Land Access Capacity to the Port has been created and the ban has been lifted on the use for hotels, for hostels or hospitality (especially lighthouses) of certain items of disused port infrastructure located on port public property.

4.3.1.2 France

MODAL SHIFT ROAD TO RAIL

1. **Subsidy for trucks using MODALOHR rail wagons.** A.F.A. project ("Autostrada Ferroviaria Alpina"); active until 2011: a monetary subsidy of 15 Mln euros was designed by Italy and France to fund truck transhipments on MODALOHR wagons across the national border; the goal was the promotion of rail freight transport link between the rail-road terminals of Turin Orbassano and Bourgneuf-Aiton. Unfortunately, the short distance has led to the economic unsustainability (Revenue/Cost ratio: 30%) of the service.
   Improvements of the economic model of this line are expected now that 4-meter high trucks are accepted on the service.
2. **Tax reduction for combined vehicles (taxe à l'essieu):** in force since 1998, this measure assesses that vehicles used in combined transport road/rail, and subject to the "taxe à l'essieu" may ask for a toll reduction; in this respect they can obtain a 75% toll reduction.
3. **Aids to combined transportation (2008-2012):** the objective of this scheme is to foster the combined transportation as a viable alternative to the carriage of goods by roads; in this respect, the purpose is to achieve a balance, in terms of final prices, between road and rail transportation services.
4. **Special tax for trucks and semitrailers ("taxe à l'essieu"):** it was introduced in 1986 with the aim of ensuring a contribution from heavy vehicles to extra-damages caused to roads infrastructures.
5. **Transit toll for heavy vehicles (abandoned):** following a law of 2009, a toll system on main non-motorway roads was to be operational in December 2013: all vehicles weighing more than 3.5 tons are paying a toll in relation to the emission levels (euro class), the geographical area (a distinction is made for rural areas) and last but not least, the congestion rate. The French government estimated a tax income of about 1.2 billion euros / year, which would have served the purpose of funding several intermodal transportation policies and sustainable transport infrastructure projects. Following protests and technical difficulties, the government decided to abandon this system in October 2014. An increase of tax on gasoil (2 cts / liter) should partially compensate the missed income.

MODAL SHIFT ROAD TO SEA

Aids for road to sea modal shifting: This scheme is designed to accelerate the launch of new "short sea shipping" routes between two or more French ports or, otherwise, an origin/destination linkage between France and another country belongs to the EU area.

SOFT TRANSPORT POLICY MEASURES

Incentives to firms for an efficient use of transportation services (environmental friendly): Objective of the measure is to protect the environment by creating an incentive for firms and individual users, to use more efficient and less polluting transport vehicles. The scheme is scheduled for the period from 1 January 2009 to 31 December 2014 and provides direct subsidies in the transport of goods and passengers. The total amount of the fund is 30 million euros.

SPECIFIC MEASURES ON THE LYON – TURIN AXIS

Beyond investments in the existing network (development of the GB1 gauge Dijon-Modane railway line and the Mont Cenis) and the establishment of a rail motorway service between Aiton highway (Savoy) and Orbassano (outskirts of Turin), the measures taken so far in favour of modal shift on the Lyon-Turin axis are:

1. **Toll changes for the road tunnels of Mont Blanc and Frejus**
   A 3.5% increase beyond the inflation between 2010 and 2015 was decided in 2009 to finance the security gallery of the Fréjus tunnel.
   The use of the extra income of this increase or the introduction of a further increase to finance the extension of the Alpine rail motorway (AFA) to the Lyon region was also decided during the Franco-Italian summit on December 3rd 2012.

2. **Modulation of tolls based on the environmental performance of vehicles:**
   This is the case in the tunnels of Mont Blanc and Frejus, with a ban on PL class EURO 0 at the Fréjus and PL classes 0-2 at the Mont Blanc tunnel, as well as progressive rates for the upper classes.
   Harmonization and strengthening of these measures is envisaged with progressive improvement of the performance of new trucks.

3. **Transit bans depending on the types of vehicles and goods :**
   Dangerous goods are prohibited in the Mont Blanc tunnel and are subject to restrictions in the Frejus tunnel. These measures are justified by safety requirements.

4. **Implementation of the opportunities offered by the current "Eurovignette" Directive:**
   The Eurovignette Directive as amended in 2006 already allows the implementation of a toll increase up to 25% on cross-border sections, to help finance infrastructure projects on other modes than road but also regulatory charges to reduce pollution and congestion, especially in mountain areas.
   The revision in 2011 introduced the possibility for Member States to take into account, in toll charges for highways and trans-European roads, the external costs of road transport related to air and noise pollution (principle of "internalisation of external costs") always with a goal of fundraising for sustainable transportation projects. The "transit toll for heavy vehicles" was a beginning of implementation of this Directive but, as said before, it has been abandoned. However, discussions are on-going to see if specific tolls in the sense of the Eurovignette directive are feasible in the alpine region, which is subject to strong pollution problems.

4.3.1.3 Italy

MODAL SHIFT ROAD TO RAIL

1. **Recognition of Public Service obligations for freight rail transportation over North-South axis:** In the last few years, the Italian government has decided to fund some rail freight routes over the north south axis. All the import/export flows from each of the Italian south regions has been funded by this public service obligation, with Trenitalia Cargo as beneficiary. The public service obligation is based on the low profitability of these routes mainly due to related not well balanced flows.
2. **Rail passenger services covered by PSO (medium- high average distance and short average distance):** considering the medium-high average distance, Trenitalia has been financed by Italian government for passenger nightly trains. Furthermore, the rail passenger regional transportation service is covered by Public Service Obligations.
3. **Increase of road tolls in the Frejus tunnel for heavy vehicles**: the increase of road tolls in Frejus tunnel has the purpose of increasing road transport price and consequently encouraging other mode of transport (i.e. rail).
4. **"Ferro bonus" (active until 2011 - decrees 592/2010, 750/2010):** the Ferro bonus was the main national incentive scheme for combined transport increasing modal shift from road to rail. The Ferro bonus assigned a maximum contribution of 2 euros per train/km to forwarders which have increased the usage of combined transport over the national rail network, meeting specific requirements. Unfortunately, it suffered from a funding uncertainty.
5. **Subsidy for trucks using MODALOHR rail wagons.** A.F.A. project ("Autostrada Ferroviaria Alpina"); active until 2011 (Program agreement between Ministry and Trenitalia): a monetary subsidy of 15 Mln euros was designed by Italy and France to fund truck transhipments on MODALOHR wagons across the national border; the goal was the promotion of rail freight transport link between the rail-road terminals of Turin Orbassano and Bourgneuf-Aiton. Unfortunately, the short distance has led to the economic unsustainability (Revenue/Cost ratio: 30%) of the service.
6. **Direct subsidies for shifting the transportation from road to rail and ship active in Friuli Venezia Giulia (L.R.24/2004)**: the measure involves the extension of a system of subsidies aimed at supporting the modal shift of freight from road to rail and ship through the granting of aid to the rail and short sea shipping. This measure was meant to compensate the various higher costs of combined transport infrastructure and maritime transport compared to road transport. The duration of the scheme is 6 years from 1 January 2010 to 31st December 2015, and foresees a total budget of EUR 12 million, or 2 million per year. The contribution amount is 33.00 Euro per intermodal unit transported, corresponding to the difference between the external costs in the transport of goods between modes road and rail for a distance of at least 100 km. Reserved to national or international links with origin/destination Friuli Venezia Giulia.

MODAL SHIFT ROAD TO SEA

1. **Subsidy for trucks using vessels. "Ecobonus"** (L.265/2002, D.P.R 205/2006, M.I.T. decree 27/2011): this policy, addressed to truck carriers, consists of a financial contribution of 20% of the tariff applied on existing routes and of 30% on new routes meeting specific requirements. According to the company in charge of the funding management (RAM S.p.A.), the impact of this measure is around 5% of traffic transferred (low success).
2. **Improve the financial autonomy for Italian ports Authorities:** the Italian Port Authorities will be able to retain part of the VAT (1%) produced on their own

territory until the maximum amount of 70 Mln Euros per Year. The identified cap (70 Mln) is not enough to meet the needs of infrastructural modernization. Moreover, the transhipment movements do not contribute to the overall amount expected by this measure because no custom clearing is carried out.

3. **Increasing of maritime rights for pilotage and mooring services.** Gradual adjustment of rates, calculated in an amount equal to 75% of the rate of inflation detected by Istat in the period from 1/1/1993 to 31/12/2011 (+59.3%). The adjustment rates were increased too suddenly.

SOFT TRANSPORT POLICY MEASURES

1. **Subsidies for fleet renewal (environmental friendly):** The incentives are intended only for vehicles with electric drive, hybrid, LPG, natural gas, bio methane, biofuels and hydrogen, with CO2 emissions lower than 120, 95 e 50 g/km. The Law n.134/2012, also provides for the establishment of a fund for the provision of incentives, with a budget of EUR 50 million for 2013 and € 45 million for each of the years 2014 and 2015. According to the "Stability Law 2013 'of 24 December 2012, the expenditure shall be reduced by $ 10 million for each of the years 2013 and 2014 bringing the total resources for the period to 120 million euro. The funds available for 2014 amounted to 63.4 million euros, of which 31.3 million euros are the residual part of the precedent year.
2. **Compensation to heavy vehicles for waiting time at terminals (L.127/2010):** payment of a sort of "fine" to the auto-carrier in case of excessive waiting time at intermodal terminals. In this context, ITC services, such as "track and tracing" systems, should be implemented as a complementary measures.
3. **A single stop shop serving all port operators in charge of providing the control, discharge of certifications, authorizations, licenses and clearances necessary to perform the import/export operations:** this measure will oblige all the public administrations to perform methodological data/system integration, offering companies an uniform interface which, when fully implemented, will allow the request, the control and "download" of certificates/clearances/ permissions electronically.

4.3.1.4 Slovenia

MODAL SHIFT ROAD TO RAIL

1. **Public service obligations:** PSO is provided through the country for almost the entirely of inland and cross-border regional passenger transport: 97% of passenger transport in Slovenia is organized under public service obligations with no distinctions between regional and long-distance travel (given the small size of the country). Public service obligations are defined in a statutory manner in the Railway Transport Act and in its implementing decree.
2. **More efficient use of Rail and Road transportation modes:** National Reform program 2013-2014 - The project of integrated public passenger transport will introduce a uniform ticket system and coordinate the timetables of railway passenger transport, bus lines and city transport.
3. **Rolling stock investments:** Slovenian national transport operational program foresee financial coverage for rolling stock investments. Moreover, the Slovenian government is funding, jointly with EU, the retrofitting of several locomotives with ETCS level 2; this action is in line with the aim of promoting interoperability and intermodality.
4. **Exemption for the payment of road usage:** Exemption for the payment of road usage fees (except motorway and tunnel tolls) using the Port of Koper as the port of entry and exit, or using combined transport in Slovenia, if:
   - Truck axle weight is < 10 tons
   - Truck axle weight is > 10 tons, up to a distance of 30 km from the terminal
5. **Exemptions from restrictions and traffic bans:** The Decree on the Reduction of Traffic on Roads in the Republic of Slovenia stipulates that trucks travelling at the end of the week and during national holidays are exempted from traffic bans if they are involved in combined transport by rail or by ship.

6. **Higher weight limits for road vehicles transporting intermodal loading units:** Even if standard admissible mass is 40 tons, it is allowed an increase up to 44 tons for:
   - Vehicles carrying ISO containers of 40' length;
   - Trailers reinforced for load in unaccompanied combined transport;
   - Articulated vehicles for the transport of swap bodies with five or more axles travelling in combined transport in arrival or departure from terminals.

MODAL SHIFT ROAD TO SEA

1. **"Motorways of the Sea" development:** Port of Koper signed a memorandum of understanding in the field of development Motorways of the Sea between the Hellenic Republic and the Republic of Slovenia.
2. **Intermodality projects in which the port of Koper is currently involved**: The Port of Koper is currently involved in several national and international projects dealing with an increase of efficiency for intermodal transport.

SOFT TRANSPORT POLICY MEASURES

1. **CO2 tax applied to fuel combustion:** In January 2013, the government officially raised the vehicle fuel CO2 tax from €0.03 per litre to €0.035 per litre of gasoline. Biofuels are exempt from excise taxes.
2. **Pollution principle for registration tax:** The registration tax is based on price and CO2 emissions. Rates vary from 0.5% (petrol) and 1 % (diesel) respectively for cars emitting up to 110 g/km to 28% (petrol) and 31% (diesel) respectively for cars emitting more than 250 g/km.

3. **Foreseen program: setting up a system aimed at financing the purchase of new eco-vehicles:** The National Reform program 2013-2014 foresees a system of financing the purchase of new eco-vehicles, namely cargo vehicles and buses (vehicle categories: N2 and N3, and M2 and M3), with engines that meet the EURO VI emission requirements.

4.3.1.5 Croatia

MODAL SHIFT ROAD TO RAIL

1. **Government policies concerning track access charges (TAC) favouring rail transport:** According to the Government, HZ set TAC very low in order to stimulate rail traffic demand (i.e. € 1.38 for pax and € 2.4 for freight traffic in 2011-12; significant increases occurred from 2012 on).
2. **Incentives to renew / purchase new rolling stock and locomotives (pax and freight):** At the end of 2012, the Croatian Government announced that grants would be allocated for the procurement of 44 new trains, of which 32 electric trains, as part of a project included in the transport development strategy and aimed to increase the share of railway passenger transport. HZ received 3.6 billion of HRK from the State for modernization and purchase of rolling stock.
3. **PSO for rail services (pax and freight):** HZ received 1.4 billion of HRK from the State for PSC contracts for 2013-2016. PSO are imposed for rail transport aiming at ensuring tariff obligations; service quantity; service quality given by certain punctuality, regularity and passenger development objectives; planned or foreseen service disruptions are regulated through the agreement with the infrastructure manager. All of these criteria have been imposed by the Ministry of the Sea, Transport and Infrastructure. Almost all domestic passenger rail traffic falls under public service obligations. In 2011, more than 70% of trains were used for the operation of public service obligations
4. **Incentive in terms of Maximum permissible weight for trucks or road trains having three or more axes when involved in combined transportation**: Ordinance on technical requirements for vehicles in road traffic (OG 51/10, 84/10, 145/11) - This ordinance stipulates deviations in terms of vehicles weight involved in combined (intermodal) transport, where in the article 10 it is stated that maximum permissible weight for trucks or road train having three or more axes, when transporting 40 TEU ISO container as a combined (intermodal) transport operation (unit), can be up to 44 tons, while for the hauler in non-intermodal transport the limit is 40 tonnes.
5. **Services provided in combined transport as services of special national interest (financial support by State budget)**: Railway Act (OG 123/03, 194/03, 79/07, 75/09): This act defines services provided in combined transport as services of special national interest (art.39) and provides possibility of cost reimbursement for rail carriers involved in intermodal transport from the State Budget where cost generated by the transport cannot cover the revenues. There is no special tax relief for road vehicles involved in combined transport, except in the part that is arranged by bilateral treaties on intermodal transport with other countries.
6. **Incentives to renew and build new railway lines:** Croatian infrastructure manager HZ Infrastruktura plans to invest EUR 3.3 billion (using Cohesion Funds) in the national section of Mediterranean corridor by 2030 to align it to European standards.
7. **Incentives for freight transport:** In 2010, the three railway companies in Croatia HZ), Slovenia (SJ) and Serbia (SZ) decided to establish Cargo 10 company to increase transport in the pan-European corridor X, but also to increase freight transport in the three signatory countries.

MODAL SHIFT ROAD TO SEA

1. **State grant to renew / purchase new vessels (pax and freight):** The Government of Croatia, through the Croatian Bank for Reconstruction and Development (HBOR), provides financing instruments for shipbuilding.

SUPPORT TO AIR TRANSPORT

1. **PSO for air services (pax):** PSO valid from 31 March 2013 – 26 March 2016 for the following routes: Zagreb-Dubrovnik, Zagreb-Split, Zagreb-Zadar-Pula, Zagreb-Brac, Osijek-Dubrovnik, Osijek-Split, Osijek-Zagreb, Rijeka-Split-Dubrovnik. The maximum number of subsidized flights is 6,857 per year and the operators will receive state subsidies totalling between €13 million and €17 million per year, dependent upon the number of yearly flights.

SOFT TRANSPORT POLICY MEASURES

1. **Pollution principle for registration tax:** The registration tax is based on CO2 emissions, price and the type of fuel used. The CO2 component varies from 1.5% (up to 100 g/km) to 31% (above 300 g/km) for diesel cars and from 1% (up to 100 g/km) to 29% (above 300 g/km) for cars using petrol, CNG or LPG as well as diesel cars meeting Euro 6 standards.
2. **Tolling system favouring green traffic:** Is it foreseen in the existing toll system that environmental friendly vehicles would grant a discount. For vehicles of EURO 4 emission class a reduction of 3% is applied and to vehicles of EURO 5 emission class a reduction of 5%. The discount can be obtained only using the electronic tolling system.
3. **Presence of driving ban for heavy vehicles:** A ban for heavy goods vehicles of over 7.5t and vehicles which exceed 14m in length, tractors, horse-drawn carts, machines and other vehicles whose maximum velocity on straight road do not exceed 40 km/h, vehicles used for driving training exists but only on state roads (SR) and country roads (CR) with the exception of completed motorway sections.
4. **The release of the annual fee for the use of public roads: (act on combined/intermodal transport OG 124/09 art.7)** Owners or operators of motor vehicles and trailers recorded in the Republic of Croatia, which, during the 12 months of the date of the last certification of roadworthiness performed at least 80 prior or subsequent transportation to and from the railway terminal for intermodal transport or unloading station, shall be exempt from obligation to pay the annual fee for the use of public roads to be paid at the registration of motor vehicles and trailers, and that is determined by a special regulation.

4.3.1.6 Hungary

The most recent transport policy measures in Hungary have been summarised in two important programme papers finalized by the end of 2013. One is the "National Transport Strategy – National Transport Policy Concept (Nemzeti Közlekedési Stratégia – Nemzeti Közlekedési Koncepció)", another one is the "Operative Programme of Integrated Transport Development (Integrált Közlekedésfejlesztési Operatív Program)". The latter has already been adopted by the Government with the exception of a list of specific investment projects planned for the period 2014-2020.

Both documents give high priority to the development of rail transport, encouraging the use of more sustainable transport modes and furnishing consistent policy measures for the support of modal shift between modes and from polluting transport modes to environmental friendly systems.

MODAL SHIFT ROAD TO RAIL

1. **National Transport Programme Provisions for supporting rail transport:** Concerning the modal shift from road to rail, which may constitute a consistent policy measure for enhance transport sustainability, the National Transport Strategy foresees the reduction of public road transport offer and the replacement of old rail rolling stocks.
2. **Reduced tariff charges for rail transport and PSO:** The National Transport Strategy considers the establishment of a compensation system for railways track usage in case of public transport services according to the EU regulatory system and the development of uniform tariff system in passenger public transport service. The National government intends to finance, on a long-term basis, cost-efficient public transport rail services and to create new rail transport services.
3. **Improvement of rail transport sustainability and efficiency:** The National Transport Strategy gives emphasis on railway transport development both in the freight and passenger transport sectors in terms of:
   - Improvement of traffic safety, sustainability and smooth access;
   - Improvement of traveller information systems, wide application of ITS and data exchange in passenger transport;
   - Rail network modernization in order to improve scheduled train services (e.g. further electrification; reduction of bottlenecks by lifting slow-down signs wherever possible, bridge reconstruction, energy supply system modernisation, partial double tracking, speed increase wherever necessary, etc.).
4. **Modernization of train transport components and systems:** National Government finance the upgrade of rail rolling stock and foresees the development of rail vehicle fleet (e.g. purchase of electric motor trains) and the modernisation of rail network (e.g. extension of GSM-R and ETCS application) and Station (e.g. reconstruction of station buildings, smooth access to installations, parking facilities, facilitated administration, etc.).

SOFT TRANSPORT POLICY MEASURES

1. **Fostering intermodal transport services and infrastructures**: The National Transport Strategy for 2013 foresees the promotion of integrated travel chains (including: interoperability, intermodality; development, institutional system, regulation) and the development of smooth passenger transport access facilities (e.g. at bus-bays and stops, bus turn-around terminals). In order to foster intermodal solutions, the National Transport Strategy also consider to enhance the competitiveness of combined transport by means of a supporting tariff policy and the development of intermodal infrastructures, financed by National Public Contribution in the framework of European Regional Policy.

2. **Improvement of road safety:** One of the priority set in the Operative Programme of Integrated Transport is the development more sustainable and efficient road transport mode in terms of:
   - Road network development;
   - Improvement of road safety and sustainability features.

4.3.2 Identification of corridor objectives

Needless to say, the **development of the Mediterranean corridor shall respond to the top-level objectives given to the Core Network by the relevant EU regulations, modulated by the specific mobility needs of the regions and Countries crossed by it**.

The TEN-T Regulation[56] defines the **general objective** of the TEN-T network as:

The trans-European transport network shall strengthen the *social, economic and territorial cohesion* of the Union and contribute to the creation of a single European transport area, which is *efficient* and *sustainable*, increases the *benefits for its users* and supports *inclusive growth*. It shall demonstrate European added value by contributing to the objectives in the following defined categories: (i) territorial and structural cohesion; (ii) efficiency between different networks; (iii) transport sustainability; (iv) and increasing the benefits for the users.

The TEN-T regulation provides a list of aspects related to these four categories. These are combined with the priorities for transport infrastructure requirements per mode of transport, included in the TEN-T regulation, and the identified specific corridor objectives and main critical issues, resulting in the following **operational objectives**, grouped in the categories efficiency and sustainability. These operational objectives are further detailed per mode of transport, as presented in the next section.

In that respect, the corridor shall provide **economically efficient and clean transport options to the flows of passenger and good between those territories as well as the other Countries that will take benefit from the corridor development for their international flows** (e.g. Portugal on the Western Side, as well as Balkan countries, Ukraine etc. on the Eastern side).

Given the socio-economic characteristics of the territories involved, the corridor is especially **relevant for the international trade of goods, given the strong economic relationship between the Countries of its Western part and the development – in perspective – of the ones with the Countries on the Eastern part**. Due to the crossing of environmental sensitive areas, such as the Pyreneans and the Alps, the objectives of "**low-carbon and clean transport, and environmental protection" can be more easily met by developing efficient rail freight transport supply** (in terms of both services and infrastructure), well interconnected by efficient "last mile" links with relevant freight transport nodes (sea and IWW ports, intermodal rail-road terminals). The latter shall provide sufficient capacity and efficient operations, in order to avoid that the removal of bottlenecks at network level will make emerge other ones on nodes.

Removal of existing localised bottlenecks on the infrastructure, as well as the alignment of it to suitable technical standards for freight (e.g. 740m allowed length for trains, maximum gradients for new lines 12.5 mm/m., 22.5 axle load, loading gauge UIC C) and **connections to intermodal nodes** appear also key corridor development measures.

As a result, the corridor objectives can be summarised as follows:

1. providing the infrastructure network with the capacity required, **by eliminating the existing bottlenecks and creating the "missing links"**;
2. **interoperability** assuring the adoption of EU standards for each mode;
3. **intermodality** guaranteeing coordination between different modes of transport in the Mediterranean corridor and a smooth connection between nodes and road / rail network.

[56] Regulation on Union guidelines for the development of the trans-European transport network and repealing Decision (11 December 2013).

In addition, the development of the corridor as the backbone of international exchanges between East and West part of Europe will contribute to the economic growth and competitiveness of such areas, as well to their connection with third countries. The corridor crosses some of the most developed region of Europe (Cataluña, Rhone-Alpes, and Northern Italy). In particular, the GDP at market prices in 2010 represents 17% of total EU (28) GDP. Nevertheless all its territories suffered considerably during the economic crisis of last years as shown by socio-economic data.

In the period 2006 – 2012, the GDP per capita suffered a major decline, with special emphasis on Italy and Spain. Croatia and Hungary recorded lower declines (approximately -0.6%), while Slovenia and France recorded the smallest decreases with -0.2% and -0.1% respectively.

The re-launch of the growth taking benefit of the economic potential of the corridor regions will certainly be boosted by better connections between them and to other European market areas, as well as to ports as door for the longer distance exchanges with other continents.

Advanced technological and operational concepts allowing interoperability, tracking & tracing of goods, better intermodal integration are among the accompanying measures to be implemented in order to achieve such targets.

Finally, **the corridor implementation shall be focused on the "network effect" that can be allowed by its connection with other Core Network corridor**, such as the Baltic-Adriatic & the Orient/East-Mediterranean corridors on the Eastern part, the Scandinavian-Mediterranean & the Rhine-Alpine ones in the central part, and the North Sea-Mediterranean & the Atlantic ones on the Western part. The Mediterranean corridor is likely to become the distribution axis of the follows gathered by such North-South corridors across all Southern European regions, i.e. playing an essential role for an integrated functioning of the TEN-T network. However, the actual achievement of such role implies a harmonised and coherent development with the other corridor in terms of both timing and technical characteristics, as well as proper attention on the development of connecting nodes in terms of capacity and intermodal integration.

On the passenger side, connections between the biggest urban areas that are suitable for high-speed rail are mostly already existing (Madrid-Barcelona; Lyon-Marseille; Turin-Milan). Over longer distances, the rail travel time will not ensure strong competitive advantage against air transport, so that the key development strategy is likely to be focused on better railway link to corridor main airports (fully integrated with the national rail network), and in some cases also better road connections to them (to avoid local landside bottlenecks).

Besides, **specific improvement of the connections for passengers shall be analysed at the national level**, since the corridor plays also a significant role for domestic interregional flows between different areas, in particular in Spain, France and Italy. The market analysis will allow to understand more the existing and future flows and the related supply needs.

4.3.3 Identification of Key Performance Indicator (KPI)

Measuring the corridor performance is a pre-requisite to increase its efficiency. There are several layers in performance monitoring.

The most immediate layer is to understand if corridor performances are in line with the identified objectives (i.e. is the corridor performing sufficiently well to fulfil its role of enabler of economic development?).

Answering to these questions supposes the criteria defining corridor performance have been agreed upon, that it is possible to measure performance according to these criteria, and to compare the measure to a reference to finally determine whether it is a sign of good performance or a symptom of deeper problems.

Another layer of corridor performance measurement is the monitoring of the effectiveness of the solutions, by comparing performance over time and verifying that the measure is returning to the "norm".

In this respect, the analysis builds on the overview of corridor objectives and assessment of main critical issues, as included in the first Progress Report, i.e. the corridor description.

Based on the defined general and operational objectives, this section presents the corresponding KPIs. Important input documents are: the SUPERGREEN project[57], RFC6 (Implementation Plan, 2013)[58] and the TEN-T planning methodology project[59] (October 2010). These studies provide a list and definitions of performance indicators. These are matched with the defined operational objectives, where relevant. The definition of KPIs follows the differentiation between general and operational objectives, with higher-level and operational KPIs respectively, as presented below.

It is important to underline that the KPI definition for all nine corridors is being discussed by the EC. As a result, the proposed KPI under this study should be amended and revised in the next version of the work plan

KPIs linked to the general objective

In order to measure progress and deliverable of the general objective, three principle KPIs are defined, as shown in the following table:

Objective	KPI
Economic efficiency	**Transport costs**
Clean transport	**Modal split**
Cohesion-regional cooperation and trade	**Freight and passenger flows**

KPI Transport costs[60]: these can be measured in absolute transport costs and relative transport costs. Absolute unit costs are expressed in € per ton for the entire stretch from the origin (loading node) to the destination (discharging node) – or a section of this stretch. Relative unit costs are expressed in € per ton-kilometre. Relative unit costs are arrived at by dividing the Absolute unit costs by the Distance of the entire stretch. Within the scope of the study, this KPI will be analysed in terms of productivity gains generated by the proposed work plan (e.g. longer / heavier trains

[57] SUPERGREEN Deliverable D2.2 – Definition of Benchmark Indicators and Methodology (September 2010).
[58] Some of KPIs included in the RFC6 Implementation plan cannot take into account due to the different aim of the monitoring system. In case of RFC6, KPIs (for instance punctuality reports and cancellation) have been established in order to monitor international train performance. For the Mediterranean CNC, the proposed KPIs intend to measure the performance of the corridor against expected target and needs (e.g. how much does the corridor "suffer" of bottlenecks? or how much does the corridor need in distance to have full coverage of highways or railway double tracks?).
[59] Trans-European Transport Network planning methodology (October 2010).
[60] SUPERGREEN Deliverable D2.2 – Definition of Benchmark Indicators and Methodology – page 115,116 (September 2010).

allowing lower cost per ton*km since fixed train cost will be distributed on a larger tonnage etc.).

KPI Modal split: This KPI indicates the performance of the different modes within a network section by measuring the amount of freight (ton*km) or travellers (pax) transported by a particular mode of transport.

KPI Freight and passenger flows: this KPI is used as a proxy for regional cooperation and trade and is measured in pax and ton*km. The freight and passenger flows will be derived from the TMS.

KPIs linked to the operational objectives[61] in the field of efficiency

Relevant indicators are listed below[62]and showed in the following table:

Operational Objective	KPI
Ad 1) Removal of infrastructure bottlenecks and "filling" missing links	**Number of identified bottlenecks** (infrastructure, capacity)
Ad 2) Upgrading of infrastructure quality level	Improved **technical standards** per mode of transport (% of electrification, double track, standard gauge, etc.)
Ad 3) Efficient use of infrastructure	Freight and passenger **flows** **Infrastructure utilisation rate**
Ad 4) Optimal integration and improved interconnection of transport modes	**Modal split** (amount of freight (tons) or travellers (pax) transported by a particular mode of transport) **Use of common traffic management systems** **Presence and use of intermodal terminals** **Availability of last mile infrastructure**
Ad 5) Optimal interconnection of national transport networks	**Border waiting time** **Use of common standards and procedures**
Ad 6) Promotion of economically efficient and high-quality transport	**Transport time** **Mean speed** **Frequency** Freight security **– availability of secured parking**
Ad 7) Promote resource-efficient use of infrastructure	**Pollutant emissions** (NOx, SOx, PM in terms of gr/tonkm) **Availability of refuelling infrastructure for alternative fuels**
Ad 8) Reduce congestion	**Mean speed**
Ad 9) Improve road safety	**Safety** (number of accidents or incidents assessed on the entire network or on its considered sections)

Ad 1) Removal of infrastructure bottlenecks and "filling" missing links

KPI Number of identified bottlenecks: the KPI for bottlenecks is the assessed result of an inventory of different types of bottlenecks per transport solution. Initial results have been presented in the first Progress Report. The SUPERGREEN project differentiates between three types of bottlenecks, i.e. infrastructure (related to conditions of infrastructure); capacity (related to capacity problems, i.e. traffic jams, customs, etc.) and geography (related to geographical barriers, i.e. ice conditions, etc.). We will focus on infrastructure and capacity related bottlenecks.

Ad 2) Upgrading of infrastructure quality level

[61] The first six operational objectives are related to efficiency and the next three operational objectives are related to sustainability.
[62] The definition of the KPIs used is made in the SUPERGREEN Deliverable D2.2 – Definition of Benchmark Indicators and Methodology – page 115,116 (September 2010).

This operational objective is linked to improving the technical standards of the infrastructure per mode of transport.

KPI Improved technical standards per mode of transport: these KPIs are based on the transport infrastructure requirements as described in the TEN-T Regulation and are presented in the table below. These data will be mostly derived from the TENtec database.

Technical requirements	KPI
Rail: electrification	Share of electrification (%)
Rail: double track	Share of double track (%)
Rail: track gauge (standard: 1435 mm)	Share of standard track gauge (%)
Rail: gradient (sections over 15%)	Share of sections over 15 % (%)
Rail: train length (target: 740 m.)	Share of sections over that meet target (%)
Rail: axle load (target: 22.5 t)	Share of sections over that meet target (%)
Road: level express or motorway[63]	Share of express or motorway (%)
IWW: class IV of ECMT classification	Share of class IV sections t (%)
IWW: reliability[64]	Share of available sections t (%)

Ad 3) Efficient use of infrastructure

The following KPIs are defined to measure efficient use of infrastructure:

KPI Freight and passenger flows: this KPI is used to assess to what extent the infrastructure is used and is measured in pax and ton*km per section and per mode of transport. The freight and passenger flows will be derived from the TMS. The assignment of the origin destination (OD) flows indicates the capacity usage of the corridor.

KPI Infrastructure utilisation rate: this KPI is combining traffic flows with the capacity of the infrastructure. This is useful to illustrate the extent to which the infrastructure is utilised. Inputs for this indicator come from TMS (flows) and TENtec (capacity).

Ad 4) Optimal integration and improved interconnection of transport modes

The following KPIs are defined to measure integration and interconnection of transport modes:

KPI Modal split: This KPI indicates the performance of the different modes within a network section by measuring the amount of freight (ton*km) or travellers (pax) transported by a particular mode of transport. Input data will be provided through the TMS.

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[63] As defined in Article 16.3 of the TEN-T Regulation.
[64] Reliability is defined here as ensuring the availability of the waterway and a minimum depth of 2.5 metres fro a specific number of days in the year. Source: PLATINA II D1.3.

KPI use of common traffic management systems: This especially refers to the use of ERTMS in rail transport, KPI being the share of ERTMS coverage (%). In parallel KPIs could be defined for road (ITS coverage) and IWW (RIS coverage). Input data will be partly provided though TENtec plus additional sources at Member State level.

KPI presence and use of intermodal terminals: This KPI provides insight in the supply (KPI: list of available intermodal terminals) and use (KPI: annual tonnage per intermodal terminal) of intermodal terminals. Input data is derived from information available at terminals.

KPI availability of last mile infrastructure: This KPI provides insight in the level of access to intermodal terminals. This is measured in a qualitative way in which we assess the supply of available last mile infrastructure, i.e. road and rail access.

Ad 5) Optimal interconnection of national transport networks

The following KPIs are defined to measure interconnection of national transport networks:

KPI Border waiting time: This KPI measures the waiting time at the border as a proxy for the level of efficiency of international cooperation between the corridor stakeholders and regions. Information is derived from Member States.

KPI use of common standards and procedures: This is a general KPI that identifies to what extent national network are operated from a common perspective. This qualitative KPI identifies such procedures as harmonisation of terminal operating times, brake tests and wagon verification, etc. A list of standards and procedures could be prepared that can be used for an assessment in this field. Input may not be readily available and would have to come from desk research and interviews with stakeholders.

Ad 6) Promotion of economically efficient and high-quality transport

The following KPIs are defined to measure economically efficient and high-quality transport, with focus on quality of services:

KPI transport time: Transport time refers to the total time in hours or days, from loading at the origin to discharging at the destination. An alternative way for measuring transport time is the average speed for the same route (see below). Specifically for passenger transport, passenger journey times between major cities and if the comparison between modes can be used as an indicator for the attractiveness of the various modes. Rail journey time is based upon timetable information. Air journey times include scheduled flight times, plus estimates of access and egress times. Car road journey times are calculated from the GIS network, based on the road categories and speed limits.

KPI mean speed: The mean speed indicates the time needed to transport people or goods on various networks between two points. This parameter is a good proxy for quality of services as it includes average congestion, access time and delays, cross-border delays, service frequency and geographical detours.

KPI frequency: The number of shipments available per time interval (day, week, year) for each individual transport solution. Information is available through service providers.

KPI freight security – availability of secured parking: This KPI indicates the availability of secured parking (number of secured parking areas) areas and the use of these secured parking areas (visitors/secured parking area).

KPIs linked to the operational objectives in the field of sustainability

Per identified operational objective relevant indicators are listed below[65].

Ad 7) Promote resource-efficient use of infrastructure

The following KPIs are defined to measure resource-efficient use of infrastructure:

KPI pollutant emissions: pollutant emissions, such as NOx, SOx and PM emissions, are negative consequences of the use of transport networks. The characteristics of these emissions depend on fuel usage, type of fuel, speed, driving cycle or road gradient. The KPI is measures gr/ton*km. This information may not be readily available and may require input from Member States (based on available studies).

KPI availability of refuelling infrastructure for alternative fuels: in order to support the uptake of alternative fuels and propulsion systems, a refuelling infrastructure is required for vehicles and vessels running on alternative fuels, such as electricity, hydrogen and LNG, as well as recharging point for electric vehicles. This KPI can be measured in number and frequency of refuelling infrastructure for alternative fuels. Information is available through infrastructure managers.

Ad 8) Reduce congestion

KPI mean speed: the mean speed is a proxy for the level of congestion. A distinction can be made per mode of transport and are of operation (urban, inter-urban). See description above on speed (cfr Ad6).

Ad 9) Improve road safety

KPI safety: the safety of a network represents the extent to which the infrastructure is safe for its users. This KPI is measured by the number of accidents or incidents assessed on the entire network or on its considered sections. It can be evaluated through the multiplication of the number of kilometres by risk factors indicating the possibility of an accident with injury. An additional KPI is the number of casualties. This information is not readily available; however, accident statistics at corridor level may be available through Member States statistics.

[65] For the definition of the KPIs use is made of the SUPERGREEN Deliverable D2.2 – Definition of Benchmark Indicators and Methodology – page 115,116 (September 2010).

4.3.4 Monitoring of the Implementation Plan

In order to monitor the implementation plan, the following indicators have been proposed. In case of mandatory KPIs, the year when compliance is needed is indicated. Compliance earlier than 2030 or 2050 is off course also allowed and encouraged.

Mode	Key Performance Indicator (KPI)	Type	Current	Objective 2030	Objective 2050
Rail	Electrification	Passenger/freight	90%	100%	
	Track gauge 1435mm	Passenger/freight	70%	100%	
	ERTMS implementation	Passenger/freight	13%	100%	
	Line speed>100 km/h	Freight	93%	100%	
	Axle load	Freight	84%	100%	
	Train length	Freight	24%	100%	
Inland waterways	CEMT class IV	Freight	80%	100%	
	CEMT class V	Freight	15%		
	CEMT class VI	Freight	12%		
	Draught (min 2.5m)	Freight	88%	100%	
	Height (min 5.25m)	Freight	79%	100%	
	Share of double locks	Freight	64%		
	Navigation reliability	Freight	N\A		
	RIS implementation	Freight	56%		
Road	Express road or motorway	Passenger/freight	95%	100%	
	Parking areas every 100km	Passenger/freight	79%	100%	
	Availability of clean fuels	Passenger/freight	N\A		
	Interoperability of tolling systems	Freight	N\A	100%	
Airports	Connection to rail network	Passenger/freight	20%		100%
	Availability of clean fuels	Passenger/freight	N\A	100%	
Seaports	Connection to rail network	Freight	100%	100%	
	Waterway CEMT IV connection	Freight	20%		
	Waterway CEMT V connection	Freight	20%		
	Availability of clean fuels	Freight	N\A	100%	
Inland ports	Connection to rail network	Freight	100%	100%	
	Waterway CEMT IV connection	Freight	100%		
	Waterway CEMT V connection	Freight	100%		
	Availability of clean fuels	Freight	N\A	100%	
	Multimodal transhipment capacity	Freight	N\A		
RRT	Multimodal transhipment capacity	Freight	N\A		

Table 94 KPI state of art along the Mediterranean Corridor (all modes)

In the table it can be seen that ERTMS and train length are areas where significant gains can be made in future years. Track gauge in the Iberian peninsula is different in the situation of today.

Inland waterways KPIs are only appropriate for Italy. The Po river is mainly a CEMT IV class waterway with a number of single locks. The bridge height is compliant for 79%.

Should future market conditions demand higher bridge clearance to transport high stacks of containers, the corridor performance will need to go up.

Road is mainly compliant. For most KPIs there was no precise data available, but parking areas are mostly available and a range of clean fuels is possible. It is to be expected that data availability on this subject will increase and that the performance will also increase in future.

18 airports out of the 20 are not connected by heavy rail. This parameter needs to be fulfilled by the year 2050 according to the regulation.

Rail connection of ports is solid on the Med corridor. The relevant inland ports are connected to an IWW network that can support large vessels. Capacity data for nodes, ports and terminals is a subject that needs more study in the next years.

4.3.5 Preliminary identification of the programme of measures

The programme of measures is a key element of the corridor work plan. It is based on the findings of the previous tasks, including the corridor objectives with respect to quality requirements from the point of view of the TEN-T and national policy, the transport market and the corridor characteristics. The measures are also based on the results of the transport market study with respect to bottlenecks and capacity requirements. The central role of the programme of measures is graphically presented in the following figure.

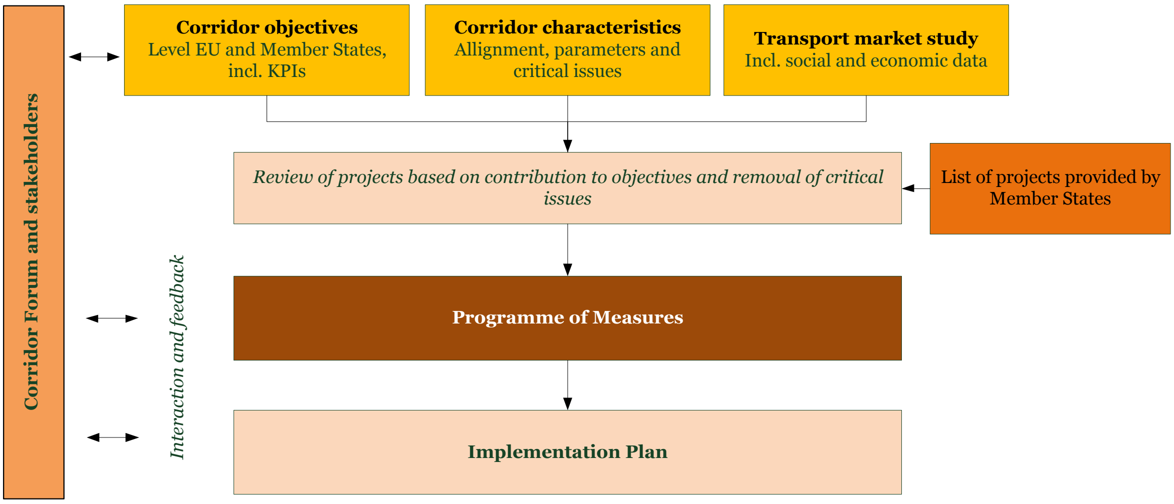


Figure 70 Program of measures necessary for developing the corridor

Initial linking of operational objectives to measures

Based on the above process, an initial screening of measures has been done. The defined objectives establish the basis for defining the measures to be implemented. Where the objectives define the ambition, the measures define how this is to be realised. The operational objectives are most suited to be linked to measures. An assessment of the KPIs provides a basis and justification to prioritise measures.

The table below includes the defined operational objectives and measures, also based on the identification of critical issues. The list of potential measures will be confronted with the list of projects that are provided by the Member States. This will help shape the programme of measures that eventually will be integrated in the corridor implementation plan.

Operational objectives	Measures
Removal of infrastructure bottlenecks and "filling" missing links	• New or upgraded infrastructure • Demand management polices
Upgrading of infrastructure quality level	• Improvement of technical standards to the level of TEN-T requirements • Elimination of sections that do not meet the minimum technical standards
Efficient use of infrastructure	• Traffic management systems to efficient use of infrastructure • Optimal usage of existing infrastructure
Optimal integration and improved interconnection of transport modes	• Supporting intermodal policy • Development and upgrading of intermodal terminals • Supporting IT management systems • Last mile infrastructure, providing access to intermodal transfer point
Optimal interconnection of national transport networks	• Customs cooperation to reduce border waiting time • Optimisation of border crossing procedures • Harmonisation of operational procedures (terminal operating times, brake tests, etc.) • Harmonisation of traffic management systems
Promotion of economically efficient and high-quality transport	• Provision of secured parking areas
Promote resource-efficient use of infrastructure	• Provision of refuelling infrastructure for alternative fuels • Restrictions to highly polluting vehicles • Protection of environmental sensitive areas
Reduce congestion	• Use of IT systems, such as dynamic route information panels • Demand management polices
Improve road safety	• Develop forgiving infrastructure • Implementation of EU Directives on Transport Safety

Table 95 Operational objectives and policy measures

4.4 Implementation

4.4.1 Review of projects

This paragraph intends to give a snapshot of projects which are currently on-going or which are planned within the MSs belonging to the corridor.

According to the template defined by the Tent committee, **the following information has been provided**:

- general description of each project,
- project promoter,
- location on the base of the corridor alignment established by the UE Regulation 1315/2013[66],
- expected timing for the implementation (as defined by IMs),
- project costs,
- envisaged financing sources;
- pre-identified projects,
- solved critical issues.

The project list has been populated according to specific guidelines defined in order to harmonize the included information.

The collected information has been provided by the involved stakeholders per each MS and per mode. The related tables are shown in Annex 5.9.

[66] Grey rows at the end of each table indicate projects that have been proposed by Member State even if they regard sections that are not part of the Mediterranean corridor.

4.4.1.1 Spain

Spanish project list foresees the realisation of a consistent number of projects, in particular for railways and ports.

Within this framework, the projects promoter (Grupo Fomento, which includes the Ministry and all the group companies) plans to invest for addressing the main existing critical issues (i.e. Resolution of physical bottlenecks, ETRMS standards, compliance with Core Network standards, Intermodality of nodes, etc.).

Railways

The proposed projects tackle the main important identified physical bottlenecks, assure the development of the traffic management systems as well as the electrification of lines, the upgrading of the maximum admissible train length up to 740m. on the conventional lines and the implementation of the UIC standard gauge (1435 mm).

In particular, concerning the Andalusian region (where the railway network suffers from low technical standard), it is important to underline the following projects:

- development of a new railway link connecting **Murcia to Almeria** (HS line designed for mixed traffic) and the related upgrading of the conventional line **Almeria-Granada** (also for mixed traffic);
- upgrading of the conventional line **Algeciras-Bobadilla.** It is worth remembering that this railway line **connects two European corridors (Atlantic and Mediterranean) and then the upgrading of this stretch to the European requirements could generate a Network effect.**

  If capacity problems linked to development of freight rail and maritime traffic will arise, the doubling of the section could be evaluated in the long run.
- **Several HS projects aiming at connecting the touristic cities of Granada with Sevilla (for passenger traffic only).**

At the moment, the main missing project is related to the upgrading of the conventional section **Granada-Bobadilla** (for freight traffic).

Concerning the conventional sections **linking Zaragoza to Tarragona and Barcelona**, the upgrading of the line "Madrid-Barcelona" should tackle all the critical issues mentioned in the paragraph 4.2.3. The upgrading of this single rail track is crucial for the corridor, since it represents a serious bottleneck for traffic flows generated by the sea ports of Tarragona and Barcelona.

At the same time, several interventions aiming at ameliorating the interoperability and the capacity of the railway sections from Barcelona and Tarragona up to the HS line of Le Perthus (upgrading of the UIC gauge and maximum admissible train length up to 740m.) are foreseen. This bottleneck represents one of the main critical issues on the Spanish side of the Mediterranean corridor.

In addition, it is important to underline that if capacity issues will arise on the cross-border (Portbou) conventional line, further interventions could be evaluated.

Finally, a missing project should be mentioned: the construction of t**he Martorell by pass,** aiming at solving traffic congestion problems due to mix of urban and freight traffics in **Barcelona urban node**. A new railway line should be built between Martorell and Castellbisbal with a new urban tunnel and a new station in Martorell. To solve saturation on this stretch it would be important to separate commuter and freight traffic.

Ports

Concerning the six Spanish ports on the Mediterranean corridor (i.e. Algeciras, Sevilla, Cartagena, Valencia, Barcelona and Tarragona), the projects proposed by the Grupo Fomento, foresee a strong **support to sea-rail and sea-road intermodality and the development of multimodal logistics platforms within the ports.**

As regard intervention on interoperability, the implementation of UIC gauge as well as the enhancement of rail connection inside the ports is planned for all seaports.

Roads

Spanish planning defined by the Grupo Fomento foresees the completion of 6 road projects regarding:

- **upgrading to express roads**, the completion of A7 motorway is the most relevant one;
- **inland connection to ports** (i.e. Algeciras, Barcelona, Cartagena, Tarragona, Seville and Valencia last mile interventions).

Airports

The Spanish Grupo Fomento also foresees the realisation of a road connection to Malaga airport and new commuter rail lines to Alicante, Sevilla and Valencia airports; costs for these interventions are under evaluation.

Rail Road terminals

Concerning Rail-Road Terminal, the Grupo Fomento foresees both the upgrading of rail connections (for instance Madrid-Vicalvaro Terminal and the new intermodal terminal ZAL Murcia for railway motorways) and the construction of new terminal (i.e. Construction of the Port of Barcelona Intermodal Terminal in the ancient Llobregat riverbed). As regard intervention on interoperability, the implementation of UIC gauge is planned on the following terminals:

- Barcelona La Llagosta;
- Barcelona Can Tunis;
- Alcazar de San Juan;
- Cordoba;
- Antequera.

4.4.1.2 France

French project list foresees the realisation of projects in the rail/RTT sector, for IWW, seaports and roads (mainly for last mile connections to the port of Marseille / Fos); **no airport project has been listed within the list provided to date by the Member State**. These projects will permit to tackle the main critical issues of French sections (i.e. resolution of physical bottlenecks, particularly for the Lyon and Marseille nodes, actions concerning rail cross-border sections, IWW intermodality, port logistic platform and ports physical limitations). Within this framework, the project promoter is RFF for rail/RRT projects, CNR and / or VNF for IWW and Marseille Port Authority for Seaports.

Railways and Intermodal terminals

After completing the Nimes and Montpellier bypass (in 2017), the remaining issues will be the nodes of Lyon and Marseille, and the Montpellier – Perpignan section (new line in project). Treating cross-border sections, in continuity with the base tunnel of Lyon-Turin, the new access lines from Lyon will be necessary to achieve the modal shift potential of this major work.

All these projects, together with **ERTMS implementation between Lyon and Marseille**, form a coherent system reaching TEN-T requirements on the whole French part of the corridor with sufficient capacity to support rail traffic development and modal shift; only one missing link could lead to remaining bottlenecks that will greatly affect the performance of the global system.

Of course the implementation of all these projects represents a great technical and financial challenge that will require clever phasing and financing solutions to be achieved by 2030. Moreover, in the meantime RFF will have to launch a great number of renewal and modernization operations on the existing lines in order to maintain or upgrade their performance.

Ports

Concerning the two most important French ports on the Mediterranean corridor (i.e. Marseille and Fos-sur-Mer), the projects defined by the Marseille Port Authority (which manages both ports) aim at **improving rail connections of the port** (identified as a major critical issue) **together with developing multimodal logistics platforms within the ports** (e.g. creation of combined transport terminals in Mourepiane and Fos). Other projects aim at reducing the existing physical bottlenecks (e.g. widening the North Pass of Marseille port) and upgrading the short sea shipping terminals (project code S1), which would benefit to the motorways of the Sea. Project S7 aims at creating a direct link IWW link between the container terminal of Fos and the Rhône. Finally road projects (road1 to road4) aim at improving road access to the port facilities.

IWW

Regarding French inland waterways, additionally to the link with Fos container terminal (project S7 above mentioned), French infrastructural planning foresees the improvement of the inland Port of Lyon, especially regarding its rail access, identified as a critical issue. Two other projects tend to increasing IWW-rail-road intermodality south of Lyon (Salaise-Sablons) and in Avignon (code IWW2 and IWW3), by creating or extending multimodal logistics platforms along the Rhône river, also connected to rail and road ; another major IWW project concerns the compliance with TEN-T standards of the "canal du Rhône à Sète"[67].

[67] This section is currently not part of the mediterranean corridor but belongs to the TEN-T core network and to the North-Sea – Mediterranean corridor. According to the MS, it has been asked to include it in the alignment of the Mediterranean corridor.

4.4.1.3 Italy

Italian project list foresees the realisation of a consistent number of projects for rail, IWW and seaports. Within this framework, the main project promoters are the Italian rail infrastructure manager (RFI) for rail and RRT projects, Port Authorities for port projects and the Regions for IWW canals.

Rail

The cross-border projects are:

- **Building new transalpine links**, with the Lyon-Turin line, planned in the medium run (works are expected to finish in 2030). Considering that freight traffic flows are penalized by the current technological standard of the existing line, RFI plans to upgrade also the historic line. Besides that, loading gauge limitations (PC 45)[68] and maximum admissible length of trains (560m) are going to be solved with specific investments from 2025.[69]
- **The creation of the HS line IT/SI:** RFI plans to finish the construction of the new high speed line by the end of 2030. At the end of 2014, it is planned to start the preliminary design which should be completed by the end of 2015.

Regarding the **other high speed lines**, as already pointed out (paragraph 4.2.3) some sections between Turin and Venice (e.g. on the Treviglio-Brescia line, in all the time windows) suffer from a lack of capacity; moreover, this situation is getting worse along the entire line on the next future because of increasing of traffic (passenger and freight). For this reason, it would be desirable the construction of a new HS line fostering competitive connections among the main cities in the North of Italy. In this respect the following new sections, with the relative expenditure estimation, are planned:

HS planned sections and suggested priorities			
New HS sections	timing	Cost estimation (‘000)	Priority in relation to identified critical issues
HS line Treviglio-Brescia	2020	2,050	High
HS line Brescia-Verona	2020	3,954	High
Hs line Verona-Padova	2020/2025	6,051	High
HS line Venezia-Trieste	>2030	7,447	Medium

As regards the **planned HS line Venezia-Trieste**, RFI, as a cheaper solution of medium term, will upgrade the conventional line, increasing the speed and realizing four track sections along the corridor. Finally, several interventions aiming at allowing the intersections of high speed lines with conventional ones are foreseen on different urban stations (the objective is to avoid interferences between passenger and freight services).

The **current constraints for freight services concern the loading gauge and the maximum admissible train length**. These problems will be tackled by two different infrastructural projects, the first of which aims at upgrading the loading gauge up to the maximum standard from the French cross border up to Milan, along the conventional line.

[68] PC 45 (maximum admissible width:2.5 m.. and height: 3.75): This loading gauge do not permit to exploit rolling motorway with swap trailers higher than 4 meter and the use of Modalohr wagons.
[69] The goal of increasing transalpine links is addressed by the InterAples project too.

Concerning the minimum standard on train length (740m), several interventions are foreseen along the whole Italian Mediterranean corridor conventional lines.

Finally, regarding **compliance with the parameters of the TEN-T regulation**, the upgrading of the signalling system to **ERTMS** is foreseen along the whole Italian Mediterranean corridor section.

Inland Waterways

As it has been pointed out in paragraph 4.2.3, in order to ensure the **compliance of the Italian IWW sections with regulation 1315/2013 about the CEMT class** requirement[70], the **construction of a new lock** over the section Pavia-Piacenza is required as well as the **adaptation to the CEMT class** of the Litoranea Veneta section.

Moreover, along the sections Mantua- Foce Mincio- Ferrara-Volta Grimana free stream works are needed in the short run, because of the fact that **navigability** is not assured during the summer season. In addition, Po river regulation is needed in the long run.

These works will enhance the connection between Cremona and Mantua inland Ports easing the passage of goods traffic flows from the Fissero-Tartaro channel (directly connected to Venice port) up to Cremona (Po river). The infrastructural interventions planned by the competent basin authority (AIPO) match exactly with these issues.

The development of **IWW intermodality (with rail and road) is also a priority** addressed by the proposed projects, such as the realisation of a new logistic platform for the connection of Valdaro Port system to rail and road in the Port of Mantua, related works will cost 6 million euros. Connections to Porto Garibaldi will be effective only after the completion of the project number IWW05, which is under development and whose objective is to reconstruct the Pontelagoscuro bridge, identified as the main physical bottlenecks because of the limited vertical bridge clearance (4.1 m.). Finally, regarding the connection to Chioggia port and Venice Port, no physical restriction are concerned and thus proposed projects, because all the European technical requirements are fulfilled.

Concerning, **traffic management system**, **the RIS is under development along all the Po river** as well as a **system for the management of goods** which aims to" create a private infrastructural network between all inland harbours in order to provide ultra-broadband connectivity to support inland waterway goods transport management, ports facilities, organization of logistics installations and innovative services"**.**

Ports

The promoter of these projects generally is the relevant Port Authority in cooperation with other involved stakeholders, such as the Italian rail infrastructure manager (RFI) and ANAS (state road agency) for the last mile connection projects. Projects are generally co-financed by the Port Authority, National and EU funds.

Regarding **Venice port,** one of the most important critical issues to be solved concerns the **limited available draughts** (due to the lagoon) which pose consequent limitations on the type vessel which can dock at the ports' quays. In this respect, the most important project is the planned construction of an **offshore Port HUB** for large ships and oil carriers in the Laguna of Venice but only 10% of funds have been

[70] Class IV: waterway allows the passage of a vessel or a pushed train of craft 80 to 85 m. long and 9.50 m. wide.

allocated so far, i.e. 100 million of € with respect to about 1 billion of € needed, which are expected to be provided by State (40%) and private (60%) funds. Furthermore, under the NAPADRAG PROJECT, **works of dredging of the West Industrial Canal in order to reach the depth of 11.8 m. are currently on-going**. Another relevant issue concerns the development of the **railway network inside the port area**; in this context, several works are planned such us the upgrading of rail links between the South Industrial Area of Marghera and Marghera Scalo Station aiming at avoiding traffic interferences.

Furthermore, in order to support **RO-RO traffic (and thereby the MoS system) a new terminal has just been completed (terminal Fusina) and the integration with railway will be possible thanks to a specific last mile projects** (code R48 – estimated costs are 270 million of euro). Finally, Ro-Ro traffic will be supported by the construction of new parking areas aiming at ameliorating road congestion problems and access to the port.

Although **Trieste port** has a sufficient available draught, its potentiality is constrained by the **limited warehouse spaces** because of the related urban context causing limited spaces and congestion problems. This issue will be partly solved by the enlargement of the container terminal at quay VII increasing the potential up to a maximum of 1,200,000 TEU.

An additional important action is the completion of a **new multipurpose terminal-so called Piattaforma logistica**-which has to be directly connected to the belt-road and the off-port rail network, with a wharf of about 600 meters in length and a depth of 14 meters.

In order to enhance the "**Motorways of the Sea**", the realization of a **new Ro-Ro terminal in the Noghere valley** area is planned, implementing a "working" draught of no less than 12 meters for berthing RO-RO vessels and a total surface of 430,000 sqm. The total expenditure will be 150 million euros. This intervention will also partly solve the already mentioned "limited warehouse spaces" bottleneck. In addition, it is foreseen the realization of **a new rail terminal in the Campo Marzio FS area** to serve piers V, VI and VII and increase intermodality ship-rail. This project foresees: 5 tracks with rail mounted gantry cranes, connected to piers; the functionality of Trieste Campo Marzio station in order to offer the needed capacity and to run longer trains; the upgrading of existing connection to national railways network, suitable to a new Ro-La terminal.

Another critical issue is related to the **limited accessibility** due to the overlap of traffics on the line Monfalcone-Bivio Aurisina-Trieste Centrale that will be solved by the following proposed projects:

- the upgrading of the State road 202 (2.5 km), which is the road connecting the port to the Italian and Slovenian motorway network, is foreseen;
- several rail connections interventions, such as:
  - Upgrading of Trieste Campo Marzio station (PRG and ACC) and of the railway line "Linea di cintura" to Campo Marzio/Trieste Aquilinia;
  - Realization of a new rail terminal in the Campo Marzio area to serve piers V, VI and VII and increase intermodality. This project foresees: 5 lines ramp with rail mounted gantry cranes, connected to the upgraded Campo Marzio tracks and existing line.

Concerning the **traffic management systems** (within the port system), a relevant project consist in the implementation of an ITS system for the automation of the authorization for the road- entry process. This telematics system will also solve the reduced road accessibility already mentioned. At the same time studies are on-going (under the NAPA project) for the enhancement of the entry process of goods by rail. Both of these actions can be considered as extremely positive and they will be taken during these years.

As for Venice, the **main critical bottleneck for Ravenna port is limited draught**, which is a structural problem since Ravenna is a canal-harbor tackled by two important proposed projects.
Also **inland connections should be enhanced,** as confirmed by the identified projects, in particular the upgrading lines linking the port to the national railway network ("Destra Canale" last mile railways interventions).
In addition, to foster the **development of the Ro-Ro and Ro-Pox traffic**, the upgrading of the existing terminal "Largo Trattoria" is foreseen.
Finally, in order to reduce the waiting time for the heavy vehicles carriers, the implementation of **telematics systems** for the management of customs declarations will be deployed.
A missing project is the upgrading of SS 309 to the Italian standard III CNR.

Airports
The identified critical issues, related to the inland connection to the airports, will be solved by the proposed projects on Milano, Malpensa (connection to HS line is foreseen), Venezia and Bergamo.

Road
The proposed projects will allow to solve some congestion problems on the cross border section IT/SI as well as to improve the traffic management system (ITS) in the sections along the Italian side of the corridor.
No actions related to safe and secure parking on the road core network are foreseen due to the high standard that has been already reached.

4.4.1.4 Slovenia

The proposed projects will permit to tackle the main critical issues of Slovenian sections (i.e. Resolution of physical bottlenecks, the development of traffic management systems, compliance with Core Network standards on loading gauge and Ports physical limitations). Within this framework, the project promoters are Slovenske Železnice d.o.o for rail projects and the port of Koper for seaports projects.

The proposed financing sources for Slovenian projects mainly derive from national and EU budgets for railways and from National funds and co-financing (EU or EIB) for seaports.

Railway infrastructure

On the **IT/SI border**, the creation of new structure (line, tunnel, bridge, etc.) in order to increase capacity and to achieve TEN-T standard (estimated expenditure of about 280 million of euros) is foreseen.
On the **SI/HU border**, the development of the ERTMS signalling system is foreseen as well as the reconstruction, electrification and upgrading of the railway line. Finally, no interventions are planned on the **SI/HR cross border**.

One of the main issues which should be underlined concern the **bypass of the Ljubljana railway hub** in order to eliminate cargo traffic from the city center. In this respect, the IM plans the construction of a substitute by-pass line under or around it (code R9); the total amount of this infrastructural improvement is about 1 billion of euros. In addition, in the plan a proposal of 30% of traffic diversion to arc of Tivoli is proposed as a temporary solution.

Others relevant critical issues are:

- **Lack of capacity on some routes:** in a specific section (from Divaca up to Rijeka Port) problems related to over congestion have arisen; this issue has been addressed by the infrastructure manager with different interventions.

Border sections	Section	Congestion rate	Critical situation
SI/IT border sections	Sezana <--> Sezana (border IT/SLO)	33%	Not critical
	Sezana (border IT/SLO) <--> Divaca	33%	
	Divaca <--> Pivka	87%	Critical
	Divaca <--> Koper	92%	
	Pivka <--> Ljubljana	87%	
	Zidani Most <--> Ljubljana	43%	Not critical
SI/HR border sections	Krsko <--> Zidani Most	22%	
	Dobova / Savski Marof (border SLO/HR) <--> Krsko	22%	
	Zidani Most <--> Pragersko	64%	Not Critical
	Pragersko <--> Cirkovce	65%	
	Cirkovce <--> Ormoz	65%	
SI/HU Boder sections	Puconci <--> Ormoz	65%	
	Puconci <--> Hodos (border SI/HU)	65%	

**Source: Network statement 2013, annex 3/1a*

- **Lack of homogeneous speed:** in several cases the maximum train operating speed (km/h) does not meet the European requirements (at least 100 km/h for freight services). This issue is tackle by the interventions indicated below.

Section	Speed limitation	Project	Timing	Project code
Sezana <--> Sezana (border IT/SLO)	75	Creation of new structure (line, tunnel, bridge, etc.) in order to increase capacity and to achieve TEN-T standard	2013-2016	R13
Divaca <--> Pivka	80			
Divaca <--> Koper	70	Construction of the 2nd track (new line, tunnels, bridges) in order to increase the capacity, running speed and degree of safety.	2014-2020	R12
Zidani Most <--> Pragersko	80	Renewals of tracks planned	2014-2015	R6

- **Not electrified sections** between Pragersko and Hodos (SI/HU border) will be upgraded with the on-going works for the upgrading of this rail link (works nearly complete, ending date 2015).
- All the Slovenian railway sections forming part of the Mediterranean corridor alignment are **not equipped with ERTMS systems**; however, a specific project aiming at upgrading the rail signaling system to the European requirement (ERTMS) is foreseen. Nevertheless, telecommunication enhancement with GSM-R Technology is on-going on the whole Slovenian Mediterranean path.
- Some sections forming part of the corridor alignment do not meet the axle load requirement; in order to tackle this issue, some interventions are foreseen.

Finally, some interventions will upgrade **the maximum admissible length of trains** operating on some railway sections, as example project on the section Ljubljana-Zidani Most.

Ports

One of the most important critical issues is the potential **lack of port infrastructure considering the expected growth of cargo volumes**.

For the port of Koper, the dredging of the accessing canal into Basin I, dredging of the Basin I (inside the area under concession), extension of Pier I and Pier II, construction of the Pier III, arrangement of hinterland areas for port activities use are needed in order to achieve increase of annual cargo traffic above 20 mio tons until 2015, above 24 mio tons until 2020 and above 30 mio tons after 2030.

The interventions foreseen in this respect are:

- dredging works;
- extension of Pier I, II and the construction of Pier III;
- increase of capacity.

Some of the above mentioned investments will also serve the purpose of **increasing the intermodality,** as shown in the following table.

Section	Project description	Incentive per type of traffic	Estimated cost
Port of Koper	Extension of Pier I	Ship transport (MoS)	Phase I (up to 2020): 100 mio € Phase II (after 2020): 60 mio €
Port of Koper	Construction of new berthing facilities in Basins I, II and III	Ship transport (MoS)	Phase I (up to 2020): 40 mio € Phase II (after 2020):

Section	Project description	Incentive per type of traffic	Estimated cost
			20 mio €
Port of Koper	Construction of port new entry and supporting road infrastructure	Road transport	Phase I (up to 2018): 20 mio € Phase II (after 2020): 10 mio €
Port of Koper	Construction of additional connecting rail infrastructure network within the port	Rail transport	Phase I (up to 2020): 20 mio € Phase II (after 2020): 20 mio €
Port of Koper	Passenger terminal infrastructure	Pax	3 mio €
Port of Koper	Arrangement of port's back areas	Road/Rail transport	Phase I (up to 2020): 12 mio € Phase II (after 2020): 10 mio €
Port of Koper	Dredging of port's basins according needs	Ship transport (MoS)	Phase I (up to 2020): 10 mio € Phase II (after 2020): 10 mio €
Port of Koper	Dredging of port's accessing canal to Basin II	Ship transport (MoS)	15 mio €
Port of Koper	Extension of Pier II	Ship transport (MoS)	200 mio € (after 2020)
Port of Koper	Construction of Pier III	Ship transport (MoS)	250 mio € (after 2020)

As regard inland connection to ports, the main physical bottleneck is related to the **section Koper-Divača**, a single rail track -electrified connection (48km), situated in a mountainous region with operational real speed for freight transportation of 34km/h. In order to solve this issue, a new and shortest rail link is under construction (code R12). In the meanwhile, the major transport infrastructure is a road link, the A1 highroad.

In relation to **road**, it is important to mention the "Ljubljana motorway ring: extension in 6 lines" aiming to solve congestion problems in the node.

4.4.1.5 Croatia

Croatia project list foresees the realisation of 7 projects in the railway sector, with an expected cost of 3.3 billion.

These projects will permit to tackle the main identified critical issues (i.e. resolution of physical bottlenecks, the development of traffic management systems, compliance with Core Network standards on loading gauge and ports physical limitations as well as inland connections to rail).

Within this framework, the project promoters are HZI d.o.o for rail projects and the port of Rijeka for seaports projects.

Railways

The entire Croatian section is equipped with **single track** except Dugo Selo-Zagreb and Zagreb – Marof (SI border) sections that, on the other hand, it suffers from mixed and intense use of the infrastructure.
At this stage, it has not been identified any project in order to solve these issues.

Others relevant critical issues are:

- **Speed limitations:** all Croatian sections do not meet the European requirement for the minimum train operating speed (freight >100km/h), as stated in the relevant Regulation 1315-1316/2013. From **Ostarije up to HU border these restrictions will be overcome thanks to the proposed projects** which also concern the improvement of existing single rail track (as short term target) and the second track (as long term target).From **Ostarije up to Rijeka Port these restrictions will be solved thanks to the proposed projects**.
- **Train length:** as shown below, all sections belonging to the corridor do not meet this requirement (average train length allowed is in the range of 400-700m).

Section	Maximum train length
Dreznica <--> Rijeka	400
Dugo Selo <--> Botovo (SB)	515
Horvati <--> Dugo Selo	400
Horvati <--> Karlovac	502
Karlovac <--> Ostarije	472
Ostarije <--> Dreznica	400
Zapresic <--> Dobova (SB)	375
Zapresic <--> Horvati	400

- **Transport management system (ERTMS),** all railway sections are not equipped with ERTMS systems. This issue will be solved thanks to the proposed project listed hereunder less than on the section Zagreb- SI border.
- **Loading gauge:** A limitation from Ostarije up to Rijeka Port, the admissible loading gauge is PC 52/368. The remaining sections allow PC 80/410.

Ports

The proposed projects regard the reconstruction of Rijeka-Brajdica and Rijeka-Cargo railway station as well as the construction of intermodal yard.

These projects will allow to partly tackle the critical issues related to the limited container storage area of Port of Rijeka and the needed efficient railway connections.

In this respect it is important to underline that section **Zagreb-Rijeka** suffers from low technical standards with unfavourable route characterised by hard ascents, sharp and low radiant curves.

In particular, the railway was constructed 135 years ago, in accordance with the technical possibilities of that time, designed to meet the then prevailing industrial and trade requirements.

On the other hand, it is worth to underline an important project, in the field of innovative technologies, aiming at establishing a port community system (estimated cost 2 million of €).

Airports

Future projects concerning Zagreb Airport are not planned to be co-financed by EU funds before 2020.

Rail Road terminals

Enhancing of Zagreb RRT Terminal is a long term project and, according to the Croatian Ministry of Transport, no comprehensive studies have been done in order to define the key elements of this project.

4.4.1.6 Hungary

Since the Government approved the National Transport Infrastructure Development Strategy on 28 August 2014, the proposed project list included in this report has to be considered as preliminary since it has not been still published in the Hungarian official documents.

Rail

The issues addressed by these projects mainly concern the enhancement of the rail interoperability (in particular axle load and train length) and the development of traffic management systems (mainly ERTMS).

No projects have been proposed in order to solve the potential bottleneck in the corridor Székesfehérvár - Boba due to the limited axle load and train length.

Some single track sections exist, but they generally provide sufficient capacity to accommodate more trains (according to the Hungarian Ministry for Transport, RFC6 Implementation Plans and statements given during the corridor forum).

It is also important to mention a rail last mile intervention related to the construction of the railway connection to Budapest Liszt Ferenc Airport.

IWW

A specific project related to the enhancement of IWW infrastructure is foreseen in order to solve some interoperability issues.

Road

The most important road interventions concern the construction of last 23 km of the motorway going to UA border and the building of a new motorway connection at the HU-SI border.

4.4.2 Focus on the ERTMS implementation plan

As part of the implementation plan, the deployment plan for ERTM specifies, according to the corridor alignment, on-going and planned projects.
The ERTMS deployment plan will be verified (and fine-tuned if needed) by both the Member States and the respective rail infrastructure managers.
The following deployment plans could be subject to changes and all information about planning and financing are without prejudice of each national deployment plan and European decision making.

Political and legal framework[71]

ERTMS is the interoperable signalling system in Europe for both conventional and high-speed rail lines (ERTMS equipment for high-speed lines is obligatory).

It provides not only **interoperability** which is the main objective to achieve in Europe, but it also fosters **economic, social and environmental benefits through time saving, punctuality and reliability**. At last but not least, it **guarantees safety and it contributes to the effective opening and to the competitiveness of rail market**.
From the **political perspective**, the White Paper of 28 March 2011 re-affirms and quantifies the objective of modal shift to rail for freight transport and identifies two major instruments for achieving this:

- interoperability via ERTMS;
- the development of corridors, an instrument for implementing the Core network

From the **legal perspective**, a framework and a timeline for the equipment of lines have been established through the adoption of:

- European Deployment Plan (EDP) in 2009 (2006/679/EC: Commission Decision of 28 March 2006, art. 3);
- the new TEN-T Guidelines (Regulation (EU) 1315/2013).

In particular, the new TEN-T Guidelines provides **the reviewed policy for the next decade and set up a corridor approach which supports the coordinated implementation of the network, including ERTMS implementation**. In addition, the Connecting Europe Facilities (CEF) under the regulation (EU) 1316/2013 will provide the financial framework for the next programming period and it foresees funding for required horizontal projects, like ETCS.

From an **operational point** of view, the entry into force of the **Rail Freight Regulation** in 2010 sets out an approach which is complementary to that of the EDP and aims at achieving competitive freight corridors through cooperation at all levels, paths of good quality and harmonisation of national rules.

In this respect, **Rail Freight corridor 6 is currently deploying ETCS** (European Train Control System) **on its lines**.

[71] European Rail Traffic Management System - Annual Report of the Coordinator – Brussels, October 2013

4.4.2.1 ERTMS deployment on the corridor countries

Information on the ERTMS implementation by country is based on the following sources:

- National Network statements;
- Commission Staff Working Documents (State of play of the implementation of the ERTMS deployment plan, 14/02/2014);
- ETCS deployment plan for the corridor D;
- National Report "Timeline of implementation of ERTMS corridors E,D" (2014);
- RFC06 Implementation Plan;
- TENtec data, validated by the infrastructure managers.

Spain

At the moment, the following sections belonging to the corridor are equipped with the ERTMS.

Section	Line type	Line Status	ERTMS Status
Tunel de Le Perthus - Figueres Vilafant	HS	In service	In service L1 / Testing L2
Figueres Vilafant - Girona	HS	In service	In service L1 / Testing L2
Girona - Barcelona Sants	HS	In service	In service L1 / Testing L2
Barcelona Sants - Camp de Tarragona	HS	In service	In service L1 / Testing L2
Camp de Tarragona - Lleida	HS	In service	In service L1 / Testing L2
Lleida - Zaragoza	HS	In service	In service L1 / Testing L2
Zaragoza - Catalayud	HS	In service	In service L1 / Testing L2
Catalayud - Madrid Puerta de Atocha	HS	In service	In service L1 / Testing L2
Cordoba - Antequera Santa Ana	HS	In service	In service L1 / Testing L2
La Enchina - Monforte del Cid	Conv	In service (upgraded in 2013)	In service L2
Figueres - Girona	Conv	In service	Testing L1
Mollet - Castellbisbal	Conv	In service	Testing L1

Table 96 Spanish sections equipped with the ERTMS – as is scenario

Three of the sections not equipped with the ERTMS are HS lines. It is worth to mention that the remaining conventional sections which are not equipped with ERTMS system should be upgraded to HS standards, as shown in the following table.

Section	Line type	Line Status	ERTMS Status
Madrid Puerta de Atocha - Cordoba	HS	In service	not in operation
Cordoba – Sevilla	HS	In service	not in operation
Murcia – Almeria	HS	Under construction	not in operation
Valencia - La Enchina	Conv	In service (upgrading to HS ongoing)	not in operation
Monforte del Cid - Murcia	Conv	In service (upgrading to HS ongoing)	not in operation
Murcia - Cartagena	Conv	In service (upgrading to HS ongoing)	not in operation
Almeria - Granada	Conv	In service (upgrading to HS ongoing)	not in operation

Section	Line type	Line Status	ERTMS Status
Granada - Antequera Santa Ana	Conv	In service (upgrading to HS ongoing)	not in operation
Portbou - Figueres	Conv	In service	not in operation
Girona - Mollet	Conv	In service	not in operation
Castellbisbal - Tarragona	Conv	In service	not in operation
Tarragona - Reus	Conv	In service	not in operation
Reus - Zaragoza	Conv	In service	not in operation
Zaragoza - Casetas	Conv	In service	not in operation
Casetas - Madrid	Conv	In service	not in operation
Madrid - Alcazar San Juan	Conv	In service	not in operation
Alcazar San Juan - Linares	Conv	In service (upgrading to HS planned)	not in operation
Linares - Cordoba Central	Conv	In service	not in operation
Cordoba Central - Sevilla	Conv	In service	not in operation
Sevilla - Utrera	Conv	In service (upgrading to HS ongoing)	not in operation
Utrera - Antequera Santa Ana	Conv	In service (upgrading to HS ongoing)	not in operation
Cordoba Central - Bobadilla	Conv	In service	not in operation
Bobadilla - Algeciras	Conv	In service (upgrading to HS planned)	not in operation
Valencia - Tarragona	Conv	In service (upgrading to HS ongoing)	not in operation

Table 97 Spanish sections not equipped with the ERTMS – as is scenario

France

The only section belonging to the Mediterranean corridor already equipped with ERTMS control system Level1 and 2 is the High speed line Tunnel de Pertús – Perpignan.

The remaining conventional lines are expected to be equipped with ERTMS in 2030; the same timing will be applied to the HS sections except for Nimes-Montpellier, where the ERMTS level 1 will be deployed in 2017 and, level 2 at a later date (>2020).

Section	Line type	Status Line	Level	Status ERTMS	Project Code	Development timing
Border E/F Túnel de Pertús - Perpignan	HS	In service	L1, L2	In service		
Perpignan - Montpellier	HS	Planned	under evaluation	not in operation	R7	2030
Montpellier - Nimes	HS	Under construction	L1 (<2017), L2 (>2020)	not in operation	R5	< 2017
Nimes - Avignon	HS	In service		not in operation	under evaluation	2030
Avignon - Marseille	HS	In service		not in operation	under evaluation	2030
Avignon - Lyon	HS	In service		not in operation	under evaluation	2030
Lyon - Modane	HS	Planned	under evaluation	not in operation	R13	2030
Lyon - Modane	Conv	In service		not in operation	under evaluation	2030
Border E/F Cerbere - Perpignan	Conv	In service		not in operation	under evaluation	2030
Perpignan - Montpellier	Conv	In service		not in operation	under evaluation	2030
Montpellier - Nimes	Conv	In service		not in operation	under evaluation	2030
Nimes - Avignon	Conv	In service		not in operation	under evaluation	2030
Avignon - Lyon	Conv	In service		not in operation	under evaluation	under evaluation
Avignon - Marseille	Conv	In service		not in operation	under evaluation	under evaluation

Table 98 The French ERTMS implementation plan

Italy

The only railway line (included in the Mediterranean corridor alignment) already equipped with ERTMS in Italy is the HS section Turin-Milan.

Concerning the remaining sections, the following table shows the "as is" situation and the foreseen one, matching the lack of ERTMS with the related projects listed in the Annex 5.9.3.

Section	Line type	Line Status	Level[72]	Project Code	Development timing	ERTMS phase
Bardonecchia - Border FR/IT II / Modane	Conv.	in service	L2 foreseen	R37	2025	II
Bardonecchia – Torino	Conv.	in service	L2 foreseen	R37	2025	II
Torino – Novara	Conv.	in service	L1 foreseen	R37	2025	I
Novara-Milano	Conv.	in service	L1 foreseen	R35	<2020	II
Milano – Pioltello	Conv.	in service	L2 foreseen	R35	<2020	I
Pioltello – Treviglio	Conv.	in service	L2 foreseen	R35	<2020	I
Treviglio – Brescia	Conv.	in service	L2 foreseen	R35	<2020	I
Brescia – Verona	Conv.	in service	L2 foreseen	R35	<2020	I
Verona – Vicenza	Conv.	in service	L2 foreseen	R35	<2020	I
Vicenza – Padova	Conv.	in service	L2 foreseen	R35	<2020	I
Padova – Bologna	Conv.	in service	under evaluation	R35	<2020	I
Bologna – Ravenna	Conv.	in service	under evaluation	R35	<2020	I
Padova – Venezia *(to be upgraded to HS according to Regulation 1315/2013)*	Conv.	in service	L2 foreseen	R35	<2020	I
Venezia - Bivio Aurisina	Conv.	in service	L2 foreseen	R35	<2020	I
Bivio Aurisina – Trieste	Conv.	in service	L2 foreseen	R35	<2020	I

[72] Source: Call of proposal "potenziamento tecnologico Torino-Padova (PP06)-conventional sections", code: 2012-IT-06075-P (26026411). This document state as follows: "The whole Turin - Padua line will be controlled by five ACCM, all of them located in Milan and equipped with a specific ERTMS interface to facilitate the future installation of the Radio Block Centres implementing **ERTMS Level 2 on the whole Italian section of Corridor "D".**

Section	Line type	Line Status	Level[72]	Project Code	Development timing	ERTMS phase
Torino- Border IT/FR (HS)	HS	planned	under evaluation	R1,R5	<2020	*
Torino node (HS)	HS	planned	under evaluation	R8	>2030	*
Torino Stura-Milano (HS)	HS	in service	L2 in service			
Milano-Pioltello (HS)	HS	in service	under evaluation	R35	<2020	I
Pioltello -Treviglio (HS)	HS	in service	under evaluation	R35	<2020	I
Treviglio-Brescia (HS)	HS	under construction	under evaluation	R14	<2020	*
Brescia-Verona (HS)	HS	planned	under evaluation	R15	<2020	*
Verona -Vicenza (HS)	HS	planned	under evaluation	R18	<2020	*
Vicenza-Padova (HS)	HS	planned	under evaluation	R18	<2020	*
Padova-Venezia (HS)	HS	in service	under evaluation	R35	<2020	I
Venezia - Bivio Aurisina (HS)	HS	planned	under evaluation	R29	>2030	*
Bivio Aurisina - Villa Opicina (HS)	HS	planned	under evaluation	R31	>2030	*
Villa Opicina - Border IT/SI Sezana (HS)	HS	planned	under evaluation	R31	2030	*

** These sections will be built in the next future, the related ERTMS deployment is included in the general projects*

Table 99 The Italian ERTMS implementation plan

Slovenia

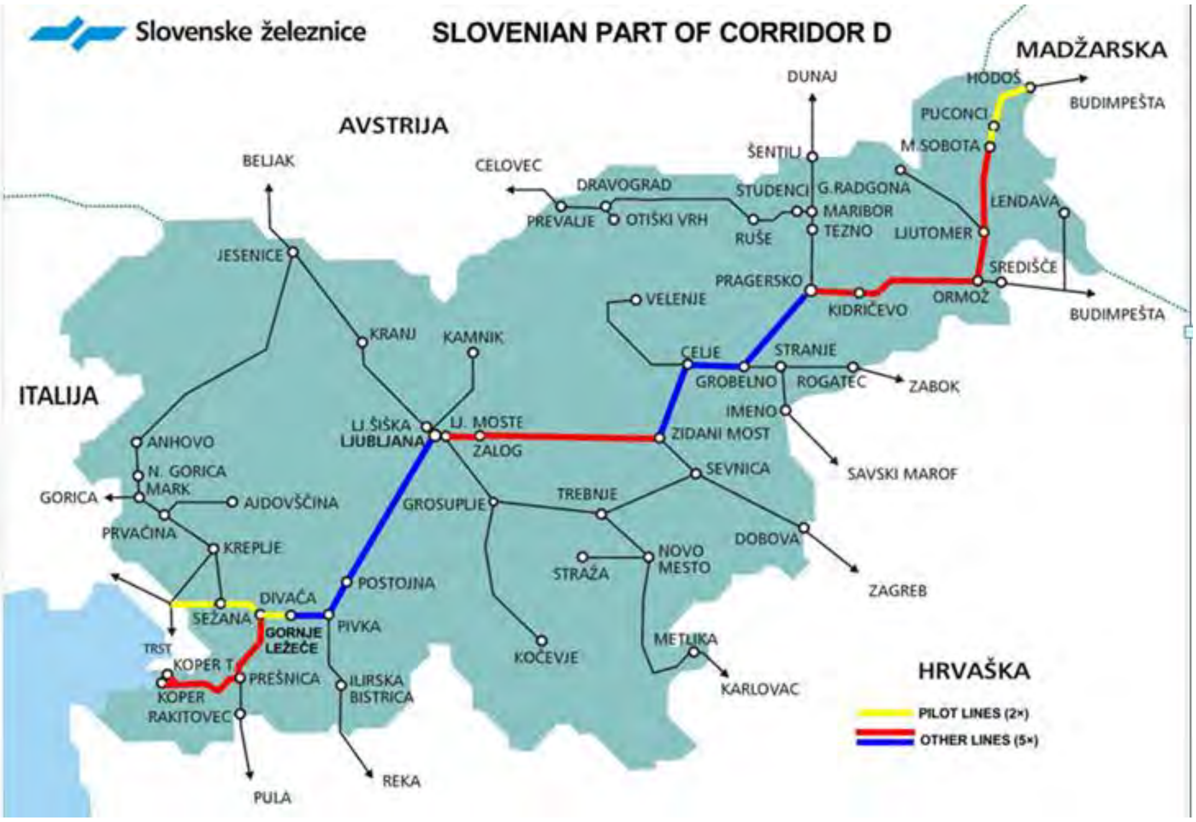
At the moment, in few sections belonging to the corridor, the ERTMS level 1 has been implemented in a test phase; more specifically:

- IT/SI border- Divaca
- Divaca- Pivka
- Murska Sobota – Hodos (SI/HU border)

The remaining part of the corridor has been divided in 5 macro-sections, which correspond to the five activities related to the ERTMS Deployment Plan for the corridor D (Action n. 2013-SI-60017-P). In this respect, the proposed Plan consists of:

- Project management and supervision
- Completion of the deployment of the design, software modifications and equipment with hardware on the 5 sections with terminal Ljubljana and port of Koper
- Test campaign on the 5 sections with terminal Ljubljana and port of Koper
- EC declaration of conformity of Interoperable Constituents on the 5 sections with terminal Ljubljana and port of Koper
- Start of the procedure for authorization placing the ETCS upgraded railway on the 5 sections with terminal Ljubljana and port of Koper in service (copy of the letter to NSA)

The following map depicts the above mentioned actions.



The following table shows the "as is" situation and the foreseen one, matching the lack of ERTMS signalling system with the related projects listed in the Annex 5.9.4.

Section	**Line type**	**Line to be upgraded** *(according to Regulation 1315/2013)*	**Line Status**	**Level**	**Project Code**	**Development timing**	**Activities**
Border IT/SLO - Divaca	Conv.	to be upgraded	In service	L1 (Pilot already completed)			
Divaca – Koper	Conv.	to be upgraded	In service	L1 foreseen	R14	2015	4
Divaca – Pivka	Conv.	to be upgraded	In service	L1 (Pilot already completed)			
Pivka – Ljubljana	Conv.	to be upgraded	In service	L1 foreseen	R14	2015	1
Ljubljana - Zidani Most	Conv.	to be upgraded	In service	L1 foreseen	R14	2015	3
Zidani Most – Dobova (SI/HR)*	Conv.	to be upgraded	In service	L1 foreseen		2015	
Zidani Most – Pragersko	Conv.	to be upgraded	In service	L1 foreseen	R14	2015	2
Pragersko – Murska Sobota	Conv.	to be upgraded	In service	L1 foreseen	R14	2015	5
Murska Sobota – Hodos (SI/HU)	Conv.	to be upgraded	In service	L1 (Pilot already completed)			

** This section is not listed in the project list.*

Table 100 The Slovenian ERTMS implementation plan

Croatia

At the moment, all sections included in the alignment of the corridor are not equipped with ERTMS. Nevertheless, works are expected to start in 2015; the level of ERTMS which will be deployed is level 1.

Finally, regarding the section Zagreb- SI border, according to the information provided by the Ministry, GSM-R will run in the period 2016-2019. ETCS level 1 or level 2 will be implemented after 2020. The related feasibility study is under elaboration.

The following table shows the "as is" situation and the foreseen one, matching the lack of ERTMS signalling system with the related projects listed in the Annex 5.9.5.

Section	**Line type**	**Line to be upgraded** *(according to Regulation 1315/2013)*	**Line Status**	**Level of ERTMS (L1, L2)**	**Status ERTMS**	**Project Code**	**Development timing**
Zagreb- HR/SI state border	Conv.	to be upgraded	In service		not in operation		
Zagreb node	Conv.	to be upgraded	In service	L1 foreseen		R7	works start date: 2025
Zagreb-Karlovac	Conv.	to be upgraded	In service	L1 foreseen	not in operation	R3	works start date:2017
Karlovac- Ogulin	Conv.	to be upgraded	In service	L1 foreseen	not in operation	R4	works start date:2017
Ogulin-Rijeka	Conv.	to be upgraded	In service	L1 foreseen	not in operation	R5, R6	works start date:2019
Dugo Selo - Botovo (HR/HU)	Conv.	to be upgraded	In service	L1 foreseen	not in operation	R1,R2	works start date:2015

Table 101 The Croatian ERTMS implementation plan

Hungary

According to the mentioned main data sources, sections already equipped with ERTMS level 1 are:

- (Hodos) Bajanseye - Oriszentpeter
- Oriszentpeter - Zalacseb Salomvar
- Zalacseb Salomvar – Boba

Neverthless, on these sections, the ERTMS will be upgraded to level 2 by year 2015. Similarly, from Boba up to Budapest and along the stretch Budapest Kelenforld-Putszataszabolcs the National Report "Timeline of implementation of ERTMS corridors E, D" and the draft projects provided by the National Ministry (7 November 2014) foresee the deployment of ERTMS level 2.

Section	Line type	Line to be upgraded *(according to Regulation 1315/2013)*	Line Status	Level of ERTMS (L1, L2)	Status ERTMS	Project Code	Development timing
(Hodos) Bajanseye - Oriszentpeter	Conv.		In service	ETCS L1 in operation, L2 foreseen	L1 in operation	R3	2015
Oriszentpeter - Zalacseb Salomvar	Conv.		In service	ETCS L1 in operation, L2 foreseen	L1 in operation	R3	2015
Zalacseb Salomvar – Boba	Conv.		In service	ETCS L1 in operation, L2 foreseen	L1 in operation	R3	2015
Boba – Szekesfehervar	Conv.	to be upgraded	In service	ETCS L2 foreseen	not in operation	R2	2020
Szekesfehervar - Budapest Kelenfold	Conv.	to be upgraded	In service	ETCS L2 foreseen	not in operation	R1	2015
Budapest Kelenfold - Budapest Ferencvaros	Conv.	to be upgraded	In service	ETCS L2 foreseen	not in operation	R1	2015
Budapest Ferencvaros - Budapest Rakos	Conv.	to be upgraded	In service			Under evaluation	Under evaluation
Budapest Rakos – Hatvan	Conv.	to be upgraded	In service			Under evaluation	Under evaluation
Hatvan – Fuzesabony	Conv.	to be upgraded	In service			Under evaluation	Under evaluation
Fuzesabony – Miskolc	Conv.	to be upgraded	In service			Under evaluation	Under evaluation
Miskolc – Mezozombor	Conv.	to be upgraded	In service			Under evaluation	Under evaluation
Mezozombor - Nyiregyhaza	Conv.	to be upgraded	In service			Under evaluation	Under evaluation
Border HR/HU - Gyekenies	Conv.	to be upgraded	In service			Under evaluation	Under evaluation
Gyekenyes - Kaposvar	Conv.	to be upgraded	In service			Under evaluation	Under evaluation
Kaposvar - Dombovar	Conv.	to be upgraded	In service			Under evaluation	Under evaluation
Dombovar - Pusztaszabolcs	Conv.	to be upgraded	In service			Under evaluation	Under evaluation

Section	Line type	Line to be upgraded *(according to Regulation 1315/2013)*	Line Status	Level of ERTMS (L1, L2)	Status ERTMS	Project Code	Development timing
Pusztaszabolcs - Budapest Kelenfold	Conv.	to be upgraded	In service	ETCS L2 foreseen	not in operation	R4,R5	2018
Budapest Ferencvaros - Szajol	Conv.	to be upgraded	In service	ETCS L2 foreseen	not in operation	Under evaluation	2015
Szajol - Puspokladany	Conv.	to be upgraded	In service				Under evaluation
Puspokladany - Debrecen	Conv.	to be upgraded	In service				Under evaluation
Debrecen - Nyiregyhaza	Conv.	to be upgraded	In service				Under evaluation
Nyiregyhaza - Zahony	Conv.	to be upgraded	In service				Under evaluation

Source: National Report "Timeline of implementation of ERTMS corridors E, D" (2014), National implementation Plan provided by the Hungarian Ministry (7 November 2014).

Table 102 The Hungarian ERTMS implementation plan

4.4.2.2 Detailed Map on the Status of ERTMS implementation along the corridor: "as is scenario"

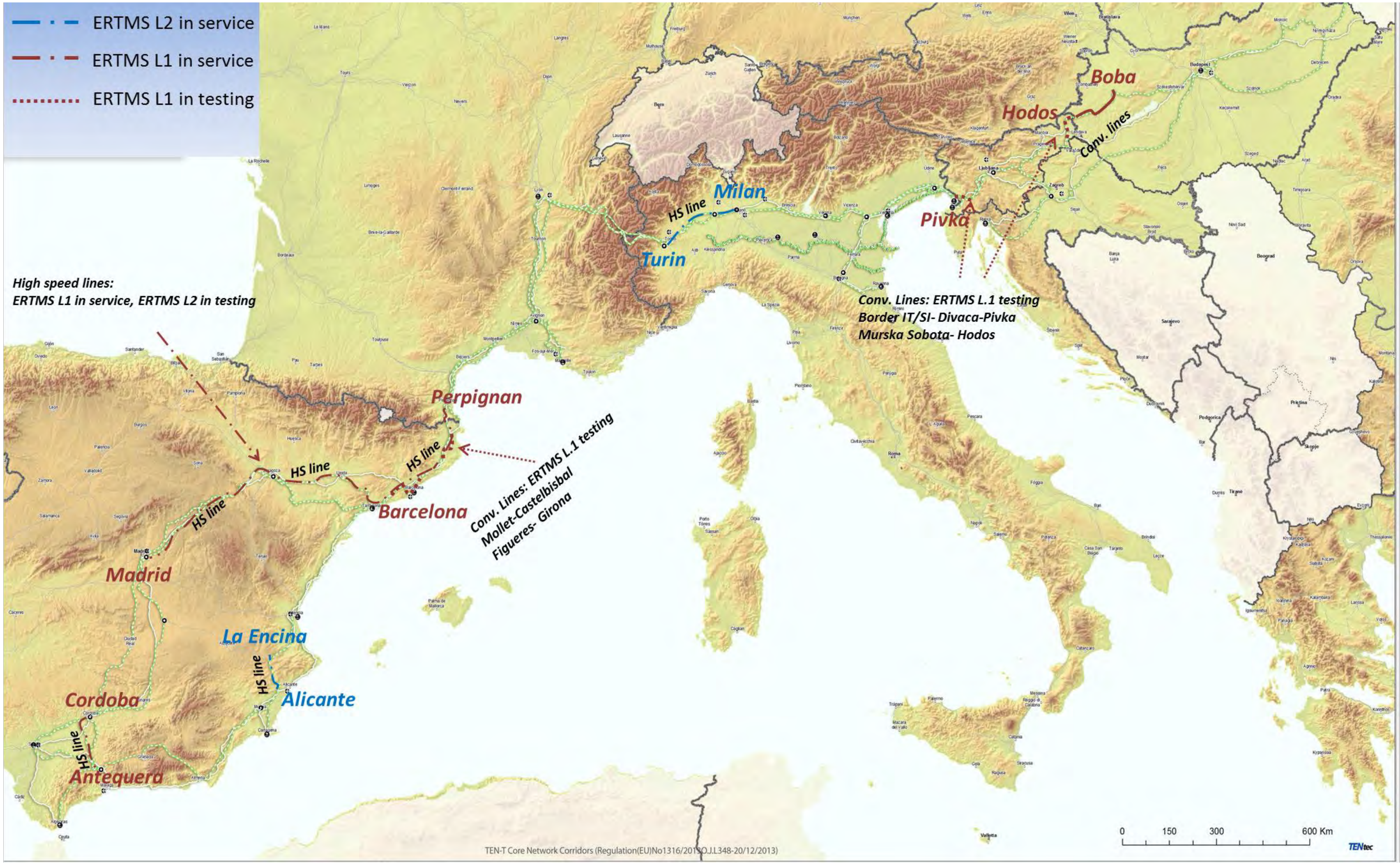


Figure 71 ERTMS map "as is scenario"

4.4.2.3 Detailed Map on the Status of ERTMS implementation along the corridor: "to be scenario: 2030"

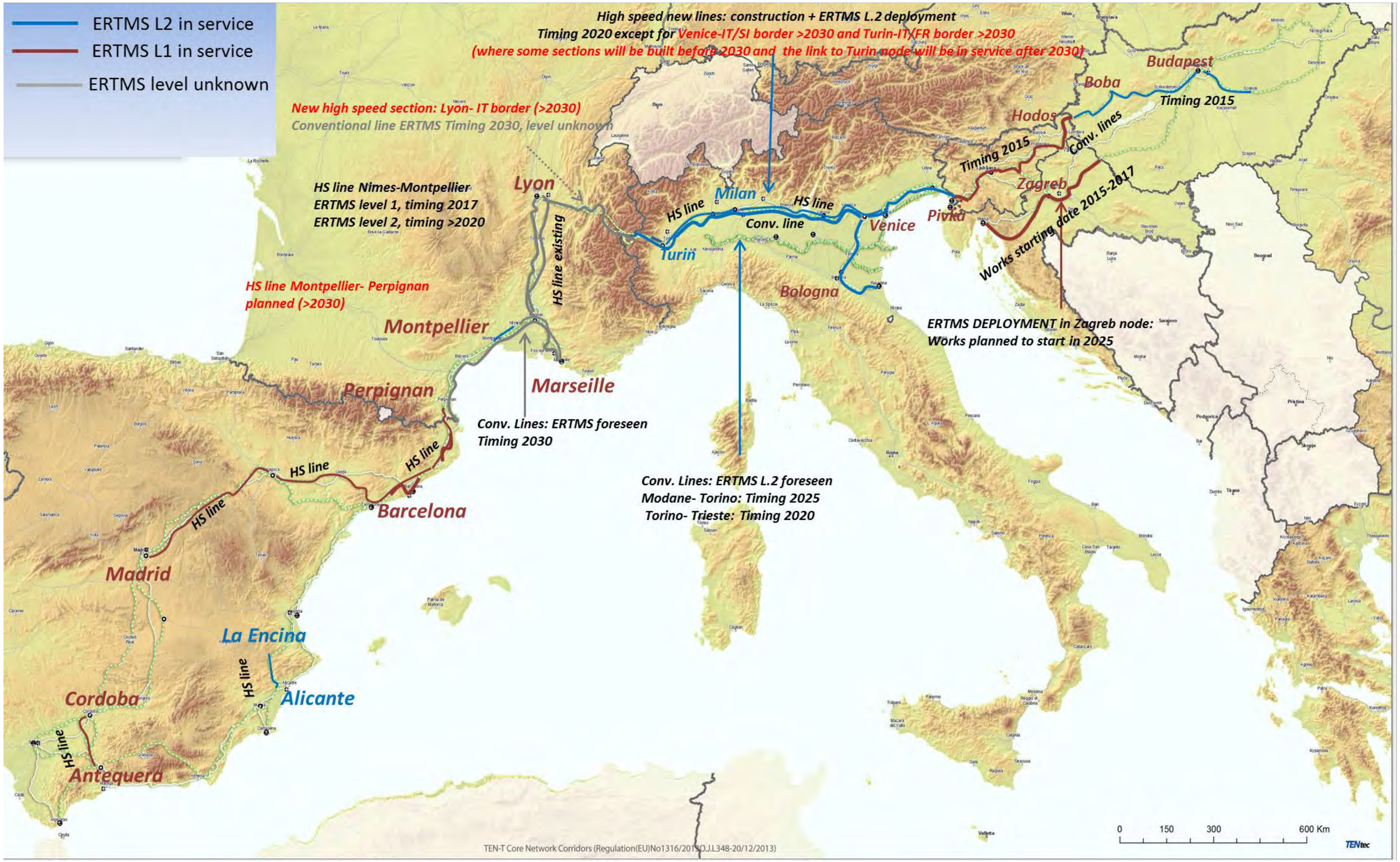


Figure 72 ERTMS map "to be scenario"

**Spanish ERTMS development Plan is under evaluation.*

*** The red color underlines the actions which do not meet the timing stated by EU regulation 1315/2013 article 38.3*

4.4.3 Focus on the RIS implementation plan

The following table shows the level of implementation of the telematics applications along the Po River.

Key RIS Technologies	Description	Elements	Implementation Status Italian IWW
Notices to Skippers	Standardised messages for skippers, containing fairway information allowing traffic management as well as voyage planning (XML format).	• Fairway & Traffic Messages (FTM) • Water Related Messages (WRM) • Ice Message (ICEM) • Weather Related Messages (WERM)	• Water Related Messages • Weather Related Messages Implemented by AIPO with related information uploaded on Google Earth About traffic control Systems it can be said that the majority of the locks are operated manually but the following locks are going to be computerized: Cavanella right and left, Brondolo lock, Pontelagoscuro lock, Valpagliaro Lock, Vallelepri lock
AIS	Vessel Tracking and Tracing (Inland AIS): similar to maritime navigation inland automatic identification system (AIS) on board of inland vessels allows for vessel tracking and tracing on inland waterways. Through AIS transponders data concerning tactical traffic information can be broadcasted and received.	• AIS shore-side infrastructure • On-board equipment (AIS transponders) Exchange data with shore based facilities and exchange between countries	Still not implemented (at least in such a way not conform to Inland AIS format)
Electronic Ship Reporting	Electronic Ship Reporting consists of standardised electronic data exchange between skippers and waterway authorities (Ship to authority and authority to authority) concerning relevant cargo, traffic and transport information.	• ERINOT and ERIRSP • BERMAN and PAXLISTS Exchange between countries	
ENC	Inland ECDIS: with Electronic Navigational Charts (ENCs) and inland electronic chart display and information systems for inland navigation (inland ECDIS) skippers are able to plan their voyage ahead	• Coverage: all waterways of CEMT class Va and higher, including the inland ports Provision free of charge	

Table 103 Ris Implementation along the Italian IWW system

** In the Venice port and lagoon, the following systems has been implemented: SIMNAV/STIM (VTS system for the navigation monitoring from the Chioggia and Malomocco to the Venice port quays); LogIS (Port community system for the electronic management of the administrative procedures); SaFE (Port area video surveillance system); SLN (Monitoring system for the port equipment). It is important to underline that the Italian RIS, which is under implementation, should be integrated with some of these Port information systems.*

About other telematics application systems it is worth to mention the LOG-PAC project (DG MOVE), which seeks to create a network between the Lombard ports authorities in order to promote inland waterway transport, through assistance of private sector in the analysis of the possible benefits, arising from the use of inland navigation, the organization of logistics installations and the administrative simplification.

In France, the Rhône river is equipped with a RIS system (see North-Sea Med corridor report for details)

5 Annexes

5.1 Stakeholder list

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HR	IM (state road network)	Edo Kos	Hrvatske ceste d.o.o.	edo.kos@hrvatske-ceste.hr
HU	MS (Government)	Peter Toth	Hungary, Ministry of National Development - Department for Transport Infrastructure	peter.toth@nfm.gov.hu
HU	MS (Government)	Beatrix Horváth	Hungary, Ministry of National Development - CEF Department	beatrix.horvath@nfm.gov.hu
HU	MS (Government)	Gergely Gesce	Hungary, Ministry of National Development - Department for Transport Infrastructure	gergely.gecse@nfm.gov.hu
HU	IM (Hungarian railway)	János ANDÓ	Head of Network Development Unit	andoja@mav.hu
HU	IM (Hungarian railway)	Lengyelné Kerekes Ágnes	Deputy of representative of the RFC-6 Management Board	lengyelneka@mav.hu
HU	MS (Goverment)	Réka Németh	RFC 6 MB member	nemethr@vpe.hu
HU	IM (RRT of Budapest)	Lívia Wáberer	Budapest Intermodal Logistics Centre (BILK)	waberer.livia@bilk.hu
HU	IM (Port of Budapest)	Zsolt Szabó	Hungarian Federation of Danube Ports	elnok@hfip.hu
HU	IM (Airport of Budapest)	Jost Lammers	Director General	jost.lammers@bud.hu
HU	MS (municipalities)	Szűcs Lajos	Association of County Municipalities, President	moosz@moosz.com

5.2 List of collected studies

EU LEVEL

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	**Customer**	**Contractor**	**Year**	**Confidential**	**Type of Source (purpose of document)**	**corridor countries**	**corridor sections**	**Other corridors involved**	**Transport Modes**	**Freight or Pax**	**Tech data on current infrastr.**	**Bottlenecks**	**Infrastructure Projects**	**Tech data on planned infrastructure**	**Cost Data/Analysis on investment**	**Financial data on investment**	**Data on historic and current transport flows**	**Demand/Market Forecasts**	**Traffic Management systems**	**Environmental issues**
RFC 6 Implementation Plan	RFI (Italian Rail Infrastructure Manager)	RFC Management Board	2013	No	Implem. Plan	ES-FR-IT-SI-HU	Almeria/Madrid-Lyon-Turin-Ljubliana-Budapest-Zahony	No	Rail	Freight	For rail and terminals	Yes	Yes	Yes	Yes	Yes	Yes	2015 - 2030	N	N
PP6 Annual Report of the Coordinator	DG MOVE - TEN-T Agency	-	2013	No	Annual report on the implementation	FR, IT, SI, HU	Lyon–Turin; Turin–Trieste;Trieste–Divača/Koper–Divača; Divača–Ljubljana–Budapest–Ukrainian border.	No	Rail	Freight	Partial	Yes	Yes	Partial	Yes	Yes	No	No	No	No
Trans-European transport network planning methodology	European Commission DG MOVE	TML, NEA, TNO, ITS, ISIS, PWC	2010	No	Planning approach Report	Mediterranean	All	Yes	-	-	No	No	No	No	No	No	No	No	No	No
Analysis of inland waterway networks in the Sonora project area	European Union	Veneto Region,	2010	No	Market study	IT HR, SI	Po regions	Yes	Iww	Freight	Yes	No	Yes	No	No	No	No	No	No	No
Bottleneck Analysis	European Union	Seta	2013	No	Bottleneck Analysis	IT HR, SI HU	All railway sections belonging to the East part of the Mediterranean corridor	Yes	Sea, Rail	Freight Pax	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No
Mapping of the current EU and SEE Regional Policies	European Union	GIFT	2013	No	Analysis on the transport regulatory policies	IT HR, SI HU	All	Yes	All	Freight /pax	No	No	No	No	No	No	Yes	No	Yes	Yes

SPAIN

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	**Customer**	**Contractor**	**Year**	**Confidential**	**Type of Source (purpose of document)**	**corridor countries**	**corridor sections**	**Other corridors involved**	**Transport Modes**	**Freight or Pax**	**Tech data on current infrastr.**	**Bottlenecks**	**Infrastructure Projects**	**Tech data on planned infrastructure**	**Cost Data/Analysis on investment**	**Financial data on investment**	**Data on historic and current transport flows**	**Demand/Market Forecasts**	**Traffic Management systems**	**Environmental issues**
Travelers' forecast update in the international section of high speed line Figueras – Perpignan	Elipsos Internacional	CTYM	2013	Yes	Market study	ES, FR	Figueras - Perpignan	No	Rail, Road, Air	Pax	No	Yes	Yes	No	No	No	Yes, 2035*	Yes	No	No
Feasibility study of the railway connection Valencia-Alicante along the coast	Generalitat Valenciana / Consellería de Infraestructuras y Transporte		2013	Yes	Feasibility study	ES	Valencia - Alicante	No	Rail	Pax	Yes	No	Yes	Yes	Yes	Yes		Yes	No	Yes
Feasibility study of a third lane in the Mediterranean corridor, section: Alicante - French Border. Demand Study	Ministerio de Fomento de España	INECO	2013	Yes	Market study	ES	Alicante-French border	No	Rail	Freight & Pax	Yes	Yes	Yes	Yes	Yes	Yes		Yes	No	No
Demand Study for Eastern Andalusia access to high-speed rail	Adif	EPYPSA	2010	Yes	Market study	ES	Madrid - Granada - Almería	Yes	Rail, Road	Pax	No	No	Yes	No	No	No		Yes	No	No
Study the flow of cargo through the Pyrenees. Modal split model	Ministerio de Fomento de España - Ministère de l'Écologie français	INECO - SETEC	2013	Yes	Market study	ES, FR	Spanish-French border	Yes	Rail, Road, Sea	Freight	Yes	Yes	Yes	Yes	No	No		Yes	No	No
Market and traffic research on the European freight corridor No. 4	GEIE SEA VITORIA DAX	SETEC, PROGTRANS, VTM, EPYPSA	2013	Yes	Market study	ES, FR, PT	Madrid - Algeciras	Yes	Rail, Road, Sea	Freight	Yes	No	Yes	Yes	No	No	Yes, 2050*	Yes	No	No
Studies of rail motorway services development in the Iberian Peninsula in 2020	GEIE SEA VITORIA DAX	INECO - SETEC	2009	Yes	Market study	ES, FR	Spanish-French border	Yes	Rail, Road	Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes, 2020*	Yes	No	No

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Socio-economic and traffic flows database Europe-Africa	SENEGSA/SNED		2013	No	Traffic analysis	ES, FR, IT	Algeciras-Trieste	Yes	Road, Sea, Air	Freight & Pax	No	No	No	No	No	No	Yes	No	No	No
Market Study of Motorways of the Sea in Spain. WEST-MOS Project	Puertos del Estado		2008	No	Market study	ES, FR, IT	Algeciras-Trieste	Yes	Road, Sea	Freight	No	Yes	No	No	No	No	Yes	Yes	No	No
Catalan agenda for the Mediterranean corridor	Generalitat de Catalunya		2014	No	Position paper and implementation plan	ES	Zaragoza – Tarragona, Valencia – Tarragona, Tarragona – Barcelona – Perpignan	No	Rail, Road, Sea	Freight & Pax	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No
Demand study on the Lyon – Madrid Axis	CLYMA		2014	No	Market study	ES-FR	Madrid-Lyon	No	Rail, Road, Sea	Freight	No	No	No	No	No	No	Yes	Yes	No	No

** global demand / modal split / traffic assignment*

FRANCE

General information						Geographicalcoverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
Dossier d'enquête préalable à la déclaration d'utilité publique Lyon - Chambéry - Turin	RFF	Egis, Setec, Inexia..	2012	No	Official studies for project approval	FR - IT	Lyon - Turin	No	Rail (all for traffic studies)	Both	Partial	Yes	Yes	Yes	Yes	Yes	Yes*	2020 - 2035	No	Yes
Etudes pré-fonctionnelles du Nœud Ferroviaire Lyonnais long terme	RFF - Ministry of transport	Egis	2009 - 2011	No	Pre-feasibility studies	FR	Lyon node	Yes	Rail	Both	Partial	Yes	Yes	Partial	Yes	No	Yes	2030 - 2035	No	Partial
Dossier d'enquête préalable à la déclaration d'utilité publique Contournement Ferroviaire de l'agglomération lyonnaise	RFF	Setec, Systra	2009 - 2011	No	Official studies for project approval	FR	Lyon node	Yes	Rail	Mostly Freight	Partial	Yes	Yes	Partial	Yes	No	Yes	2030 - 2035	No	Partial
Etudes de trafic Fret ligne nouvelle Montpellier - Perpignan	RFF	Egis - Nestear	2011	No	Preparatory studies	FR	Perpignan - Montpellier	No	All	Freight	No	No	Yes	No	No	No	Yes	Yes	No	No
Etudes de trafic Voyageurs ligne nouvelle Montpellier - Perpignan	RFF	Setec	2011	No	Preparatory studies	FR	Perpignan - Montpellier	No	All	Pax	No	No	Yes	No	No	No	Yes	Yes	No	No
Rapport de la Commission "mobilité 21"	Ministry of Transport		2013	No	Government strategy	FR	All in France	Yes	All	Both	No	No	Yes	No	Yes	Yes	No	No	No	No
Débat public sur les transports dans la vallée du Rhône	Commission nationale du débat public		2007	No	Government strategy	FR	Lyon – Montpellier	No	Rail and road	Both	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes

*****_capacity studies_

ITALY

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	**Customer**	**Contractor**	**Year**	**Confidential**	**Type of Source (purpose of document)**	**corridor countries**	**corridor sections**	**Other corridors involved**	**Transport Modes**	**Freight or Pax**	**Tech data on current infrastr.**	**Bottlenecks**	**Infrastructure Projects**	**Tech data on planned infrastructure**	**Cost Data/Analysis on investment**	**Financial data on investment**	**Data on historic and current transport flows**	**Demand/Market Forecasts**	**Traffic Management systems**	**Environmental issues**
Studi preparatori alla revisione del Piano Nazionale della Logistica	Ministry of Infrastructure and Transportation	Bocconi – CERTeT		No	Preparatory studies	IT	Turin - Trieste	Yes	All	Freight	Partially for rail	Yes	Yes	Yes	Yes	Yes	Yes	2012-2026	N	N
Piano Nazionale della Logistica	Ministry of Infrastructure and Transportation	-	2012	No	Implementation Plan fo the Italian logistic sector	IT			All	Freight	N	Yes	No	No	No	No	Yes	No	No	No
Piano Operativo Triennale 2013-2015	Venice Port Authority		2013	No	Three years implem. plan	IT	No	No	Sea And Rail	Freight Pax	N	Yes	Yes	No	Yes	Yes	Yes	No	No	No
Le infrastrutture strategiche di trasporto	Ministry of Infrastructure and Transportation	Astrid Italiadecide ResPublica	2011	No	Strategy Study	IT,SL	Venezia-Trieste-Divača	Yes	All	Freight Pax	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Connessioni logistiche, efficienza e competitività: un'indagine sul sistema portuale Italiano	Banca d'Italia	Italian Independent experts	2009	No	Study on traffic and infrastructural assets	IT	Venezia-Trieste	Yes	Sea	Freight	Yes	Yes	No	No	No	No	Yes (Until 2009)	No	No	No
Rapporto sullo stato delle strutture in Italia: criticità di oggi, priorità di domani	Unioncamere	Italian Independent experts	2011	No	Study on traffic and infrastructural assets	IT	Torino-Milano-Verona-Padova-Venezia-Trieste	Yes	All	Freight Pax	Yes	Yes	Partial	No	Yes	No	Yes	No	No	Partial
Analisi strutturale del trasporto combinato ferroviario ed aereo e proposte di potenziamento	Ministry of Infrastructure and Transportation	ISPI	2011	No	Study on freight traffic	IT	Torino-Milano-Verona-Padova-Venezia-Trieste	Yes	All	Freight	Yes	Yes	Yes	Partial	No	No	Yes	No	No	No
Piano nazionale della logistica: analisi demo-socio-economica e infrastrutturale delle piattaforme logistiche territoriali	Ministry of Infrastructure and Transportation	Ernst & Young	2011	No	Implementation plans divided by regions	IT	Torino-Milano-Verona-Padova-Venezia-Trieste	Yes	All	Freight	No	Yes	Yes	No	Yes	No	Partial	No	No	No
Analisi strutturale del trasporto combinato marittimo e proposte di potenziamento	Ministry of Infrastructure and Transportation	CIELI	2011	No	Freight traffic-fares analysis	IT	Venezia-Trieste	Yes	Sea	Freight	No	No	No	No	No	No	Yes	No	No	No

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
Piano della logistica: analisi dei processi di filiera, morfologia dei flussi logistici internazionali.	Ministry of Infrastructure and Transportation	D'Appolonia S.p.A.	2011	No	Market study	IT	Venezia-Trieste	No	Air, Sea	Freight	No	Partial	No	No	No	No	Yes	No	No	Partial
An early evaluation of Italian high speed projects	Naples University Federico II	TemaLab	2011	No	Italian High speed Rail evaluation	IT	Torino-Milano-Venezia-Trieste-Frejus	No	Rail	Pax	Partial	No	Partial	No	Yes	No	Yes	Partial	No	No
Alta capacità Milano-Venezia: scelte strategiche e una proposta finanziaria innovativa	Confindustria Veneto	ResPublica-	2012	No	Strategy Study	IT	padova-Verona-Brescia	Yes	Rail	Pax	No	No	Yes	No	Yes	Yes	Yes	Yes	No	No
Cost benefit analysis of Venezia - Trieste	RFI	-	2012	No	Feasibility study	IT	Venezia – Trieste	No	Rail	Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Documento di Economia e Finanza 2014	Ministry of Infrastructure and Transportation	-	2014	No	List of the Italian priority projects	IT	IT sections	Yes	All	Freight Pax	No	Yes	Yes	No	No	Yes	No	No	No	No
Stato di attuazione dei progetti TEN-T nazionali relativi al programma 2007-2013 suddivisi per modalità di trasporto	Ministry of Infrastructure and Transportation	-	2013	No	Italian Ten-t projects funded by UE	IT	Torino-Milano-Verona-Padova-Venezia-Trieste DivacaDivača	Yes	All	Freight Pax	No	No	Yes	No	Yes	Yes	No	No	No	No
Programma infrastrutture strategiche	Ministry of Infrastructure and Transportation		2013	No	Implem. plan strategic infrastr.	IT	Torino-Milano-Verona-Fréjus	Yes	Rail, Road	Freight Pax	No	No	Yes	No	Yes	Yes	No	No	No	Yes
Monitoraggio dello stato di avanzamento delle tratte Italiane e transfrontaliere della transpadana	Transpadana-Sistema corridoi europei	Gruppo Class	2013	No	Descriptive. analysis	IT	IT sections	Yes	Rail	Freight Pax	No	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Strumenti valutativi per l'analisi degli impatti del traffico di transito su strada e su rotaia attraverso gli assi alpini (MONITRAF)	Monitraf	Eurac research, Arpa	2013	No	Monitraf indicators system	IT	Fréjus	Yes	Road	Freight Pax	No	No	No	No	No	No	Yes	No	No	Yes
Revisione progetto definitivo: Torino Lione	LTF		2012	No	Project revision	IT, FR	Torino	No	Rail	Freight Pax	No	Yes	Yes	Yes	No	No	No	Yes	No	No
Quaderni 1-8 dell'Osservatorio della Linea Torino - Lione	Italian Government	Osservatorio della Linea Torino - Lione	2006 - 2008	No	Feasibility study	IT, FR	Torino	No	Rail	Freight Pax	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
The Alcotra 2007-2013 programme studies	EC	INTERAPLES	2007 - 2013	NO	Market study	IT, FR	Lyon - Turin	No	Rail	Freight Pax	No	Yes	No	No	Yes	No	No	No	No	Yes
Relazione sulle attività delle autorità portuali	Ministry of Infrastructure and Transportation		2012	No	Traffic analysis	IT	Trieste-Venezia-Ravenna	Yes	Sea	Freight Pax	No	No	Yes	No	Yes	Partial	Yes	No	No	No
Piano generale del sistema idroviario dell'Italia del Nord	European Union	Aipo, Provincia di Mantova, ALOT etc.	2012	No	Implem. Plan	IT	Po regions	Yes	Inland Waterway	Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Studies for the Development of the RIS Operability along the Northern Italy waterway system	European Union	Aipo	2011	No	Inception Report	IT	Po regions	Yes	Inland Waterway	Freight	Yes	Yes	No	No	No	No	Yes	No	Yes	No
Analysis of inland waterway networks in the Sonora project area	European Union	Veneto Region,	2010	No	Market study	IT HR, SI	Po regions	Yes	Iww	Freight	Yes	No	Yes	No	No	No	No	No	No	No
Bottleneck Analysis	Seta		2013	No	Bottleneck Analysis	IT HR, SI HU	Trieste- Villa Opicina	Yes	Sea, Rail	Freight Pax	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No
Piano Operativo Triennale 2013-2015	Ravenna Port Authority		2012	No	Three years implementation plan	IT	Ravenna port	No	Sea, Road, Rail	Freight Pax	No	Yes	Yes	No	No	No	Yes	Yes		Yes
Piano Operativo triennale 2013-2015	Trieste Port Authority		2012	No	Three years implementation plan	IT	Trieste Port	No	Sea, Road, Rail	Freight Pax	Yes	Yes	N	No	No	Yes	Yes	Yes	No	N
Corridoio Mediterraneo	Assolombarda, Unione Industriale di Torino e Confindustria Genova	OTI Nordovest	2013	No	Report on foreseen projects	IT	All	Yes	Rail	Freight Pax	No	Yes	Yes	No	No	No	No	No	No	No
Rilevazione e analisi di indicatori di accessibilità per trasporti a medio e lungo raggio in Lombardia	UNIONCAMERE Lombardia	TRT	2013	No	Planning approach Report	IT	Airports located in Lombardia region Milano intermodal nodes	No	Air and Rail-Road	Freight Pax	No	Yes	Yes	No	No	No	Yes	No	No	No
Atlante degli aeroporti Italiani	Ministry of Infrastructure and Transportation	One Works, KPMG, Nomisma	2010	No	Technical analysis	IT	All	Yes	Air	Freight /pax	Yes	Yes	Yes	No	No	No	No	No		Yes

SLOVENIA

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
National program on transport and transport infrastructure strategy	Ministry of infrastructure and spatial planning	PNZ DRI	2014	No	National transport plan	SI	Slovenia as a whole	Baltic-Adriatic	All	Pax / Freight	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Public railway infrastructure development needs in Slovenia (unofficial translation)	RS, MINISTRSTVO ZA PROMET (Ministry of traffic), Langusova ulica 4, 1535 Ljubljana	Prometni institut Ljubljana d.o.o., APPIA d.o.o., University of Ljubljana, University of Maribor, Faculty of logistics	2011	No	Analysis of the develop-ment and infrastr. needs in Slovenia	IT SI HR	Slovenia as a whole	-	Rail, Road, Port	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Feasibility study of new railway link between Divača and Ljubljana and Ljubljana and Zidani Most	Ministry of infrastructure and spatial planning	PNZ svetovanje projektiranje d.o.o.	2013	No	Expected traffic flows	SI	New construction* Upgrade of current infrastructure **	No	Rail	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Infrastructure plans (draft document; to be confirmed by the Ministry of infrastructure)	DARS		2014-2020	Yes	Potential investments into roads	SI	Slovenia	Baltic-Adriatic	Road	Pax / Freight	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes,	No
Aeropolis (development plan)	Aerodrom Ljubljana		2021	No	Improvement of current infrastructure and its surroundings		Airport (Letališče Jožeta Pučnika, Ljubljana), Slovenia	No	No	-	Yes	No	Yes	Yes	No	No	No	No	No	Yes
Prispevek k resoluciji o nacionalnem programu razvoja prometne infrastrukture v Republiki Sloveniji (Contribution to the national program of Republic of Slovenia, draft document - to be confirmed by the Ministry of Infrastructure)	Aerodrom Ljubljana	n/a	Planned investments until 2040	Yes	Contribution of Aerodrom Ljubljana to Slovenian national plan for infrastructure and its development	SI	Airport (Letališče Jožeta Pučnika, Ljubljana), Slovenia	No	Airport	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
Master Plan Summary	Aerodrom Ljubljana	Hochtief Airport	Planned investments until 2040	No	Summary of Master plan	SI	Airport (Letališče Jožeta Pučnika, Ljubljana), Slovenia	No	Airport	Both	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Operativni program za izvajanje Evropske kohezijske politike v obdobju 2014 -2020 (Operational Programme for the implementation of European cohesion policy for the period 2014 -2020; draft document, to be confirmed by the Ministry)	Aerodrom Ljubljana	n/a	2014-2040	Yes	General overview and policy in Slovenia	SI	General	Not directly	Infrastructure general	Both	Yes	No	No	No	No	Yes	No	No	No	Yes
Analiza Luke Koper in drugih severno Jadranskih pristanišč	Ministry of infrastructure	DRI upravljanje investicij, Ministrstvo za infrastrukturo in prostor Družba za razvoj infrastrukture d.o.o.	2013	No	Overview of the current and future plans of Luka Koper and NAPA (North Adriatic Port Association)	IT SI HR	Luka Koper, Venice, Trieste, Reka	No	Ports	Freight	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Overview of Luka Koper and its development			2013, covers period until 2030	No	Overview of Luka Koper and its development and rail service between Divača-Koper	SI	Luka Koper, Divača-Koper	No	Ports, rails	Freight	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Analiza pretovornih zmogljivosti Luke Koper, zmanjšanega obratovanja železniške proge zaradi izrednih dogodkov in vzdrževanja ter izkoriščenost avtoceste Mediterranean Divačo in Koprom	Ministry of infrastructure	DRI upravljanje investicij, Ministrstvo za infrastrukturo in prostor Družba za razvoj infrastrukture d.o.o.	Study finalised 2012, covers period until 2040	No	Overview of Luka Koper and its development and rail and road service between Divača-Koper	SI	Luka Koper, Divača-Koper	No	Ports, rails, roads	Freight	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
Prometna študija tovornega prometa Luke Koper	Ministry of transport	DRI upravljanje investicij, Ministrstvo za infrastrukturo in prostor Družba za razvoj infrastrukture d.o.o.	Study finalised 2012, covers period until 2040	No	Overview of Luka Koper and its development and rail and road service between Divača-Koper	SI	Luka Koper, Divača-Koper	No	Ports, rails, roads	Freight	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	No
Študija izvedljivosti za novo železniško progo Divača - Koper odsek Divača - Črni Kal odsek Črni Kal - Koper (A feasibility study for a new railway line Divača - Koper section Divača - Crni Kal section Crni Kal - Koper)	Ministry of transport	-	2012 until 2040	No	Feasibility of the track Divača – Koper section Divača – Črni Kal section Črni Kal – Koper	SI	Divača – Koper	No	Rail	Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Divača - Ljubljana, Ljubljana - Zidani Most/Zagorje, Zidani Most/Zagorje-Maribor*

*** TrIeste-Divača, Koper-Divača, Maribor/Pragersko - Hodoš, Maribor - Šentilj, Jesenice - Ljubljana, Zidani Most/Zagorje - Divača; Upgrade with additonal track: Ljubljana-Kamnik, Grosuplje-Ljubljana.*

CROATIA

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	**Customer**	**Contractor**	**Year**	**Confidential**	**Type of Source (purpose of document)**	**corridor countries**	**corridor sections**	**Other corridors involved**	**Transport Modes**	**Freight or Pax**	**Tech data on current infrastr.**	**Bottlenecks**	**Infrastructure Projects**	**Tech data on planned infrastructure**	**Cost Data/Analysis on investment**	**Financial data on investment**	**Data on historic and current transport flows**	**Demand/Market Forecasts**	**Traffic Management systems**	**Environmental issues**
Transport development strategy of the republic of Croatia(2014-2030)	Ministry of the Maritime Affairs, Transport and Infrastructure		2014	No	Implem. plan	HR	All	Baltic Adriatic	All	Pax / Freight	No	Yes	No	No	No	No	No	No	Yes	Yes
Operationale Programme Traffic 2007-2013	Ministry of the Maritime Affairs, Transport and Infrastructure	Ministry of the Maritime Affairs, Transport and Infrastructure	April 2012	No	Integral part of the greater European transport network	HR	Zagreb-Rjieka	Rhine-Danube and Baltic-Adriatic	All	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Ys	Yes	Yes	Yes
Program Građenja I Održavanja Javnih Cesta Za Razdoblje Od 2013. Do 2016. Godine	Croatian Government	Croatian Government	2013	No	Implem. plan for roads	HR	Zagreb-Rjieka		Road	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Nacionalno Izvješće O Autocestama Za 2012. Godinu	The Croatian Association of Toll Motorways Concessionaires (HUKA)	HUKA	April 2013	No	Report on Motorways 2012	HR	Zagreb-Rjieka		Road	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Network Statement, Hž Infrastruktura	HŽ Infrastruktura	HŽ Infrastruktura	2013	No	Railroad network statement	HR	Zagreb-Rjieka	Rhine-Danube and Baltic-Adriatic	Railroad	Pax / Freight	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Summary On Infrastructure In Port Of Rijeka From Websites	-	-	Seen February 2014	No	List of infrastructure	HR	-	-	Port	Freight	Yes	No	No	No	No	No	No	No	No	No
Croatian Airports In The European Low-Cost Carrier Network	Geodaria, Vol.17 No.1	Department of Geography, Faculty of Science, University of Zagreb, Zagreb	June 2012	No	Research paper	HR	-	-	Air	Passengers	Yes	Yes	Yes	No	No	No	Yes	No	Yes	No

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
Feasibility study and cost benefit analysis for the rail section Ogulin – Delnice - Škrljevo	HŽ Infrastruktura	IPP, Istraživanje i projektiranje u prometu d.o.o.	2014	No	Feasibility study	HR	Ogulin – Delnice - Škrljevo		Rail	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Feasibility study and cost benefit analysis for the rail section ŠKRLJEVO – RIJEKA – ŠAPJANE	HŽ Infrastruktura	IPP, Istraživanje i projektiranje u prometu d.o.o.	2014	No	Feasibility study	HR	Škrljevo – Rijeka		Rail	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Development Potentials Of Low Cost Aviation In The Republic Of Croatia	PROMET - Traffic and Transportation	University of Zagreb, Faculty of Transport and Traffic Sciences; Zagreb Airport Ltd.	2011	No	Research paper	HR	-	-	Air	Passengers	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No
Feeder Service And Block Trains –The Vital Links To Promote Rijeka's Transport Route	-	Pupovac, D.	2009	No	Research paper	HR	Mediterranean (from Venice)r	Baltic Adriatic	Port, railroad	Freight	Yes	No	Yes	No	No	No	Yes	No	No	No
Functional Analysis Of Republic Of Croatia For Short Sea Shipping Development	PROMET - Traffic and Transportation, Vol. 22, No.1	Bukljaš Skočibušić, M., Jolić, N.;University of Zagreb, Faculty of Transport and Traffic Sciences	2010	No	Research paper	HR	Zagreb-Rjieka	Baltic Adriatic	Port	Pax / Freight	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Optimal Analytical Instruments In The Function Of Estimation Of Total Traffic In The Port Of Rijeka	Pomorstvo: Scientific Journal of Maritime Research, Vol.27, No.2	Juretić,S., Port Authority Rijeka; Cerović, Lj., Galović, T.; University of Rijeka, Faculty of Economics	2013	No	Review paper	HR	-	-	Port	Freight	No	No	No	No	No	No	Yes	Yes	No	No

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
The Analysis Of The Container Traffic Movement In The Port Of Rijeka Compared To The Container Traffic In The Port Of Koper	Pomorstvo: Scientific Journal of Maritime Research, Vol.25, No.2	Tomašević, M., Faculty of Maritime Studies Split; Jadrijević, N., Croatia Yachting; Dundović,Č., Faculty of Maritime Studies Rijeka	2011	No	Review paper	HR; SI	Zagreb-Rjieka	-	Port	Freight	No	No	Yes	No	No	No	Yes	Yes	Yes	No
Port And Traffic Infrastructure In The Republic Of Croatia	Pomorstvo: Scientific Journal of Maritime Research, Vol.25 No.1	Dundović, Č., Faculty of Maritime Studies Rijeka; Plazibat, V., Faculty of Maritime Studies Split	June 2011	No	Preliminary communication	HR	Zagreb-Rjieka	Baltic Adriatic	All	Pax / Freight	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No
Prostorno I Prometno Integralna Studija Primorsko-Goranske Županije I Grada Rijeke	Autocesta Rijeka-Zagreb d.d., Ministry of the Maritime Affairs, Primorsko-Goranska county, City of Rijeka, Hrvatske autoceste d.o.o., Hrvatske ceste d.o.o., Lučka uprava Rijeka, HŽ Infrastruktura d.o.o.	Institut IGH d.d., Faculty of Maritime Studies Rijeka, Rijekaprojekt d.o.o., Faculty of Transport and Traffic Sciences Zagreb, Željezničko projektno društvo d.d., Faculty of Civil Engineering, Arhitecture and Geodesy	May 2011	No	Implem. plan	HR	Zagreb-Rjieka	-	All	Pax / Freight	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
Prostorno-Prometna Studija Cestovno-Željezničkog Sustava Šireg Područja Grada Zagreba	Ministry of the Maritime Affairs, Transport and Infrastructure, Hrvatske autoceste d.o.o., City of Zagreb, Hrvatske željeznice d.d., Hrvatske cetse d.o.o., Zagrebačka County	Faculty of Civil Engineering Zagreb, Faculty of Arhitecture Zagreb, Faculty of Transport and Traffic Sciences Zagreb, Institut of Transport and Communication, Željezničko projektno društvo d.d.; Coordinator - IGH d.d.	May 2009	No	Implem. plan	HR	Zagreb-Rjieka	Baltic Adriatic	All	Pax / Freight	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes

HUNGARY

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
National Transport Strategy (Nemzeti Közlekedési Stratégia - NKS)	Transport Development Coordination Centre (Government)	Strategy Consortium (Stratégiai Konzorcium)	2013	No	Strategy paper	HU	HU	4, 9	Rail, Road, IWW, Air	Pax / Freight	Partial	Yes	Yes	No	Partial	No	Yes	Yes	Partial	Yes
National Railway development Concept (Országos Vasútfejlesztési Koncepció - OVK)	Transport Development Coordination Centre (Government)	Strategy Consortium (Stratégiai Konzorcium)	2013	No	Strategy paper	HU	HU	4, 9	Rail	Pax / Freight	Partial	Yes	Yes	No	Partial	No	Yes	Yes	Partial	Yes
Traffic Model for all Transport Modes (Összközlekedési Forgalmi Modell)	Transport Development Coordination Centre (Government)	Strategy Consortium (Stratégiai Konzorcium)	2013	No	Traffic anaylsis and forecast	HU	HU	4, 9	Rail, Road, IWW, Air	Pax / Freight	No	No	Yes	No	No	No	Yes	Yes	No	Yes
Strategic Environmental Analysis (Stratégiai Környezeti Vizsgàlat)	Transport Development Coordination Centre (Government)	Strategy Consortium (Stratégiai Konzorcium)	2013	No	Environmental impact analysis	HU	HU	4, 9	Rail, Road, IWW, Air	Pax / Freight	No	Yes	Partial	No	No	No	No	No	Partial	Yes
National Aviation Strategy (Nemzeti légügyi stratégia)	Government	n.a.	2011	No	Strategy paper	HU	HU	4, 9	Air	Pax / Freight	No	Parti al	Partial	No	No	No	No	No	Yes	Yes
Operative Programme of Integrated Transport Development (Integrált Közlekedésfejlesztési Operatív Program)	Government	n.a.	2013	No	Development programme	HU	HU	4, 9	Rail, Road, IWW, Air	Pax / Freight	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes
City-Hub Project	European Commission 7th framework programme	International Consortium	ongoin g	No	Research on design and operation of seamless, smart, clean and safe intermodal urban public transport systems	HU included	HU case study included	4, 9	Urban public transport modes	Pax	No	No	No	No	No	No	No	Partial	Yes	Yes
National Road Transport Platform of ERTRAC-Hungary	Government (research & techn. development supervising body)	KTI transport research institute	2010	No	Strategic Research and Implementation plan	HU			Road	Pax / Freight	No	No	No	No	No	No	No	Partial	No	Yes

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
M0 Western Section, construction between Highways 10 and 1 (M0 nyugati szektor, 10. sz. főút - 1. sz. főút között)	National Infrastructure Development Co ltd (NIF Zrt.)	Public procurement process under preparation	2016	Yes	Environmental impact study	HU	HU	4, 9	Road,	Pax / Freight	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
M3, construction between Vásárosnamény and border (M3 Vásárosnamény-országhatár)	National Infrastructure Development Co ltd (NIF Zrt.)	Ongoing public procurement process		Yes	Environmental impact study	HU	HU		road,	Pax / Freight	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
M70, extension between Letenye and SI border (M70 Letenye-országhatár bővítés)	National Infrastructure Development Co ltd (NIF Zrt.)	Unitef-Uvaterv	2015	Yes	Environmental impact study, plans for approval	HU	HU		road,	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Track reconstruction Rákos - Hatvan (Rákos - Hatvan rekonstrukció)	National Infrastructure Development Co ltd	UVATERV Zrt	2012	No	Plan for approval	HU	HU		rail	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Elimination of bottleneck Hatvan - Miskolc (Hatvan - Miskolc szűk keresztmetszet kiváltás)	National Infrastructure Development Co ltd (NIF Zrt)	tender under preparation	2015	No	Feasibility Study	HU	HU		rail	Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Elimination of bottleneck Miskolc - Nyíregyháza (Miskolc - Nyíregyháza szűk keresztmetszet kiváltás)	National Infrastructure Development Co ltd (NIF Zrt)	tender under preparation	2015	No	Feasibility Study	HU	HU		rail	Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Track reconstruction Kelenföld - Százhalombatta (Kelenföld - Százhalombatta rekonstrukció)	National Infrastructure Development Co ltd (NIF Zrt)	UVATERV	2015	No	Plan for approval	HU	HU		rail	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Track reconstruction Százhalombatta - Pusztaszabolcs (Százhalombatta - Pusztaszabolcs rekonstrukció)	National Infrastructure Development Co ltd (NIF Zrt)	UTIBER-UVATERV	2015	No	Plan for approval	HU	HU		rail	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

General Information						Geographical coverage			Modal coverage		Study content									
											Infrastructure						Demand		Others	
Title	Customer	Contractor	Year	Confidential	Type of Source (purpose of document)	corridor countries	corridor sections	Other corridors involved	Transport Modes	Freight or Pax	Tech data on current infrastr.	Bottlenecks	Infrastructure Projects	Tech data on planned infrastructure	Cost Data/Analysis on investment	Financial data on investment	Data on historic and current transport flows	Demand/Market Forecasts	Traffic Management systems	Environmental issues
Elimination of bottleneck Pusztaszabolcs - Dombóvár (Pusztaszabolcs - Dombóvár szűk keresztmetszet kiváltás)	National Infrastructure Development Co ltd (NIF Zrt)	UVATERV	2014	No	Feasibility Study	HU	HU		rail	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Elimination of bottleneck Dombóvár - Gyékényes (Dombóvár - Gyékényes szűk keresztmetszet kiváltás)	National Infrastructure Development Co ltd (NIF Zrt)	UVATERV	2014	No	Feasibility Study	HU	HU		rail	Pax / Freight	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

5.3 Overlapping with other corridors

The Mediterranean corridor is one of the most interconnected in Europe, since it is crossed by other six corridors (Atlantic, North Sea – Mediterranean, Rhine – Danube, Rhine – Alpine, Orient / East - Mediterranean, Scandinavian-Mediterranean and Baltic-Adriatic).

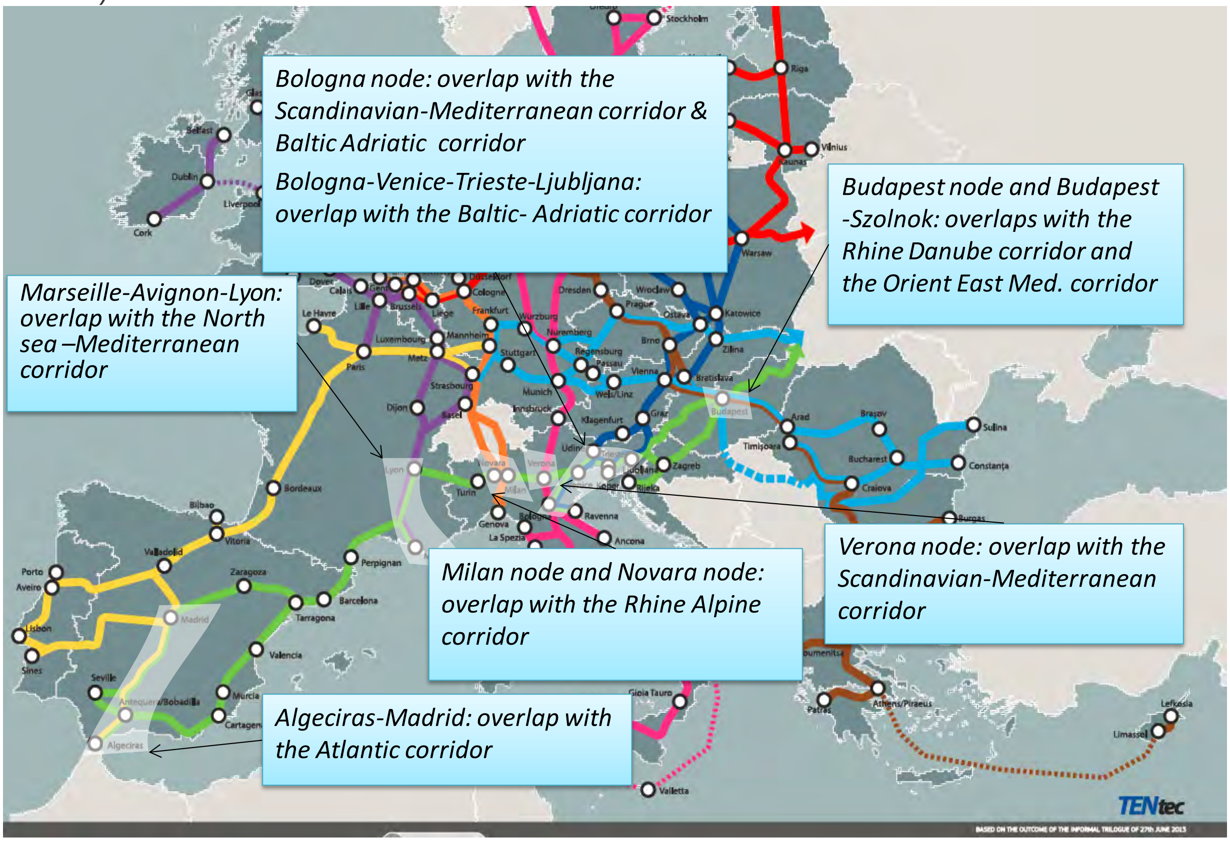


Figure 73 Overlapping sections

The overlapping sections are detailed in the following table by MS.

MS	Mediterranean Sections	Overlapping and connections with other corridors
ES	Algeciras - Sevilla - Cordoba	Atlantic corridor
ES	Cordoba - Madrid	Atlantic corridor
FR	Marseille - Avignon - Lyon	North Sea - Mediterranean corridor
IT	Novara node	Rhine - Alpine corridor
IT	Milan node	Rhine - Alpine corridor
IT	Verona node	Scandinavian - Mediterranean corridor
IT	Bologna node	Scandinavian - Mediterranean corridor Baltic - Adriatic corridor
IT	Venice and Trieste Node	Baltic - Adriatic corridor
IT	IT/SI Border - Trieste - Venezia - Padova - Bologna – Ravenna	Baltic - Adriatic corridor
SI	Maribor - Ljubljana - SI/IT Border	Baltic - Adriatic corridor
SI	Ljubljana node	Baltic - Adriatic corridor
HU	Budapest node	Rhine - Danube corridor Orient / East - Mediterranean corridor
HU	Budapest – Szolnok	Rhine - Danube corridor Orient / East - Mediterranean corridor

Table 104 Overlapping sections

The various overlapping presented above make necessary to clearly identify each contractor responsible for data collection to fill the TEN TEC database. As identified by DG MOVE in its communication dated 14th of February, the following breakdown has been established.

Nodes and sections for which the contractor is responsible for data collection and encoding	
Baltic-Adriatic	Warsaw-Lodz (rail) Warsaw node Prerov node Zilina node Brno-Vienna Padova-Ravenna (rail) Bologna node, Venice node Adriatic ports (Koper, Trieste, Venice, Ravenna)
North Sea-Baltic	Warsaw-Lodz (road) Lodz node Poznan node Berlin node Bremen-Bremerhaven/Wilhelmshaven Amsterdam-Utrecht
Mediterranean	Pragersko-Padova Inland waterway to Ravenna Algeciras-Madrid Madrid node, Milano node, Ljubljana node Padova-Ravenna (road) Padova node Inland ports (Venice, Ravenna)
Orient/East-Mediterranean	Brno-Bratislava Hamburg-Dresden (inland waterways) Prag-Brno Budapest-Bulgarian border
Scandinavian-Mediterranean	Helsinki node Hamburg/Bremen – Hannover Rostock-Berlin Verona node
Rhine-Alpine	Rhine Amsterdam-Rhine Kanaal (inland waterways) Antwerpen-Köln Rechtsrheinisch Mannheim node, Novara node
Atlantic	Metz-Strasbourg Strasbourg node
North Sea-Mediterranean	Rotterdam-Antwerpen Inland waterways south of Rotterdam Lyon-Marseille Linksrheinisch Paris node
Rhine-Danube	Budapest node, Wien node, Bratislava node Wien-Bratislava-Budapest Würzburg-Nürnberg München node

Table 105 Nodes and sections under different contractors' responsibility

As indicated by DG MOVE in the mentioned communication, for "node" it shall be intended the relevant inland ports, seaports, airports and rail-road terminals. Where not indicated differently, links are to be considered multimodal (i.e. road, rail at the same).
As result, the following table identifies the nodes and the sections for which our consortium is not in charge for the data collection, that shall be encoded from other consultants.

MS	Mediterranean Sections	Overlapping and connections with other corridors	Overlapping nodes and sections in charge to other consultants
ES	Algeciras - Sevilla - Cordoba	Atlantic corridor	
ES	Cordoba - Madrid	Atlantic corridor	
FR	Marseille - Avignon - Lyon	North Sea - Mediterranean corridor	Lyon – Marseille all sections (road, rail etc.) in charge to North Sea – Mediterranean consultants.
IT	Novara node	Rhine - Alpine corridor	Novara node in charge to Rhine - Alpine consultants
IT	Milan node	Rhine - Alpine corridor	
IT	Verona node	Scandinavian - Mediterranean corridor	Verona node in charge to Scandinavian - Mediterranean consultants
IT	Bologna node	Scandinavian - Mediterranean corridor Baltic - Adriatic corridor	Bologna node in charge to Baltic - Adriatic consultants
IT	Venice and Trieste Node	Baltic - Adriatic corridor	Venice node in charge to Baltic - Adriatic consultants Venice and Trieste ports in charge to Baltic - Adriatic consultants
IT	Venezia - Padova	Baltic - Adriatic corridor	
IT	Padova – Bologna	Baltic - Adriatic corridor	Padova – Ravenna rail sections in charge to Baltic - Adriatic consultants
IT	Bologna – Ravenna	Baltic - Adriatic corridor	Ravenna port in charge to Baltic - Adriatic consultants
IT	IT/SI Border - Trieste	Baltic - Adriatic corridor	
SI	Maribor - Ljubljana - SI/IT Border	Baltic - Adriatic corridor	Koper port in charge to Baltic - Adriatic consultants
SI	Ljubljana node	Baltic - Adriatic corridor	
HU	Budapest node	Rhine - Danube corridor Orient / East - Mediterranean corridor	Budapest node in charge to Rhine - Danube consultants
HU	Budapest – Szolnok	Rhine - Danube corridor Orient / East - Mediterranean corridor	Budapest – Szolnok in charge to Orient / East – Mediterranean consultants

It is important to underline that the proposed breakdown is relevant and useful to avoid double activities (and different data) during the data collection phase.

5.4 Proposal of inclusion of other core or comprehensive network sections

Sections and nodes belonging to the corridor are identified by the following legislative acts:

- Annex I to the EU Regulation 1315/2013 (definition of the Core Network);
- Annex I to the EU Regulation 1316/2013 (Alignment of corridors).

As a result, no changes to the identified alignment are possible during 2014.

Nevertheless, it is important to underline some issues arisen during the review of the existing studies, in particular:

- **Comprehensive rail lines** to be considered when core lines between core network nodes are not existing.
- **last mile connection** to ports, airports, rail-road terminals that are not included in the core network. In this respect, as a general issue, it is important to discuss if including all foreseen last mile connections to core nodes (e.g. rail link to Milano Linate as well as to Ljubljana airport).
- **alternative routing to the main core network** that have been proposed as part of rail freight corridor 6 or are necessary to ensure the most efficient intermodal connection to the corridor ports/terminals. This latter case refers in particular to the line section Milano-Bologna in Italy, which belongs to the core network and is to be considered by large the lowest time/cost route to the port of Ravenna for the transport flows having as origin/destination the western part of the corridor.

Clarifications regarding the above issues are provided in the following table (detailed maps are provided in Annex 4).

Issues	Spain	France	Italy	Slovenia	Croatia	Hungary
Compr. lines to be considered	▪ Road link Algeciras – Malaga (AP7 and A7) ▪ Rail link Malaga – Antequera (HS and conventional line) ▪ Rail link Zaragoza – Monzón - Tarragona (Conventional line)	▪ Second line along the Rhône ▪ Rhône river (Fos sur Mer – Avignon) ▪ Rhône river (Avignon – Lyon)	▪ Lyon – Turin (existing line)	▪ Road link to Ljubljana airport.		▪ Bypass M0 ▪ Bypass M31[73]
Last mile connection	▪ Road connection to Alcazar de San Juan RRT ▪ Ports of Castellón, Alicante and Sagunto ▪ Road link to Antequera RRT	▪ Rail:Port of Fos / Marseille ▪ Rail: Port of Lyon ▪ Road section from Aix-en Provence to Marseille port; Road	▪ Bivio D'Aurisina – Trieste Centrale (existing conventional line) ▪ Road and rail links to Core Nodes[74]	▪ Road and rail link to Ljubljana airport ▪ Road link from motorway to	Rail/Road link to Zagreb Airport	▪ Ferencvàros -Soroksar Terminal ▪ Ferencvàros -Csepel Port

[73] The Budapest bypass M31 is not part of the TEN-T network, but it would be included to the comprehensive network with the next delegated acts. No financing is need for it, as this is a relatively newly constructed motorway, but it carries the bulk of corridor traffic.
[74] For further details please refers to the following table.

Issues	Spain	France	Italy	Slovenia	Croatia	Hungary
	(Core)	sections from Salon the Provence to Fos-sur-Mer port		port of Koper		
Alternative routing	▪ Almeria – Linares Baeza – Alcazar de Saint Juan – Albacete – Chinchilla – Murcia ▪ Rail line Valencia-Zaragoza-Teruel	▪ Valence – Grenoble – Montmélian ▪ Marseille – Lavalduc	▪ Vicenza – Treviso – Portogruaro ▪ Torino – Alessandria ▪ Novara/Tortona – Milano ▪ Milano - Bologna ▪ Novara-Alessandria-Tortona ▪ Road section E55 connecting Ravenna to Venice (comprehensive)	Razdrto-Nova Gorica		▪ Rail link Boba – Celldömölk – Gyor; ▪ Rail link Székesfehérvár-Gyékényes ▪ Budapest road bypass M31.

** Proposed inclusion of comprehensive network sections/Last mile connections/Alternative routings in the study.*

In addition, it would be important to evaluate a particular case related to the **Spanish sections**: the inclusion in the core alignment of the high speed (Madrid – Cuenca – Valencia) and conventional (Madrid – Alcázar de San Juan – Albacete – Valencia and Valencia – Teruel – Zaragoza) lines in order to connect the two main branches of the Spanish corridor. In this respect, it is important to include them in the scope of the study. Furthermore, it is worth remembering that the inclusion of Guadalquivir river in the Mediterranean corridor alignment is important for the direct connection to the sea of the Port of Sevilla.

The following table summarizes the proposed Italian last mile connections to be included in the scope of the study.

Nodes	Road last mile connection	Rail last mile connection
Ravenna port	SS16 and SS67 up to the Port (17 km.; managed by ANAS) and the connection to SS309 (via Magni, via Baiona, via Classicana)	
Trieste port	SS 202 up to the Port (7.9 km.; managed by ANAS)	The following sections should be added: ▪ Trieste- Trieste Campo Marzio
Venezia port	SS14 and SS11 up to the port (1.9 km, SS14 managed by ANAS) (via Martiri della Libertà, via dell'Elettricità, via del Commercio, via Orlanda)	Two new sections should be added and included in the Mediterranean corr alignment: ▪ Venezia Mestre-Venezia Marghera ▪ Venezia Mestre- Scalo Montefibre
Venezia airport	A27 and SS14 up to the Airport (11 km; managed by ASPI –A27- and ANAS-SS14)	
Trieste airport	Local roads: Via arrigo Boito, viale Giuseppe Verdi, viale Primo Maggio, via Volontari della Libertà, via Aquileia (10 km.; connecting A4 highway to the Airport)	
Bergamo	SS671, via dell'Aeroporto (4km.;	The rail linkage to the Bergamo Airport should be

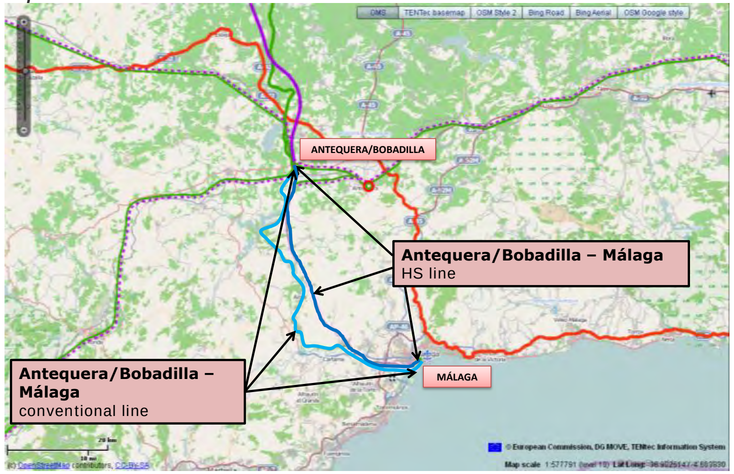
Nodes	Road last mile connection	Rail last mile connection
airport	connecting A4 highway to the airport)	added
Milano Linate Airport	Via Fermi, via dell'Aviazione, via Baracca (2.4km.; connecting Tangenziale Est –A51- to Milano Linate airport)	
Milano Malpensa Airport	SS336, SS336 dir (37km. Connecting A8 and A4 highways to the Airport)	Gallarate-Malpensa (rail section to be included in the Mediterranean-corr. alignment)
Torino airport	SP2, SP13 (2km; connecting Torino ring road to the airport)	
Brescia RRT		The rail linkage to the Terminal should be added
Bologna RRT	SP3, SP4 (6.2 km. connecting A13 highway to Bologna rail road terminal)	Castelmaggiore-S.Pietro in Casale (part of the Mediterranean corr. Alignment) to be split in: ▪ Castelmaggiore-S.Giorgo di P. ▪ S.Giorgo di P.- S.Pietro in Casale
Verona Quadrante Europa RRT		Existing TEN-t section Verona-Verona QE ; nevertheless some last mile sections should be added as new sections and included in the Mediterranean corr alignment: ▪ Verona QE-Bivio S.Massimo ▪ Verona QE-Bivio Fenilone ▪ Bivio Fenilone-Bivio S.Massimo ▪ Bivio Fenilone- Bivio S.Lucia ▪ Bivio Fenilone- Verona Finally, the section Verona-Brescia (Part of the Mediterranean corr alignment) should be split in: ▪ Brescia- Bivio Fenilone ▪ Bivio Fenilone - Verona

Table 106 Italian Rail/Road last mile connections to nodes to be included in the Core Network

Proposed inclusion of comprehensive network sections in the study: Maps

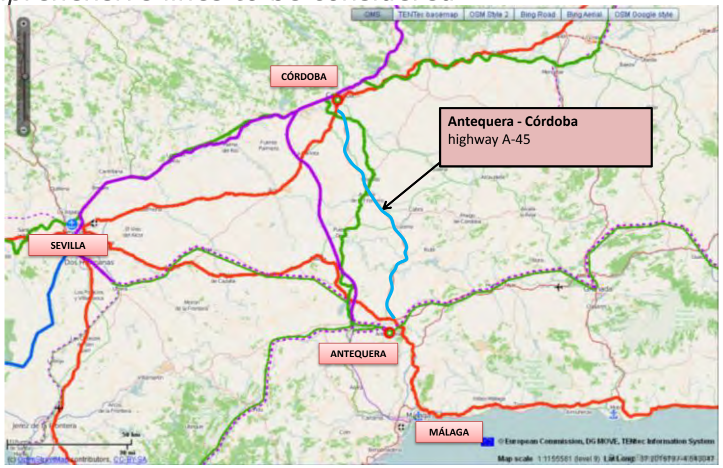
SPAIN

Comprehensive lines to be considered



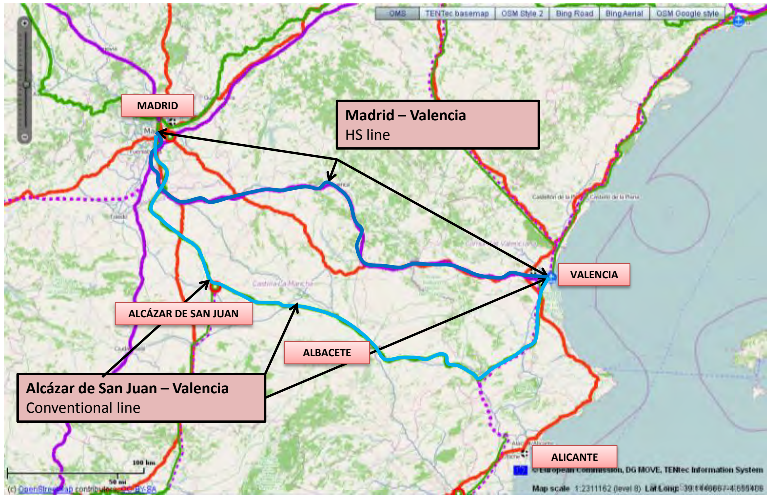
Comprehensive lines to be considered

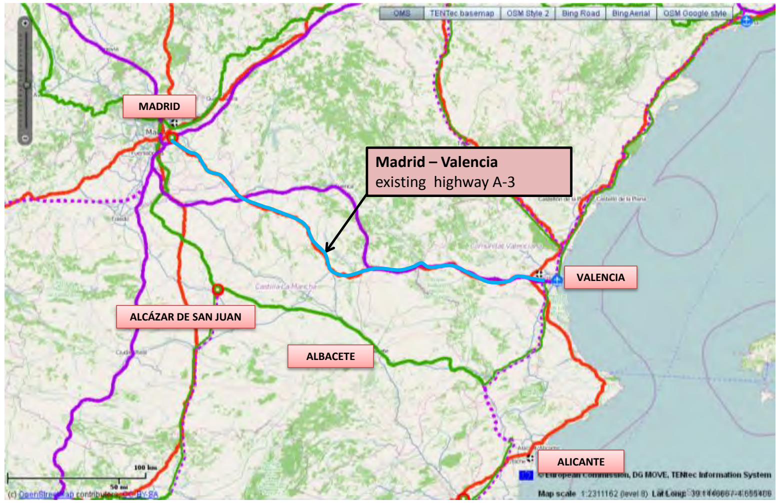
Comprehensive lines to be considered

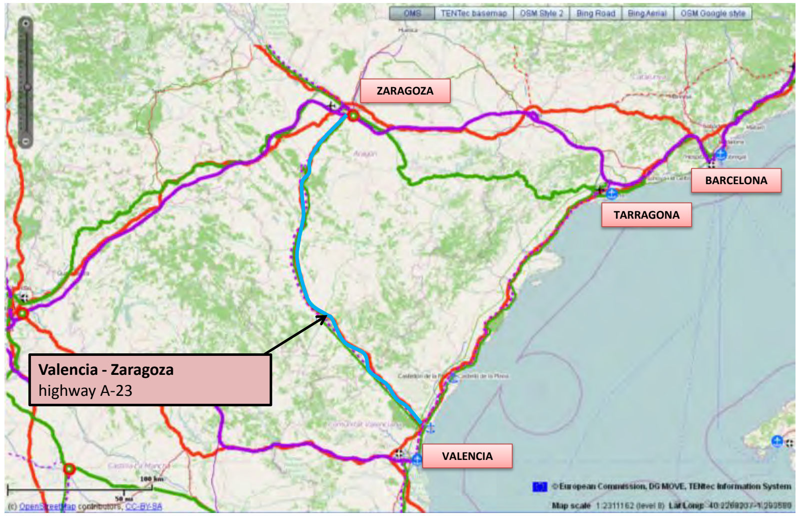


Last mile

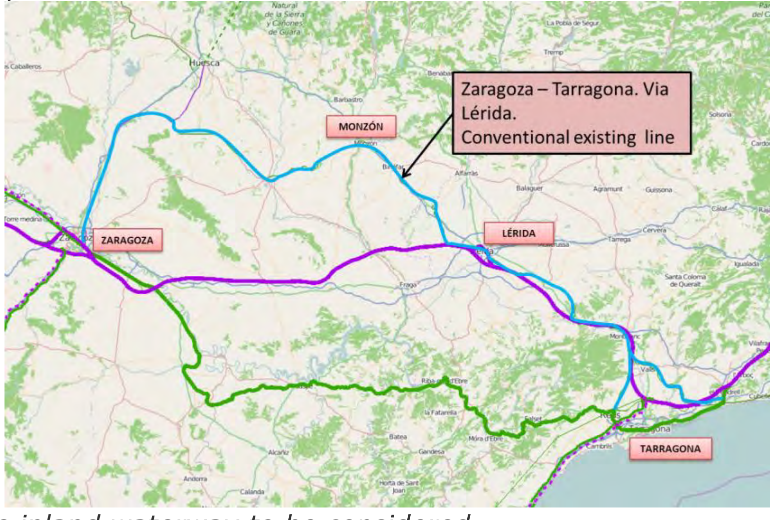
Connection between the two branches of the corridor







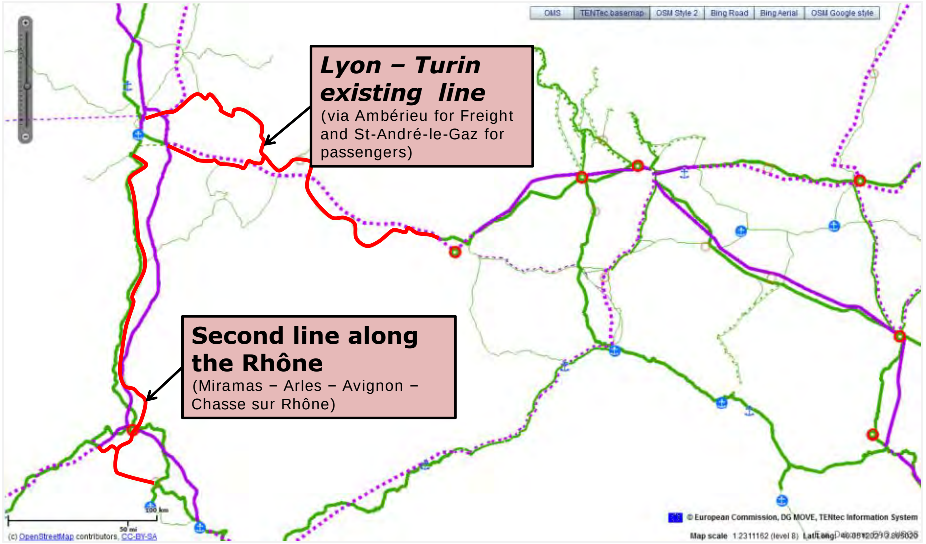
Comprehensive lines to be considered



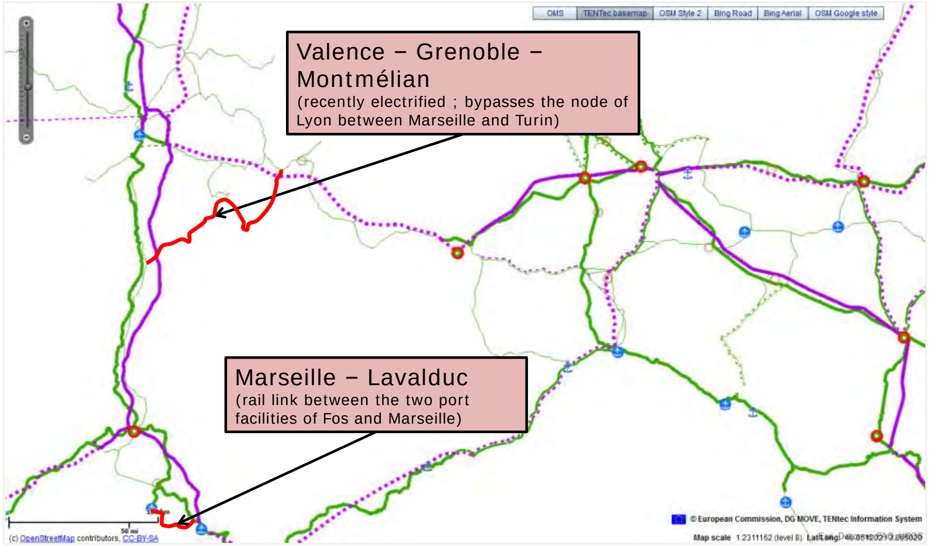
Core inland waterway to be considered

FRANCE

Comprehensive lines to be considered

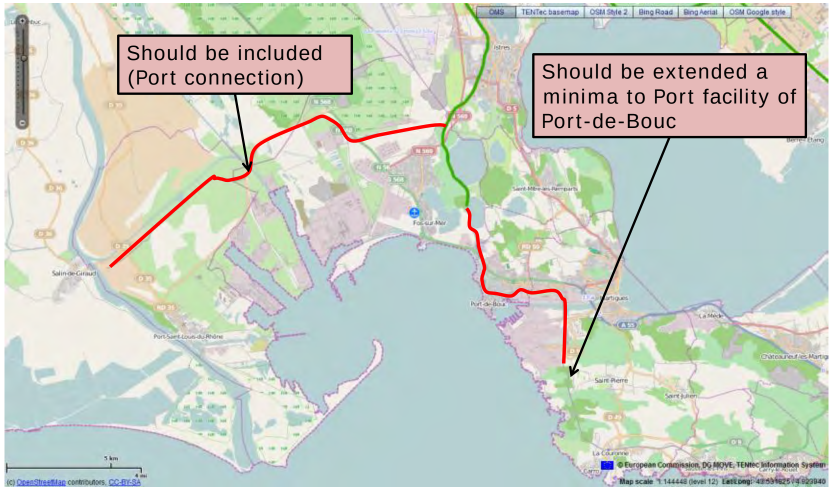


Additional routing

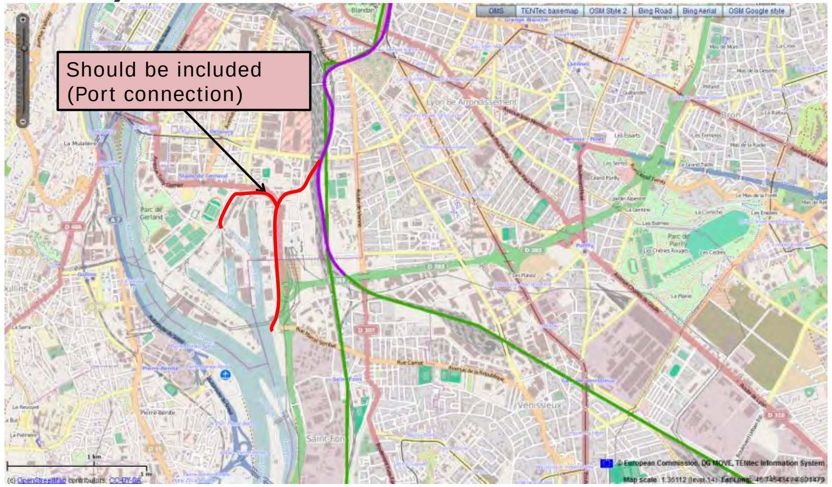


Rail Last mile connection

Port of Fos-Marseille

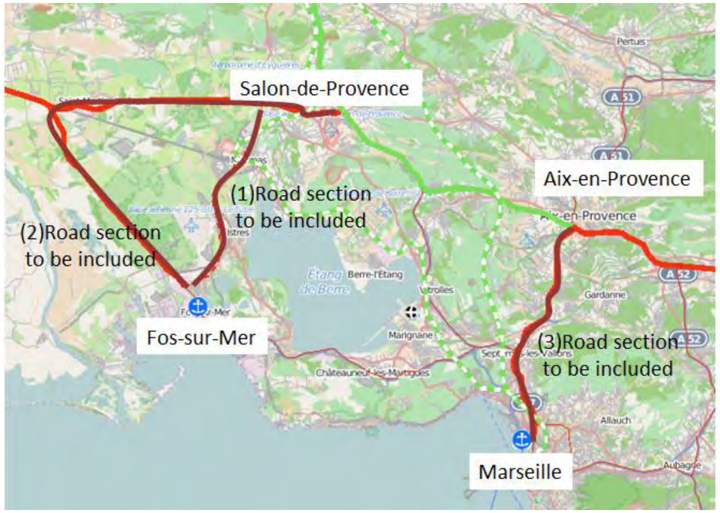


Port of Lyon



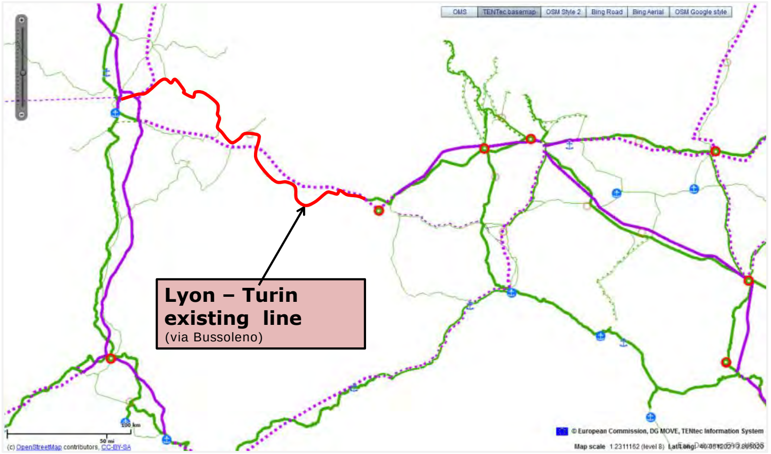
Road last mile connection

Port of Fos-Marseille

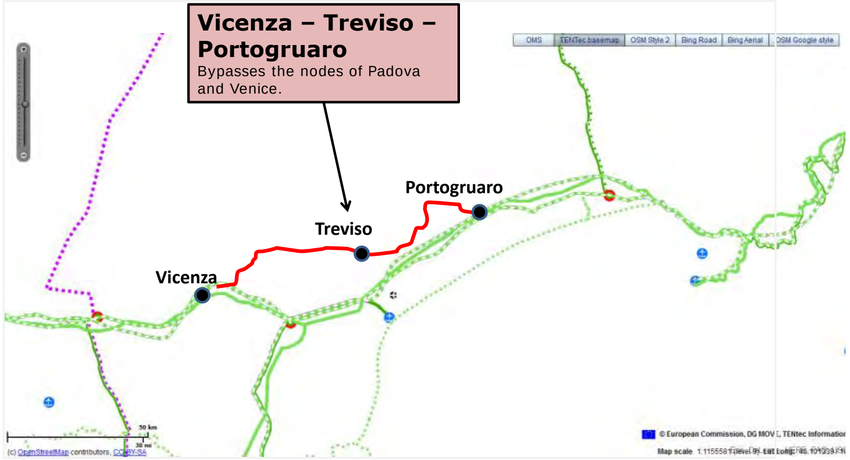


ITALY

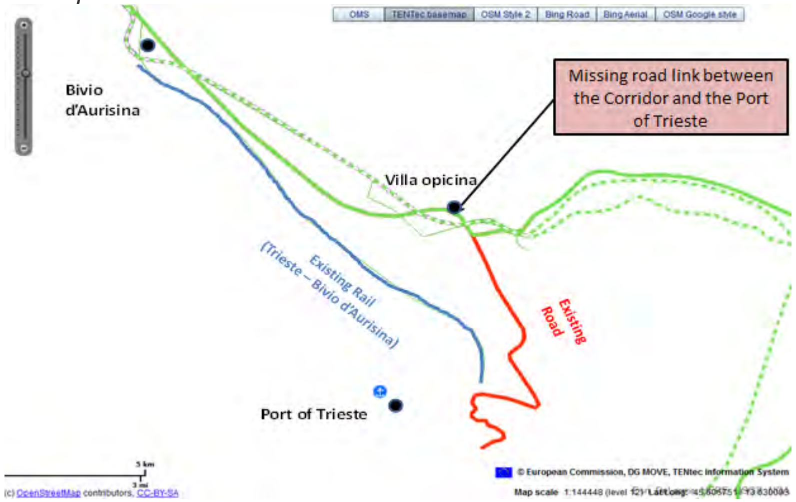
Comprehensive lines to be considered

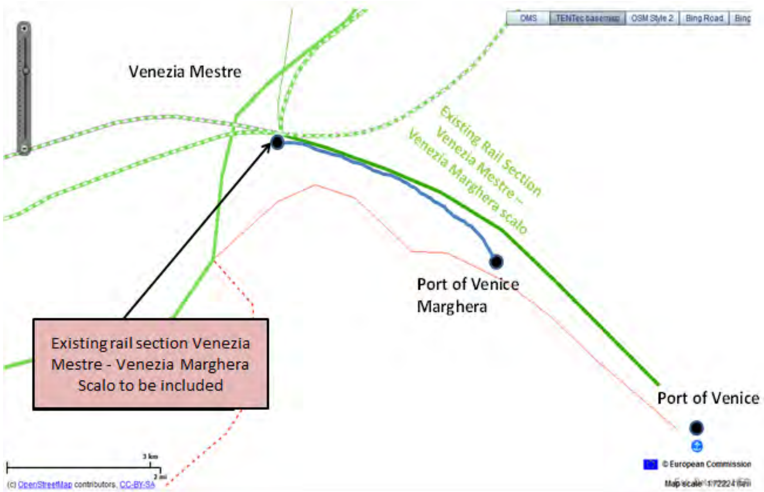


Additional routing

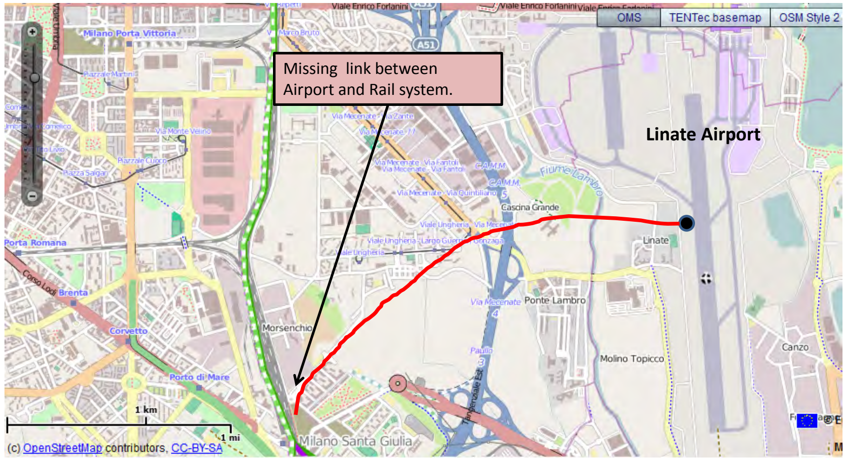


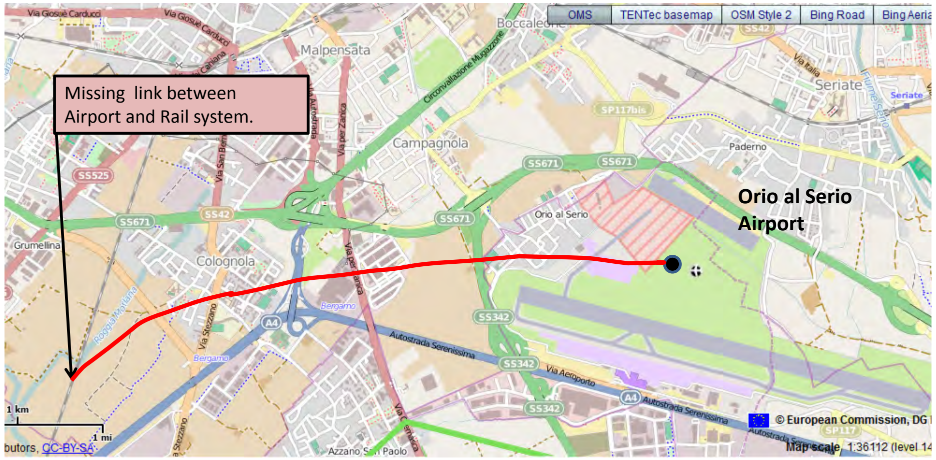
Examples of last miles connections

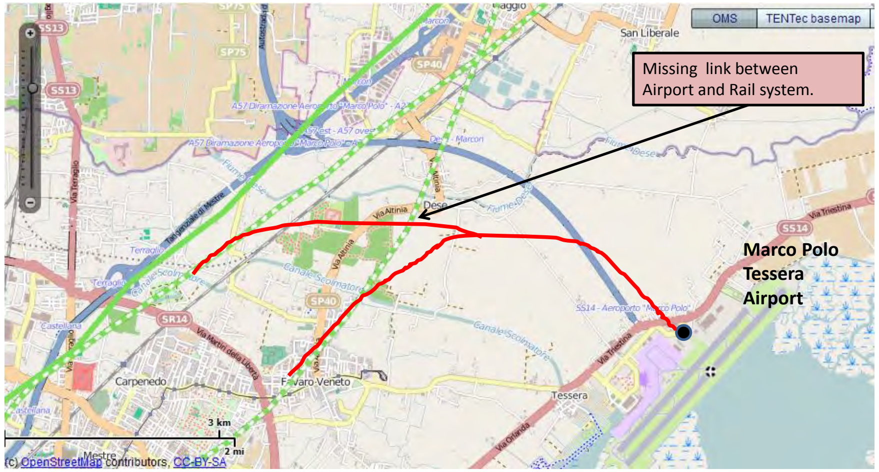




Examples of last miles connections

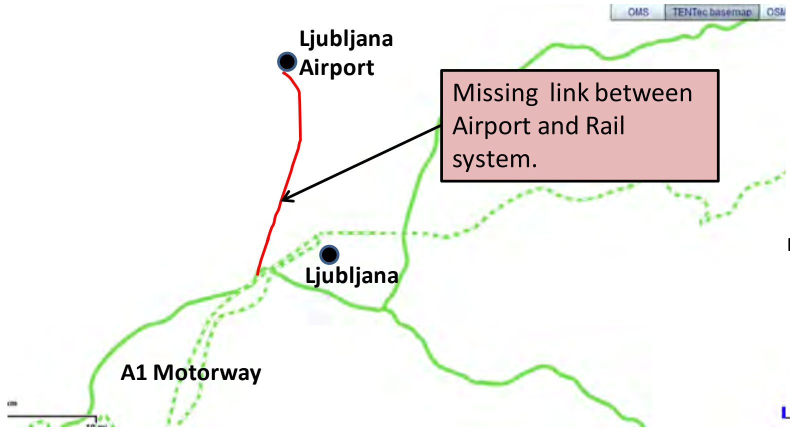


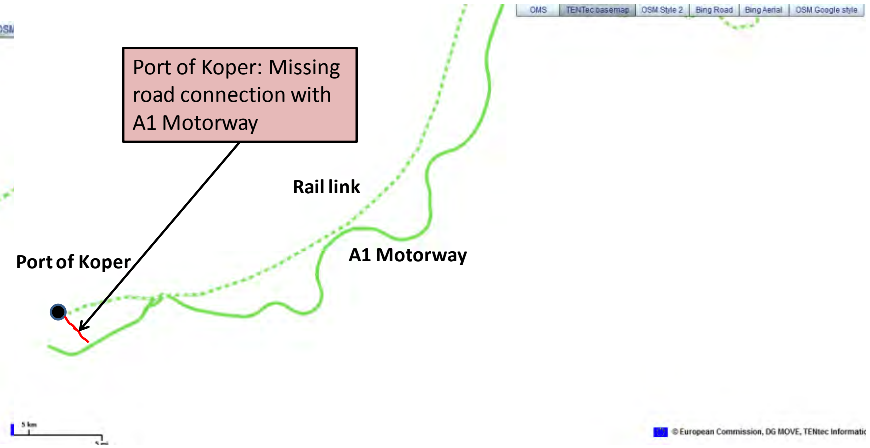




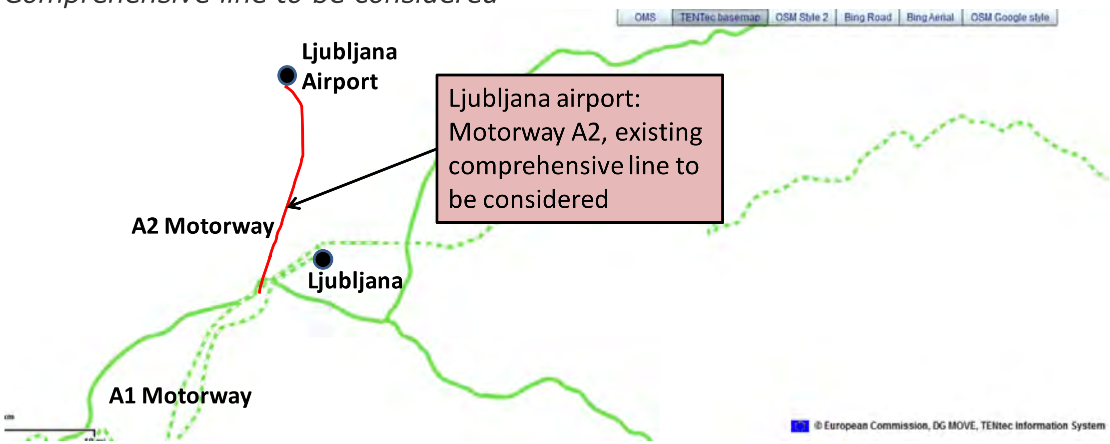
SLOVENIA

Last miles connections



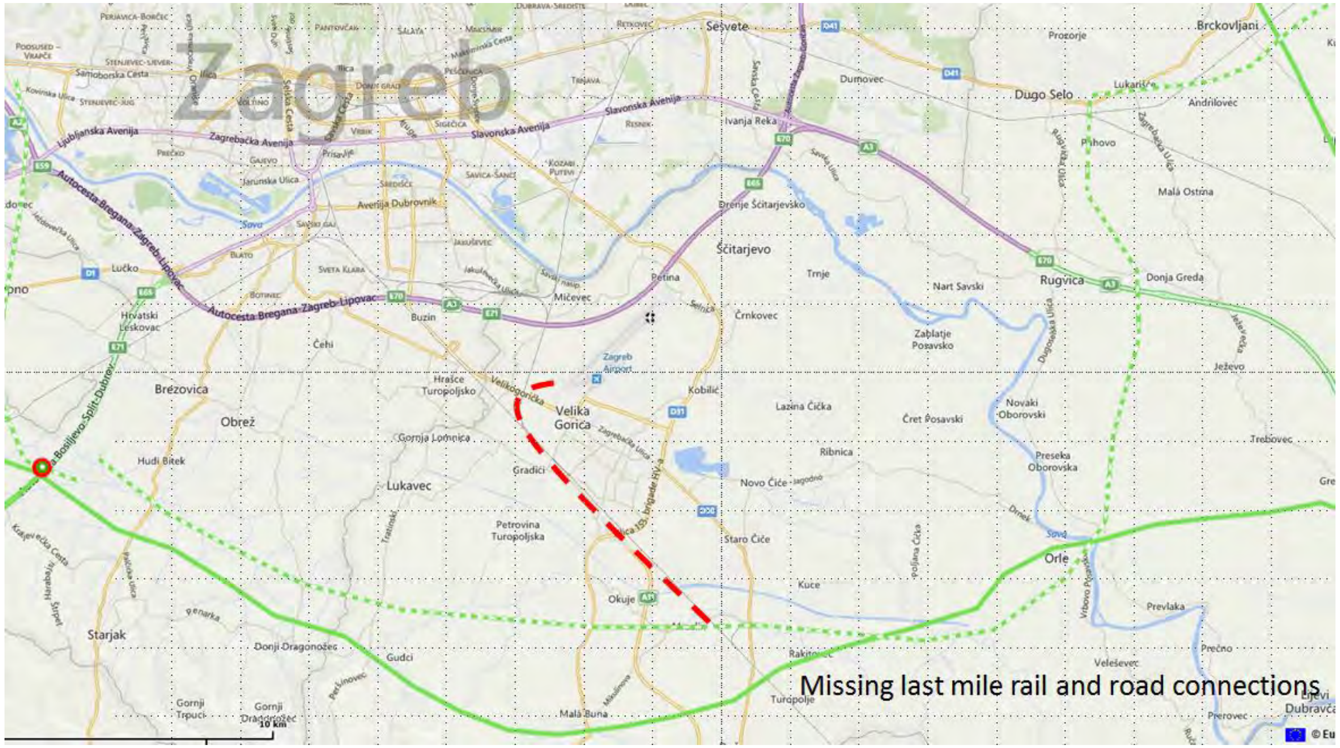


Comprehensive line to be considered

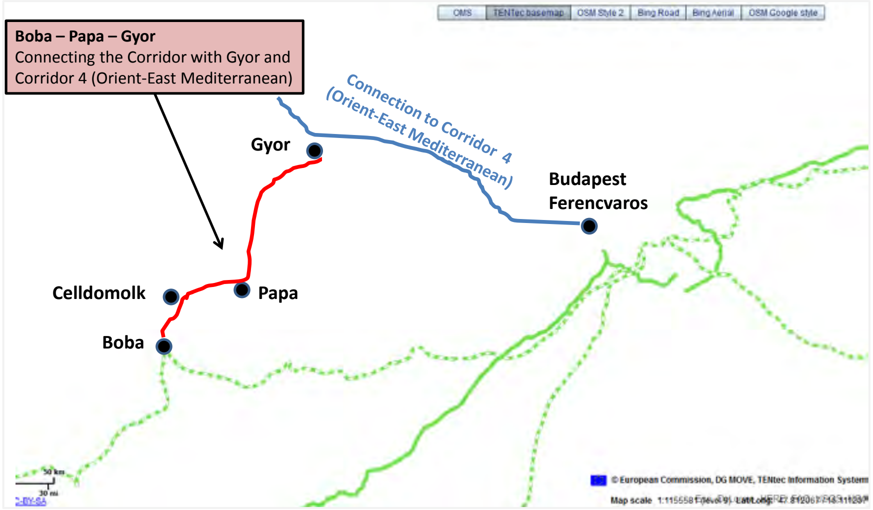


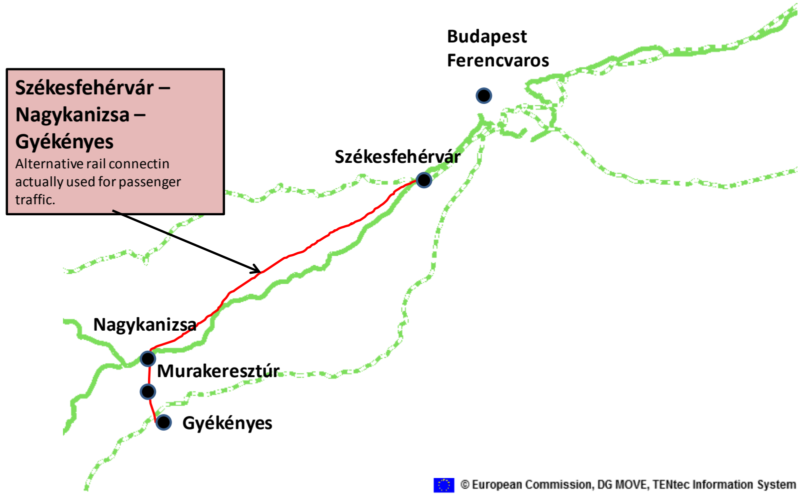
CROAZIA

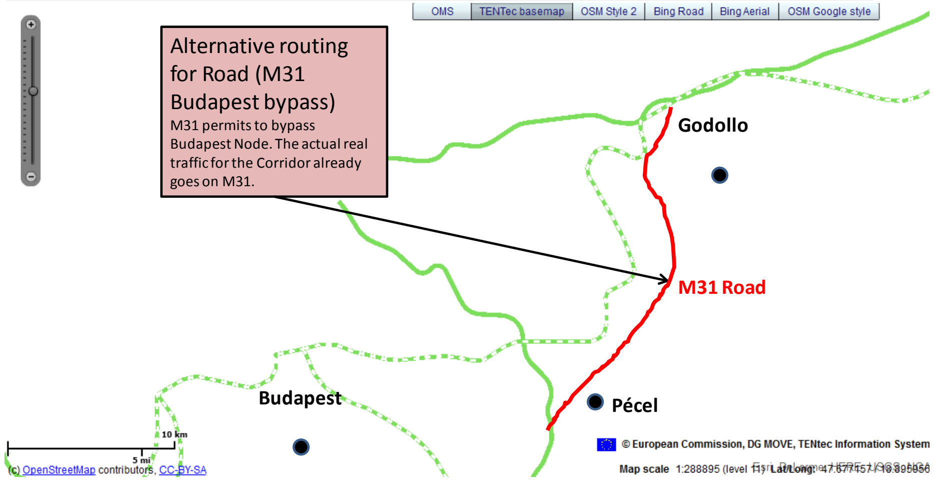
Last mile connections



HUNGARY
Additional routing







5.5 Revision of the corridor representation

Some alignment modifications for each MS have already been submitted and accepted by the Commission; a detailed representation of them is shown in paragraph 5.6.

Moreover, after the Second corridor Forum, additional issues have arisen as detailed in the next paragraph.

The proposed revision regard:

- technical modifications (covered by the current guidelines) such as
  - correction of trajectories,
  - merging / splitting sections,
  - other changes,
- political modifications (only through the new guidelines), such as
  - add new sections,
  - delete sections.

5.5.1 Spain

Rail alignment issues

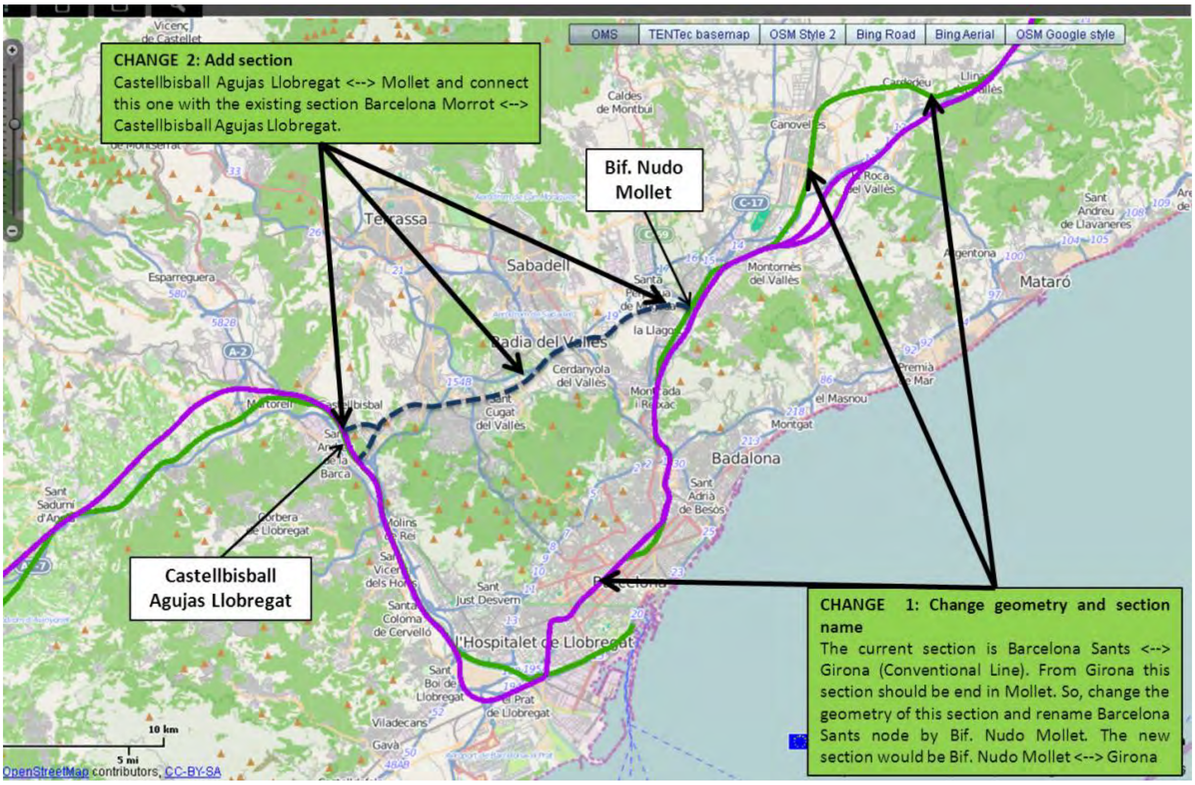
Formal change about section nomenclature

TENtec ID	TENtec section name	Proposed revision	Type of revision
140521162100000	Llers- Tunel de Le Perthus	Llers TP Ferro - Tunel de Le Perthus	New nomenclature
140521162100001	Figueres Vilafant- Llers	Figueres Vilafant - Llers TP Ferro	New nomenclature
22100074	Zaragoza Bif Moncasi- Lleida	Zaragoza Bif Moncasi– Lleida Pirineus	New nomenclature
22100061	Lleida <--> Camp de Tarragona	Lleida Pirineus <--> Camp de Tarragona	New nomenclature
20211	Reus <--> Tarragona -Puerto	Reus <--> Tarragona	New nomenclature
20110	Tarragona -Puerto <--> San Vinçenc de Calders	Tarragona <--> San Vinçenc de Calders	New nomenclature
19745	Reus <--> Zaragoza	Reus <--> Zaragoza (Miraflores)	New nomenclature
22100100	Madrid Chamartin <--> Madrid (Puerta de Atocha)	This section in the field Railways_T is classified as Conventional but is High Speed just for passengers	Change attributes

Geometry modifications

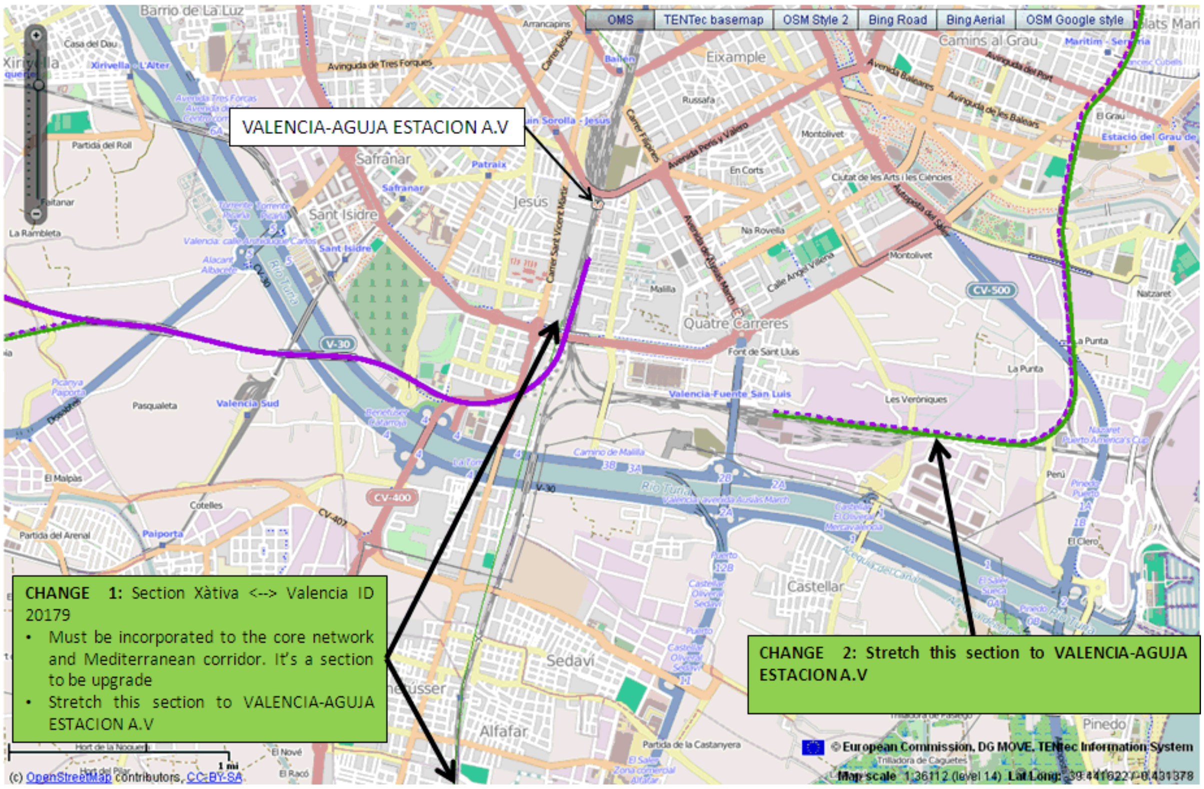
Since **Barcelona Sants** node is a passenger station, it should not be included as part of the conventional network for freight; therefore, concerning the section **Barcelona Sants- Girona (ID 22100049)**, instead of entering into the passenger station Sants, it would be better to continue from Mollet to Castelbisball. The requested revision is detailed in the following table and figure.

TENtec ID	TENtec section name	Proposed revision	Type of revision
22100049	Barcelona Sants-Girona	Change the geometry of the section and rename **Barcelona Sants node by Bif. Nudo Mollet**. The new section would be **Bif. Nudo Mollet- Girona. It's a conventional for passenger and freight.**	Geometry change
		Add a new section **Castellbisball Agujas Llobregat-Mollet** and connect this one with the existing section **Barcelona Morrot -Castellbisball Agujas Llobregat**. This new one it's a high speed for passenger and freight.	Add of a new section



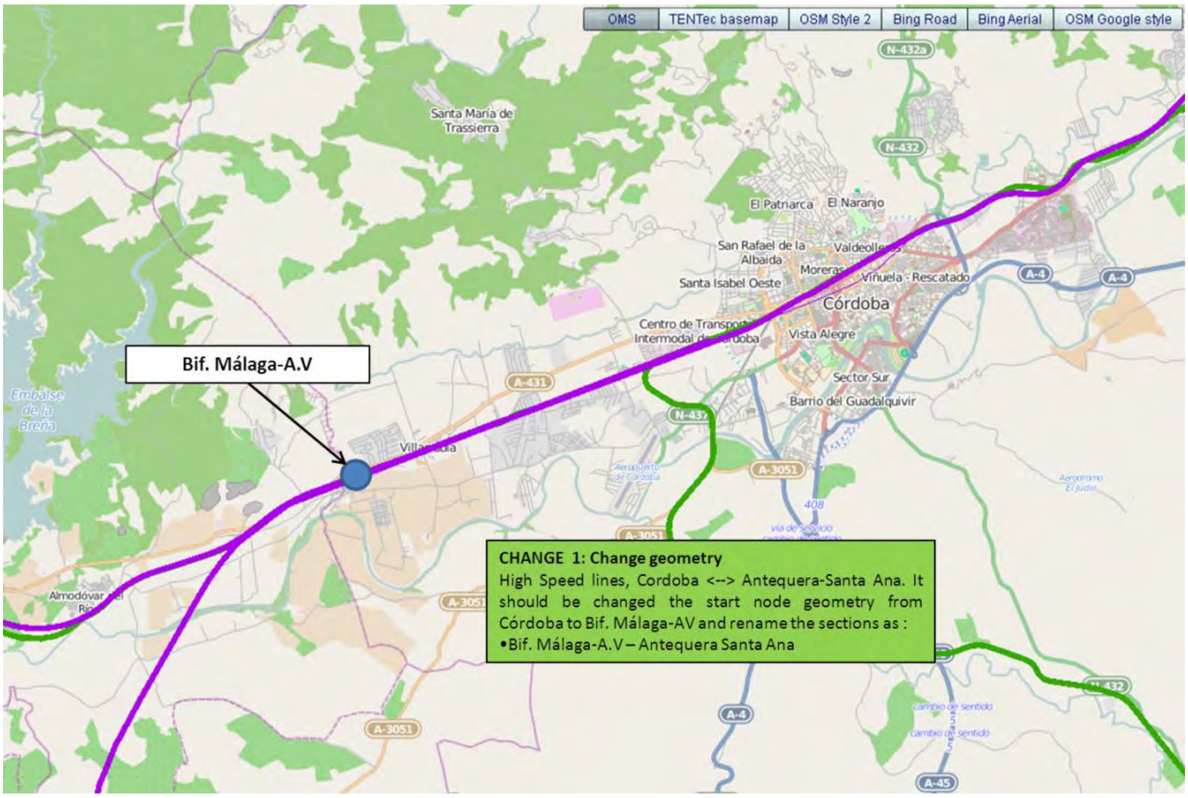
In the Valencia area, the section **Xàtiva - Valencia (ID 20179)** should be incorporated into the core network as part of the Mediterranean corridor; to be upgraded. **. So, both sections ID 64989 and ID 20179 should form part of the corridor.**

Once this corrections have been made, the north section **Valencia <--> Castellon (high speed) ID 22100053** should be connected with the south one **Xàtiva <--> Valencia ID 20179** because in this moment they are not connected. The connection should be done by stretching both sections to a point called Valencia-Aguja Estacion A.V. The section ID 64989 should be also connected to the Valencia station.



In Córdoba area the high Speed lines, Cordoba <--> Antequera-Santa Ana. It should be changed the start node geometry from Córdoba to Bif. Málaga-AV and rename the sections as :

- Bif. Málaga-A.V – Antequera Santa Ana

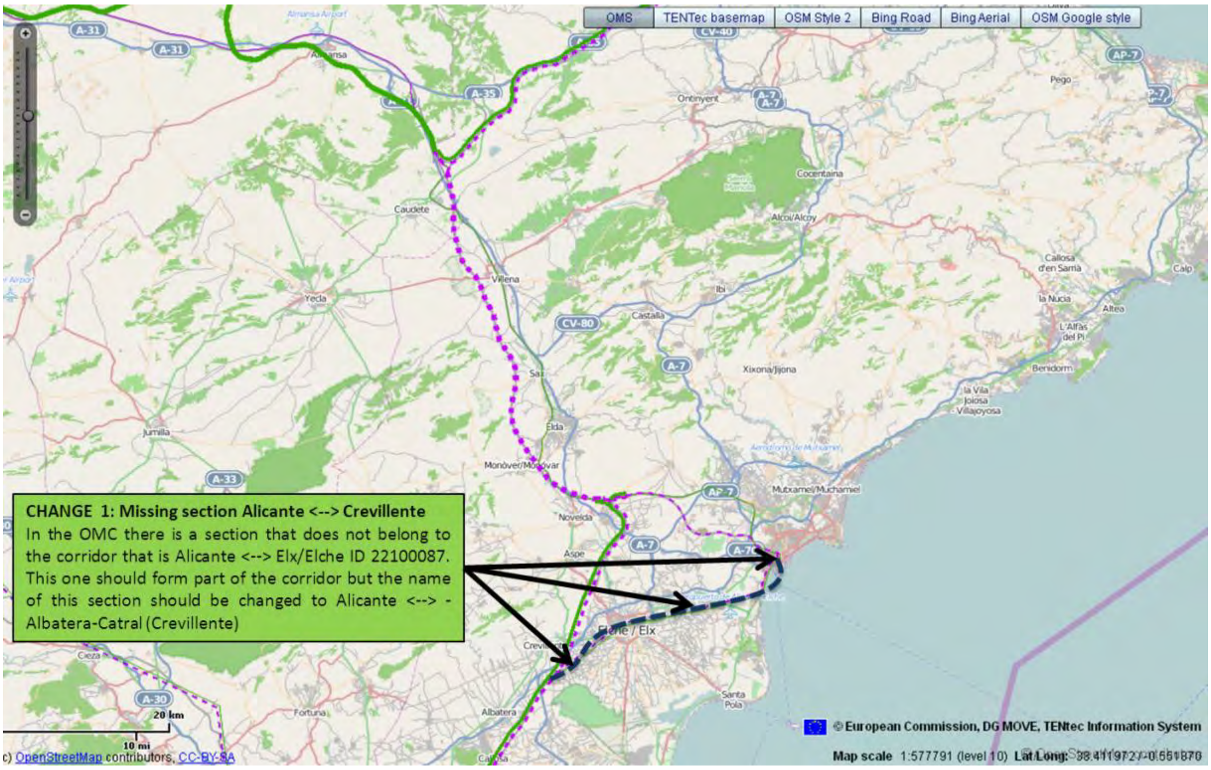


In addition of this change, the high speed section between Sevilla and Córdoba should be splitted into the next two sections:

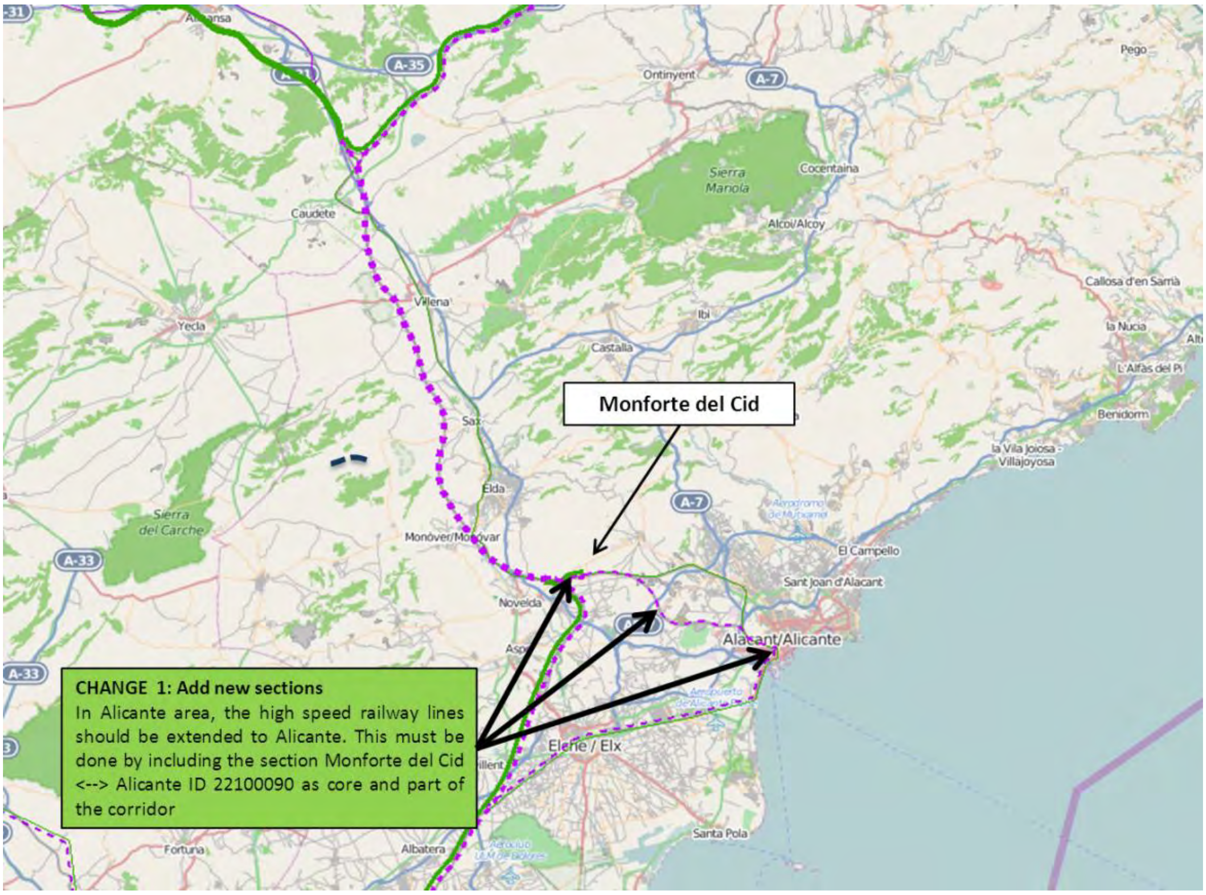
- *Córdoba - Bif. Málaga-A.V (belonging to mediterranean and atlantic corridor)*
- *Sevilla - Bif. Málaga-A.V (belonging to mediterranean corridor)*

Add new sections

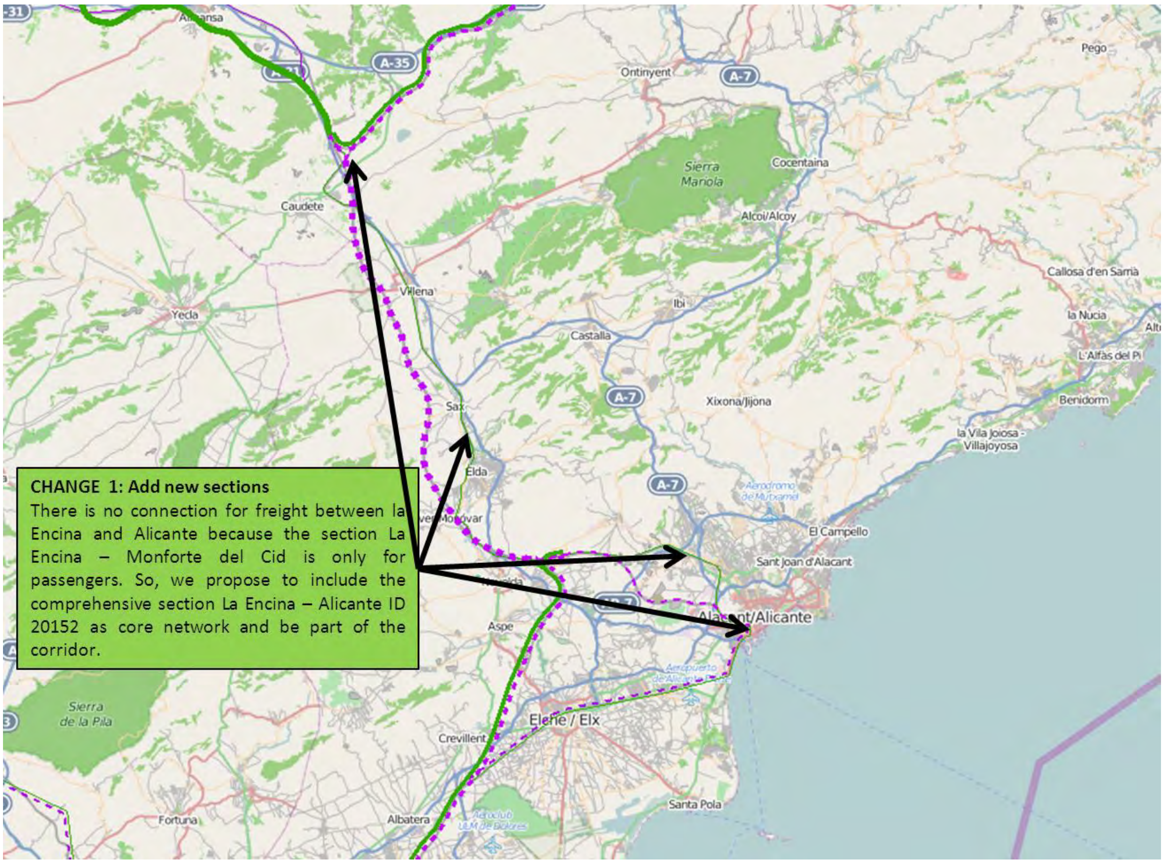
There is no connection for freight between Alicante and Murcia. However, in the OMC it can be found a section, which is **Alicante – Elche (ID 22100087)**, that does not belong to the corridor; it would be well advised to include it in the Mediterranean corridor and change his name in **Alicante <--> Albatera-Catral (Crevillente).** It's a conventional for passenger and freight.



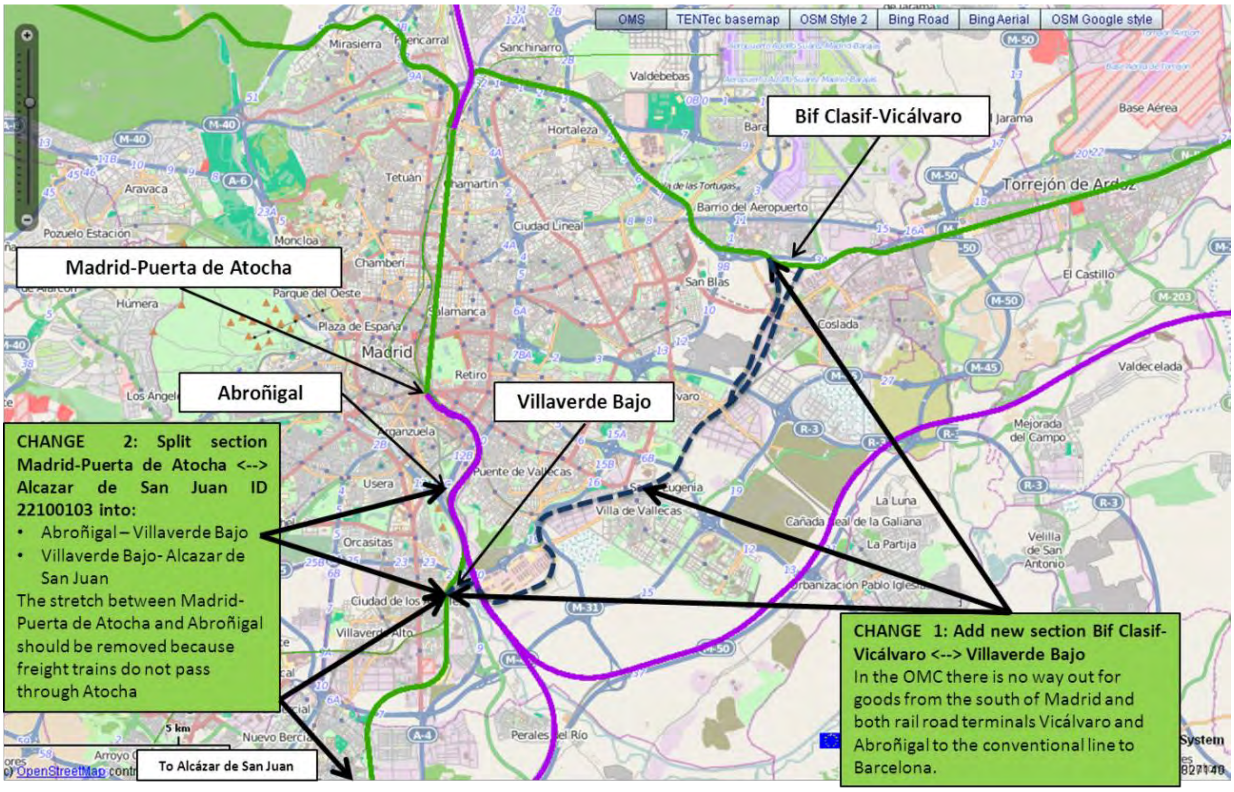
In Alicante area, the high speed railway lines should be extended to Alicante. This must be done by including the section Monforte del Cid **<--> Alicante** ID 22100090 as core and part of the corridor. It's a high speed just for passenger



In adition, there is no connection for freight between la Encina and Alicante because the section La Encina – Monforte del Cid is only for passengers. So, we propose to include the comprehensive section **La Encina – Alicante** ID 20152 as core network and be part of the corridor. It's a conventional for passenger and freight.

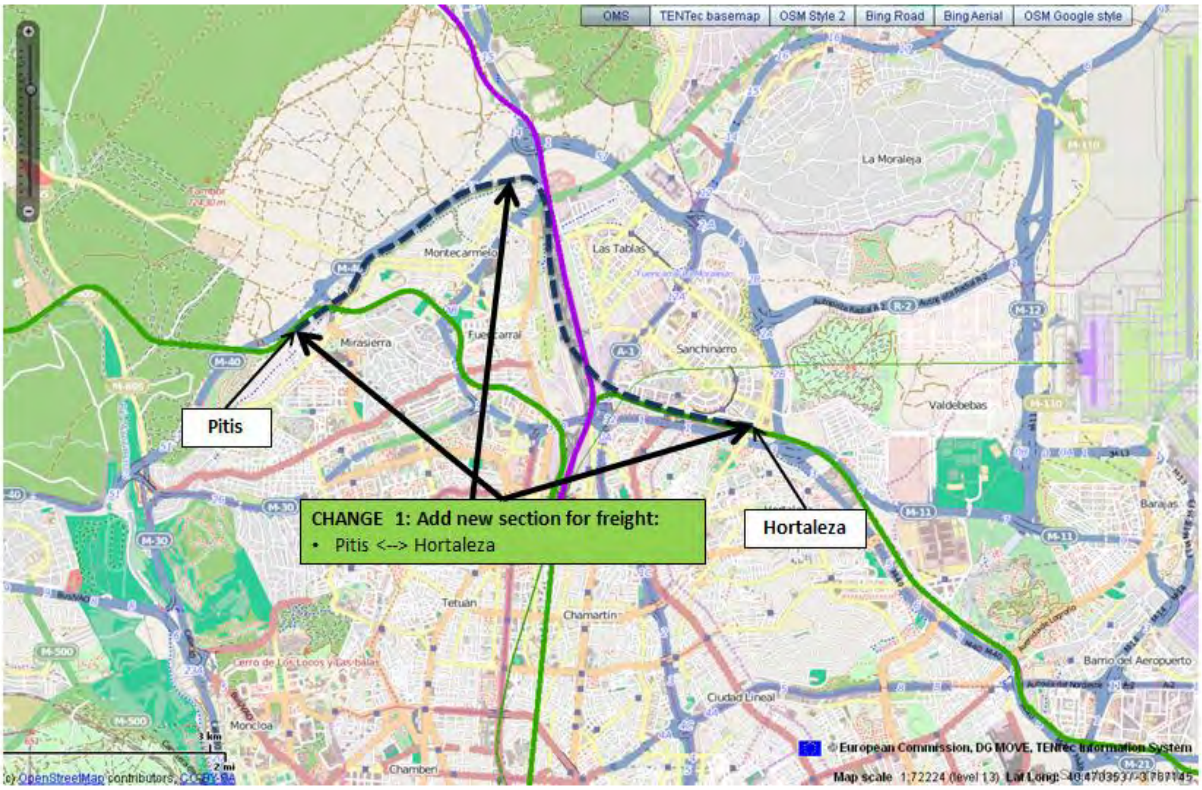


Secondly, about **Madrid node**, in the OMC there is no way out for goods from the south of Madrid and both rail road terminals Vicálvaro and Abroñigal to the conventional line to Barcelona. In this respect, it would be necessary to add new section between **Madrid - Casetas ID 72368** and **Madrid-Puerta de Atocha - Alcazar de San Juan ID 22100103** named **Bif Clasif-Vicálvaro - Villaverde Bajo.** Finally it would be necessary to split the section **Madrid-Puerta de Atocha - Alcazar de San Juan ID 22100103** into: **Abroñigal – Villaverde Bajo** and **Villaverde Bajo- Alcazar de San Juan. The stretch between Madrid-Puerta de Atocha and Abroñigal should be removed because freight trains do not pass through Atocha.**



Thirdly an additional issue is about the rail connection between Madrid and the Airport terminal number 4. At the moment it is already operating a commuter train line to the and an upgrading to HS line is foreseen. In this respect in the OMC there is a section that does not belong to the corridor which is **Madrid Chamartin - Madrid (aeropuerto) ID 22100101**. This one should be part of the corridor. If it is possible, the geometry should be corrected in order to reflect the current line. It’s a high speed just for passenger.

Fourthly it would be necessary to add a new section between **Pitis - Hortaleza** for freight.

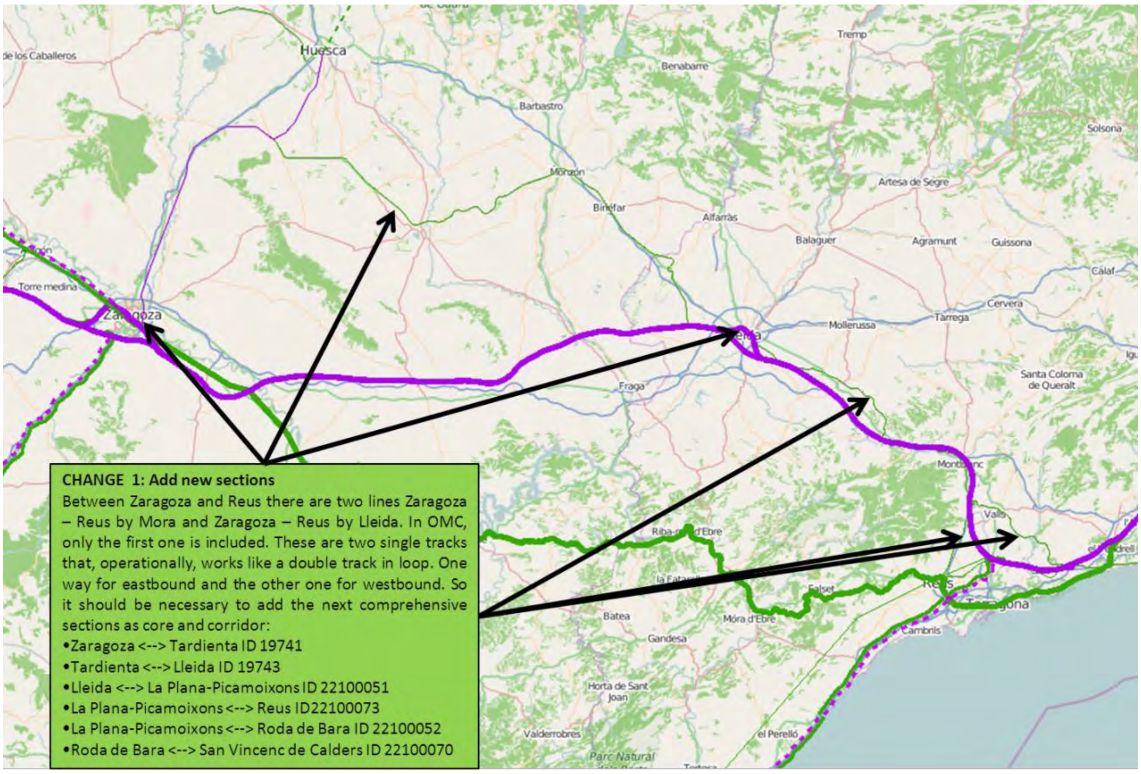


Fifthly, between Zaragoza and Reus there are two lines Zaragoza – Reus by Mora and Zaragoza – Reus by Lleida. In OMC, only the first one is included. These are two single tracks that, operationally, works like a double track in a loop. One way for eastbound and the other one for westbound. So, it should be necessary to add the next comprehensive sections as core and corridor (All of them are conventional for passenger and freight).

- *Zaragoza <--> Tardienta ID 19741*
- *Tardienta <--> Lleida ID 19743*

(Merge this two sections into one Zaragoza (Delicias) <--> Lleida (Pirineus)

- *Lleida <--> La Plana-Picamoixons ID 22100051*
- *La Plana-Picamoixons <--> Reus ID 22100073*
- *La Plana-Picamoixons <--> Roda de Bara ID 22100052*
- *Roda de Bara <--> San Vincenc de Calders ID 22100070*



Sixthly, it should be included three sections in the Andalucía are between Almería y Antequera San Ana for high speed. In this moment there are the next conventional sections

- *22100029 Moreda <--> Almería*
- *22100017 Granada <--> Moreda*
- *437 Bobadilla <--> Granada*

It should be included the next three sections for high speed:

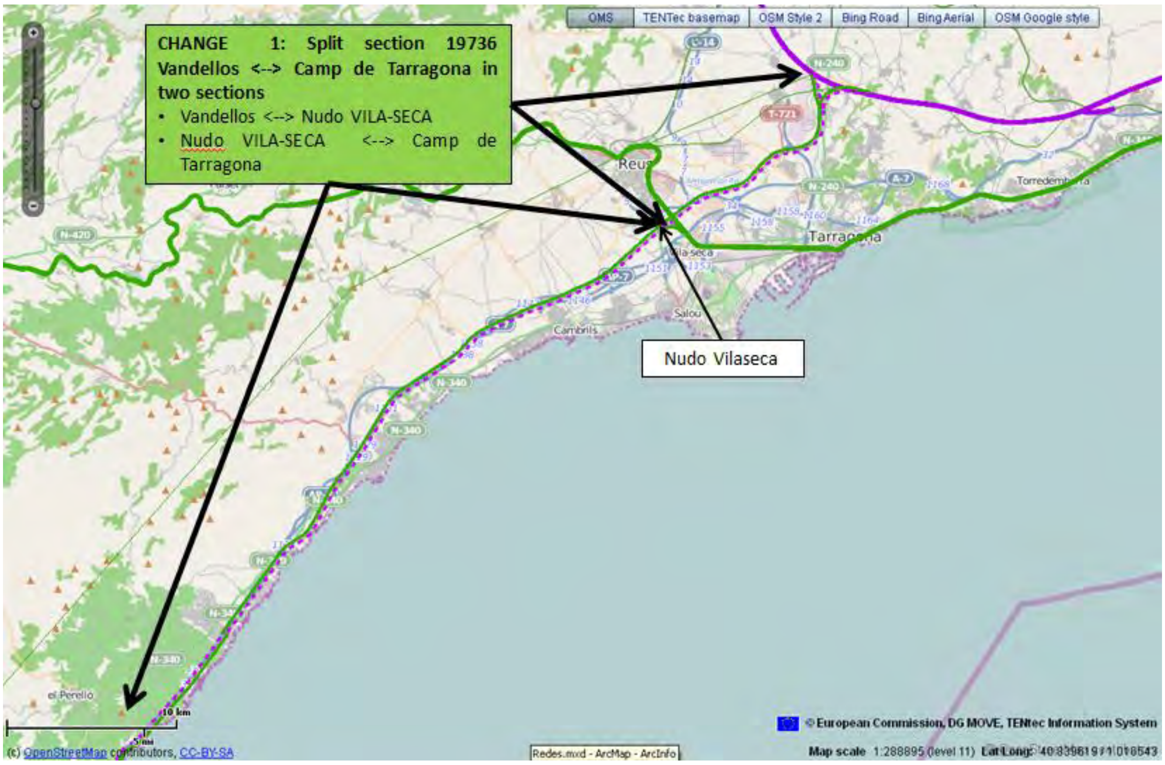
- *Moreda <--> Almería (high speed)*
- *Granada <--> Moreda (high speed)*
- *Antequera-Santa Ana<--> Granada (high speed)*

These are high speed just for passenger.

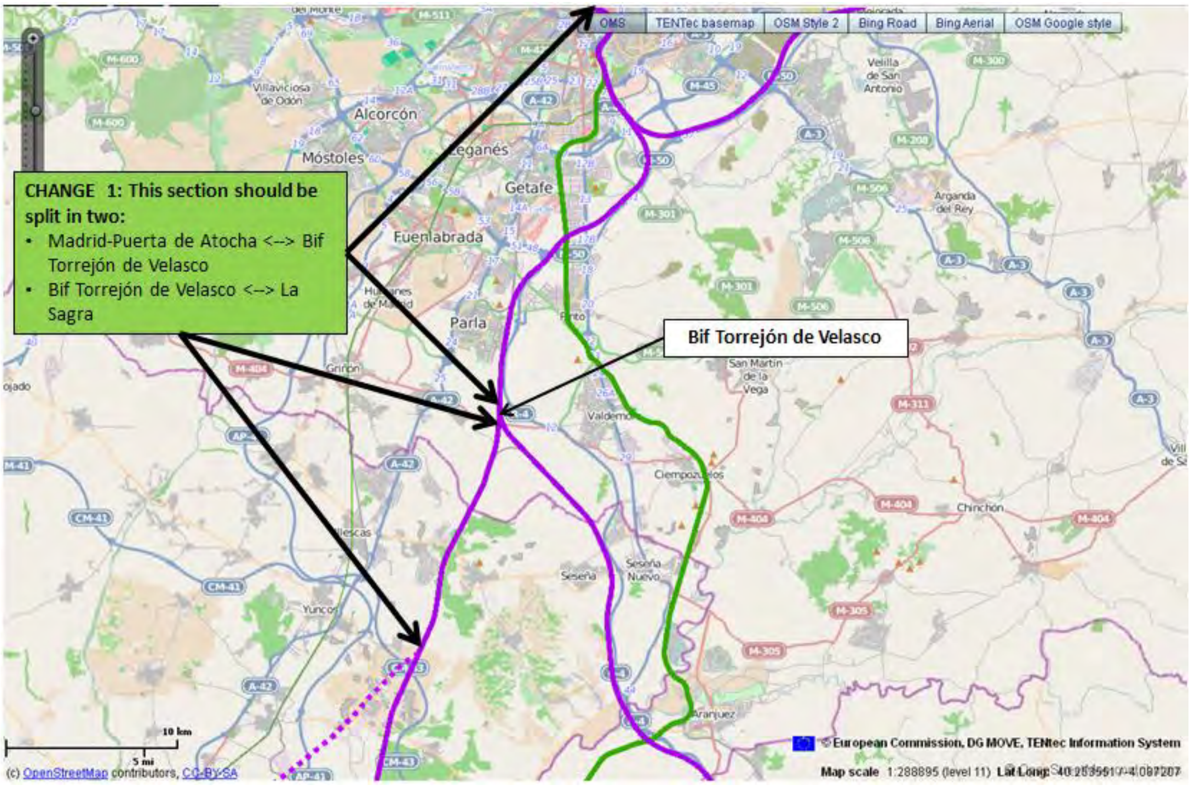
Finally, the comprehensive section ID 22100046 Cartagena <--> Cartagena-Puerto should be added to the corridor and merge with section ID 22100045 Murcia <--> Cartagena. The final section should be renamed as Murcia-Carga<--> Cartagena-Puerto. The origin node should be move to Murcia-Carga. It's a convetional for passenger and freight.

Splitting section

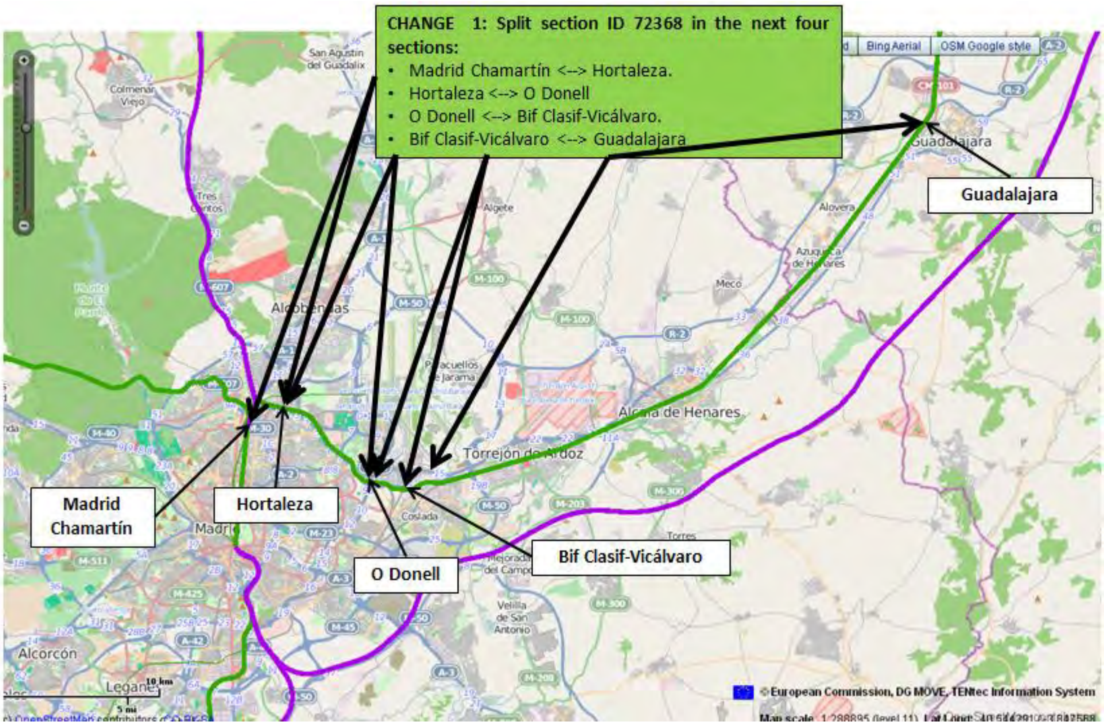
Concerning the section Vandellos –Camp de Tarragona (ID 19736), it would be well advised to split it into two segments: **Vandellos – Nudo Vila Seca** and **Nudo Vila Seca- Camp de Tarragona. The first one is high speed for passenger and freight and the second one high speed just for passenger.**



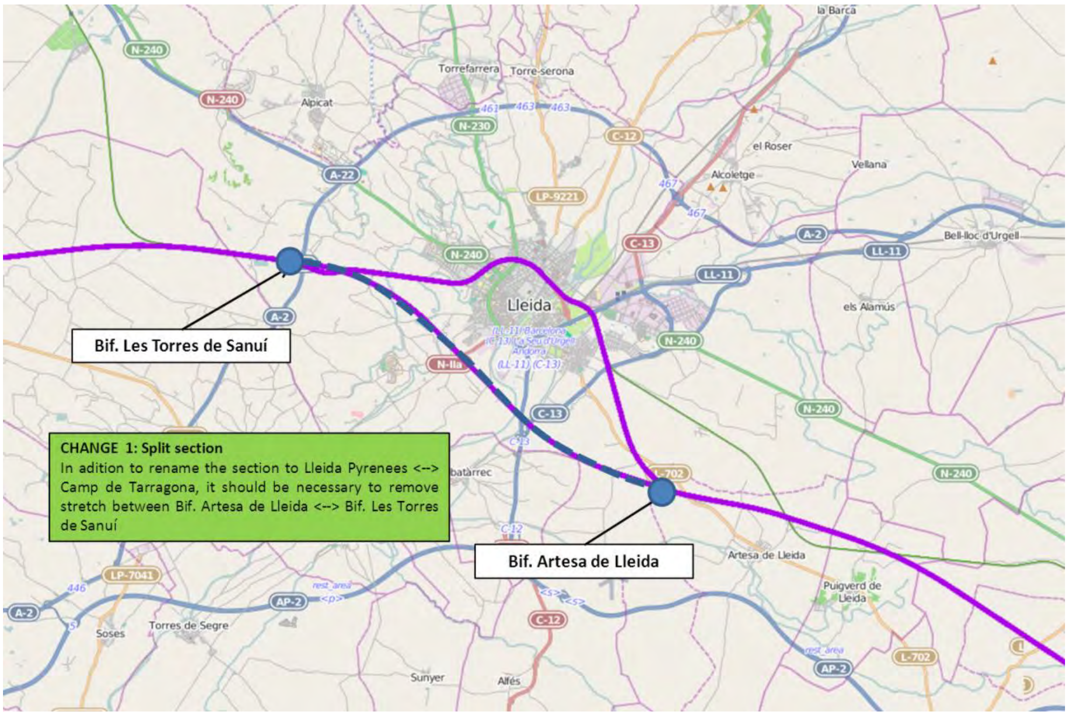
A second proposal concerns the split of **Madrid Puerta de Atocha** section (ID 221000429) in two segments: **Madrid-Puerta de Atocha - Bif Torrejón de Velasco** and **Bif Torrejón de Velasco - La Sagra**. The reason is because at the moment there are works on going between **Madrid Puerta de Atocha and Bif Torrejón de Velasco** in order to increase the capacity from 2 to 4 tracks.



A third splitting proposal concerns the section **Madrid- Casetas (ID 72368).** In the Madrid metropolitan area there is a significant difference of train circulations because of the presence of a large number of commuter and freight trains. For this reason the following split would be desirable: **Madrid Chamartín - Hortaleza; Hortaleza - O'Donell; O'Donell - Bif Clasif-Vicálvaro; Bif Clasif-Vicálvaro - Guadalajara**.



- A fourth proposal concerns Lleida-Camp de Tarragona ID 22100061. In adition to rename the section to Lleida Pirineus <--> Camp de Tarragona, it should be necessary to remove stretch between Bif. Artesa de Lleida <--> Bif. Les Torres de Sanuí



A fifth split is related to section ID 22100088 Monforte del Cid <--> Murcia. It should be splitted in:

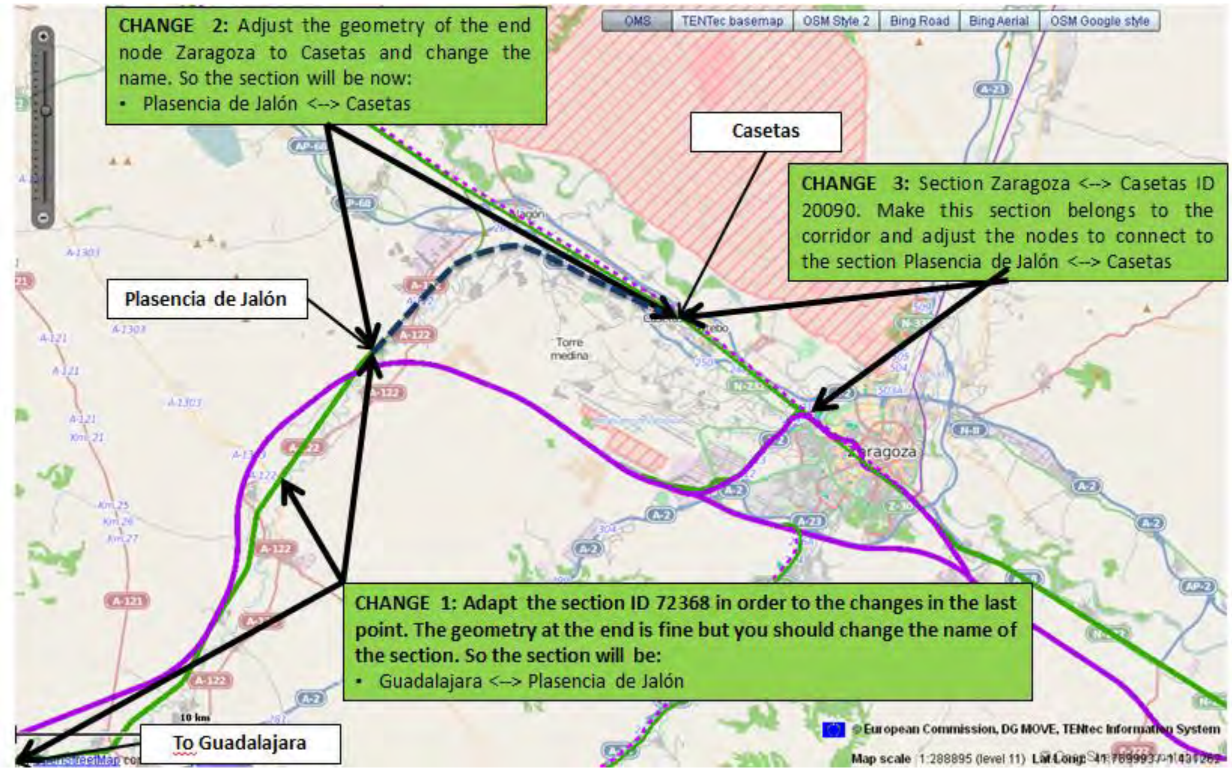
- **Monforte del Cid <-->Crevillente. It's a high speed just for passenger**
- **Crevillente <--> Murcia. It's a high speed for passenger and freight.**

Revision related to the Zaragoza area

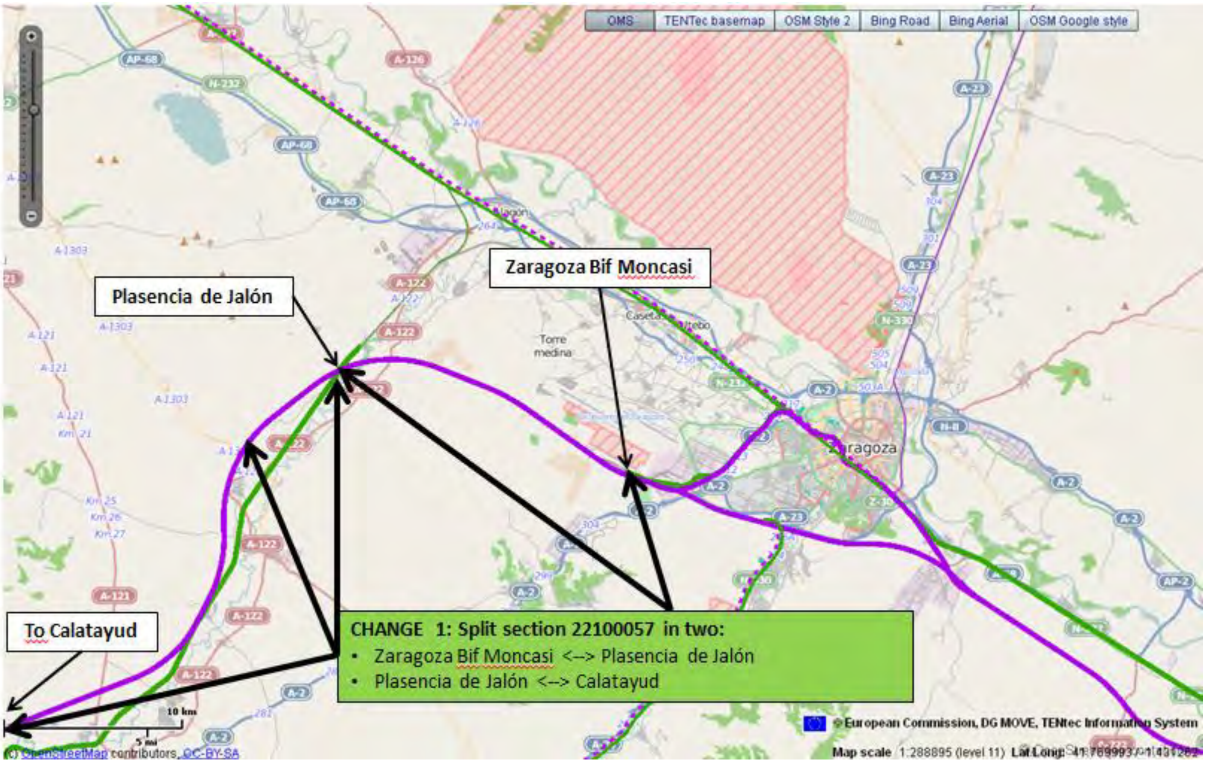
In relation to the section **Madrid- Casetas (ID 72368),** once the split process will be completed, finishing in Guadalajara, a change in the section name (in the Zaragoza area) will be desirable; the new name will be **Guadalajara - Plasencia de Jalón.** Secondly, concerning the section **Plasencia de Jalon - Zaragoza** (ID 140521105300000)**,** the following spilt would be advised: **Casetas - Plasencia de Jalón –; Zaragoza – Casetas.**

The reason at the basis of this revision is that Casetas is an important junction of two different railway lines; from there to Zaragoza the line shift from two to a single track; therefore, in the opinion of the member state the best way to proceed would be:

- Section ID 140521105300000 **Plasencia de Jalón - Zaragoza**: Adjust the geometry of the end node Zaragoza to Casetas and change the name. So the section will be now **Plasencia de Jalón - Casetas**
- **Zaragoza - Casetas ID 20090**. this section should be part of the corridor in order to link these nodes to the section **Plasencia de Jalón - Casetas**.



An additional split is requested about the section **Zaragoza Bif Moncasi - Calatayud ID 22100057** because in Plasencia de Jalon exists a gauge changer. The two sections should be: **Zaragoza Bif Moncasi - Plasencia de Jalón, Plasencia de Jalón – Calatayud.**



Finally, the section 22100021 Algeciras <--> Antequera-Santa Ana should be splitted into:

- Algeciras <--> Bobadilla. It's a Conventional for passenger and freight
- Bobadilla <--> Antequera-Santa Ana. It's a High speed for passenger and freight.

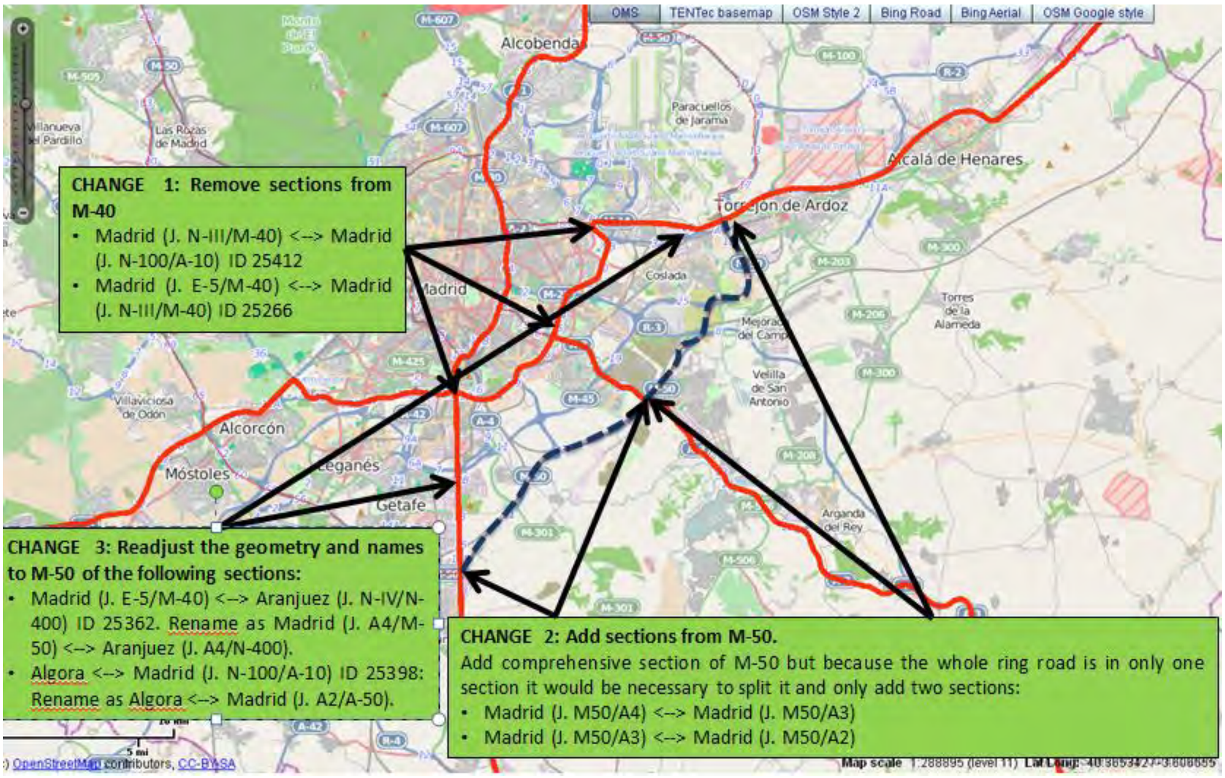
Road alignment issues

Given the complexity of such changes, each issue has been divided by geographical area.

- *Madrid M-50:* The long way traffic uses more the M-50 ring road than the M-40 ring road. Therefore on the point of view of the Member State the M-50 ring road would be more appropriated because is more external. In this context the following changes are suggested:

TENtec ID	TENtec section name	Proposed revision	Type of revision
25412	Madrid (J. N-III/M-40) - Madrid (J. N-100/A-10)	Remove sections belonging to M 40	Remove section
25266	Madrid (J. E-5/M-40) - Madrid (J. N-III/M-40)		Remove section
To be added	Madrid (J. M50/A4) – Madrid (J.M50/A3)	Add new sections belonging to M-50: In the OMC there is a section that does not belong to the corridor: Madrid (J. M50/A6) - Madrid (J. M50/A1) ID 22100004; which is the whole M-50. This one should form part of the corridor but for Mediterranean Corridor just a portion of that is needed.	New section
To be added	Madrid (J. M50/A3) – Madrid (J.M50/A2)		New section
25362	Madrid (J. E-5/M-40) - Aranjuez (J. N-IV/N-400	Readjust the geometry and replace the name of this sections with: Madrid (J. A4/M-50) - Aranjuez (J. A4/N-400). Algora - Madrid (J. A2/A-50).	New nomenclature and geometry change
25398	Algora - Madrid (J. N-100/A-10)		New nomenclature and geometry change

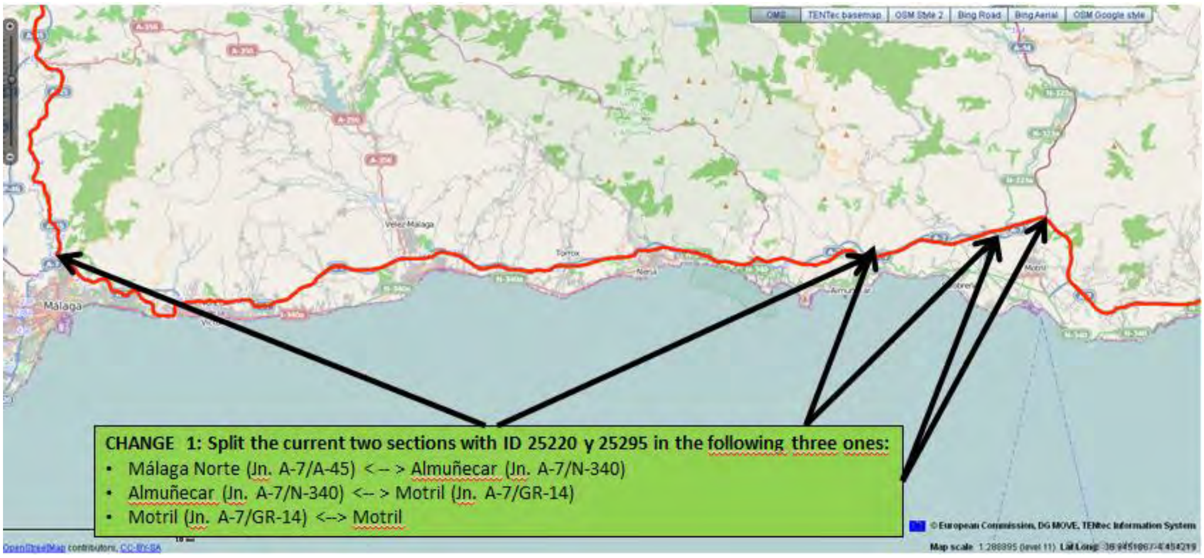
For a better understanding the proposed changes are shown in the hereunder.

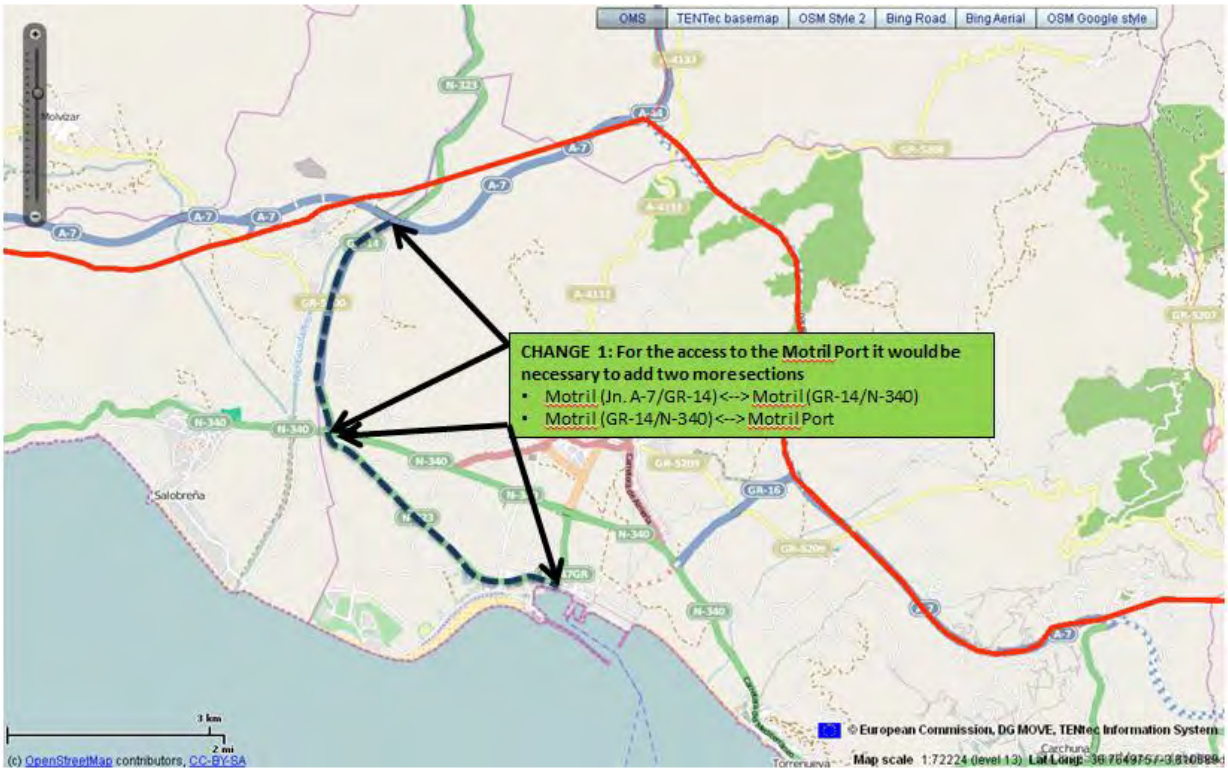


- *Motril:* To respond appropriately to the entire stretch that includes the sections Nerja – Motril and Malaga (J. N-331/A-7) – Nerja, a splitting into three segments would be well advised. Moreover, for the access to the Motril Port it would be necessary to add two more sections.

TENtec ID	TENtec section name	Proposed revision	Type of revision
25220	Nerja - Motril	Proposed sections: • Motril (Jn. A-7/GR-14) - Motril: Road A-7 in service (highway, state competency) • Almuñecar (Jn. A-7/N-340) - Motril (Jn. A-7/GR-14): Road A-7 under construction (highway, state competency) • Málaga Norte (Jn. A-7/A-45) - Almuñecar (Jn. A-7/N-340) Road A-7 in service (highway, state competency)	Section split
25295	Malaga (J. N-331/A-7) - Nerja		Section split
To be added	Motril (Jn. A-7/GR-14) - Motril (GR-14/N-340)	For the access to the Motril Port	New section
To be added	Motril (GR-14/N-340) - Motril Port		New section

For a better understanding the proposed changes are shown in the hereunder.




OMS
TENTec basemap
OSM Style 2
Bing Road
Bing Aerial
OSM Google style
CHANGE 1: For the access to the Motril Port it would be necessary to add two more sections
• Motril (Jn. A-7/GR-14) <--> Motril (GR-14/N-340)
• Motril (GR-14/N-340) <--> Motril Port
Salobreña
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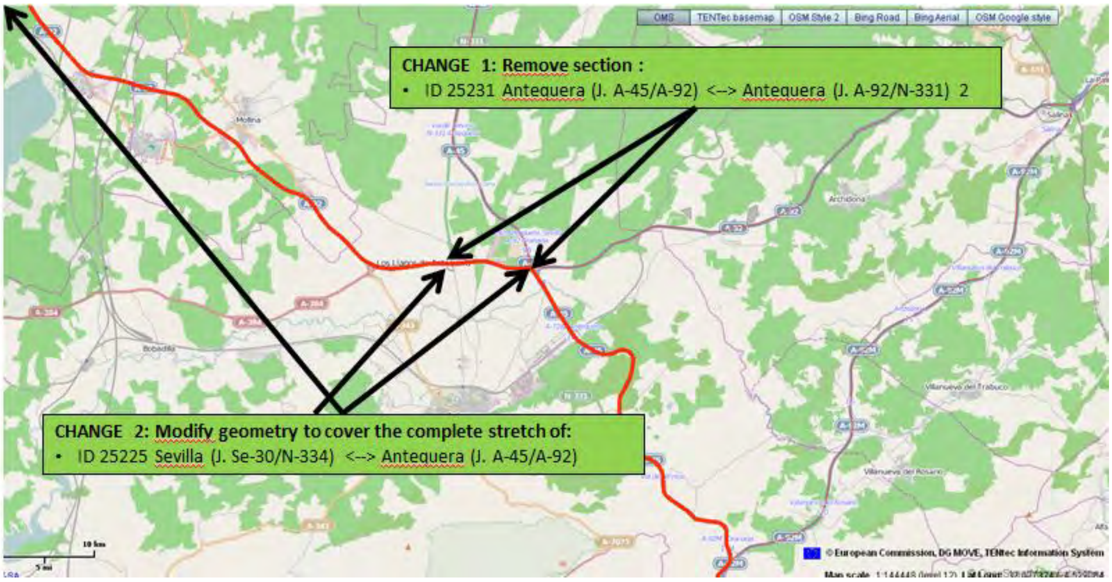
- *Antequera:* Section ID 25231 **Antequera (J. A-45/A-92) - Antequera (J. A-92/N-331)** is already included in another section 25225 Sevilla (J. Se-30/N-334) <--> Antequera (J. A-45/A-92). For this reason the MS proposes to remove section 25231 and modify the geometry of section 25225 in order to cover the complete stretch **Sevilla (J. Se-30/N-334) - Antequera (J. A-45/A-92).**



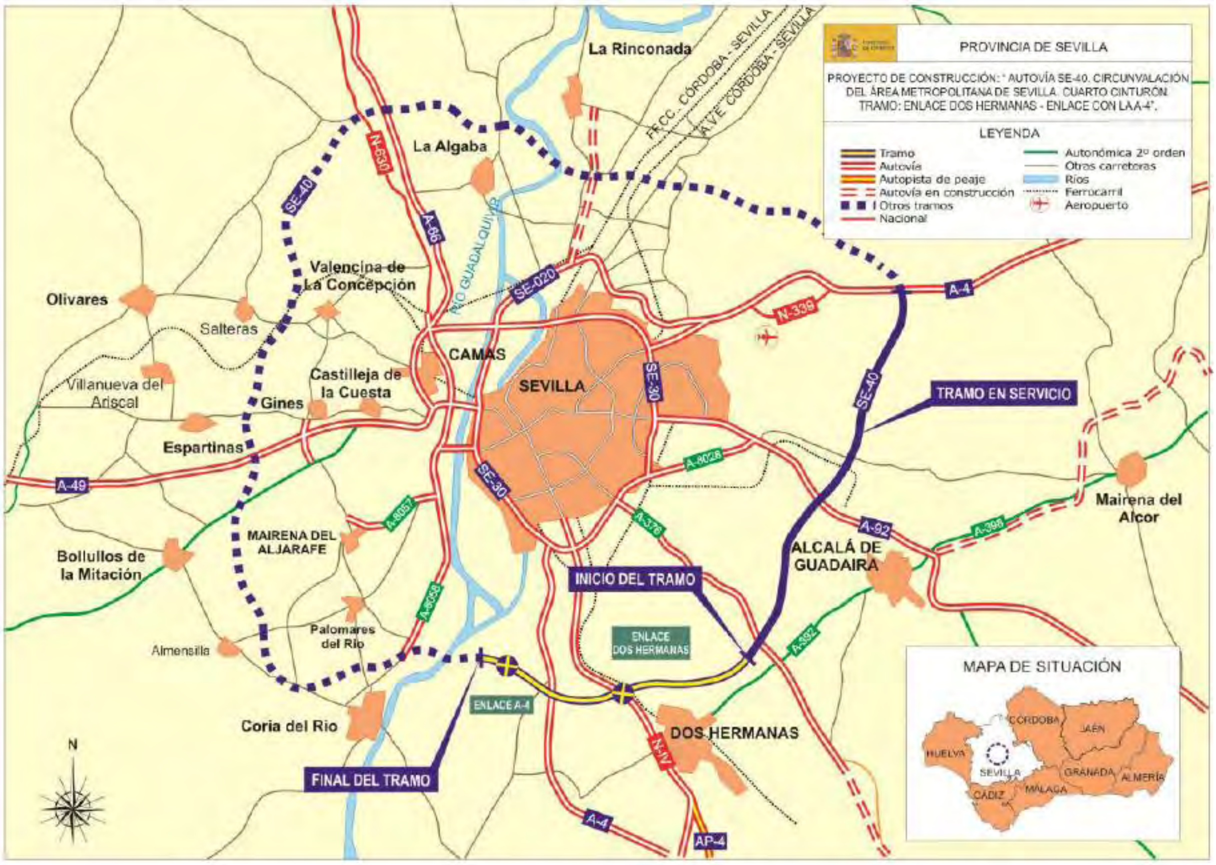
- *A4 Madrid – Seville:* as detailed in the following table almost all changes refer to node names or geometry changes.

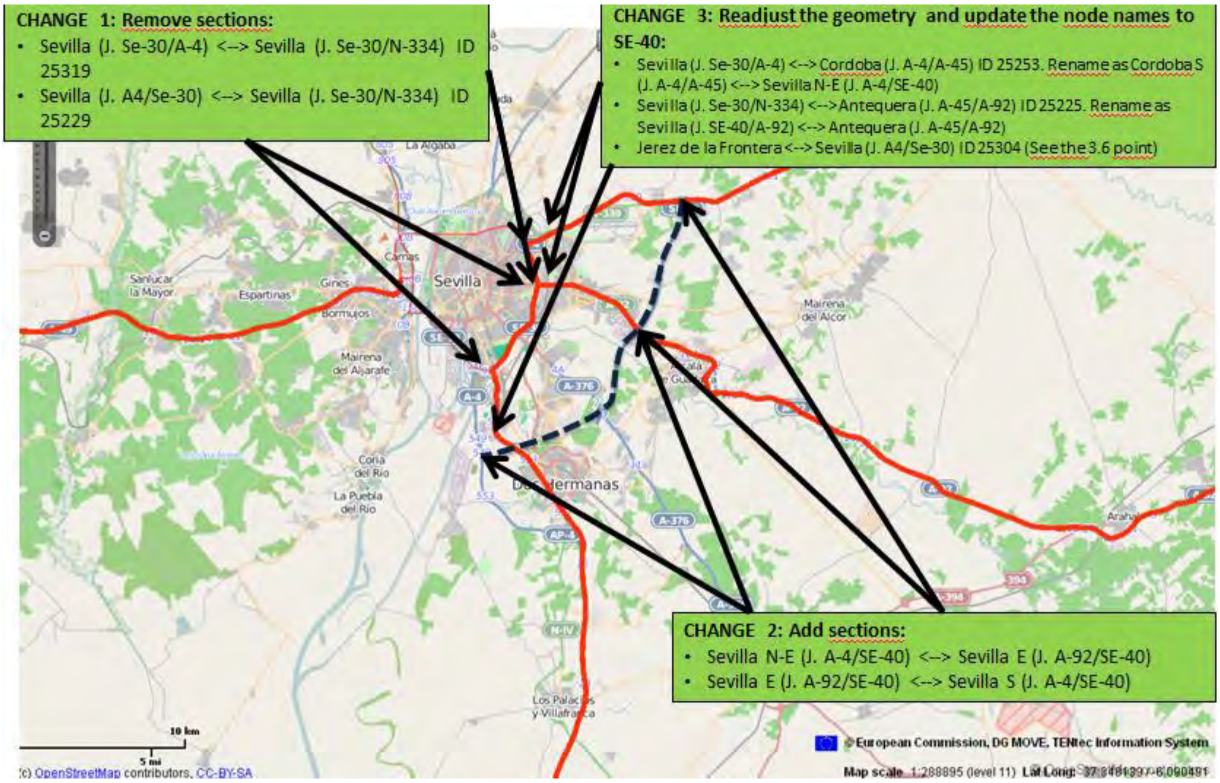
ID	Section	Change
25362	Madrid (J. E-5/M-40) - Aranjuez (J. N-IV/N-400)	Readjust geometry to M-50 and rename as Madrid (J. A-4/M-50) - Aranjuez (J. A-4/M-305)
25385	Aranjuez (J. N-IV/N-400) - Aranjuez	Rename as Aranjuez (J. A-4/M-305) - Aranjuez (J. A-4/N-400)
25378	Aranjuez - Puerto Lapice	Split this section into: Aranjuez (J. A-4/N-400) - Ocaña (J. A-4/R-4) Ocaña (J. A-4/R-4) - Madridejos (J. A-4/CM-42) Puerto Lápice's node should be replaced by Madridejos.
25242	Puerto Lapice - Manzanares	Readjust geometry of both nodes. Rename as Madridejos (J. A-4/CM-42) - Manzanares (J. A-4/A-43)
25356	Manzanares - Bailen (J. E-5/E-902)	Rename as Manzanares (J. A-4/A-43) - Bailen N (J. A-4/A-44) and readjust geometry in Manzanares node
25328	Cordoba - Bailen (J. E-5/E-902)	Rename as Bailen N (J. A-4/A-44) - Córdoba E (A-4/CO-31)
25376	Cordoba (J. A-4/A-45) - Cordoba	Rename as Córdoba E (A-4/CO-31) - Cordoba S (J. A-4/A-45) and readjust geometry of node Cordoba S (J. A-4/A-45) to A-45
25253	Sevilla (J. Se-30/A-4) - Cordoba (J. A-4/A-45)	Modify the geometry of Cordoba node S (J. A-4/A-45) to A-45 and Seville's node SE-30 to Seville SE-40. Rename as Cordoba S (J. A-4/A-45) - Sevilla N-E (J. A-4/SE-40) New section Sevilla N-E (J. A-4/SE-40) - Sevilla N-E (J. A-4/SE-30) (To allow access to airport)

- *Seville's ring road:* As new ring road of Sevilla SE-40 is proposed, in substitution of the current SE-30 as less external from the urban area. To date, the southeast section of SE-40 is already operating, on the contrary the southwest part is under construction. So, the needed modification would be:

TENtec ID	TENtec section name	Proposed revision	Type of revision
25319	Sevilla (J. Se-30/A-4) - Sevilla (J. Se-30/N-334)	Remove these sections from the Mediterranean corridor alignment	Remove section
25229	Sevilla (J. A4/Se-30) - Sevilla (J. Se-30/N-334)		Remove section
To be added	Sevilla N-E (J. A-4/SE-40) - Sevilla E (J. A-92/SE-40)	Add the following sections	New section
To be added	Sevilla E (J. A-92/SE-40) - Sevilla S (J. A-4/SE-40)		New section
25253	Sevilla (J. Se-30/A-4) - Cordoba (J. A-4/A-45)	Rename the sections linked with SE 40 (previously linked with SE-30): • Rename as Cordoba S (J. A-4/A-45) - Sevilla N-E (J. A-4/SE-40)	Rename section
25225	Sevilla (J. Se-30/N-334) - Antequera (J. A-45/A-92)	Rename the sections linked with SE 40 (previously linked with SE-30): • Rename as Sevilla (J. SE-40/A-92) - Antequera (J. A-45/A-92)	Rename section
25304	Jerez de la Frontera - Sevilla (J. A4/Se-30)	See the next modfication request	See next paragraph
To be added	Sevilla S (J. A-4/SE-40) - Sevilla W (J. A-49/SE-40)	To complete the Seville SE-40 ring road it would be necessary to add these sections.	New section
To be added	Sevilla W (J. A-49/SE-40) - Sevilla N (J. A-66/SE-40)		New section
To be added	Sevilla N (J. A-66/SE-40) - Sevilla N-E (J. A-4/SE-40)		New section
25331	Sevilla <--> Sevilla (J. A4/Se-30)	Finally, the following comprehensive section should be modified as core, included into the Mediterranean Corridor alignment and renamed as: Sevilla S (J. A-4/SE-30) <--> Acceso Puerto SE-30, salida 12.	Section classification and new nomenclature

The following picture provides a detailed representation of the foreseen SE-40.


PROVINCIA DE SEVILLA
PROYECTO DE CONSTRUCCIÓN: " AUTOVÍA SE-40. CIRCUNVALACIÓN DEL ÁREA METROPOLITANA DE SEVILLA. CUARTO CINTURÓN. TRAMO: ENLACE DOS HERMANAS - ENLACE CON LA A-4".
LEYENDA
Tramo
Autovía
Autopista de peaje
Autovía en construcción
Otros tramos
Nacional
Autonómica 2º orden
Otras carreteras
Ríos
Ferrocarril
Aeropuerto
La Rinconada
La Algaba
Valencina de la Concepción
Olivares
Salteras
CAMAS
SEVILLA
Castilleja de la Cuesta
Villanueva del Ariscal
Gines
Espartinas
MAIRENA DEL ALJARAFE
Bollullos de la Mitación
Almensilla
Palomares del Río
Coria del Río
DOS HERMANAS
ALCALÁ DE GUADAIRA
Mairena del Alcor
TRAMO EN SERVICIO
INICIO DEL TRAMO
FINAL DEL TRAMO
ENLACE DOS HERMANAS
ENLACE A-4
MAPA DE SITUACIÓN
HUELVA
SEVILLA
CÓRDOBA
JAÉN
GRANADA
ALMERÍA
MÁLAGA
CÁDIZ
N


CHANGE 1: Remove sections:
• Sevilla (J. Se-30/A-4) <--> Sevilla (J. Se-30/N-334) ID 25319
• Sevilla (J. A4/Se-30) <--> Sevilla (J. Se-30/N-334) ID 25229
CHANGE 3: Readjust the geometry and update the node names to SE-40:
• Sevilla (J. Se-30/A-4) <--> Cordoba (J. A-4/A-45) ID 25253. Rename as Cordoba S (J. A-4/A-45) <--> Sevilla N-E (J. A-4/SE-40)
• Sevilla (J. Se-30/N-334) <--> Antequera (J. A-45/A-92) ID 25225. Rename as Sevilla (J. SE-40/A-92) <--> Antequera (J. A-45/A-92)
• Jerez de la Frontera <--> Sevilla (J. A4/Se-30) ID 25304 (See the 3.6 point)
CHANGE 2: Add sections:
• Sevilla N-E (J. A-4/SE-40) <--> Sevilla E (J. A-92/SE-40)
• Sevilla E (J. A-92/SE-40) <--> Sevilla S (J. A-4/SE-40)
Sevilla
Dos Hermanas
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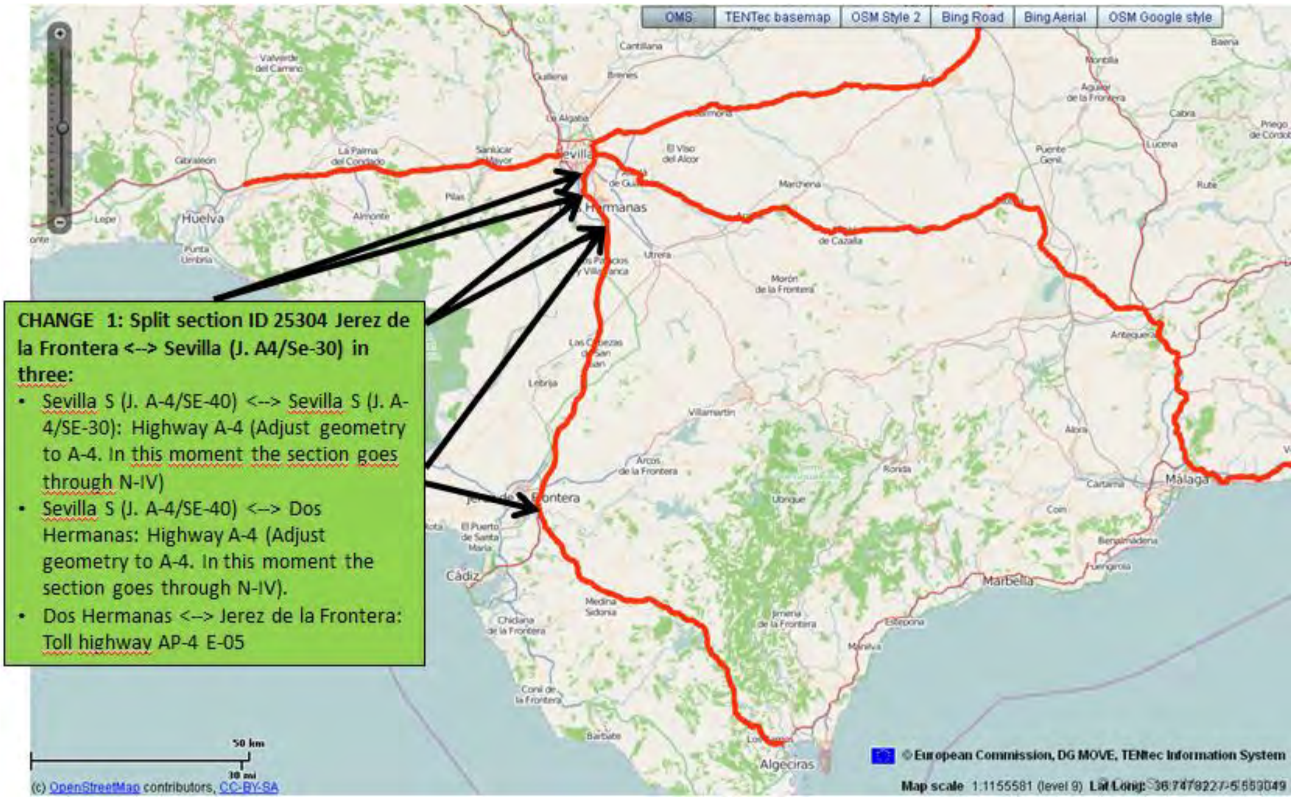
Changes concerning the section Jerez de la Frontera - Sevilla (J. A4/Se-30) are proposed in the following table.

TENtec ID	TENtec section name	Proposed revision	Type of revision
25304	Jerez de la Frontera - Sevilla (J. A4/Se-30)	Split this section as follows, because the current one covers two different roads (Highway A-4 and Toll Highway AP-4). The new sections will be: • Sevilla S (J. A-4/SE-40) - Sevilla S (J. A-4/SE-30): Highway A-4 (Adjust geometry to A-4. In this moment the section goes through N-IV) • Sevilla S (J. A-4/SE-40) - Dos Hermanas: Highway A-4 (Adjust geometry to A-4. In this moment the section goes through N-IV). • Dos Hermanas - Jerez de la Frontera: Toll highway AP-4 E-05	Section splitting



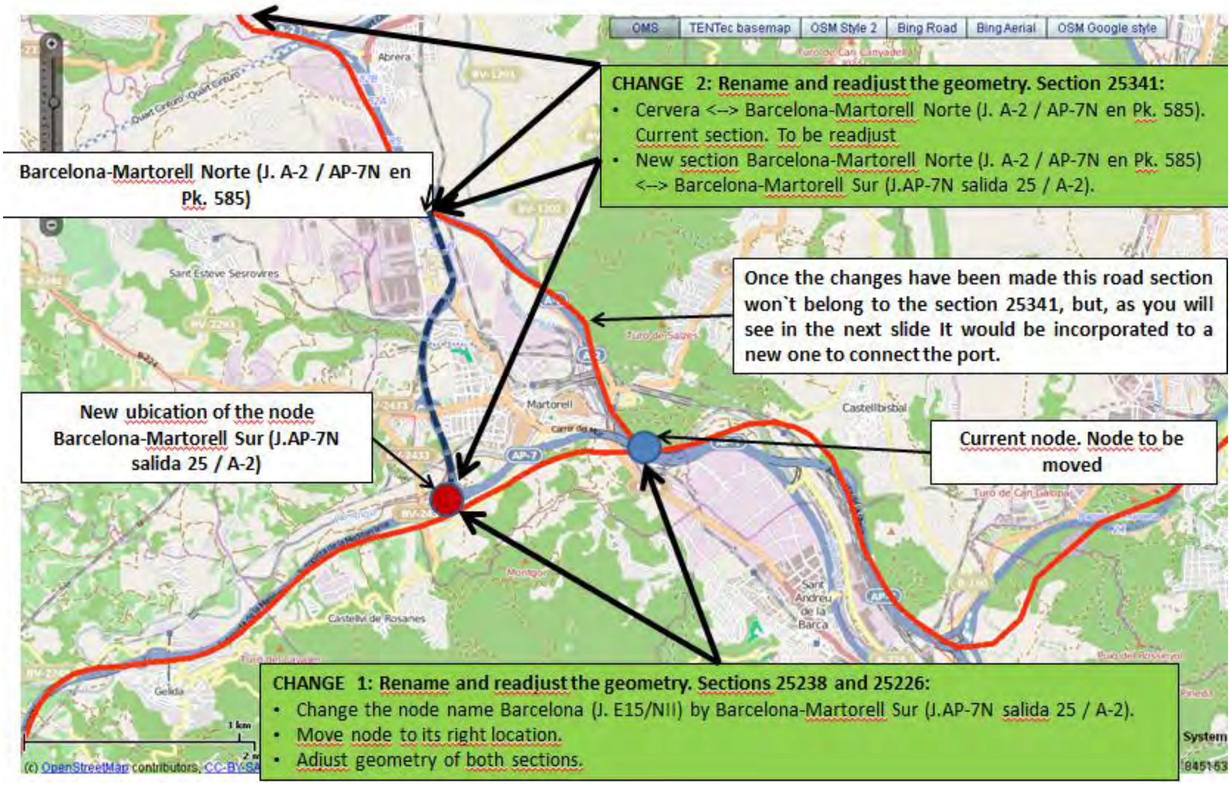
- *Barcelona metropolitan area*: the following changes in the nomenclature are suggested

TENtec ID	TENtec section name	Proposed revision	Type of revision
25401	Border ES/FR Perthus - Riudellots de la Selva	Border ES/FR Perthus - Riudellots de la Selva (J.AP-7N/C-25)	New nomenclature
25402	Barcelona (J. E-15/C-33) - Riudellots de la Selva	Riudellots de la Selva (J.AP-7N/C-25) - Barcelona-Montmelo (J. AP-7N/C-33)	New nomenclature
25223	Barcelona (J. C-58/E-15) - Barcelona (J. E-15/C-33)	Barcelona-Montmelo (J. AP-7N/C-33) - Barcelona-Cerdanyola del Valls (J.AP-7N/C-58)	New nomenclature
25305	Barcelona (J. E-15/E90) - Barcelona (J. C-58/E-15)	Barcelona-Cerdanyola del Valls (J.AP-7N/C-58) - Barcelona-Sant Andreu de la Barca (J.AP-7N/AP-2B)	New nomenclature
25238	Barcelona (J. E15/NII) - Barcelona (J. E-15/E90)	Barcelona-Sant Andreu de la Barca (J.AP-7N/AP-2B) - Barcelona-Martorell Sur (J.AP-7N salida 25 / A-2).	New nomenclature

Secondly, about the geometry of the road alignment the MS proposes to modify the sections listed hereunder:

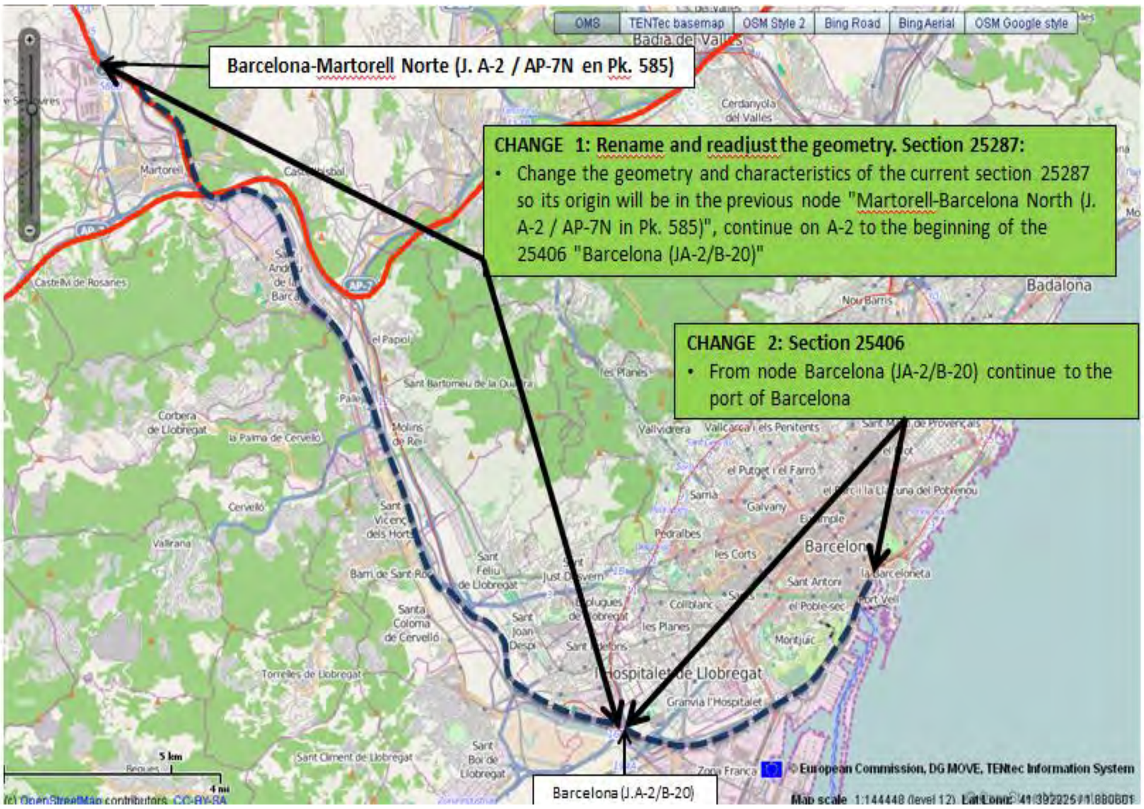
TENtec ID	TENtec section name	Proposed revision	Type of revision
25238	Barcelona (J. E15/NII) - Barcelona (J. E-15/E90)	Barcelona-Sant Andreu de la Barca (J.AP-7N/AP-2B) - Barcelona-Martorell Sur (J.AP-7N salida 25 / A-2).	New nomenclature
25226	Llorenc del Penedes - Barcelona (J. E15/NII)	Llorenc del Penedes - Barcelona-Martorell Sur (J.AP-7N salida 25 / A-2).	New nomenclature
25341	Cervera - Barcelona (J. E15/NII)	Split this section into: • Cervera - Barcelona-Martorell Norte (J. A-2 / AP-7N en Pk. 585). • New section. Barcelona-Martorell Norte (J. A-2 / AP-7N en Pk. 585) - Barcelona-Martorell Sur (J.AP-7N salida 25 / A-2)..	Section split

The geographic representation of these changes is shown in the following map.



Finally, once these corrections have been made, the new section **Cervera - Barcelona-Martorell Norte** (J. A-2 / AP-7N en Pk. 585), derived from the original splitted 25341 Cervera - Barcelona (J. E15/NII), will represent the last mile road link to the port of Barcelona (see the previous map).
Moreover an additional change concerning two comprehensive sections is requested; these sections are codified as ID 25287 and ID 25406 and allow the access to Barcelona Port and Airport. It is necessary to consider these road segments as core part of the Mediterranean Corridor because they connect the core nodes of the corridor.
Therefore, resuming this issue the MS proposes the following changes.

TENtec ID	Proposed revision
25287	Change the geometry and characteristics of the current section 25287 so its origin will be in the previous node "Martorell-Barcelona North (J. A-2 / AP-7N in Pk. 585)", continue on A-2 to the beginning of the 25406 "Barcelona (JA-2/B-20)".
25406	From Barcelona node (JA-2/B-20) up to the port.


Barcelona-Martorell Norte (J. A-2 / AP-7N en Pk. 585)
CHANGE 1: Rename and readjust the geometry. Section 25287:
• Change the geometry and characteristics of the current section 25287 so its origin will be in the previous node "Martorell-Barcelona North (J. A-2 / AP-7N in Pk. 585)", continue on A-2 to the beginning of the 25406 "Barcelona (JA-2/B-20)"
CHANGE 2: Section 25406
• From node Barcelona (JA-2/B-20) continue to the port of Barcelona
Barcelona (J.A-2/B-20)
© European Commission, DG MOVE, TENtec Information System
OMS
TENTec basemap
OSM Style 2
Bing Road
Bing Aerial
OSM Google style

5.5.2 France

Inland Waterways

The Rhône river, between Lyon and Fos sur Mer should be included in the Mediterrranean Corridor alignment as core section.

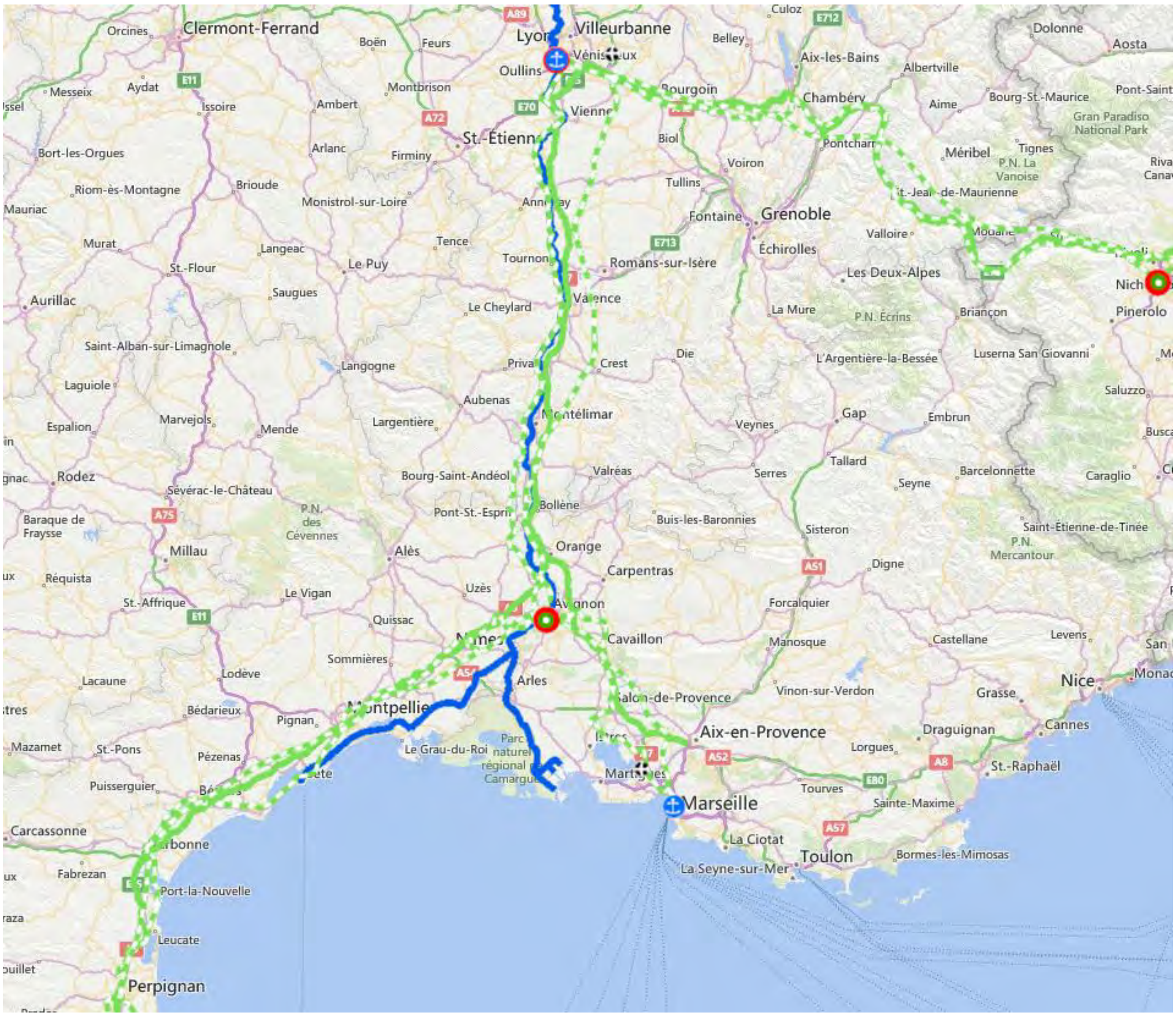


Figure 74 Proposed inclusion of Rhône river in the Mediterranean Corridor alignment

5.5.3 Italy

Inland Waterways

It is important to underline that the following sections have not been indicated as part of the corridor.

TENtec ID	TENtec section name	Map reference.	River or channel
22400010	Milano-Pizzighettone (missing link)	n.1 (proposal of inclusion as core Inland waterways core sections of the Mediterranean corridor)	*Waterway Milano – Cremona (from Milan to Cremona)*
22400011	Pizzighettone-Cremona		
15316	Mantua- Foce Mincio	n.2 (proposal of inclusion as core Inland waterways core sections of the Mediterranean corridor)	*Channel Fissero – Tartaro- Canal Bianco*
22400020	Mantua south – Ostiglia	n.3 (proposal of inclusion as core Inland waterways core sections of the Mediterranean corridor)	
14051610450000	Ostiglia- Rovigo		
14051610450001	Rovigo-Baricetta		
22400021	Baricetta- Porto Levante		

About these sections, the proposed revision, according to the Ministry of Infrastructure and Transport and AIPO (the infrastructure managers in charge of the Italian inland waterways network development), consist of including them as sections of the corridor.

In particular, concerning **Milano-Pizzighettone and Pizzighettone- Cremona,** EU Regulation 1316/2013 clearly indicates that the IWW of the Mediterranean corridor (Lot3) is stretched from Milan up to the Adriatic Sea (as it shown in the following table).

PRE-IDENTIFIED SECTIONS INCLUDING PROJECTS:		
Algeciras - Madrid	Rail	Studies ongoing, works to be launched before 2015, to be completed 2020
Sevilla - Antequera - Granada - Almería - Cartagena - Murcia - Alicante - Valencia	Rail	Studies and works
Madrid-Zaragoza-Barcelona	Rail	Upgrading of existing lines (gauge, sidings, platforms)
Valencia - Tarragona - Barcelona	Rail	Construction between 2014 - 2020
Barcelona	Port	Interconnections rail with port and airport
Barcelona - Perpignan	Rail	Cross-border section, works ongoing, new line completed by 2015, upgrading existing line (gauge, sidings, platforms)
Perpignan - Montpellier	Rail	Bypass Nimes - Montpellier to be operational in 2017, Montpellier - Perpignan for 2020
Lyon	Rail	Relieving Lyon bottlenecks: studies and works
Lyon – Avignon – Marseille	Rail	Upgrading
Lyon - Torino	Rail	Cross-border section, works base tunnel; studies and works access routes
Milano - Brescia	Rail	Partially, upgrading and, partially, new high-speed line
Brescia - Venezia - Trieste	Rail	Works to start before 2014 on several sections in synergy with upgrading actions undertaken in over-lapping stretches as in the Baltic-Adriatic Corridor
Milano – Cremona- Mantova – Porto Levante/Venezia – Ravenna/Trieste	IWW	Studies and works

The following map shows the actual corridor alignment and the mentioned sections

**Iww Section to be included as core part of the Mediterranean corridor: Waterway Milan - Cremona*

Secondly, concerning the section **Mantua- Foce Mincio,** it is important to consider that Mantua is a core inland port (in accordance with the Regulation 1315/2013) as well as section Casalmaggiore <--> Foce Mincio is part of the core network.
Thus, it would be possible include section Mantua – Foce Mincio in the Mediterranean corridor as link between Mantua (core inland port) and section Casalmaggiore <--> Foce Mincio.

* *Iww Section to be included as core parts of the Mediterranean corridor: Waterway Mantua-Mincio Mouth*

Thirdly, as stated by Regulation 1316/2013 **the Italian inland waterway system connecting the Core inland Ports of Trieste, Venice, Mantua, Cremona and Ravenna is composed by the Po river and the Fissero-Tartaro-Canal Bianco Channel**.
Therefore, these two inland waterways should be considered together, creating an integrated system in which traffic flows follow these directions:

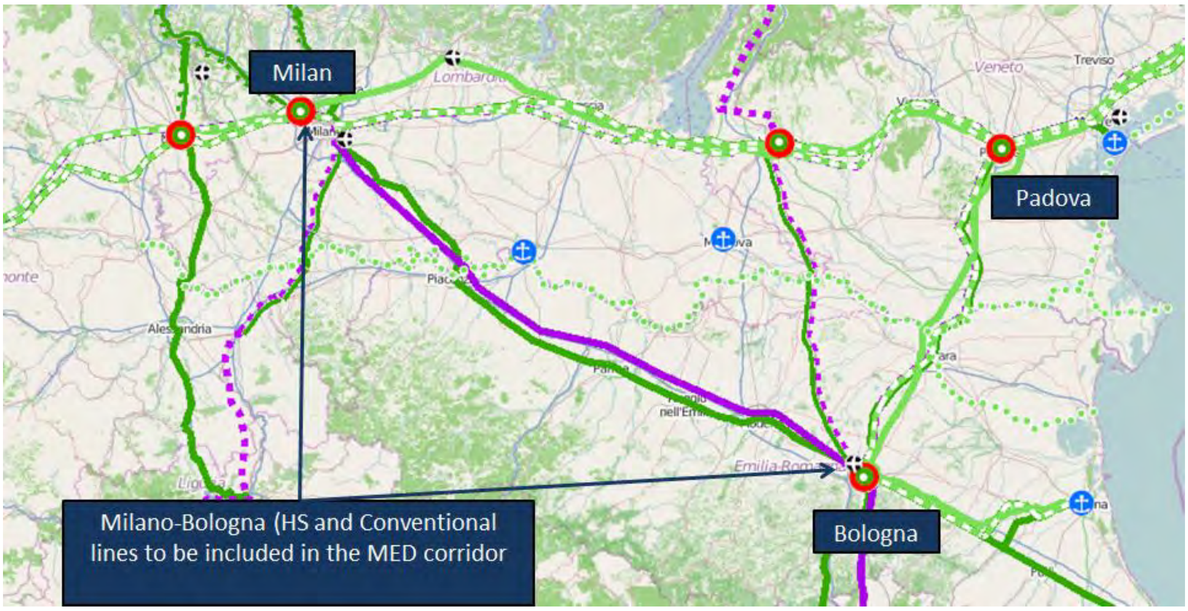
- Milano – Cremona – Mantova – Porto Levante/Venezia (trough the Po River and the Fissero-Tartaro-Canal Bianco Channel in North East direction)
- Milano – Cremona - Mantova – Ravenna (through the Po River, and the Ferrarese waterway in South-East direction)

* *Iww Section to be included as core parts of the Mediterranean corridor: Fissero-Tartaro Canal Bianco channel*

Rail

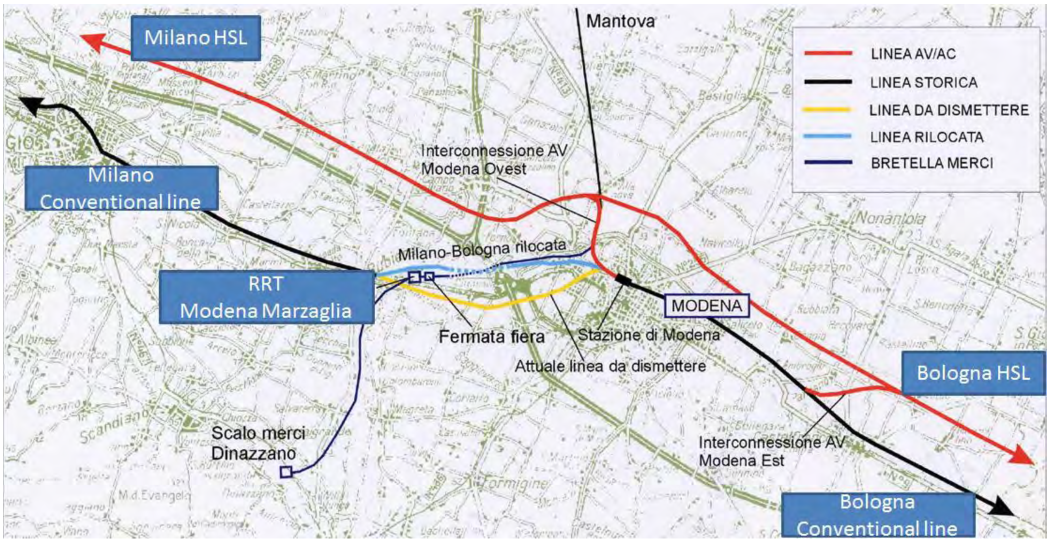
HS and Conventional line Milano-Bologna: request of inclusion in the Mediterranean corr alignment

It is important to underline that even if section Milano – Bologna (HS Line and Conventional Line) is not part of the main branches of the Mediterranean corridor (identified in the Annex I of the EU Regulation 1316/2013), it is identified by the Regulation as core section and it is strongly recommended to consider it because it represents a more effective and efficient connection to the port of Ravenna for the traffic from/to the west side of the corridor. Hereunder a detailed map showing the section above mentioned.



Rail/road terminals

In case of acceptance of the Milan-Bologna HS line and Conventional line as part of the Mediterranean corridor by the European Commission, the inclusion of the Modena Marzaglia Rail/road terminal (which construction has already planned) should be taken into account.



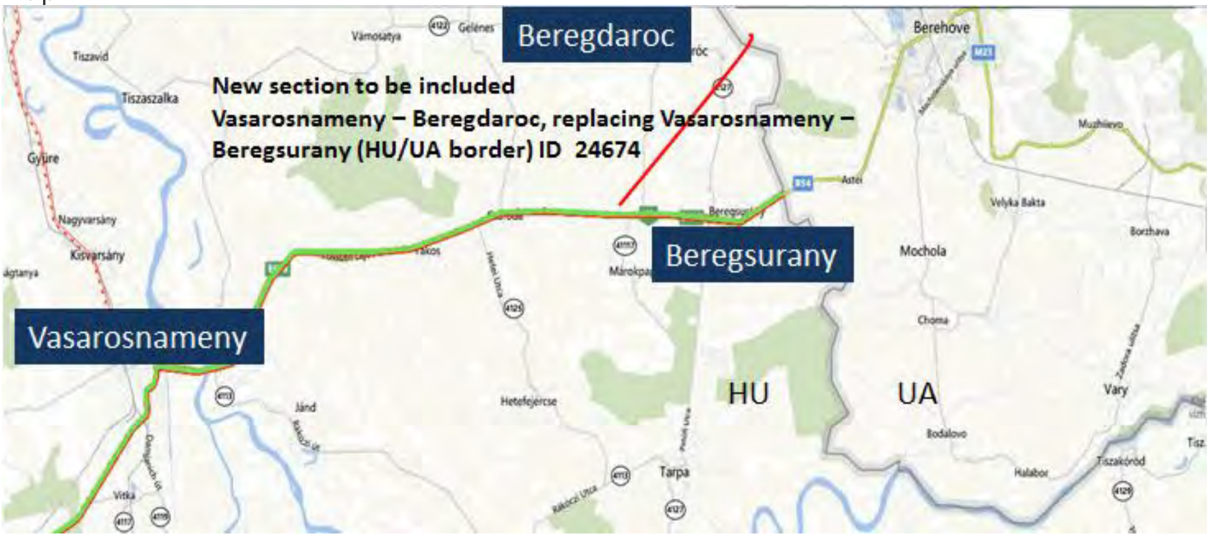
5.5.4 Hungary

Road

According to the involved stakeholders, the following changes are proposed:

TENtec ID	TENtec section name	Proposed revision	Type of revision	Reason	Map N.
24674	Vasarosnameny – Beregsurany (HU/UA border)	This section is part of the road Mediterranean corridor alignment and will be automatically replaced by Vasarosnameny – Beregdaroc; please correct the alignment on the TEN-t base map.	Section replacement	The road section Vasarosnameny – Beregdaroc/ Dyida at the HU-UA border will become part of the corridor at the end of the works. This motorway section is planned to be built as foreseen by 2018. The border crossing point has been localized in governmental agreement between HU and UA	Map.1
24677	Gorican (brd.) / Letenye - Junction M7/M70 (HU/HR Border)	Since this sections is part of the corridor, please modify TEN-tec base maps according to those included in the regulation 1315/2013 on pg. 55	Section to be added	As it shown in the related map this little road section (8 km) will assure a direct link with Slovenia.	Map.2

Map.1



** Road section replacement proposed by Hungarian Ministry (HU/UA Border)*

Map.2

Road section to be added (HU/SI Border)

5.6 Revision of the corridor representation already accepted

The following revisions have already been approved by the National Ministries of Infrastructures and officially accepted by the European Commission.

5.6.1 France

Concerning rail, the proposed alignment for rail sections did not fully reflect completed or planned rail sections

For Lyon-Turin rail section, TENtec official excel file and TENtec OMC map system do not reflect the current rail alignment; more specifically, the actual conventional rail line connecting Turin to Lyon has not been included in the alignment. Briefly, there is a missing link at the cross border at least until the Commission will not fix these issue by including the conventional rail line passing through: Lyon-Chambery- San Juan de Maurienne.

5.6.2 Italy

Rail alignment issues

Concerning rail, the proposed alignment for rail sections did not fully reflect completed or planned rail sections.

For Turin-Lyon rail section, TENtec official excel file and TENtec OMC map system do not reflect the current rail alignment; more specifically, the actual conventional rail line connecting Turin to Lyon has not been included in the alignment. Briefly, there is a missing link at the cross border at least until the Commission will not fix these issue by including the conventional rail line passing through: Turin- Bardonecchia.

In addition, for the following sections a new nomenclature as well as a spilt / merger have been proposed according to the Italian rail infrastructure manager (RFI) in order to ensure consistency with the network statement classification.

TENtec ID	TENtec section name	Proposed revision	Type of revision
22400200	Bussoleno <--> Avigliana	Bussoleno- S. Paolo	Merger of two sections
22400201	Avigliana <--> S. Paolo		
18981	Rho/Pero <--> Novara Ovest	P.M. Rho Fiera- Novara Ovest	New nomenclature
18978	Rho/Pero <--> Milano	P.M. Rho Fiera -Milano	New nomenclature
22400171	Milano Lambrate <--> Pioltello	Milano - Pioltello (Venezia DD)	New nomenclature
22400147	Brescia <--> Verona Porta	Brescia- Verona	New nomenclature

TENtec ID	TENtec section name	Proposed revision	Type of revision
	Nuova		
18763	Verona Porta Nuova <--> Vicenza	Verona -Vicenza	New nomenclature
22400165	Ronchi <--> Bivio Aurisina	Ronchi dei Legionari Sud - Bivio S.Polo	Split into two sections
		Bivio S.Polo-Bivio Aurisina	

** Proposed revision of some Italian rail sections*

Road alignment issues

Concerning road, the following TENtec road sections do not match with the toll booths.

In the following table, it has been proposed a new nomenclature in order to allow to clearly define sections and consequently all technical parameters in a consistent way. The proposed changes are under evaluation from the related stakeholders.

TENTEec code	TENtec Section Name	Proposed revision
24506	Santhia <--> Recetto	Biandrate
24483	Recetto <--> Pero	Biandrate
24434	Pero <--> Milano/Baranzate	Cormano
24459	Brembate <--> Agrate Brianza	Cormano
22400248	Brembate <--> Bergamo	Capriate
24433	Travagliato <--> Bergamo	Ospitaletto
22400223	Travagliato <--> Brescia	Ospitaletto
22400315	Verona <--> Interconnesione A4	Montecchio
22400275	Vicenza <--> Interconnesione A4	Montecchio
26295	Torino <--> Bardonecchia	Torino (J. A32/A55)
22400309	Venaria <--> Torino	Venaria Stadio
22400211	Venaria <--> Torino (J. A4/A55)	Venaria Stadio
24417	Verona <--> Brescia	Verona (Sud) or Brescia (Centro)
22400257	Padova (J. A4/A13) <--> Vicenza	Vicenza (Est)

** Proposed revision of some Italian road sections*

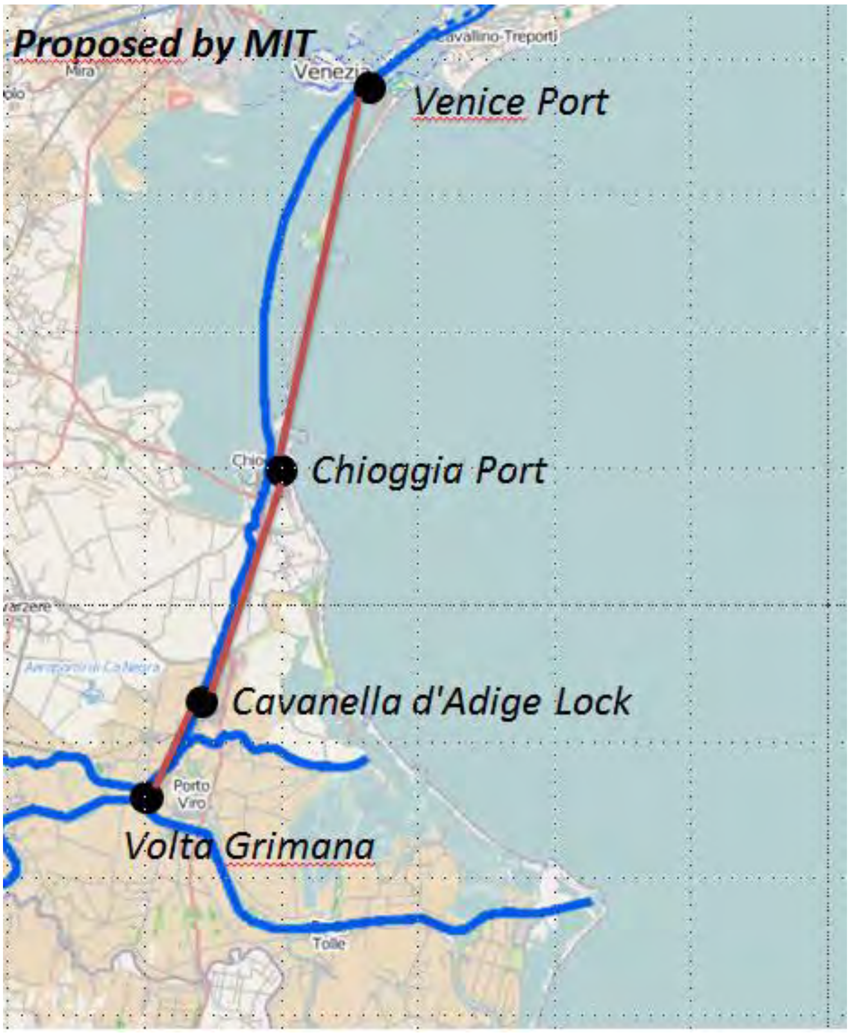
In addition, from the analyses undertaken some clarifications seem necessary regarding the sections alignment of the Mestre motorway ring road, as detailed in the following table.

TENTEec code	Section Name	Proposed revision
22400181	Bivio A4/A57 <--> Venezia Marghera (J. SS309/A4)	-
24480	Venezia Marghera (J. SS309/A4) <--> Mestre	Venezia Marghera (J. SS309/A4) <--> (VE) Mestre
22400255	Mestre <--> (VE) Mestre	(VE) Mestre <--> Mestre
22400271	(VE) Mestre <--> Quarto D'Altino	Mestre <--> Quarto D'Altino

** Proposed revision of the Mestre motorway ring road*

Inland Waterways alignment issues

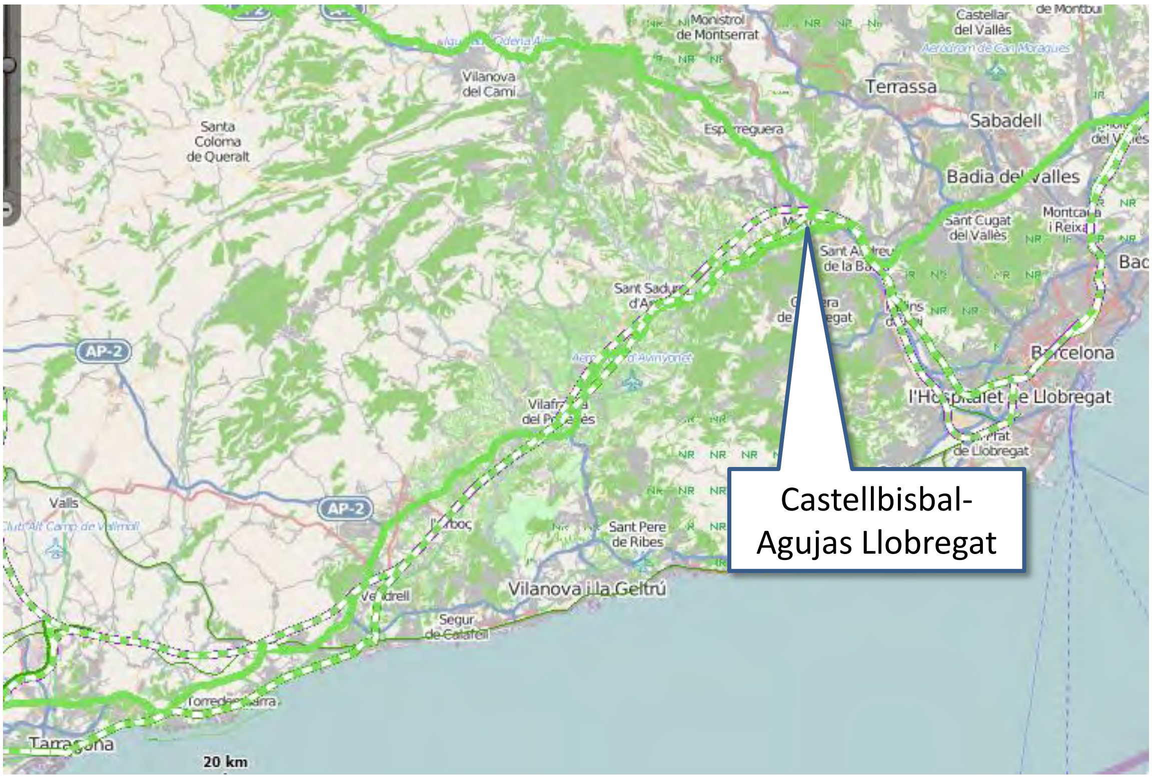
Concerning IWW alignment, the main issue regards sections split in order to better reflect infrastructure capacity, as shown in the following figures.



5.6.3 Spain

A) **Section «Barcelona Sants - San Vincenc de Calder section»** (TENtec ID 22100071)

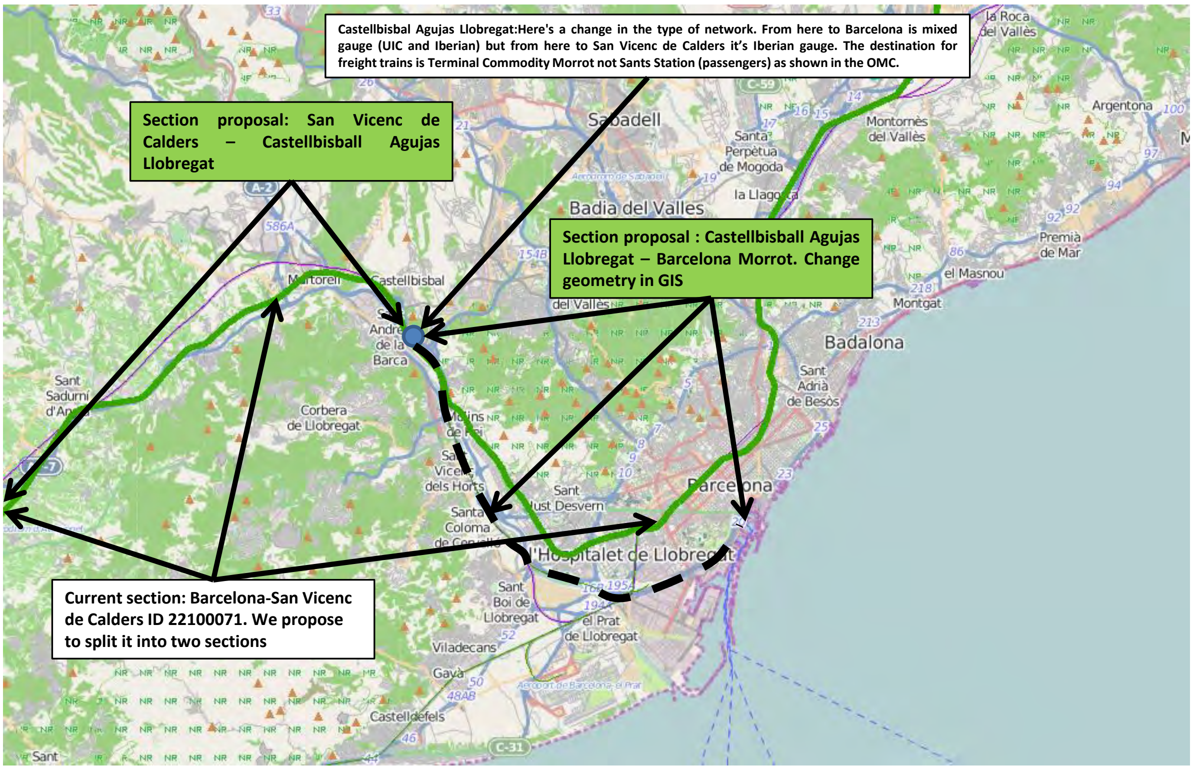
The starting node of this section (freight line) should be changed into "Castellbisbal-Agujas Llobregat" in order to maintain consistency with the rest of the network.



In addition, **this section should be split in two other ones in order to take into account the different type of gauge**. In particular:

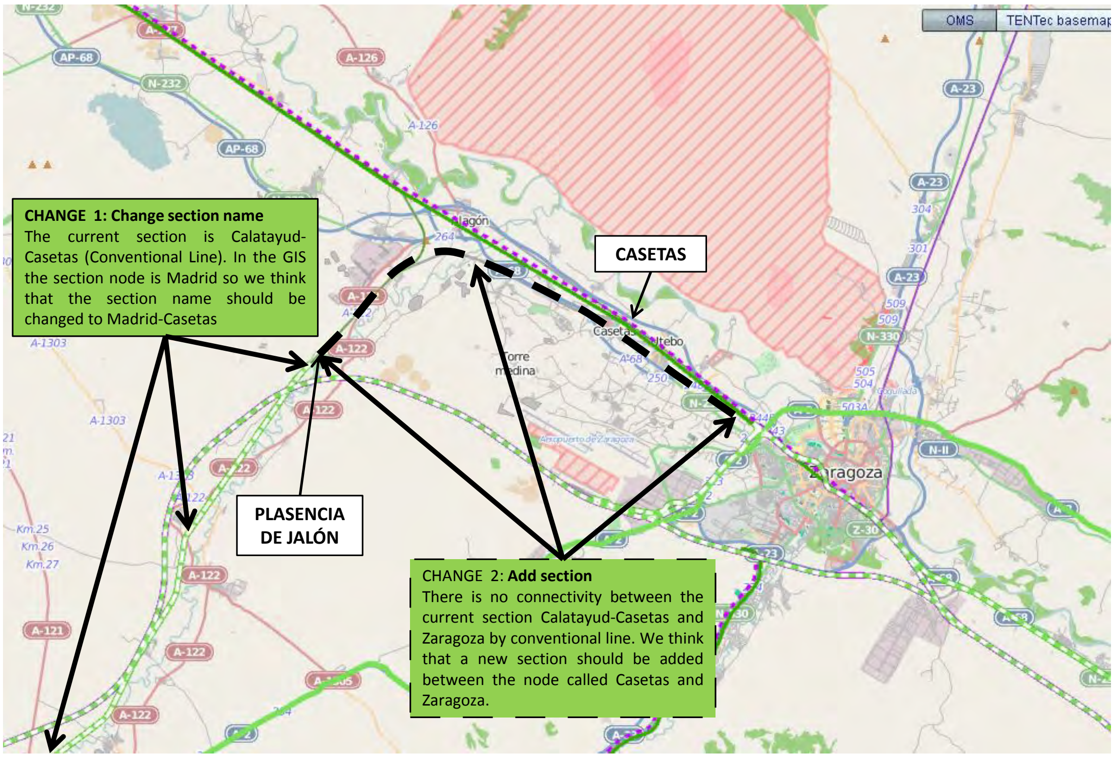
- San Vicenc de Calders – Castellbisball Agujas Llobregat with the Iberian gauge;
- Castellbisball Agujas Llobregat - Barcelona Morrot with the mixed gauge (UIC and Iberian).

Concerning this line, it would be also important to change the path replacing the line that goes to Barcelona Sants, which is a passenger station with the one which is roughly parallel and entering into the freight station Morrot Barcelona (further details are provided in the following figure).



B) Section Calatayud – Casetas (TENtec ID 72368)

This section should be changed into "Madrid-Casetas" in order to maintain consistency with the rest of the network. In addition, the conventional section "Casetas-Zaragoza" should be included in order to guarantee continuity. If this is not possible, the end node of this section (Casetas) could be replaced by Plasencia de Jalón, where a gauge changer is placed (further details are provided in the following figure).



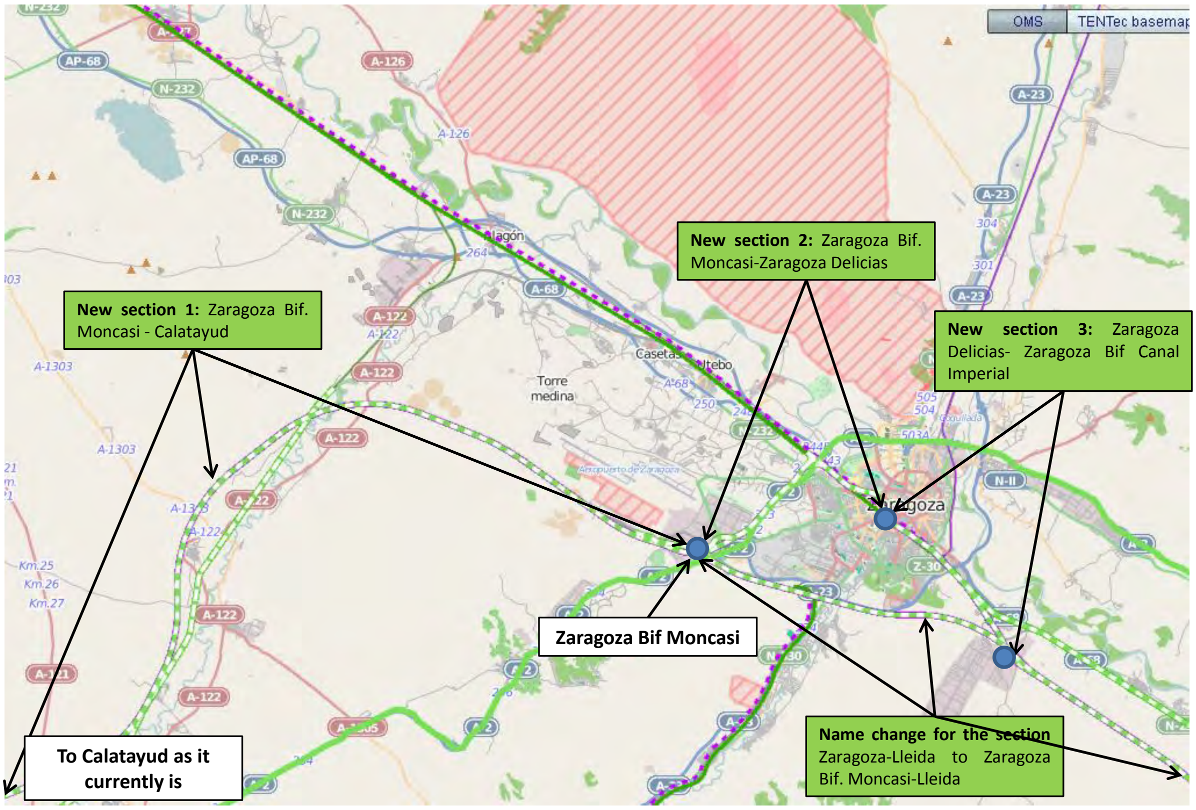
C) Section Cuevas Bajas JCT - Antequera-Santa Ana (TENtec ID 72148)
This section should be changed into "Córdoba - Antequera-Santa Ana" in order to maintain consistency with the rest of the network (further details are provided in the following table).

TENTec code	TENtec sections	Network statement sections	Proposed change for TENtec section
65006	Sevilla-Córdoba	Sevilla-Córdoba, HS	-
22100082	Sevilla-Cuevas Bajas	Sevilla-Córdoba, conventional	Sevilla-Córdoba
72148	Antequera Santa Ana-Cuevas Bajas JCT	Antequera Santa Ana-Córdoba, HS	1) To change the section into Antequera Santa Ana-Córdoba or 2) To include a new section Cuevas Bajas JCT-Córdoba

D) **Section Figueras Vilafant- Le Perthus Tunnel** (TENtec ID 202092)
This section includes lines which belong to a different infrastructure managers. In particular, on the Spanish side, the section ends in the town of Llers, where the TPFerro section starts. On the French side, TPFerro section starts in the town of Le Soler.

E) **Sections Plasencia de Jalón - Calatayud** (TENtec ID 22100057) and **Plasencia de Jalón - Zaragoza** (TENtec ID 22100056)
In order to assure consistency with the rest of the network, these sections should be changed into as follows (for further details, please see the picture shown below).

- Plasencia de Jalón – Calatayud should be called Zaragoza Bif Moncasi – Calatayud.
- Plasencia de Jalón - Zaragoza should be split into two new sections called:
  - Zaragoza Bif. Moncasi-Zaragoza Delicias,
  - Zaragoza Delicias- Zaragoza Bif Canal Imperial.
- Zaragoza-Lleida should be called Zaragoza Bif Moncasi-Lleida.



F) **Section Reus-Reus** (TENtec ID 19745)

Since this section has the same origin and destination, it should be changed into Reus – Zaragoza

G) Barcelona RRT

This node is not included in the TENtec official excel file.
According to European Regulation 1316/2013, Barcelona RRT is part of the core network and of the Mediterranean corridor, so it should be included in the TENtec official excel file and maps.
<u>Suggested revision: to add this RRT in the TENTec database</u>

H) Road sections 25220 and 25295

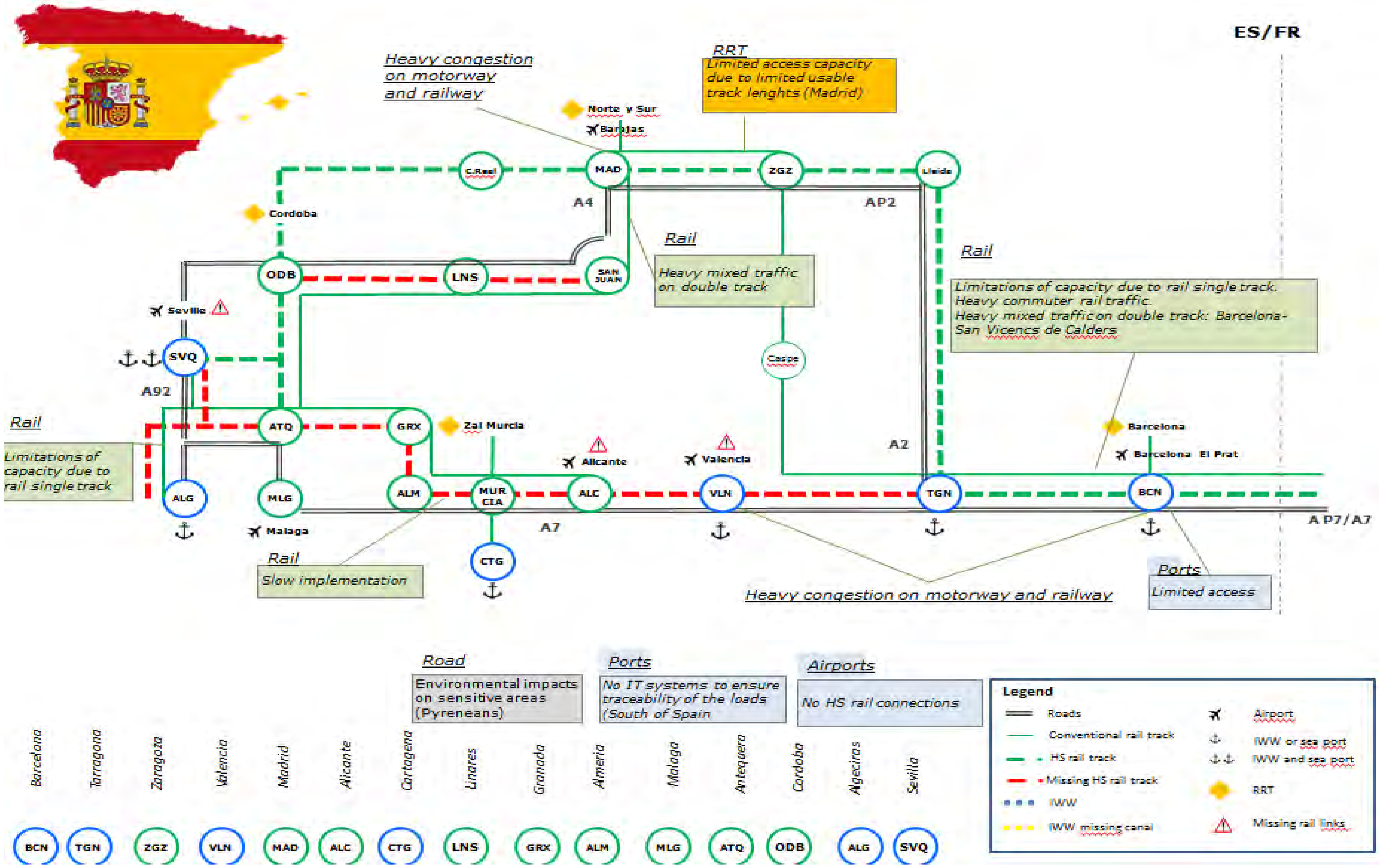
In order to distinguish existing sections from under construction ones, the following split is proposed.

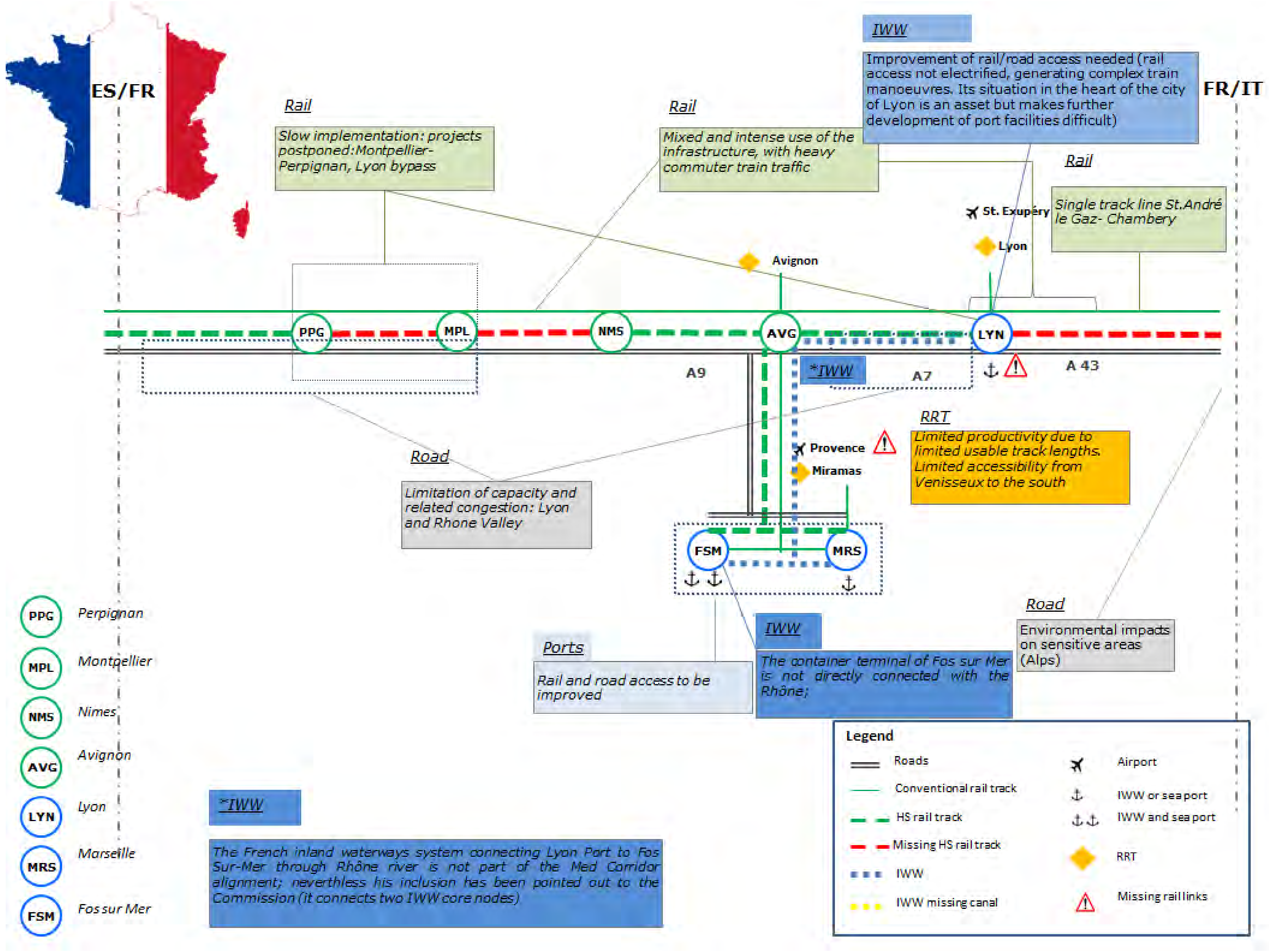
TENTEec code	TENtec sections	Proposed change for TENtec section	Note
25220 25295	1. Nerja <--> Motril 2. Malaga (J. N-331/A-7) <--> Nerja	1. Motril Jn. A-7/GR-14 <--> Motril	Road: A-7 in service (highway, state competency)
		2. Almuñecar Jn. A-7/N-340 <-- > Motril Jn. A-7/GR-14	Road A-7 under construction (highway, state competency)
		3. Málaga Norte Jn. A-7/A-45 < -- > Almuñecar Jn. A-7/N-340	Road: A-7 in service (highway, state competency)

I) Road sections 25225 and 25231

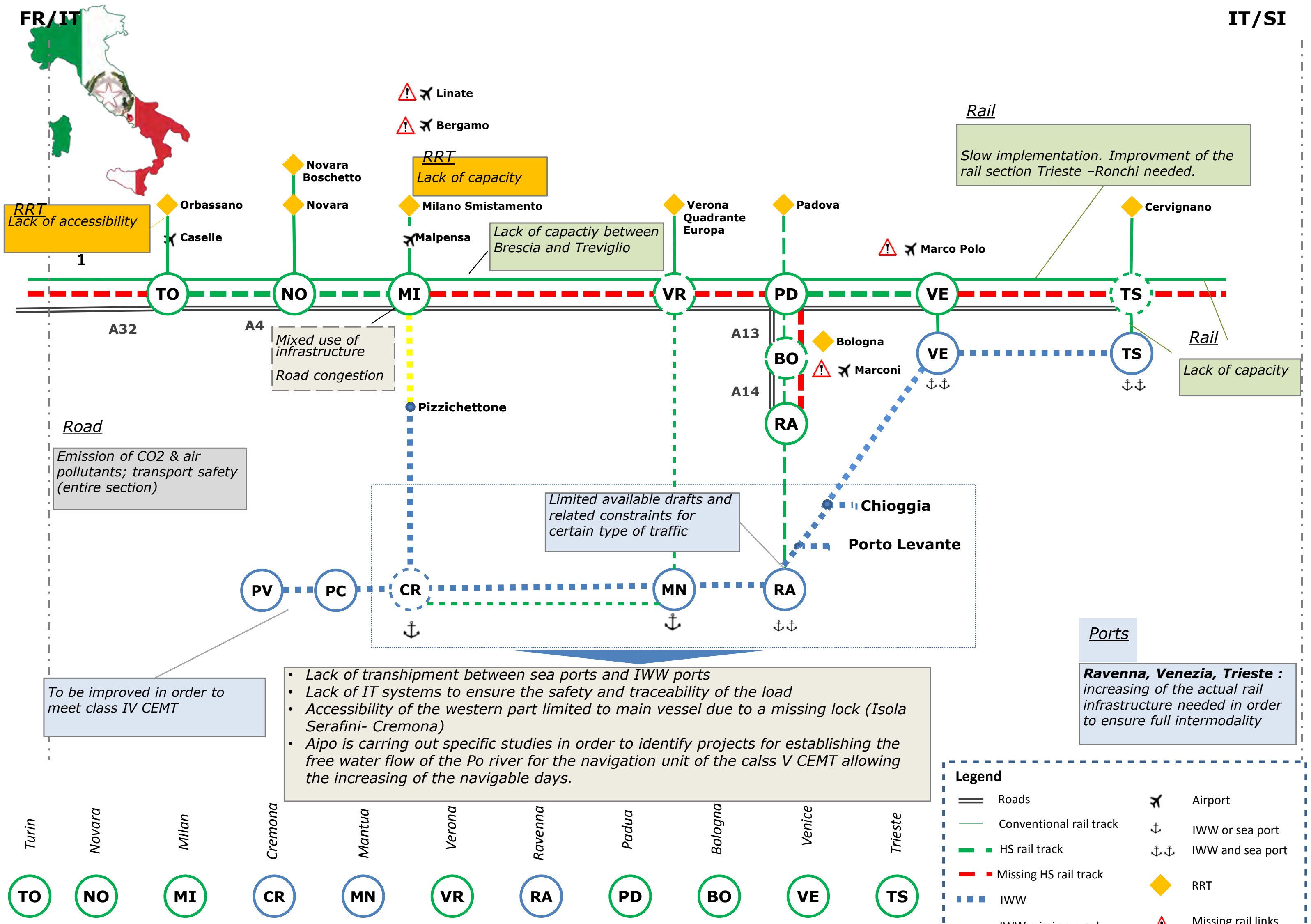
Section 25231 - Antequera (J. A-45/A-92) <--> Antequera (J. A-92/N-331) is included in section 25225 - Sevilla (J. Se-30/N-334) <--> Antequera (J. A-45/A-92).
As a result, section 25231 should be removed while routing of section 25225 should be modified in order to cover the overall stretch "Sevilla (J. Se-30/N-334) <--> Antequera (J. A-45/A-92)".

5.7 Detailed maps of the most relevant critical issues (all modes)

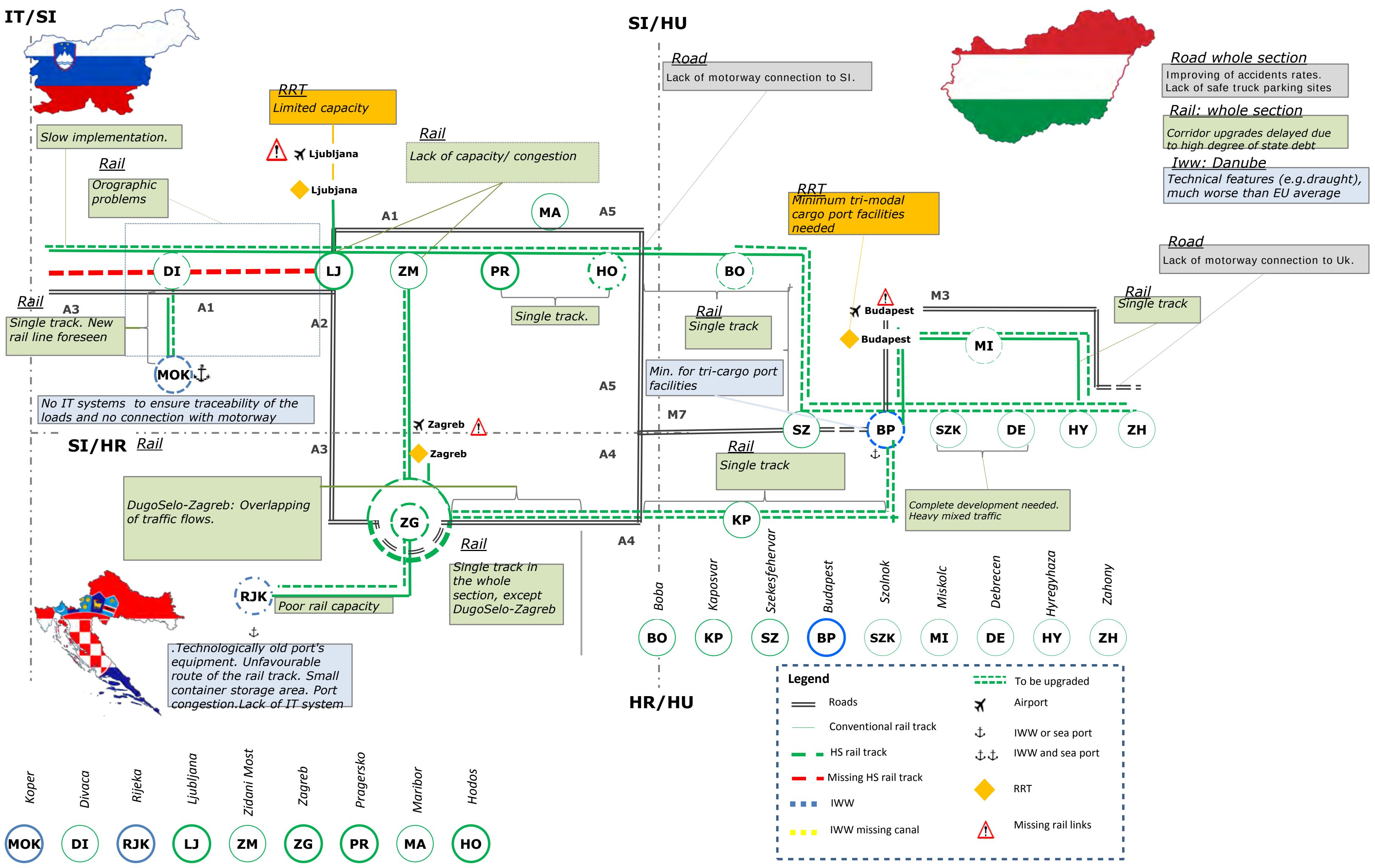




ES/FR
FR/IT
Rail
Slow implementation: projects postponed:Montpellier-Perpignan, Lyon bypass
Rail
Mixed and intense use of the infrastructure, with heavy commuter train traffic
IWW
Improvement of rail/road access needed (rail access not electrified, generating complex train manoeuvres. Its situation in the heart of the city of Lyon is an asset but makes further development of port facilities difficult)
Rail
Single track line St.André le Gaz- Chambery
St. Exupéry
Lyon
Avignon
PPG
MPL
NMS
AVG
LYN
A9
*IWW
A7
A 43
RRT
Limited productivity due to limited usable track lengths. Limited accessibility from Venisseux to the south
Provence
Miramas
Road
Limitation of capacity and related congestion: Lyon and Rhone Valley
FSM
MRS
Road
Environmental impacts on sensitive areas (Alps)
IWW
The container terminal of Fos sur Mer is not directly connected with the Rhône;
Ports
Rail and road access to be improved
PPG Perpignan
MPL Montpellier
NMS Nimes
AVG Avignon
LYN Lyon
MRS Marseille
FSM Fos sur Mer
*IWW
The French inland waterways system connecting Lyon Port to Fos Sur-Mer through Rhône river is not part of the Med Corridor alignment; neverthless his inclusion has been pointed out to the Commission (it connects two IWW core nodes)
Legend
Roads
Conventional rail track
HS rail track
Missing HS rail track
IWW
IWW missing canal
Airport
IWW or sea port
IWW and sea port
RRT
Missing rail links

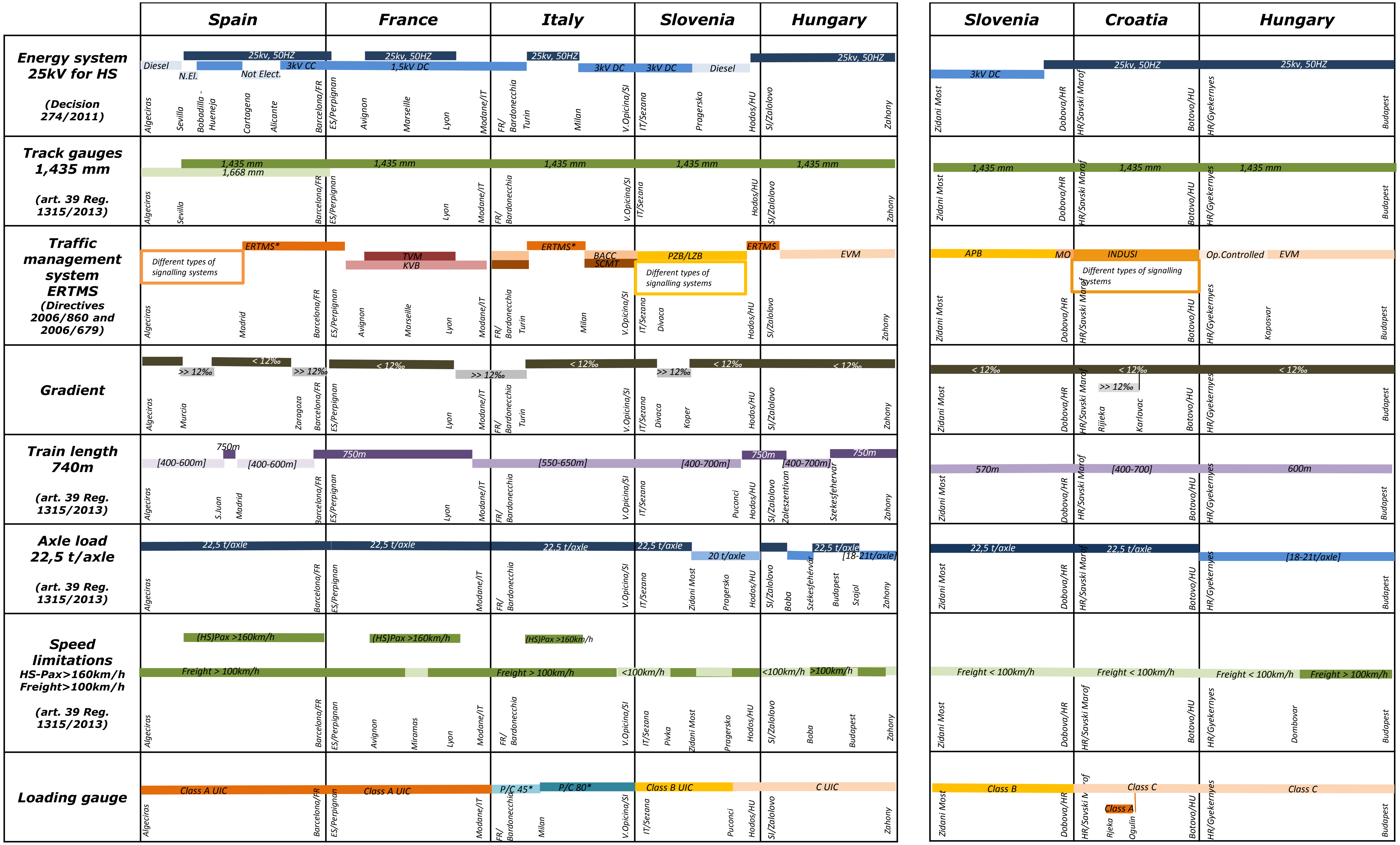


1.Conventional line passing through Bardonecchia, not in the core section



IT/SI
SI/HU
SI/HR
HR/HU
Slow implementation.
Rail
Orographic problems
RRT
Limited capacity
Ljubljana
Ljubljana
Rail
Lack of capacity/ congestion
A1
MA
A5
Road
Lack of motorway connection to SI.
Road whole section
Improving of accidents rates.
Lack of safe truck parking sites
Rail: whole section
Corridor upgrades delayed due to high degree of state debt
Iww: Danube
Technical features (e.g.draught), much worse than EU average
RRT
Minimum tri-modal cargo port facilities needed
Road
Lack of motorway connection to Uk.
DI
LJ
ZM
PR
HO
BO
Rail
Single track. New rail line foreseen
A3
A1
A2
Single track.
Rail
Single track
Budapest
Budapest
M3
MI
Rail
Single track
MOK
No IT systems to ensure traceability of the loads and no connection with motorway
A5
Min. for tri-cargo port facilities
M7
Zagreb
Zagreb
SZ
BP
SZK
DE
HY
ZH
Rail
A3
A4
Rail
Single track
DugoSelo-Zagreb: Overlapping of traffic flows.
ZG
Complete development needed. Heavy mixed traffic
KP
A4
Rail
Single track in the whole section, except DugoSelo-Zagreb
RJK
Poor rail capacity
.Technologically old port's equipment. Unfavourable route of the rail track. Small container storage area. Port congestion.Lack of IT system
Boba
Kaposvar
Szekesfehervar
Budapest
Szolnok
Miskolc
Debrecen
Hyregyhaza
Zahony
BO
KP
SZ
BP
SZK
MI
DE
HY
ZH
Legend
Roads
Conventional rail track
HS rail track
Missing HS rail track
IWW
IWW missing canal
To be upgraded
Airport
IWW or sea port
IWW and sea port
RRT
Missing rail links
Koper
Divaca
Rijeka
Ljubljana
Zidani Most
Zagreb
Pragersko
Maribor
Hodos
MOK
DI
RJK
LJ
ZM
ZG
PR
MA
HO

5.8 Detailed maps of the most relevant railway critical issues (focus on tech. standard)



*ERTMS specification: ERTMS technology devolved only on high speed sections (Italian and Spanish sections)
*The Italian loading gauge codification P/C 45 allow high cube transportation, P/C 80 Ro-La transportation.
*About Croatian TMS: On the railway section S. Marof – Zgb Gk – Dugo Selo – Botovo (HU) automatic block is in the function as well as the section Zagreb Gk – Moravice. On the railway section Moravice- Rijeke the system of interstation dependance is on On the railway section Moravice – Rijeka the installation of the automatic block is under construction and it will soon be put into operation.

5.9 Implementation plan – project information

5.9.1 Spain

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects *(Regulation 1316/2013 -Annex I)***	Related critical issues
Mediterranean	R1	Rail	French Border-Barcelona-Tarragona	Works	*Castellbisbal-Vilaseca.-Vandellos*: Implementation of standard gauge. Enlargement of maximum freight train length to 740 m *Third rail between Reus and Vila-Seca*: Implementation of the mixed gauge (9.5 km) **Interventions concerning compliance with Core Network standards on track gauge and train length**	**Ministerio de Fomento**	<2020	372,81	State and EU funds (CEF)	**Yes**	Low technical standard (Iberian gauge and train length)
Mediterranean	R2	Rail	Vilaseca-Camp de Tarragona (HS line)	works	Construction of a HS link for passengers: tracks, electrification, signalling systems, etc. **Resolution of a physical bottleneck**	**Ministerio de Fomento**	2014-2020	95	State and EU funds	**Yes**	Low technical standard (Iberian gauge and train length)
Mediterranean	R3	Rail	Barcelona node	Works	**a)** Upgrading of the Barcelona-Sants station *(financing sources: State and EU Funds - CEF)* **b)** La Sagrera station: realization of a new intermodal station with HS, regional, suburban, metro and bus stations, located in the Sagrera neighborhood of Barcelona. *(financing sources: State, EU Funds and Regional resources)* **Resolution of a physical bottleneck**	**Ministerio de Fomento**	Evaluation on-going	Evaluation on-going	State and EU funds (CEF) **(a)** State/ EU funds (CEF)/Regional resources **(b)**	**Yes**	
Mediterranean	R4	Rail	Tarragona-Valencia	Works	*Vandellos-Castellón- Valencia- Almussafes*: Implementation of the standard gauge (Phase I). Enlargement of maximum freight train length to 740 m **Interventions concerning compliance with Core Network standards on track gauge and train length**	**Ministerio de Fomento**	<2020	330,00	State and EU funds (CEF)	**Yes**	Low technical standard (Iberian gauge and train length)
Mediterranean	R5	Rail	Tarragona-Valencia	Works	ERTMS deployment **Development of traffic management system**	**Ministerio de Fomento**	<2020	50,73	State and EU funds (CEF)	**Yes**	Traffic management system (ERTMS not in operation)
Mediterranean	R6	Rail	Valencia-Alicante-Murcia	Works	*Almussafes-La Encina- Alicante:* Implementation of the standard gauge (Phase II). Enlargement of maximum freight train length to 740 m *Alicante-Murcia:* Implementation of the standard gauge (Phase II). Enlargement of maximum freight train length to 740 m. Electrification to 25 KV AC **Interventions concerning compliance with Core Network standards on track gauge, train length and electrification**	**Ministerio de Fomento**	<2020	566,11	State and EU funds (CEF and FEDER)	**Yes**	Low technical standard (Iberian gauge, train length and electrification)
Mediterranean	R7	Rail	Murcia-Cartagena (conventional line)	Works	Upgrading of rail line: implementation of the mixed gauge (Iberian-standard). Electrification to 25 KV AC. Enlargement of maximum freight train length to 740 m. **Interventions concerning compliance with Core Network standards on track gauge, train length and electrification**	**Ministerio de Fomento**	<2020	109,09	State and EU funds (ERDF)	**Yes**	Low technical standard (Iberian gauge, train length and diesel traction)
Mediterranean	R8	Rail	HS Line Murcia-Cartagena	Study	Construction of a HS Line in the Murcia-Cartagena section **Resolution of a physical bottleneck**	**Ministerio de Fomento**	<2030	Evaluation on-going	State and EU funds	**Yes**	
Mediterranean	R9	Rail	Region of Murcia	Study and works	Urban Railway integration in the Region of Murcia **Last mile connection to urban node/ missing link**	**Ministerio de Fomento**	<2030	Evaluation on-going	State and EU funds	**Yes**	Rail connection to Core urban node needed
Mediterranean	R10	Rail	Murcia-Almería	Works	*Murcia-Almeria:* Implementation of the double track on the existing line and realization of a New rail link up to Almeria, electrification to 25 KV, ERTMS. (High Speed- Mixed traffic) **Electrification** **Resolution of a physical bottleneck** **Development of traffic management system**	**Ministerio de Fomento**	<2030	335,53	State and EU funds (ERDF)	**Yes**	Missing link
Mediterranean	R11	Rail	Almeria-Granada (conventional line)	Works	*Almería - Granada*: Upgrading of the conventional line (mixed traffic). **Resolution of a physical bottleneck**	**Ministerio de Fomento**	Evaluation on-going	Evaluation on-going	State and EU funds	**Yes**	Low technical standard (diesel traction, train length limitation, lack of ERTMS system)

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects *(Regulation 1316/2013 -Annex I)***	Related critical issues
Mediterranean	R12	Rail	Granada – Antequera (HS line)	Works	*Granada-Antequera:* New HS line including the implementation of standard gauge and electrification on some sections of the conventional line. **Resolution of a physical bottleneck** **Interventions concerning compliance with Core Network standards on track gauge and electrification**	**Ministerio de Fomento**	<2020	330,00	State and EU funds (ERDF)	**Yes**	Low technical standard (the actual conventional line has diesel traction, train length limitation, lack of ERTMS system)
Mediterranean & Atlantic	R13	Rail	HS Line Atocha-Chamartin	Works	*New HS line Atocha-Chamartin Phase I*: construction of a tunnel (length 8,2 km). The tunnel will improve the operation model of both stations in Madrid, as they will go from having a terminal configuration to being transit stations. **Resolution of a physical bottleneck**	**Ministerio de Fomento**	<2020	85,79	State and EU funds (CEF)	**Yes**	Physical bottleneck (no direct connection between Southern/Eastern and North high-speed lines) and low technical standard (Iberian gauge)
Mediterranean & Atlantic	R14	Rail	HS Line Atocha-Chamartin	Works	*New HS line Atocha-Chamartin Phase II (please see intervention R13)* **Resolution of a physical bottleneck**	**Ministerio de Fomento**	<2020	227,27	State and EU funds (CEF)	**Yes**	Physical bottleneck (no direct connection between Southern/Eastern and North high-speed lines) and low technical standard (Iberian gauge)
Mediterranean & Atlantic	R15	Rail	HS Line Atocha-Torrejón de Velasco	Works	Construction of the 3rd and 4rd tracks on the section Atocha-Torrejón de Velasco including the implementation of the ERTMS **Resolution of a physical bottleneck** **Development of traffic management system**	**Ministerio de Fomento**	<2020	46,97	State and EU funds (CEF)	**Yes**	Physical bottleneck (capacity constraints)
Mediterranean & Atlantic	R16	Rail	HS Line Atocha-Chamartin Torrejón de Velasco	Works	ERTMS deployment **Development of traffic management system**	**Ministerio de Fomento**	<2020	12,70	State and EU funds (CEF)	**Yes**	Traffic management system (ERTMS not in operation)
Mediterranean & Atlantic	R17	Rail	Conventional line Madrid-Alcázar-Córdoba-Algeciras	Works	ERTMS deployment **Development of traffic management system**	**Ministerio de Fomento**	<2020	9,10	State and EU funds (ERDF)	**Yes**	Traffic management system (ERTMS not in operation)
Mediterranean & Atlantic	R18	Rail	Conventional line Madrid-Alcázar-Córdoba-Algeciras	Works	Upgrading and implementation of the standard gauge **Interventions concerning compliance with Core Network standards on track gauge**	**Ministerio de Fomento**	<2030	>500,00	State and EU funds (ERDF)	**Yes**	Low technical standards (Iberian gauge)
Mediterranean & Atlantic	R19	Rail	Conventional line Madrid-Alcázar-Córdoba-Algeciras	Works	Construction of the Almoraima Bypass (San Roque Railway Station) **Resolution of a physical bottleneck**	**Ministerio de Fomento**	<2030	<50	State and EU funds (ERDF)	**Yes**	
Mediterranean & Atlantic	R20	Rail	Conventional line Madrid-Alcázar-Córdoba-Algeciras	Works	Construction of a rail track for freight on the section San Cristobal - Villaverde Bajo - Pitis **Resolution of a physical bottleneck**	**Ministerio de Fomento**	<2030	Evaluation on going	State and EU funds (ERDF)	**Yes**	
Mediterranean & Atlantic	R21	Rail	Conventional line Madrid-Alcázar-Córdoba-Algeciras	Works	Construction of interoperable tracks in order to allow train length of 740m **Interventions concerning compliance with Core Network standards on trains length**	**Ministerio de Fomento**	<2020	17,85	State and EU funds (ERDF)	**Yes**	Low technical standards (train length limitations)
Mediterranean & Atlantic	R22	Rail	Madrid – Sevilla HS Line	Works	Upgrading of the rail line **Resolution of a physical bottleneck**	**Ministerio de Fomento**	<2020	273,60	State and EU funds (ERDF)	**Yes**	Low technical standards (ERTMS not in operation on the HS line)
Mediterranean	R23	Rail	Rail line Sevilla-Utrera-	Works	ERTMS deployment between Sevilla-Utrera. *(The estimated cost is related to the whole stretch Sevilla-Cadiz)* **Development of traffic management system**	**Ministerio de Fomento**	<2020	53,71	State and EU funds (ERDF)	**Yes**	Traffic management system (ERTMS not in operation)
Mediterranean	R24	Rail	Sevilla-	Works	Construction of a new direct link including a new single track in	**Ministerio**	<2020	20,00	State and EU	**Yes**	Low technical

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects *(Regulation 1316/2013 -Annex I)***	Related critical issues
& Atlantic			Malaga/Granada HS line		the standard gauge, electrified (25KV AC) and equipped with ERTMS. **Resolution of a physical bottleneck** **Development of traffic management system** **Interventions concerning compliance with Core Network standards**	**de Fomento**			funds (ERDF)		standard (the actual conventional line has diesel traction, train length limitation, lack of ERTMS system)
Mediterranean	R25	Rail	Madrid – Barcelona (conventional line)	Works	Upgrading of the conventional rail line Madrid – Barcelona to TEN-t requirements (train length to 740 m). **Interventions concerning compliance with Core Network standards on trains length**	**Ministerio de Fomento**	Evaluation on-going	Evaluation on-going	State and EU funds	**Yes**	Physical bottlenecks (single track between Barcelona and Saragoza, with train length limitations, lack of ERTMS system)
Mediterranean & Atlantic	R26	Rail	Plasencia de Jalón – Plaza	Works	Construction of a new line (also including tunnel, bridge and leapfrog) **Resolution of a physical bottleneck**	**Ministerio de Fomento**	Evaluation on-going	119,53	State and EU funds (CEF)	**Yes**	Bottleneck (lack of capacity and punctuality)
Mediterranean & Atlantic	R27	Rail	Bobadilla – Algeciras (conventional line)	Works	Electrification (25KV AC) of the line Bobadilla – Algeciras **Interventions concerning compliance with Core Network standards on electrification**	**Ministerio de Fomento**	<2020	81,55	State and EU funds (ERDF)	**Yes**	Low technical standards (diesel traction)
Mediterranean	R28	Rail	All conventional sections part of the Mediterranean Corridor	Works	Implementation of ERTMS in the Mediterranean Corridor (conventional network) **Development of traffic management systems**	**Ministerio de Fomento**	Evaluation on going	Evaluation on going	State and EU funds	**Yes**	Traffic management system (ERTMS not in operation on the majority of the conventional lines)
Mediterranean	R29	Seaport Rail/road last mile	Tarragona Port	Study and Works	*Upgrading railway access* Electrification. New rail access. UIC and iberian gauge.(Costs:18 MLN) **Connection to rail network.** **Interventions concerning compliance with Core Network standards** *Upgrading road access:* Access to port/logistic platform (ZAL).(Cost: 9,3 MLN) **Connection to road network.**	**Ministerio de Fomento**	*Upgrading railway access* <2020 *Upgrading road access* <2020*:*	*Upgrading railway access:* 18,00 *Upgrading road access:* 9,30	State and EU funds (CEF)		Insufficient integration among transport modes(in order to absorb the expected traffic growths) / (inadequate intermodal facilities and insufficient connection)
Mediterranean	R30	Seaport Rail/Road last miles	Barcelona Port	Study and Works	**a)***Upgrading railway access:* ▪ New railway access (Muelle Prat) through several interventions (Marshalling yards in Nou Llobregat and "Ronda del Port" included) *(Costs: 141 MLN. Timing: <2020. Funding: State and EU funds (CEF)* **Connection to rail network** **Resolution of a physical bottleneck** **b)***Upgrading road access:* ▪ New road connection Muelle Prat (Outside port) ▪ New road connection Muelle Prat (Inside port; section 1Band1Cand2) ▪ New road connection. Interconnection over former Llobregat riverbed.Phase 3 *(Costs: 242,80 MLN. Timing: <2020. Funding: State and EU funds (CEF))* **Connection to road network**	**Ministerio de Fomento**	*Upgrading railway access* <2020 *Upgrading road access* <2020*:*	*Upgrading railway access:* 141,00 *Upgrading road access:* 242,80	State and EU funds (CEF)		Insufficient integration among transport modes(in order to absorb the expected traffic growths)/ / (inadequate intermodal facilities and insufficient connection)
Mediterranean	R31	Seaport Rail/Road	Cartagena Port	Works	*Upgrading rail/road access:* ▪ New Rail connection to Escombreras	**Ministerio de**	*Upgrading railway and*	*Upgrading railway and*	State and EU funds (CEF)		Insufficient integration among

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects *(Regulation 1316/2013 -Annex I)***	Related critical issues
		last mile			▪ Ugrading road connection and other services in Escombreras **Connection to rail/road network** **Resolution of a physical bottleneck**	**Fomento**	*road access:* <2020	*road access:* 36			transport modes(in order to absorb the expected traffic growths)/
Mediterranean	R32	Seaport Rail/Road last miles	Sevilla Port	Study and Works	*Upgrading railway access:* **a)** Upgrading rail connection (outside the port) *(Cost: 26,60 MLN. Timing: <2020. Funding: State and EU funds (ERDF))* **b)** Upgrading rail network (inside the port) *(Costs: 17 MLN. Timing: <2020. Funding: State and EU funds (ERDF))* **c)** Upgrading rail terminal (inside the port) *(Costs: 4,5 MLN. Timing: <2020. Funding: State and EU funds (ERDF))* **Resolution of a physical bottleneck** **Connection to rail network** **Intermodal integration** *Upgrading road access:* **d)** New road connection (SE-40) *(Costs: 6 MLN. Timing: <2020. Funding: State and EU funds)* **Connection to road network**	**Ministerio de Fomento**	*Upgrading railway connections inside/outside the port areaand Rail terminal* <2020 *Upgrading road access* <2020	*Upgrading railway connections inside/outside the port areaand Rail terminal* 48,1 *Upgrading road access* 6.00	State and EU funds (ERDFand CEF)		Insufficient integration among transport modes(in order to absorb the expected traffic growths)/
Mediterranean & Atlantic	R33	Seaport Rail/road last mile	Bahía de Algeciras Port	Study and Works	**a)***Upgrading railway access:* Implementation UIC access Algeciras Port and New rail connection to Campamento / Campo Gibraltar, including rail network inside the port and others (electrification, etc.) and upgrading of railway traffic system inside the port *(Costs: 120.00, timing: <2030; financing sources: EU funds and own resources)* **Resolution of a physical bottleneck** **Connection to rail network** **b)** *Upgrading road access:* Duplication of road N-350 (South-access to port of Algeciras) Upgrading connection N-340 to North-access to port of Algeciras. Detour urban road CA-34. New road access to Campamento port facilities. New road connection to the port of Tarifa (inside/outside the port incl.) *(Costs: 88,3, timing: 2014-2020, Financing sources: CEF and own funds)* **Connection to Road network**	**Ministerio de Fomento**	*Upgrading railway access:* <2030 *Upgrading road access* 2014-2020	*Upgrading railway access:* 120.00 *Upgrading road access* 88,30	State and EU funds (ERDF and CEF)		Insufficient integration among transport modes(in order to absorb the expected traffic growths)/
Mediterranean	R34	Seaport Rail/road last mile	Valencia Port	Study and Works	**a)** *Upgrading rail access:* ▪ Implementation of standard gauge ▪ Enlargement of existing port terminals to attend 750m long trains ▪ Improvement of rail and road layout to reduce level crossings and improve trains transit times ▪ Expanding rail network to new port terminals ▪ Interconnecting rail security and control system inside and outside the port **Connection to rail network** **Resolution of a physical bottleneck** **b)** *Upgrading road access:*. ▪ New tunnel to solve connection to Madrid/Valencia motorway ▪ New connection to port of Valencia (North access) ▪ Upgrading south access **Connection to road network.**	**Ministerio de Fomento**	*Upgrading rail access within the port:* <2020 *Upgrading road access* <2030	*Upgrading rail access within the port:* 47,50 *Upgrading road access* 160.00	State and EU funds (CEF)		Insufficient integration among transport modes(in order to absorb the expected traffic growths)/

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects *(Regulation 1316/2013 -Annex I)***	Related critical issues
Mediterranean & Atlantic	RRT1	Rail-Road Terminal	Madrid	Works	Upgrading of the Madrid-Vicalvaro Terminal Multimodal including related logistic development. Completion of the Aranjuez terminal. Implementation of the standard gauge connection to the Vicalvaro and Abroñigal terminals **Development of multimodal logistic platforms** **Connection to rail network**	**Ministerio de Fomento**	<2030	200,00	State, Private and EU Funds (CEF/ERDF)		RRT upgrading needed, standard gauge connection should be implemented
Mediterranean & Atlantic	RRT2	Rail-Road Terminal	Madrid	Works	Upgrading of the rail terminal facilities in the inland terminal of Madrid Coslada. **Development of multimodal logistic platforms**	Ministerio de Fomento	<2020	<50	Evaluation on-going		RRT upgrading needed
Mediterranean & Atlantic	RRT3	Rail-Road Terminal	Algeciras-San Roque	Works	Upgrading of the rail terminal of Algeciras-San Roque including related logistic development. **Development of multimodal logistic platforms**	**Ministerio de Fomento and Regional Government**	Evaluation on-going	Evaluation on-going	State, EU funds (CEF) and private		RRT upgrading needed
Mediterranean	RRT4	Rail-Road Terminal	Alcazar de San Juan	Works	Terminal upgrading and implementation of the standard gauge on the last mile rail connection **Development of multimodal logistic platforms** **Connection to rail network**	**Regional government**	Evaluation on-going	Evaluation on-going	Regional and Private and EU Funds		Low technical standard (iberian gauge)
Mediterranean	RRT5	Rail-Road Terminal	Cordoba	Works	Terminal upgrading and implementation of the standard gauge on the last mile rail connection **Development of multimodal logistic platforms** **Connection to rail network**	**Regional government**	Evaluation on-going	Evaluation on-going	Regional and Private and EU Funds		Low technical standard (iberian gauge)
Mediterranean	RRT6	Rail-Road Terminal	Antequera	Works	Construction of the Antequera RRT phase I **Development of multimodal logistic platforms**	**Regional government**	<2020	30,00	Regional and Private and EU Funds		This RRT terminal will capture the traffics originating by Algeciras Port
Mediterranean	RRT7	Rail-Road Terminal	ZAL Murcia	Study and Works	Construction of the new terminal for development of a logistic platform with road and rail connections. It is also foreseen to develop the terminal infrastructures for a rail motorway **Development of multimodal logistic platforms**	**Regional government**	<2020	43,50	Regional and Private and EU Funds (CEF)		Insufficient integration among transport modes Lack of capacity in terminals and facilities Physical bottleneck in current facilities (access, track gauge, electrification and train length)
Mediterranean	RRT8	Rail-Road Terminal	Zaragoza	Works	Upgrading rail terminal facilities in Zaragoza Plaza and TMZ **Development of multimodal logistic platforms**	**Ministerio de Fomento**	<2020	Evaluation on-going	Evaluation on-going		RRT upgrading needed
Mediterranean	S1a	Seaports/ RRT	Barcelona Port	Study and Works	*New Port facilities/ upgrading of existing facilities / capacity increase:* **a)** New port infrastructure and upgrading: ▪ Muelle de la Energía ▪ Muelle Álvarez de la Campa (wharf upgrading and rail terminal) ▪ New maritime terminals in South basin (Costs: 400 MLN. Timing: < 2020 and 2020 -2030. Funding: Own funds/private/Other sources) **Resolution of a physical bottleneck** *Traffic Management System / Telematics System* **b)** Port community system & eManifest implementation (Costs: to be defined. Timing: <2020. Funding: State and EU funds (CEF)) **Resolution of a physical bottleneck**	**Ministerio de Fomento**	*New Port facilities/ upgrading of existing facilities* <2030 *Traffic Management System / Telematics System* <2020	*New Port facilities/ upgrading of existing facilities* 400 *Traffic Management System / Telematics System* To be defined	Own funds/private/Other sources		Physical bottleneck (available warehouses spaces are not sufficient in order to absorb the expected traffic growths)/ **(a)** Need of improved traffic management system/ **(b)**
Mediterranean	S1b	Seaports/ RRT	Barcelona Port	Study and Works	*Interventions concerning Rail/road terminals* **a)** *New intermodal terminal:*	**Ministerio de**	*Interventions concerning*	*Interventions concerning*	State, EU funds (CEF) and		Physical bottleneck (available

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects *(Regulation 1316/2013 -Annex I)***	Related critical issues
					Construction of the Port of Barcelona Intermodal Terminal in the ancient Llobregat riverbed. ○ Phase 1. Marshalling yard. ○ Phase 2. Terminals.New rail terminals (inside the port) *(Costs: 200,00, timing: 2020-2030, financing sources: State, EU funds (CEF) and private)* **Development of multimodal logistic platforms** **b)** *Rail/road terminal Can Tunis* Implementation of intermodality and UIC gauge *(Costs: 33,00, timing: <2020, financing sources: State and EU funds (CEF))* **Development of multimodal logistic platforms** **c)** *La Llagosta terminal* Implementation of intermodality and UIC gauge. Including the second phase that involves the construction of the two branch lines providing link to the Llagosta intermodal rail terminal, to allows its northwards connection on UIC gauge, using the high speed line. *(Costs: 100,00, timing: <2020, financing sources: State, EU funds (CEF) and private)* **Development of multimodal logistic platforms**	**Fomento**	*Rail/road terminals* <2030	*Rail/road terminals* 333,00	private **(a)** State and EU funds (CEF)) **(b)** State, EU funds (CEF) and private **(c)**		warehouses spaces are not sufficient in order to absorb the expected traffic growths)/ **(a)** Low technical standard (implementation of UIC gauge needed) / **(b,c)**
Mediterranean	S2a	Seaports/ RRT	Tarragona Port	Study and Works	*Capacity increase* South expansion (breakwater) South expansion (new terminals) Rail connection Reus dock – Aragón dock Ribera East area expansion. (Repsol terminal) New basin of Tarragona port. 1st Phase **Resolution of a physical bottleneck**	**Ministerio de Fomento**	<2020 and 2020-2030	474,50	Own funds/private/Other sources		Physical bottleneck (available ports facilities are not sufficient in order to absorb the expected traffic growths)
Mediterranean	S2b	Seaports/ RRT	Tarragona Port	Works	*Interventions concerning Rail/road terminals* Upgrading intermodal terminal inside the port. **Resolution of a physical bottleneck**	**Ministerio de Fomento**	<2020	13,30	State and EU funds (CEF)		Terminal upgrading needed
Mediterranean	S3a	Seaports/ RRT	Valencia Port	Study and Works	**a)***Traffic Management System / Telematics System* Port community system & eManifest implementation New PCS to optimise port operations including eManifest, eFreight and eMaritime initiatives. Vessel and Railways Management and traffic control systems not only in the PCS but also inside of the Port Authority Management including VTMS, berth planning and control, formalities management for railway and vessel. Innovative connection of the PCS with the Corridor Operators' systems. Development of traffic management system (Costs: 4 MLN. Timing: <2020. Funding: State and EU funds (CEF)) **Development of traffic management system** **b)** *New Port facilities/ upgrading of existing facilities / capacity increase:* M adosado, P. Felipe North basin (New terminals 1st phase). North basin (New terminals 2nd phase). North basin (New terminals 3rd phase) (Costs: 333 MLN. Timing: <2020 / 2020-2030. Funding: own funds/private (CEF)) **Resolution of a physical bottleneck**	**Ministerio de Fomento**	*New Port facilities/ upgrading of existing facilities / capacity increase:* <2020 and 2020-2030 *Traffic Management System / Telematics System* <2020	*New Port facilities/ upgrading of existing facilities / capacity increase:* 333.00 *Traffic Management System / Telematics System* 4.00	Own funds/private/Other sources		Need of improved traffic management system/ **(a)** Physical bottleneck (available ports facilities are not sufficient in order to absorb the expected traffic growths; capacity increase needed)/ **(b)**
Mediterranean	S3b	Seaports/ RRT	Valencia Port	Works **(a)** Study and Works **(b)**	*Interventions concerning Rail/road terminals* **a)** Developing ZAL Valencia *(Costs: 60,00, timing: evaluation on going, Financing sources: State, EU funds (CEF) and private)* **Resolution of a physical bottleneck** **b)** *Fuente San Luis*	**Ministerio de Fomento (a)** **Ministerio de**	*Interventions concerning Rail/road terminals* <2020	*Interventions concerning Rail/road terminals* 85,45	State, EU funds (CEF) and private **(a)** State and EU funds (CEF) and private funds		Physical bottleneck (available ports facilities are not sufficient in order to absorb the expected traffic growths; capacity

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects *(Regulation 1316/2013 -Annex I)***	Related critical issues
					Multimodal and logistics development and upgrading of the Road access *(Costs: 25,45, timing: <2020, financing sources: State and EU funds (CEF) and private funds and Regional resources)* **Development of multimodal logistic platforms**	**Fomento and Regional governme nt (b)**			and Regional resources **(b)**		increase needed)/ **(a,b)**
Mediterranean	S4a	Seaports/ RRT	Sevilla Port	Study and Works	*New Port facilities/ upgrading of existing facilities / capacity increase:* **a)** New PIF facilities, ZAL extension, FREEPORT Sevilla, TRANSITIUM- (Costs: 10,5 MLN. Timing: <2020. Funding: State and EU funds (CEF)) **Resolution of a physical bottleneck** *Upgrading the access to the Port (through the river)* **b)** Upgrading maritime access (Guadalquivir): 1st and 2nd phase **Resolution of a physical bottleneck** *Traffic Management System / Telematics System* **c)** IT infrastructure (TECNOPORT) (Costs: 7,8 MLN. Timing: <2020. State and EU funds (CEF)) **Development of traffic management system**	**Ministerio de Fomento**	*New Port facilities / upgrading of existing facilities:* <2020 *Upgrading the access to the Port (through the river)* <2020 *Traffic Management System / Telematics System* <2020	*New Port facilities / upgrading of existing facilities:* 10,5 *Upgrading the access to the Port (through the river)* 57,00 *Traffic Management System / Telematics System* 7,8	State and EU funds (ERDF) and CEF		Physical bottleneck (available ports facilities are not sufficient in order to absorb the expected traffic growths; capacity increase needed)/ **(a)** Upgrading of the maritime access is needed, Guadalquivir river has class IV CEMT) **(b)** Need of improved traffic management system/ **(c)**
Mediterranean	S4b	Seaports/ RRT	Sevilla Port	Study and Works	*Interventions concerning Rail/road terminals* New terminal in "El Cuarto " (Costs: 50,00, timing: <2020, financing sources: Own funds, EU funds (CEF) and private) **Development of multimodal logistic platforms**	**Ministerio de Fomento**	*Interventions concerning Rail/road terminals* <2020	*Interventions concerning Rail/road terminals* 50,00	Own funds, EU funds (CEF) and private		Physical bottleneck (available ports facilities are not sufficient in order to absorb the expected traffic growths; capacity increase needed)
Mediterranean & Atlantic	S5a	Seaports	Bahia de Algeciras Port	Study and Works	*New Port facilities/ upgrading of existing facilities / capacity increase:* **a)** New port infrastructure and upgrading: La Galera, Juan Carlos I, Campamento 1st phase (keywalls & jetty)/Campamento 2nd phase (breakwater)/Isla Verde expansion/Tarifa expansion *(Costs: 850 MLN. Timing: <2020 and 2020-2030. Funding: State and EU funds (ERDF) and private)* **Resolution of a physical bottleneck** *Traffic Management System / Telematics System* **b)** IT infrastructure (PCS, VTMS, etc.) *(Costs: 30 MLN. Timing: <2020, financing: CEF and own funds)* **Development of traffic management system (VTIMS)**	**Ministerio de Fomento**	*New Port facilities/ upgrading of existing facilities / capacity increase* <2030 *Traffic Management System / Telematics System* <2020	*New Port facilities/ upgrading of existing facilities / capacity increase* 850.00 *Traffic Management System / Telematics System* 30	State and EU funds (ERDF and CEF) and private		Physical bottleneck (available ports facilities are not sufficient in order to absorb the expected traffic growths; capacity increase needed)/ Tarifa port (specialized in RO-RO and passenger traffic)**(a)** Need of improved traffic management system/ **(b)**
Mediterranean & Atlantic	S5b	Seaports/ RRT	Bahia de Algeciras Port	Study and Works	*Interventions concerning Rail/road terminals* New rail terminals inside the port (adapting T-2 terminal as intermodal terminal ro-ro / rail to provide services to the rolling motorways) *(Costs:15.00, Timing: 2014-2020, financing sources: CEF and Own sources)* **Connection to rail network/development of a multimodal platform**	**Ministerio de Fomento**	<2020	15,00	State and EU funds (CEF)		
Mediterranean	S6	Seaports/ RRT	Cartagena Port	Study and Works	*New Port facilities/ upgrading of existing facilities:* New basin EL Gorguel (road/rail connections incl.), Development of RRT and New logistic Platform.	**Ministerio de Fomento**	Evaluation on-going	Evaluation on-going	Own funds/private/ EU Funds		Expansion needed in Cartagena area in order to increase

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects *(Regulation 1316/2013 -Annex I)***	Related critical issues
					Studies: 10 MLN <2020 **Connection to rail network** **Development of multimodal logistic platforms**	**and Regional governme nt**					facility supply for container traffic
Mediterranean & Atlantic	S7	Seaports	All Spanish Mediterranean corridor	Study and Works	LNG supply facilities **Availability of alternative clean fuels**	**Ministerio de Fomento**	<2020	~~10,00~~ Evaluation on-going	State, EU funds (CEF) and private		Environmental issues
Mediterranean & Atlantic	S8	Seaports	All Spanish Mediterranean corridor	Study and Works	Implementation and upgrading of Motorways of the Sea in the Med. Corridor (incl. infrastructure and services) **Motorways of the sea**	**Ministerio de Fomento**	<2020	Evaluation on-going	State, EU funds (CEF) and private		
Mediterranean & Atlantic	S9	Seaports/ RRT	All Spanish Mediterranean corridor	Study and Works	Logistic Single Window: Integrated management of information from corridor ports to the hinterland (Logistic Single Window) **Actions to support administrative procedures**	**Ministerio de Fomento**	2014-2020	1,00	State and EU funds (CEF)		Need of improved traffic management system
Mediterranean	A1	Airport/road connection	Málaga airport	Works	New road connections **Road connection to airports**	**Ministerio de Fomento**	Evaluation on-going	Evaluation on-going	Evaluation on-going		
Mediterranean	A2	Airport/rail last mile	Barcelona airport	Works	Rail connection to the T1 terminal of Barcelona airport. New 5 km mixed gauge rail corridor providing link to Barcelona Airport. It also includes the construction of two new stations, one in terminal T1 and the other in T2, both having an interchange with the metro L9 line. **Connection to rail network**	**Ministerio de Fomento**	<2020	300	Evaluation on-going		Physical bottleneck, insufficient integration between transport modes
Mediterranean & Atlantic	A3	Airport	Madrid airport	Works	Adaptation Urbanización de Rejas to urban planning and platform extending. Change the current Urbanización de Rejas agree study urban detail presented in the city, besides expanding aero platforms to allow construction of new cargo terminals and maintenance hangars **Resolution of a physical bottleneck**	**Ministerio de Fomento**	<2020	4,3	State and EU funds (CEF)		
Mediterranean	A4	Airport/road last mile	Zaragoza airport	Works	Actions to Start Operation of Class II / III, Runway 30 R. Zaragoza Airport **Resolution of a physical bottleneck.**	**Ministerio de Fomento**	<2020	10,3	State and EU funds (CEF)		
Mediterranean	Road1	Road	A2 Girona	Works	Upgrading of the Road section N-II / A-2 Girona **Resolution of a physical bottleneck.**	**Ministerio de Fomento**	<2020	90	State and EU funds		
Mediterranean	Road2	Road	B40 Barcelona	Works	Construction of a fourth ring road of Barcelona (B-40) **Resolution of a physical bottleneck.**	**Ministerio de Fomento**	<2030	250	State and EU funds		
Mediterranean	Road3	Road	A7. Several sections along the corridor	Study and Works	Infrastructure improvements- Increasing capacity. **Resolution of physical bottlenecks**	**Ministerio de Fomento**	<2030	300	State and EU funds		
Mediterranean	Road4	Road	A7. Granada-Almería (Motril-Adra)	Works	Completion of the motorway **Upgrading of ordinary roads of the Core Network to express roads or motorways**	**Ministerio de Fomento**	<2020	380	State and EU funds		

Table 107 Proposed list of projects for Spanish sections and nodes belonging to the Mediterranean corridor

All white rows concern projects related to core sections of the Mediterranean corridor.

***The pre-identified projects listed in Regulation 1316/2013 annex 1 are not clearly defined, therefore this analysis is an attempt to filter the potential pre-identified projects from the others.*

The following projects concern internventions that have been proposed by Member State. Although they regard sections/nodes that are not part of the Mediterranean corridor (comprehensive sections/nodes or core sections not included in the alignment), these projects could be considered important for development of the corridor.
Other projects related to Guadalajara dry port of Tarragona, Azuqueca-Yunquera dry port of Barcelona and Basf rail/road terminal of Tarragona, have not been taken into account for this implementation Plan since these terminals cannot be considered neither comprehensive or core nodes.

Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Note
Com.1	Rail-Seaport. Last mile	Castellón port	Works	New RAIL connection to PORT of Castellón. **Connection to rail network** **Resolution of a physical bottleneck**	**Ministerio de Fomento**	<2020	139,97	CEF / Own funds	Comprehensive port
Com.2	Rail-Seaport. Last mile	Sagunto port (Port Authority of Valencia)	Works	New RAIL connection to PORT of Sagunto. **Connection to rail network.** **Resolution of a physical bottleneck**	**Ministerio de Fomento**	<2020	42,00	FEDER/CEF / Own funds	Comprehensive port
Com.3	Rail-Road Terminal	RRT El Vendrell en Penedés	Works	Construction of a new 740 metre-long rail terminal in El Penedès to serve the foreseen logistic area in L'Arboç **Development of multimodal logistic platforms** **Interventions concerning compliance with Core Network standards**	**Regional Government**	<2030	Evaluation on-going	Regional and EU funds (CEF)	Comprehensive RRT
Com.4	Rail-Road Terminal	RRT Figueras. Far d'Empordà	Works	Construction of a new intermodal rail terminal located next to Vilamalla station and development of a new refuelling terminal in the future Far d'Empordà logistics sector. **Development of multimodal logistic platforms**	**Regional Government**	<2030	113,60	Regional and EU funds (CEF)	Comprehensive RRT

Table 108 Proposed projects related to nodes / sections which are not part of the corridor - Spain

5.9.2 France

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean and North Sea	R1	Rail	Avignon Centre – Lyon (existing line)	Works	Upgrading and Capacity improvement **Resolution of physical bottleneck**	RFF	<2020	Evaluation ongoing	RFF internal	**Yes**	
Mediterranean and North Sea	R2	Rail	Avignon Centre – Lyon (existing line)	Studies and Works	Upgrading and Capacity improvement **Resolution of physical bottleneck**	RFF	>2020	Evaluation ongoing	RFF internal	**Yes**	
Mediterranean and North Sea	R3	Rail	Marseille / Fos - Avignon Centre (existing line)	Works	Upgrading and Capacity improvement **Resolution of physical bottleneck**	RFF	<2020	Evaluation ongoing	RFF internal	**Yes**	
Mediterranean and North Sea	R4	Rail	Marseille / Fos - Avignon centre (existing line)	Studies and Works	Upgrading and Capacity improvement **Resolution of physical bottleneck**	RFF	>2020	Evaluation ongoing	RFF internal	**Yes**	
Mediterranean	R5	Rail	Montpellier – Nîmes (new line)	Works	Creation of a high-speed bypass line of both cities, for freight and passengers **Resolution of physical bottlenecks, speed, ERTMS**	RFF	<2020	2,300	EU, State, Languedoc-Roussillon Region, RFF	**Yes**	Physical bottlenecks (mixed traffic and limited passenger speed) and traffic management system (ERTMS)
Mediterranean	R6	Rail	Montpellier – Nîmes (new line)	Works	Creation of a new station at Nimes - Manduel on the new bypass HSL **Resolution of physical bottleneck**	RFF	<2020	Evaluation ongoing	EU, State, Languedoc-Roussillon Region, RFF	**Yes**	Physical bottlenecks (mixed traffic and limited passenger speed)
Mediterranean	R7	Rail	Montpellier – Perpignan (new line)	Studies and Works	Creation of a new high-speed line, both passenger and freight between Montpellier and Beziers, passengers only between Beziers and Perpignan **Resolution of physical bottlenecks, speed, ERTMS** **Actions concerning Rail cross-border sections**	RFF	Second priority in Mobility 21 report (> 2030), but some works could begin before 2030	6,300 (CE 2012)	EU, State, Languedoc-Roussillon Region, RFF	**Yes**	Physical bottlenecks (mixed traffic and limited passenger speed)
Mediterranean	R8	Rail / Rail - Road Terminal	Lyon node (Grenay)	Studies and Works	Creation of an intermodal platform in order to extend the Alpine rolling motorway up to Lyon **Rail connection to multimodal logistics platform**	RFF	< 2020	60 - 70	EU, State, Rhône-Alpes Region, RFF		Intermodal integration
Mediterranean and North Sea	R9	Rail	Lyon Node (new line)	Studies and Works	Lyon area bypass (CFAL). New line of bypass of the agglomeration **Resolution of physical bottleneck**	RFF	Second priority in Mobility 21 report (> 2030), but some works could begin before 2030	3,500 € (CE 2012)	EU, State, Rhône-Alpes Region, RFF	**Yes**	Physical bottlenecks (mixed traffic and limited passenger speed)
Mediterranean and North Sea	R10	Rail	Lyon Node, Lyon - Avigon, Lyon – Modane	Works	Centralized Network Control System Lyon-Perrache / Rive Gauche **Telematics application systems**	RFF	<2020	In the framework of a national operation lead by RFF (around 15 regional control centers): 500 for all the Lyon area	RFF internal		
Mediterranean and North Sea	R11	Rail	Lyon node	Studies and Works	First treatment of Lyon node. Works on the existing network aiming to increase reliability, security and capacity of train operations **Resolution of physical bottlenecks**	RFF	First priority in Mobility 21 report (before 2030) : <2030	1,000 – 1,150 € (CE 2012) I phase: 400 - 600 to be verified	EU, State, Rhône-Alpes Region, RFF (Contrat de Plan Etat – Région Rhône-Alpes 2015-2020)	**Yes**	Physical bottlenecks (delays due to intensive and mixed use of the infrastructure)

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean and North Sea	R12	Rail	Lyon node	Studies and Works	Further treatment of the Lyon node. Technical studies for infrastructures allowing to mitigate problems of traffic overload : doubling of the lines on land or underground **Resolution of physical bottlenecks**	RFF	Second priority in Mobility 21 report (>2030)	400 – 1,200 (CE 2012) to be reviewed: 2,500-5,000	EU, State, Rhône-Alpes Region, RFF	**Yes**	Physical bottlenecks (delays due to intensive and mixed use of the infrastructure)
Mediterranean and North Sea	R13	Rail	Marseille node	Studies and Works	Underground crossing of Marseille with a new 4 tracks underground station as well as a 4th track in the Huveaune valley **Resolution of physical bottlenecks**	RFF	First priority in Mobility 21 report works to begin before 2020	2,500	EU, State, PACA Region, local authorities, RFF		Physical bottlenecks (delays due to intensive and mixed use of the infrastructure)
Mediterranean and North Sea	R14	Rail / Rail-road terminal	Marseille node / Marseille - Avignon	Studies and Works	Improvement of the rail-road terminal of Miramas (Clesud) : upgrade of the rail connections to the terminal **Resolution of physical bottlenecks** **Rail connection to multimodal logistics platform** I	RFF	< 2020	4 (rail connection only)	EU, State, PACA Region, local authorities, RFF		Physical bottleneck, Intermodal integration
Mediterranean	R15	Rail	Lyon - Modane (new line)	Studies and Works	Construction of the line between Lyon and Saint-Jean-de-Maurienne for freight and passengers transport (phases I & II) **Resolution of physical bottlenecks**	RFF	Second priority in Mobility 21 report (after 2030)	8,000	EU, State, Rhône-Alpes Region, RFF	**Yes**	Physical bottlenecks (critical section in terms of capacity, single-track between St-André le Gaz - Chambéry)
Mediterranean	R16	Rail	Lyon - Turin (cross-border new line)	Studies and Works	Construction of the international Base Tunnel : new line for passenger and freight (cross-border section, resolution of physical bottlenecks, ERTMS, speed, resolution of gradient and train length issues) **Resolution of physical bottlenecks, speed, ERTMS** **Actions concerning Rail cross-border sections**	Project promoter to be created before 2015 (after LTF)	<2030	4,264 (€ 2012)	EU, French and Italian states, project promoter	**Yes**	Physical bottleneck (very high gradient, train length and loading gauge limitations) and traffic management system (ERTMS)
Mediterranean and North Sea	R17	Rail, seaport	Fos-sur-Mer node (rail last mile)	Works	Capacity improvement of the rail access to the port of Fos-sur-Mer **Resolution of physical bottlenecks**	RFF	<2020	8	State, PACA region, departement, Port of Marseille	**Yes (NSMed)**	Physical bottleneck (inadequate capacity) and insufficient integration among transport (inadequate accesses to the port facilities)
Mediterranean and North Sea	R18	Rail, seaport	Fos-sur-Mer node (rail last mile)	Studies and Works	Automatisation of access and new links to the port and industrial zone of Fos-sur-Mer **Resolution of physical bottlenecks**	RFF	Evaluation ongoing	Evaluation ongoing	Evaluation ongoing	**Yes (NSMed)**	Physical bottleneck (inadequate capacity) and insufficient integration among transport (inadequate accesses to the port facilities)
Mediterranean and North Sea	R19	Rail, seaport	Marseille node (rail last mile)	Works	Capacity improvement of the rail access to the port of Marseille (Mourepiane link) **Resolution of physical bottlenecks**	RFF	2016	18.5	State, PACA region, departement, Port of Marseille	**Yes (NSMed)**	Physical bottleneck (inadequate capacity) and insufficient integration among transport (inadequate accesses to the port facilities)
Mediterranean and North Sea	IWW1	Inland port, IWW , rail	Lyon node	Studies and Works	Upgrade of the Port of Lyon including: ▪ renewal of roads in the port (modification of the circulation plan with a new entry way for trucks) ▪ construction of a new dock to stock bulk commodities ▪ various upgrades enabling to increase and secure the supply of containers transport (including the upgrade of the Terminal 1 and 2 and new equipment) ▪ direct connection with the national rail network (creation of a new track and electrification works on the existing track) **Rail connections to inland ports** **Road connections to inland ports** **Development of a multimodal logistic platform**	CNR, RFF (rail part)	<2030	20.8	EU, State, Rhône-Alpes Region, CNR (and RFF for the rail connection)	**Yes (NSMed)**	Physical bottleneck (inadequate capacity) and insufficient integration among transport (inadequate accesses to the port facilities)
Mediterranean and North Sea	IWW2	Inland port, IWW, RRT	Lyon node (Salaise - Sablons)	Studies and Works	Into a 340 ha multimodal platform, make viable a 220 ha area including a 35 ha area with direct connection to the waterway **Rail connections to inland ports**	CNR, VNF, RFF, local authorities	<2030	132	EU, State, Local authorities	**Yes (NSMed)**	Insufficient integration among transport (inadequate intermodal facilities and insufficient

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
					Road connections to inland ports **Development of a multimodal logistic platform**						connection)
Mediterranean and North Sea	IWW3	IWW, Inland port, RRT	Avignon node (RRT and IWW)	Studies and Works	Creation of a tri-modal platform IWW-rail-road by upgrading and integrating existing port facilities on Courtine area and RRT of Champfleury. Program on 70 ha area **Rail connections to inland ports** **Road connections to inland ports** **Development of a multimodal logistic platform**	CNR, VNF, RFF, State, *Provence Alpes Cote d'Azur Region*	<2020	80 for transferring the RTT of Champfleury and 30 for making viable a 30 ha area dedicated to port et local economical activities	To be defined	**Yes (NSMed)**	Insufficient integration among transport (inadequate intermodal facilities and insufficient connection)
Mediterranean and North Sea	S1	Seaport/last mile rail and RRT creation	Marseille node (RRT and port)	Studies	*<u>Improvement of port rail connection, RRT creation:</u>* **a)** Mourepiane combined transport terminal *(Costs: 1st phase 1,4 MLN, 2nd phase 40,4 MLN. Timing: 1st phase: 2014-2015, 2nd phase: 2015-2017. Financing: to be defined)* **b)** Rolling motorway terminal (creation of new RRT) (Costs: 5 MLN. Timing: 2018-2020. Funding: to be defined) **Rail connections to sea ports** **Development of a multimodal logistic platform** **c)**Upgrade of Short Sea Shipping terminals (Costs: 80 MLN. Timing: 2015-2020. Funding: to be defined) **Resolution of physical bottlenecks,** **Development of motorways of the sea**	Société MTTC **(a)** Port of Marseille-Fos **(b, c)**	Improvement of port rail connection, RRT creation: <2020	Improvement of port rail connection, RRT creation: 46.80	Evaluation on going	**Yes (NSMed) (a, b)**	Physical bottleneck (inadequate capacity) and insufficient integration among transport (inadequate accesses to the port facilities)/ **(a,b,c)**
Mediterranean and North Sea	S2	Seaport	Marseille node (port)	Works	*<u>Enlarging works:</u>* Widening of the North Pass, allowing call of bigger ships **Resolution of physical bottlenecks**	Port of Marseille-Fos	<2020	32.70	Evaluation on going		insufficient integration among transport (inadequate accesses to the port facilities)
Mediterranean and North Sea	S3	Seaport	Marseille node (Fos-sur-Mer port)	Studies and Works	*<u>Dredging works and waterway access:</u>* **a)** Waterway link : create an IWW connection between Fos container terminal and the Rhône (Costs: 34 MLN. Timing: 2019-2020. Funding: to be defined) **b)** Fos Dock infrastructures : allowing call of bigger ships and improvement of terminal operations (Costs: 40 MLN. Timing: 2015-2018. Funding: to de defined) **Resolution of physical bottlenecks** *<u>Capacity increase:</u>* **c)** Fos combined transport terminal (Costs: 25 MLN. Timing: 2018-2020. Funding: to be defined) **d)** Fos 4XL container terminal : enlarging port container facilities (Costs: 2,5 MLN. Timing: 2018. Funding: to be defined) **e)** Multiclient bulk platform (Costs: 3,5 MLN. Timing: 2017. Funding: to be defined) **Resolution of physical bottlenecks** **Development of a multimodal logistic platform**	Port of Marseille-Fos **(a,b,c,d,e)**	Dredging works and waterway access: <2020 Capacity increase <2020	Dredging works and waterway access: 74 Capacity increase 31	Evaluation on-going	**Yes (NSMed) (a, c)**	insufficient integration among transport (inadequate accesses to the port facilities)/**(b,c,d,e)** Bottlenecks and missing links **(a)**
Mediterranean and North Sea	Road1	Road, seaport	Fos-sur-Mer - Marseille (road last mile)	Studies and Works	Bypass of Martigues and Port-de-Bouc **Resolution of physical bottlenecks**	State	<2020	145	Evaluation on going		Physical bottleneck

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean and North Sea	Road2	Road, seaport	Fos-sur-Mer - Avignon (road last mile)	Works	Bypass of Miramas **Resolution of physical bottlenecks**	State	<2020	61.20	Evaluation on going		Physical bottleneck
Mediterranean and North Sea	Road3	Road, seaport	Fos-sur-Mer - Avignon (road last mile)	Studies and work	Motorway link Fos - Salon-de-Provence **Resolution of physical bottlenecks**	State	>2020	300	Evaluation on going		Physical bottleneck
Mediterranean and North Sea	Road4	Road, seaport	Fos-sur-Mer - Marseille (road last mile)	Studies and works	Bypass of Arles **Resolution of physical bottlenecks**	State	<2030	600	Evaluation on going		Physical bottleneck

Table 109 Proposed list of projects for French sections and nodes belonging to the Mediterranean corridor

All white rows concern projects related to core sections of the Mediterranean corridor.

TENtec sections do not include road last mile connections up to Marseille - Fos Sur Mer port, this problem has been tackled in the paragraph 5.4.

***The pre-identified projects listed in Regulation 1316/2013 annex 1 are not clearly defined, therefore this analysis is an attempt to filter the potential pre-identified projects from the others.*

The following projects concern internventions that have been proposed by Member State. Although they regard sections/nodes that are not part of the Mediterranean corridor (comprehensive sections/nodes or core sections not included in the alignment), these projects could be considered important for development of the corridor.

Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Note
Com1	Rail	Valence - Montmélian (existing line)	Studies and Works	Upgrading to GB1 / Rolling Motorway Gauge of the Tunnel de Voreppe **Resolution of physical bottleneck**	RFF	<2020	10 M€ courants	EU, State, Rhone-Alpes Region, RFF	Comprehensive section
IWW4	IWW	Sete - Marseille (NSMed)	Studies and Works	Improvement of capability of the Rhône-Sète canal Compliance with class IV* requirements at least and core network standards (waterway allows the passage of a vessel or a pushed train of craft 80 to 85 m long and 9.50 m wide): Works consist in :- raising of 5 bridges - new zones of crossing in Gallician and Aigues-Mortes - modification of a few curves with low values of radius of curvature – and deepening of the minimum draught (Target: >2.50m) **Compliance with Core network standards** **Resolution of physical bottleneck**	VNF	<2020	75	EU, State, Region	Core section not included in the Mediterranean corridor alignment (its inclusion has been proposed to the Commission)
IWW5	IWW	Core network for Rhône inland waterway (NSMed)	Studies and Works	Standardization of Slipway in Arles **Resolution of physical bottlenecks**	VNF	<2020	6.70	Evaluation on going	Core section not included in the Mediterranean corridor alignment (its inclusion has been proposed to the Commission)
IWW6	IWW	Core network for Rhône inland waterway (NSMed)	Studies and Works	Development of stops for passenger ships **Resolution of physical bottlenecks**	VNF	<2020	13	Evaluation on going	Core section not included in the Mediterranean corridor alignment (its inclusion has been proposed to the Commission)
IWW7	IWW	Core network for Rhône inland waterway (NSMed)	Studies and Works	Development of quays and waiting areas for alternate traffic direction **Resolution of physical bottlenecks**	VNF	<2020	3.30	Evaluation on going	Core section not included in the Mediterranean corridor alignment (its inclusion has been proposed to the Commission)

TENtec sections do not include road last mile connections up to Marseille - Fos Sur Mer port, this problem has been tackled in the paragraph 5.4.

Table 110 Proposed projects related to nodes / sections which are not part of the corridor - France

5.9.3 Italy

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean	R1	Rail	IT Border-Susa - Core network	Study and works	In the first phase only the base tunnel and the Susa station will be built. The second phase foresees the construction of a short stretch (2km) of the Orsiera tunnel. The realisation of this railway link will meet all the TEN-T technical requirements. **Resolution of a physical bottleneck; Realisation of a cross-border section; Interventions concerning compliance with all Core network standards**	Project promoter to be created before 2015 (after LTF S.p.A.)	<2020	4,822*	Public funds and possible EU co-financing	**Yes**	Physical bottleneck (capacity constraint), low technical standard (freight traffic flows are penalized by the current technological standard of the existing line)
Mediterranean	R2	Rail	IT Border-Torino – Core network	Study and works	Upgrading up to maximum gabarit of sections belonging to the new line Lyon-Turin (section Susa-Avigliana-Turin). **Interventions concerning compliance with Core Network standards on loading gauge**	RFI S.p.A.	<2030	to be defined	Public funds and possible EU co-financing	**Yes**	Physical bottleneck (freight traffic flows are penalized by the current technological standard of the existing line)
Mediterranean	R3	Rail	IT Border-Torino – Core network	Study and works	Upgrading up to 740m of sections belonging to the new line Lyon-Turin. **Interventions concerning compliance with Core Network standards on train length. Actions concerning Rail cross-border sections**	RFI S.p.A.	<2030	50,00	Public funds and possible EU co-financing	**Yes**	Physical bottleneck, low technical standard (freight traffic flows are penalized by the current technological standard of the existing line)
Mediterranean	R4	Rail	IT Border-Torino (conventional line)	Study and works	Technological upgrading of traffic management system in order to increase the capacity **Resolution of physical bottlenecks Actions concerning Rail cross-border sections**	RFI S.p.A.	<2030	60.00	Public funds and possible EU co-financing		Physical bottleneck, low technical standard (freight traffic flows are penalized by the current technological standard of the existing line)
Mediterranean	R5	Rail	Avigliana-Torino	Study and works	Bypass node of Turin (priority phase I): creation of new structure (line, tunnel, bridge and leapfrog) **Resolution of physical bottleneck**	RFI S.p.A.	<2020	2,180.00	Public funds and possible EU co-financing	**Yes**	Physical bottleneck (by pass needed in order to avoid the freight passage within the urban node)
Mediterranean	R6	Rail	Torino –Padova (conventional line)	Study and works	The planned intervention shall allow a higher level of plant automation with consequent improvement in managerial efficiency and achievement of the performance-related, quantitative and qualitative coherence, with all lines merging onto such section. **Resolution of physical bottleneck**	RFI S.p.A.	<2020	711.00	Public funds and possible EU co-financing	**Yes**	
Mediterranean	R7	Rail	Torino node	Study and works	Shortening of blocks length in order to allow better track occupancy and increase the capacity. **Resolution of physical bottleneck**	RFI S.p.A.	<2030	60.00	Public funds and possible EU co-financing		
Mediterranean	R8	Rail	Torino node	Study and works	Completion of Turin's belt line **Resolution of physical bottlenecks**	RFI S.p.A.	>2030	2,213.00	Public funds and possible EU co-financing		Physical bottleneck (intervention needed due to the overlap of different type of rail services)
Mediterranean & Rhine Alpine	R9	Rail	Novara node	Study and works	Completion of planned works in Vignale, Boschetto and "Novara Centrale" including General Regulatory Plan (PRG) and the Computerised Central Apparatus ("CCA") for controlling and managing all station plant (signals, points, level crossings): the intervention allows to increase the Novara Boschetto transfer station capacity, to upgrade Vignale in order to manage trains of 740m and to run trains in Novara Centrale in accordance with maximum safety requirements **Development of traffic management system Resolution of physical bottlenecks**	RFI S.p.A.	<2030	493.00	Public funds and possible EU co-financing		
Mediterranean	R10	Rail	Turin – Milan (HS) - Core network	Study and works	Upgrading of the Command and control system on the HS section, with related Radio Block System and Control Center in Milano Greco Station	RFI S.p.A.	<2020	50.00	Public funds and possible EU co-	**Yes**	

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
					Development of traffic management system				financing		
Mediterranean & Rhine Alpine	R11	Rail	Milano Node	Study and works	Technological upgrading: headway distance, renovation of the General Regulatory Plan (PRG) and realisation of new station apparatuses; adaptation of the Electric Traction plants; installation of CCA (Milano Lambrate, Porta Garibaldi and Rho Station Included) aiming at reducing interferences, thus increasing capacity **Development of traffic management system** **Resolution of physical bottlenecks**	RFI S.p.A.	<2020	339.00	Public funds and possible EU co-financing	**Yes**	Low technical standard (on this node, the average commercial speed need to be increased)
Mediterranean & Rhine Alpine	R12	Rail	Milano Node	Study	Upgrading of the Forlanini station. This station of Milan "Passante" Railway (Milan urban railway), allow the connection between Linate airport, railway and M4 underground (under construction). **Actions implementing transport infrastructure in nodes of the Core Network, including urban nodes**	MM S.p.A.	<2020	15.8	State: 8 Lombardy Region: 4 City of Milan: 3.8		Physical bottleneck (intermodal traffic)
Mediterranean & Rhine Alpine	R13	Rail	Milano Node	Study	Upgrading of the rail road terminal AC/SFR/MM. This project foresees the construction of a parking area, as rail-road terminal to link railway and Milan metropolitan underground, improving the accessibility to Fiera of Milan (exhibition area of Milan). **Actions implementing transport infrastructure in nodes of the Core Network, including urban nodes**	City of Milano	<2020	12	Fublic funds		Physical bottleneck (intermodal traffic)
Mediterranean	R14	Rail	Treviglio–Brescia (HS line) - Core network	Study and works	Track quadruplication of Milan-Brescia Section: the new HS section (39,6 km), parallel to the conventional line will cross Brescia urban node for about 6,9 km . **Resolution of physical bottleneck**	RFI S.p.A.	<2020	2,050.00	Public funds and possible EU co-financing	**Yes**	Physical bottleneck(this section is facing a lack of capacity, creating a serious barrier for freight and passenger services)
Mediterranean	R15	Rail	Brescia-Verona (HS line) - Core network	Study and works	Construction of a new HS section: 73km length, two interconnections with the conventional line and 10 km of urban crossing will link the new line to Verona station **Resolution of physical bottleneck**	RFI S.p.A.	<2020	3,954.00	Public funds and possible EU co-financing		Physical bottleneck(this section is facing a lack of capacity, creating a serious barrier for freight and passenger services)
Mediterranean & Scandinavian Mediterranean	R16	Rail	Verona node - Core network	Study and works	Verona HS node (east-west access) - Urban penetration of the new HS line will also provide the opportunity to improve the transport systems of the main metropolitan network. **Resolution of physical bottleneck**	RFI S.p.A.	<2020	180.00	Public funds and possible EU co-financing		
Mediterranean & Scandinavian Mediterranean	R17	Rail	Verona node - Core network	Study and works	The planned interventions in Verona Porta Nuova station, both infrastructural and technological, shall allow an increase in the overall capacity of the Node, intermodal integration and an improvement in managerial efficiency; **Resolution of physical bottleneck**	RFI S.p.A.	<2020	90	Public funds and possible EU co-financing		
Mediterranean	R18	Rail	Verona- Padua (HS line) - Core network	Study and works	New HS section (75km), it will run parallel to the conventional line and the A4 highway; the interaction with the existing line will be realised through two interconnections in Vicenza and Padua. **Resolution of physical bottleneck**	RFI S.p.A.	<2020	6,051.00	Public funds and possible EU co-financing		Physical bottleneck (this section is facing a lack of capacity, creating a serious barrier for freight and passenger services)
Mediterranean, Scandinavian Mediterranean & Baltic Adriatic	R19	Rail	Bologna node (HS)	Study and works	Realisation of railway feeder for the HS access **Resolution of physical bottleneck**	RFI S.p.A.	<2020	36.2	Public funds and possible EU co-financing		Physical bottleneck (intervention needed due to the overlap of different type of rail services)
Mediterranean & Baltic Adriatic	R20	Rail	Bologna-Padova	Study and works	Technological upgrading with a new management system that allows to run trains in accordance with maximum safety requirements (line sections) **Development of traffic management system**	RFI S.p.A.	<2020	175.00	Public funds and possible EU co-financing		
Mediterranean & Baltic Adriatic	R21	Rail	Bologna-Padova	Study and works	Technological upgrading (completion) with a new management system that allows to run trains in accordance with maximum safety requirements (extension to the main	RFI S.p.A.	<2030	To be defined	Public funds and possible EU co-		

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
					stations) **Development of traffic management system**				financing		
Mediterranean & Baltic Adriatic	R22	Rail	Bologna-Castel Bolognese	Study and works	Upgrading of the railway line in order to increase capacity of the railway in terms of train frequency **Resolution of physical bottleneck**	Emilia Romagna Region	<2030	To be defined	Public funds and possible EU co-financing		
Mediterranean & Baltic Adriatic	R23	Rail	Bologna-Ravenna	Study and works	Upgrading of loading gauge to PC/80 **Interventions concerning compliance with Core Network standards on loading gauge (Gabarit)**	RFI S.p.A.	<2020	30.00	Public funds and possible EU co-financing		Low technical standard (actual standard is gauge PC 32)
Mediterranean & Baltic Adriatic	R24	Rail	Milano-Venezia (conventional line) Core sections	Study and works	Speed up works in order to increase the average commercial speed **Resolution of physical bottlenecks**	RFI S.p.A.	<2020	65.00	Public funds and possible EU co-financing	**Yes**	Low technical standard (on this section, the average commercial speed need to be increased; at the moment it is about 70 km/h))
Mediterranean & Baltic Adriatic	R25	Rail	Venice node	Study and works	Upgrading of the "Linea dei Bivi"(first phase) in order to support freight traffic flows.passing through Venice node and departing/arriving from the rail/road terminal Cervignano del Friuli **Resolution of physical bottleneck**	RFI S.p.A.	<2020	120.00	Public funds and possible EU co-financing	**Yes**	Physical bottleneck (intervention needed with the aim of improving the rail accessibility to the port)
Mediterranean & Baltic Adriatic	R26	Rail	Venice node	Study and works	Completion of Linea dei Bivi bypass that allows the direct connection to Venezia-Trieste line **Resolution of physical bottleneck**	RFI S.p.A.	<2030	To be defined	Public funds and possible EU co-financing	**Yes**	Physical bottleneck (intervention needed with the aim of improving the rail accessibility to the port)
Mediterranean & Baltic Adriatic	R27	Rail	Venezia-Trieste-Villa Opicina	Study and works	Technological upgrading with a new management system that allows to run trains in accordance with maximum safety requirements **Resolution of physical bottleneck**	RFI S.p.A.	<2020	105.00	Public funds and possible EU co-financing	**Yes**	
Mediterranean & Baltic Adriatic	R28	Rail	Venice – Trieste (conventional line)	Study and works	Speed up works in order to increase the average commercial speed for freight operators **Resolution of physical bottleneck**	RFI S.p.A.	<2020	60.00	Public funds and possible EU co-financing	**Yes**	
Mediterranean & Baltic Adriatic	R29	Rail	Venice-Trieste (HS)	Study and works	New high speed line Venice-Trieste. **Resolution of physical bottlenecks**	RFI S.p.A.	>2030	7,447.00	Public funds and possible EU co-financing		Low technical standard (on this section, the average commercial speed need to be increased; at the moment it is about 70 km/h))
Mediterranean & Baltic Adriatic	R30	Rail	Venice-Trieste (conventional line)	Study and works	Quadruplication of Venice –Trieste section **Resolution of physical bottlenecks**	RFI S.p.A.	<2030	1,000.00	Public funds and possible EU co-financing	**Yes**	Physical bottleneck (lack of capacity in the medium-long run)
Mediterranean & Baltic Adriatic	R31	Rail	Trieste-Divaca (HS)**	Study and works	New high speed line Divaca-Trieste. **Actions concerning Rail cross-border sections**	RFI S.p.A.	<2030	1,040.00	Public funds and possible EU co-financing	**Yes**	Physical bottleneck, integration between Member States (lack of capacity in the medium-long run)
Mediterranean	R32	Rail	IT Border - Torino-Milano (conventional line)	Study and works	Upgrading of loading gauge to PC/80 **Interventions concerning compliance with Core Network standards on loading gauge (Gabarit)**	RFI S.p.A.	<2020	25.00	Public funds and possible EU co-financing	**Yes**	Low technical standard (actual standard is gauge PC 45)
Mediterranean, Scandinavian Mediterranean & Baltic Adriatic	R33	Rail	All sections belonging to the corridor	Study and works	Upgrading of train length to 740 m **Interventions concerning compliance with Core Network standards on trains length (Target: 740 m)**	RFI S.p.A.	<2020	65.00	Public funds and possible EU co-financing	**Yes**	Low technical standard (train length approximately between 550m and 625m, Turin and Venice node to be considered as critical points)

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean	R34	Rail	All sections belonging to the corridor	Study and works	Upgrading of stations along the corridor in order to enhance quality of service (e.g. customer services for People with disabilities) **Resolution of physical bottleneck**	RFI S.p.A.	<2020	400.00	Public funds and possible EU co-financing		
Mediterranean, Scandinavian Mediterranean & Baltic Adriatic	R35	Rail	Novara-Trieste/Villa Opicina	Study and works	Enhancement of signalling system ERTMS (phase 1) **Development of traffic management system**	RFI S.p.A.	<2020	76.00	Public funds and possible EU co-financing	**Yes**	Low technical standard (these conventional lines are still not equipped with ERTMS signalling system)
Mediterranean	R36	Rail	All sections belonging to the corridor	Study and works	Elimination of railway crossings on various sections of the Mediterranean Corridor. **Resolution of physical bottlenecks**	RFI S.p.A.	<2020	200.00	Public funds and possible EU co-financing	**Yes**	
Mediterranean	R37	Rail	Modane - Novara	Study and works	ERTMS implementation on the Mediterranean corridor (phase 2). **Development of traffic management system**	RFI S.p.A.	<2030	190.00	Public funds and possible EU co-financing	**Yes**	Low technical standard (these conventional lines are still not equipped with ERTMS signalling system)
Mediterranean, Scandinavian Mediterranean & Baltic Adriatic	R38	Rail	All sections belonging to the corridor	Study and works	Works for implementing the technical standards for interoperability on other sections belonging to the corridor. **Interventions concerning compliance with all Core network standards in terms of interoperability requirements**	RFI S.p.A.	<2030	To be defined	Public funds and possible EU co-financing	**Yes**	
Mediterranean & Baltic Adriatic	R39	Rail	Venetian-Friulian area	Study and works	Technological upgrading of the traffic management system in order to increase the capacity **Resolution of physical bottlenecks**	RFI S.p.A.	<2030	50.00	Public funds and possible EU co-financing	**Yes**	Physical bottleneck, low technical standard (freight traffic flows are penalized by the current technological standard of the existing line)
Mediterranean & Scandinavian Mediterranean	R40	Rail	Verona node	Study and works	Upgrading of Verona Quadrante Europa in order to increase the current terminal capacity **Resolution of physical bottlenecks**	RFI S.p.A.	<2030	To be defined	Public funds and possible EU co-financing		
Mediterranean & Rhine Alpine	R41	RRT	Milano Smistamento – core node	Study and works	Terminal upgrading in order to increase the current terminal capacity and allows to manage the trains foreseen in Italia-Svizzera agreement **Resolution of physical bottlenecks**	RFI S.p.A.	<2020	50.00	Public funds and possible EU co-financing		Physical bottleneck (lack of capacity)
Mediterranean & Rhine Alpine	R42	RRT	Novara Boschetto –core node	Study and works	Terminal Upgrading (1st phase) including the bypass of "Novara Centrale" station by freight trains (connecting directly Vignale station), and upgrading of the intermodal terminal (Ro. La.) **Resolution of physical bottlenecks**	RFI S.p.A.	<2020	70.00	Public funds and possible EU co-financing		
Mediterranean & Rhine Alpine	R43	RRT	Novara CIM	Study and works	Expansion of the Eastern part of the RRT. **Development of multimodal logistics platforms**	Evaluation on-going	Evaluation on-going	Evaluation on-going	Evaluation on-going		
Mediterranean & Baltic Adriatic	R44	RRT	Cervignano	Study and works	Improvement of the accessibility by railways to the Cervignano Core RRT **Development of multimodal logistics platforms**	RFI S.p.A	<2030	Not yet defined	Public funds and possible EU co-financing		
Mediterranean & Baltic Adriatic	R45	Rail	Friuli Venezia Giulia, Veneto ed Emilia Romagna	Study and works	ERTMS Deployment (phase 2) – common section between Mediterranean and Baltic Adriatic corridors **Development of traffic management system**	RFI S.p.A	<2030	50.00	Public funds and possible EU co-financing		Low technical standard (these conventional lines are still not equipped with ERTMS signalling system)
Mediterranean & Baltic Adriatic	R46	Port & Rail – last mile	Trieste Core port – last mile	Study and works	*Upgrading railway access:* Upgrading of Trieste Campo Marzio station (PRG and ACC) and of the railway line "Linea di cintura" to Campo Marzio/Trieste Aquilinia Realization of a new rail terminal in the Campo Marzio area to serve piers V, VI and VII and increase intermodality. This project foresees: 5 lines ramp with rail mounted gantry	RFI S.p.A.	<2020	50.00	Public funds and possible EU co-financing	**Yes** (Port interconnections**)**	Insufficient integration between transport modes (upgrading of rail/road interconnections needed in order to increase the multimodal integration)

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
					cranes, connected to the upgraded Campo Marzio tracks and existing line **Intermodal integration**						
Mediterranean & Baltic Adriatic	R47	Port & Rail – last mile	Venice Core Port	Study	<u>*Upgrading railway access:*</u> **a)**Realisation of a last mile link between rail port network and Linea dei Bivi; more specifically: Direct linkage between Fusina RO-RO terminal and Linea dei Bivi, bypassing Mestre junction (250 MLN, 2025-2030, RFI) **b)**Doubling of railway line (Adriamos EU project): Upgrade of railway port's infrastructure in order to support growth in traffic flows due also to the realisation of Fusina Ro-Ro terminal. main rail infrastructure bottlenecks are: ▪ network composed by single rail tracks; ▪ railway crossing. To resolve the above critical issues, the following actions will be taken: ▪ Doubling of railway line connecting Fusina terminal to Via dell'Elettronica; ▪ Doubling of rail section Via della Chimica-Via dell'Elettricità; ▪ Doubling of Via dell'Elettricità. (5,65 MLN, 2014-2020, Venice Port Authority and RFI S.p.A.) **c)** Railway project supporting RO-RO terminal Fusina (part of the Adriamos EU project):Realisation of four transfer tracks within Fusina terminal (6, 7 MLN, 2014-2015, Venice Port Authority and RFI S.p.A) **d)** Upgrade of rail links between the South Industrial Area of Marghera and Marghera Scalo Station: realisation of a new rail line (1,300 mt) and construction of a road underpass to avoid traffic interferences. *(7,5 MLN, 2015-2018, Venice Port Authority and RFI S.p.A)* **Resolution of physical bottlenecks** **Connection to rail network (Target: ports of the Core must be connected to heavy rail by 2030)** **Actions to support the development of motorways of the sea**	RFI S.p.A. and Venice Port Authority **(b,c,d)**	Upgrading railway access: <2030	Upgrading railway access: 269,85	Public funds and possible EU co-financing	**Yes** (Port interconnections**)**	Bottleneck (traffic flows are restrained by Mestre junction)/ **(a)** Physical bottleneck (single tracks and railway crossing causing traffic congestion in the port area; safety issues will be solved)/ **(b)** Physical bottleneck (upgrading of rail/road interconnections needed in order to increase the multimodal integration; traffic diversion needed)/ **(d)**
Mediterranean & Baltic Adriatic	R48	Port & Rail – last mile	Ravenna Port	Study and works	<u>*Upgrading railway access:*</u> <u>**a)**</u> Upgrading lines linking Ravenna Port to the national railway network ("Destra Canale" last mile railways interventions) *(Costs: 10,00, timing <2025, financing sources: Public funds and possible EU co-financing, RFI)* **b)** Elimination of the main railway crossing (Bologna-Ravenna conventional line) *(Costs: 15.00, timing <2020, financing sources: Public funds and possible EU co-financing, RFI)* **Resolution of a physical bottleneck** **Connection to rail network**	RFI S.p.A.	Upgrading railway access: <2030	Upgrading railway access: 25	Public funds and possible EU co-financing	**Yes** (Port interconnections**)**	Physical bottleneck (upgrading of rail interconnections needed in order to increase the multimodal integration)
Mediterranean & Rhine Alpine	R49	Airport & Rail – Last mile	Malpensa Core airport	Study and works	Last mile connection upgrading (feasibility study is under study) **Intermodal integration**	RFI S.p.A.	<2020	To be defined	Public funds and possible EU co-financing		Low technical standard (lack of direct link with HS, long distance railway services)

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean & Rhine Alpine	R50	Airport & Rail – Last mile	Malpensa Airport – core node	Works	Rail connection between Terminal 1 and 2 to be delivered in full compliance with all required technical and regulatory specifications **Intermodal integration**	SEA S.p.A. FNM S.p.A.	<2020 On-going	115.00	EU and State-SEA funds		Physical bottleneck, insufficient integration between transport modes (the existing last mile linkage to T2 will be enlarged to T1)
Mediterranean & Rhine Alpine	R51	Rail & Airport Last mile	Bergamo Airport – core node	Study and works	Rail connection Bergamo-Milan – Railway link between the Orio al Serio Airport and Bergamo city. **Connection to rail network (Target: certain airports have to be connected to heavy rail by 2050)**	RFI S.p.A.	<2030	170.00	State-Private-SACBO funds		Physical bottleneck, insufficient integration between transport modes (upgrading of rail/road interconnections needed in order to increase the multimodal integration; last mile connection not existing at the moment)
Mediterranean & Baltic Adriatic	R52	Airport & Rail – Last mile	Venezia Tessera Core airport	Study and works	Last mile rail connection with conventional railway line (SMFR) **Intermodal integration**	RFI S.p.A.	<2020	250.00	Public funds and possible EU co-financing		Low technical standard (at the moment there is no direct connection to railway network)
Mediterranean & Baltic Adriatic	R53	Airport & Rail – Last mile	Venezia Tessera Core airport	Study and works	Realisation of a new railway station integrated with the last mail rail connection (by RFI) **Intermodal integration**	SAVE S.p.A.	<2020	114.00	Public funds and possible EU co-financing		Low technical standard (at the moment there is no direct connection to railway network)
Mediterranean & Baltic Adriatic	P1	Port	Ravenna Core Port	Works	*Dredging works and quay adjustments:* **a)First Phase**: dredging works in several channels (Candiano, S.Vitale, Trattaroli) up to 11,5 – 13,5 meters; adapting quay layout **Second Phase**: dredging works up to 14m; realisation of a new quay serving a specific container terminal (200MLN 1st and 2nd phases; 2015-2020 1st , 2018-2025 2nd) **b)Third phase:** quay adjustments **Fourth phase:** dredging works increasing depth up to 15.5 meters (3rd and 4th 246 MLN, 2018-2025) **c)** EU project: "Ravenna Port Hub: final detailed design and supporting technical analyses" (Study Final Detailed design) ▪ dredging activities related to the front port area and to the main port canals achieving water depths varying from a minimum of 11.5 metres to a maximum of 14 meters, ▪ upgrading of at least 3,900 m of existing quays impacted by the proposed interventions, the construction of a new 600 meters long terminal container quay, and the upgrading of existing quays in the main port canal. (4,394 MLN, 2013-2015-on-going) **Resolution of a physical bottleneck** *Capacity increase:* **d)** Upgrading of the existing Ro-Ro and Ro-pax terminals (Largo Trattaroli): marine jetties and service area. (22 MLN; 2016-2018) **Actions to support the development of motorways of the sea** *Traffic Management System / Telematics System:* **e)** Implementation of telematics systems for the management of customs declarations and any other documents that are commonly used in goods transportation. (3,9 MLN; 2014-2015 on-going) **Development of traffic management system (VTIMS)**	Port authority of Ravenna	Dredging works and quay adjustments: <2030 Capacity increase: <2020 TMS / Telematics System <2020 On-going	Dredging works and quay adjustments: 450.39 Capacity increase: 22.00 TMS / Telematics System: 3.90	Public funds and possible EU co-financing		Physical bottleneck (the limited draught is a structural problem since Ravenna is a canal harbour)/**(a)** Physical bottleneck (the limited draught is a structural problem since Ravenna is a canal harbour)/**(b)** Physical bottleneck (the limited draught is a structural problem since Ravenna is a canal harbour)/**(c)** Administrative burden (increase the efficiency of the administrative procedures)/ **(e)**

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
					Other projects **f)** LNG Supply facilities, availability of alternative clean fuels (60.00, <2020)- the estimated cost is included in Venice Port stream. **Availability of alternative clean fuels**						
Mediterranean & Baltic Adriatic	P2	Port	Venice Core Port	Works	*Dredging works and quay adjustments:* **a)** NAPADRAG PROJECT- Works of dredging of the West Industrial Canal to reach the depth of 11.8 m.(12,8 MLN, 2013-2015) **Resolution of physical bottlenecks** *Capacity increase:* **b)** Construction of an offshore Port HUB for large ships avoiding oil carriers to transit on the Laguna and able to host up to Ultra Large Container Vessel (seawall, oil terminal, pipeline and container quay) (2.198 MLN, composed by 948 MLN financed by Italian Government and 1.250 by private funds, 2014-2019) **c)** Construction of a new marshalling yard located in Penisola della Chimica. (costs to be defined, 2025-2030) **Freight transport services** **Resolution of physical bottlenecks** *Traffic Management System / Telematics System:* **d)** Interoperability between National Single Window and Venice Port Community System: realisation of a New Port Community System with the objective of increasing the interoperability between National Maritime Single Window and Port Operators Information Systems. (1,6 MLN, 2015-2017) **e)** Realisation of an information system in order to real time monitor maritime traffic and forecast the maritime traffic levels in the last maritime mile (0,6 MLN, 2016-2016) **f)** ICT system related to the port accessibility (gate –in , gate out process) and data exchange with the others traffic management systems (0,8 MLN, 2015) **g)** Railway telematics systems for shunting operations and its integration with PCS and information systems of other subject involved in developing rail services (1,55 MLN, 2015-2017) **Development of traffic management system (VTIMS)** **Actions to support the development of motorways of the sea** **Freight transport services** *Other interventions:* **h)** Railway project: new rolling stock vehicle maintenance and repair shop in response to increasing demand for this kind of services by port's railway operators. (2, 53 MLN, 2015-2017) **i)** New parking areas aiming at ameliorating road congestion problems and access to the port (2,5 MLN, 2016) **Resolution of physical bottlenecks** **Freight transport services** **l)** LNG Supply facilities, availability of alternative clean fuels (60.00, <2020) **Availability of alternative clean fuels**	Venice Port Authority	Dredging works and quay adjustments: <2020 Capacity increase: <2030 TMS / Telematics System: <2020 Other interventions : <2020	Dredging works and quay adjustments: 12.80 Capacity increase: 2,198.00 (43% pulic and 57% private funds) TMS / Telematics System: 4.55 Other interventions : 65.03	Public funds, possible EU co-financing and private funds		Physical bottleneck (limited available draught due to the lagoon)/**(a)** Physical bottleneck (available warehouses spaces and draught levels are not sufficient)/ **(b)** Physical bottleneck (upgrading of rail/road interconnections needed in order to increase the multimodal integration)/**(c)** Need of improved traffic management system (absence of a common platform for all Players/entities)/**(d)** Need of improved traffic management system/ **(e,f,g)** Physical bottleneck (upgrading of rail/road interconnections needed in order to increase the multimodal integration; traffic diversion needed)/**(i)** Initiative compliant to the Directive 2014/94/UE/**(l)**

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean & Baltic Adriatic	P3	Port	Trieste Core port	Study	*Quay adjustment:* **a)** First phase: construction of a new quay called "Logistic Platform" which has to be directly connected to the belt-road and the off-port rail network, with a wharf of about 600 meters in length and a depth of 14 meters. (132,4 MLN, 2014-2018, on-going. Funding: Port Authority, State budget and private) **b)** Second phase: construction of a new quay called "Logistic Platform", with a wharf of about 600 meters in length and a depth of 12-14 meters (184,5, 2014-2020, on-going) **Resolution of a physical bottleneck** **Actions to support the development of motorways of the sea.** *Capacity increase:* **c)** Enlargement of the container terminal at quay VII increasing the potential up to a maximum of 1,200,000 TEU (dimension 200m, 18m depth) (187 MLN, 2014-2020, on-going) **d)** Realization of a new Ro-Ro terminal in the Noghere valley area with a "working" draught of no less than 12 meters for berthing RO-RO vessels and a total surface of 430.000 sqm. (27 MLN 1st phase, 126 MLN 2nd phase; 2014-2020, on-going) **e)** Passengers terminal upgrade encompassing the enlargement of the related quay and the renewal of the maritime station. (1st phase: renewal of the maritime station is already completed, 2nd phase: enlargement of the quay, 14 MLN; 2014-2020, on-going) **Actions to support the development of motorways of the sea.** **Resolution of a physical bottleneck**. *Traffic Management System / Telematics System:* **f)** Under the European project ITS the automation of the authorization for the road- entry process: In the project NAPA studies will be delivered the entry process of goods by rail. (ITS already done, NAPA Studies are on-going 2014-2015; 0,4 MLN, on-going) **g)** Feasibility study for a dangerous goods tracking systems (Under the Losamedchem European project) in order to monitor the flow of dangerous goods both incoming and outgoing port and to improve management of the flow of goods within the port. The project concerning the automation of road gates of the port of Trieste (acronyms: SEC and SILI) had been implemented (first phase). Afterwards, three additional modules have been designed in order to develop the system. This later expansion regards also the tracking of dangerous goods. (1st phase 4.00 MLN, 2nd phase 2.00 MLN, 2013-2015, on-going) **Development of traffic management system** *Other interventions:* **h)** New operating centre for integrating all ancillary port services (COS) (23 MLN, timing to be defined) **Other telematics application systems** **Actions to support administrative procedures**	Trieste Port Authority	Quay adjustment: <2020 Capacity increase: <2020 TMS / Telematics System <2020 Other interventions Evaluation on-going	Quay adjustment: 316.90 Capacity increase: 354.00 TMS / Telematics System: 2,4 Other interventions : 23	Public funds and possible EU co-financing		Physical bottleneck (limited warehouse space)/**(a,b,c)** Physical bottleneck (capacity increase in the RO-RO traffic needed)/**(d,e)** Need of improved traffic management system (absence of a common platform for all Players/entities)/ **(f)** Need of improved traffic management system/ **(g,h)**

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean	IWW 01	IWW	Po river (all core sections)	Study and works	Free stream: This planning provides a short term solution for Po River secure Navigation and implementation of river standards from Cremona to River Mincio intersection (Step 1) and from Foce Mincio to Volta Grimana lock (Step 2), identifying the most urgent sections to set in with free stream works. The project (Studies) is completed for the Step 1 and is ongoing for the Step 2 (Studies and works), to assure a safe standard navigation, up to 300 day/year waiting that the Po river regulation will be completed (long term solution) **Freight transport services –other inland waterways works**	AIPO (Lombardia, Veneto and Emilia-Romagna Region)	Studies <2020 Works start <2020	Cost: works, Step 1 and Step 2, 200 Works Step 3 15	Public funds and possible EU co-financing	**Yes**	Physical bottleneck (low navigability reliability, the low rate (60%) is due to the constant variations in hydraulic conditions)
Mediterranean	IWW 02	IWW	Po river (all core sections)	Study and works	Po is actually a free stream river, and navigation is limited for upper class in the summer period from June to the end of August. The project aims to guarantee navigation up to 365 days a year through 5 locks,. The study, aims to define the solution and costs. It is foreseen to build power plants in Po River, and the production of hydraulic energy. **Freight transport services –other inland waterways works**	AIPO (Lombardia, Veneto and Emilia-Romagna Region)	Studies <2020	2.00	Private, Public funds and possible EU co-Financing	**Yes**	Physical bottleneck (low navigability reliability, the low rate (60%) is due to the constant variations in hydraulic conditions)
Mediterranean	IWW 03	IWW	Section Cremona-Piacenza;	Works	Po river: new lock of Isola Serafini-Piacenza; implementation of river standards from Cremona to River Mincio intersection and from there to Venezia/Ferrara; **Compliance with class IV requirements at least (waterway allows the passage of a vessel or a pushed train of craft 80 to 85 m long and 9.50 m wide)**	AIPO (Emilia-Romagna Region)	<2020 On-going	47	Public funds and possible EU co-Financing	**Yes**	Physical bottleneck; low technical standards (Piacenza-Pavia: Class III CEMT; no freight traffic due to Isola Serafini lock)
Mediterranean	IWW 04	IWW	Po river Section Cremona-Piacenza;	Works	Work on San Benedetto bridge, to remove the existing, and rebuild in according with V Class Standard. Resolution of a physical bottleneck **Compliance with class IV requirements at least (waterway allows the passage of a vessel or a pushed train of craft 80 to 85 m long and 9.50 m wide)**	Lombardia Region – AIPO – Province of Mantova	<2020 On-going	46	Public funds and possible EU co-Financing	**Yes**	Physical bottleneck (intervention needed in order to meet the European CEMT requirements)
Mediterranean	IWW 05	IWW	Section Ferrara-Porto Garibaldi	Works	Work in progress – Ferrara Waterway: works for the implementation of class V standards of the segment Pontelagoscuro-Portogaribaldi, including a better connection with the sea in Portogaribaldi. **Compliance with class IV requirements at least (waterway allows the passage of a vessel or a pushed train of craft 80 to 85 m long and 9.50 m wide)**	Province of Ferrara (Emilia-Romagna Region)	<2020 On-going	242	Public funds and possible EU co-Financing	**Yes**	Physical bottleneck (Pontelagoscuro bridge represents the main limitation because of the limited clearance 4.1m)
Mediterranean	IWW 06	IWW	All sections belonging to the corridor – Core network	Works	The River Information Services (RIS) for the Northern Italy waterway system (SIIN) has as its area of interest the Po Valley, and in particular the basin of the Po River, with its tributaries, the waterway Ferrarese and the river basin district of the Eastern Alps, which includes the basin of the artificial waterway Fissero-Tartaro-Canalbianco and the Venetian Lagoon basin. The coast from Ravenna to Trieste will be also taken into account. The area will include also two Operations Centres (RIS Provider Centres). **Development of traffic management system (RIS) – II Phase**	AIPo – Sistemi Territoriali S.p.A., Provincia di Mantova, Venezia Port Authority (Lombardia, Veneto and Emilia-Romagna Region)	<2020	2	Public funds and possible EU co-Financing	**Yes**	Physical bottleneck (the limited draught is a structural problem since Ravenna is a canal harbour)
Mediterranean	IWW 07	IWW	Po Brondolo Canal . Canale di Valle	Study and works	Implementation of safety measures in the hydraulic system through the realization of a gate for flood control of river and protection of Canal di Valle from the in flood of river Brenta. **Freight transport services –other inland waterways works**	Sistemi Territoriali S.p.A. (Veneto Region)	<2020 On-going	0.40	Public funds and possible EU co-Financing	**Yes**	
Mediterranean	IWW 08	IWW	IWW core port of Mantova	Study and works	New logistic platform for the connection of Valdaro Port system to rail and road **Development of inland ports**	Province of Mantova - Mantova	<2020	0.50	Public funds and possible EU co-	**Yes**	

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
					Rail Connections to inland ports **Road Connections to inland ports**	Minicipality (Lombardia, Region)			Financing and Private		
Mediterranean	IWW 09	IWW	Casalmaggiore - Foce Mincio	Works	Upgrading of the functionality of Viadana Pipeline, and connection to existing logistic connection **Development of inland port/docks**	Province of Mantova (Lombardia, Region)	<2020	4.00	Public funds and possible EU co-Financing and Private		Physical bottleneck (upgrading of rail/road interconnections needed in order to increase the multimodal integration)
Mediterranean	IWW 10	IWW	Mincio River Mantova	Study and works	IWW renewal of the navigable line in Mincio River to the connection of Mantova lakes. Elimination of physical bottleneck in Masetti Lock, and connected industrial quay. **Compliance with class IV requirements**	Administration of Mantova – AIPo (Lombardia, Region)	<2020	0.50	Public funds and possible EU co-financing		
Mediterranean	IWW 11	IWW	Casalmaggiore - Foce Mincio	Study and works	Adaptation of Borretto Ports facilities to intermodal platform standards **Development of inland ports**	AIPo (Emilia-Romagna Region)	<2020	2.00	Public funds and possible EU co-financing		
Mediterranean	IWW 12	IWW	Litoranea veneta Section Cavanella d'Adige-Chioggia And Chioggia-Venezia	Study and works	Adaptation to the Class IV standard of the Litoranea Veneta section, Upgrading bridges, dredging in some relevant section, to upgrade for Class IV navigation **Compliance with class IV requirements**	Sistemi Territoriali S.p.A. (Veneto Region).	<2020 On-going	1.00	Veneto Region funds	**Yes**	Physical bottleneck (intervention needed in order to meet the European CEMT requirements/at the moment CEMT class II)
Mediterranean	IWW 13	IWW	All sections belonging to the corridor – Core network	Study and works	The project aims to create a private infrastructural network between all inland harbours in order to provide ultra-broadband connectivity to support inland waterway goods transport management, ports facilities, organization of logistics installations and innovative services. The project aims also to develop a unique goods transport telematics management systems. **Development of inland ports**	Consvipo	<2020	0.10	Public funds and possible EU co-Financing and Private	**Yes**	Need of improved traffic management system (absence of a common platform for all Players/entities)
Mediterranean	IWW 14	IWW	All sections belonging to the corridor – Core network.	Study and works	The project aims to create an infrastructural network along main rivers and sections (PO, Fissero-tartaro-canalbianco ..) in order to provide ultra-broadband connectivity dedicated to inland navigation. **Development of inland ports**	Consvipo	<2020	0.2	Public funds and possible EU co-Financing and Private	**Yes**	Need of improved traffic management system (absence of a common platform for all Players/entities)
Mediterranean	IWW15	IWW	Ferrarese waterway Section Ferrara	Study and works	Realization of new docks on Boicelli and the rail connection of Ferrara inland port **Development of inland ports** **Rail Connections to inland ports**	Province of Ferrara (Emilia-Romagna Region	<2020	6.00	Public funds and possible EU co-Financing and Private		
Mediterranean	IWW16	IWW	Ferrarese waterway Section Porto Garibaldi	Study and works	New Logistic Platform to serve Cercom area in Ferrarese Waterway in Comacchio **Freight transport services Other Inland waterways works**	Province of Ferrara (Emilia-Romagna Region)	<2020	0.50	Public funds and possible EU co-Financing		
Mediterranean	IWW17	IWW	Po River Ferrara section	Study and works	Realization of new Po River dock in Cologna – Berra (FE) **Development of inland ports**	Province of Ferrara (Emilia-Romagna Region)	Evaluation on-going	0.50	Public funds and possible EU co-Financing and Private		
Mediterranean & Baltic Adriatic	A1	Airport	Venice Airport – core node	Study	Airside planned infrastructures: Parking areas expansion **Intermodal integration**	SAVE S.p.A	< 2030	150	SAVE funds		
Mediterranean & Baltic Adriatic	A2	Airport	Venice Airport – core node	Study	Airside planned infrastructures: New layout configuration for Cargo infrastructures	SAVE S.p.A	< 2030	47	SAVE funds		

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
					Development of multimodal logistic platforms						
Mediterranean & Baltic Adriatic	A3	Airport	Venice Airport – core node	Study	Airside planned infrastructures: Internal road layout upgrade **Intermodal integration**	SAVE S.p.A	< 2030	40	SAVE funds		
Mediterranean & Baltic Adriatic	A4	Airport	Venice Airport – core node	Study and Works	Construction of a multimodal terminal **Development of multimodal logistic platforms**	SAVE S.p.A	<2020	41.00	Own resources, public funds and possible EU co-financing		
Mediterranean & Baltic Adriatic	A5	Airport	Venice Airport – core node	Works	People Mover **Intermodal integration**	SAVE S.p.A	<2020	32.60	SAVE funds		
Mediterranean & Rhine Alpine	A6	Airport	Malpensa Airport – core node	Study	Connection tunnel terminal 1-satellite, people mover **Intermodal integration**	SEA S.p.A.	<2020	225	Public funds and possible EU co-financing		Physical bottleneck (the existing last mile linkage to T2 will be enlarged to T1)
Mediterranean, Scandinavian Mediterranean corridor & Baltic Adriatic	A7	Airport	Bologna Airport – core node	Study	**a)** People mover between Railway station and Airport (Costs: 107,0 MLN. Timing: 2015-2018. Financing: Public-private and possible EU co-financing) **b)** People mover station at airport terminal (Costs: 3.00, Timing: 2015-2018. Financing: own funds) **Intermodal integration**	**a)**Emilia Romagna Region **b)** SAB	<2020	a) 107.00 b) 3.00	a) Public-private and possible EU co-financing b) SAB funds		Physical bottleneck, insufficient integration between transport modes (upgrading of rail/air interconnections needed in order to increase the multimodal integration; last mile connection not existing at the moment)
Mediterranean & Baltic Adriatic	Road1	Road	Friuli Venezia Giulia Region (IT)	Study and works	Improvement of the R.A. 14 motorway: Interventions planned in order to reorganize and separate different types of traffic flows (highway traffic and urban traffic) on the Italian side of the border **Actions concerning cross-border Road sections**	ANAS	<2020	8.10	Public funds and possible EU co-financing		Physical bottleneck (an intervention it would be required ameliorate the traffic conditions and ensure a better safety standard)
Mediterranean & Baltic Adriatic	Road2	Road	IT/SI Cross border section	Study	R.A.13: Interventions planned in order to reorganize and separate different types of traffic flows (highway traffic and urban traffic) on the Italian side of the border. **Actions concerning cross-border Road sections**	ANAS	Evaluation on-going	2.90	Public funds and possible EU co-financing		Physical bottleneck (an intervention it would be required ameliorate the traffic conditions and ensure a better safety standard)
Mediterranean	Road3	Road	Several sections belonging to the corridor – Core network	Works	Installation of several road telematics systems such as: weather support systems, points for measuring vehicle speed, traffic structure and flow, points for measuring environmental parameters, electronic information boards and variable message signs, data transmission and data processing systems, video cameras and accident detection systems, dispatcher's supervision points and information points). **Traffic management systems for roads**	ANAS	Evaluation on-going	4.10	Evaluation on-going		Need of improved traffic management system
Mediterranean & Baltic Adriatic	Road4	Road	IT/SI Cross border section	Study and Works	Improvement of the Cross-border Road section between Italy and Slovenia (R.A. 14 motorway). **Actions concerning cross-border Road sections**	ANAS	Evaluation on-going	Evaluation on-going	Evaluation on-going		Actions concerning cross borders
Mediterranean & Rhine Alpine	Road5	Road	Milan node	Study and Works	Realization of fourth "dynamic" lane of A4 motorway in Milan area (lane used as traffic lane or hard shoulder, as needed). **Resolution of a physical bottleneck**	Autostrade per l'Italia S.p.A.	<2020	220.00	Private funds		Bottleneck (Milan node suffer from high traffic congestion)
Mediterranean & Rhine Alpine	Road6	Road	Milan node	Works	New freeway SP103 ("Cassanese Bis"). Upgrade of accessibility to "Hub intermodale" of Segrate (Segrate rail road terminal, east of Milan), connecting Brebemi motorway and urban area of Milan. **Resolution of a physical bottleneck**	Milano Serravalle S.p.A. Provincia di Milano	<2020	68.00 137.50	Private funds Public and Private funds		Bottleneck (Milan node suffer from high traffic congestion)
Mediterranea, Scandinavian Mediterranean &	Road7	Road	Bologna – Ferrara (motorway A13)	Study and works	Motorway A13 Bologna - Ferrara: widening to 3 lanes **Resolution of a physical bottleneck**	Autostrade per l'Italia	<2020	Evaluation on-going	Private funds		

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Baltic Adriatic											
Mediterranean Scandinavian Mediterranean & Baltic Adriatic	Road8	Road	Bologna –Castel Bolognese (motorway A14)	Study and works	Motorway A14 Bologna –Castel Bolognese: widening to 4 lanes **Resolution of a physical bottleneck**	Autostrade per l'Italia	<2020	600.00	Private funds		
Mediterranea, Scandinavian Mediterranean & Baltic Adriatic	Road9	Road	Bologna-Ozzano (motorway A14)	Study and works	Realization highway coplanar nord A14 Ozzano – Bologna: **Resolution of a physical bottleneck**	ANAS	<2020	37.00	Public funds and possible EU Co-financing		
Mediterranean & Baltic Adriatic	Road10	Airport & Road – Last mile	Venice Core airport	Study and works	SS14 bypass at Campalto and Tessera, providing access to the Venice Marco Polo Airport. **Resolution of a physical bottleneck**	ANAS S.p.A.	Evaluation on-going	35.00	Public funds and possible EU co-financing		Physical bottleneck (road access to Venice airport should be improved)
Mediterranean & Baltic Adriatic	Road	Airport & Road – Last mile	Bologna Core Airport	Study and works	Road rail node of Casalecchio di Reno (work related to Motorway North BY-pass of Bologna) **Resolution of a physical bottleneck**	ASPI	Step 1: starting date 2015, step 2:starting date 2020	Resources allocated: step 1 160.00 covered by ASPI, Step 2 91.60 to be defined	Public funds and possible EU co-financing		
Mediterranean & Baltic Adriatic	Road	Airport & Road – Last mile	Bologna Core Airport	Study and works	Rastignano node 2nd part (work related to Motorway North BY-pass of Bologna) **Resolution of a physical bottleneck**	step1 RFI,step2: Provincia di Bologna	step 1 start 2015, step2 final project:2016, works: 2020	67.80 (resources allocated: step1:27,8 covered by ANAS and RFI, step2: 40.00 MLN still not covered).	Public funds and possible EU co-financing		
Mediterranean & Baltic Adriatic	Road13	Port & Road – last mile	Trieste Core port	Study	SS202: works from the static consolidation of the wing walls (from km 9+850 to km 12+200) and for the structural recovery of the viaduct "Molo VII". **Resolution of a physical bottleneck**	ANAS S.p.A.	<2020 On-going	4.30	Public funds		Physical bottleneck (upgrading of rail/road interconnections needed in order to increase the multimodal integration)
Mediterranean & Baltic Adriatic	Road14	Port & Road – last mile	Venice Core Port	Works	New road infrastructures outside the port area aiming at ameliorating the traffic flow management. The main problem is the high mix of different traffic flows. (roads: SR11, SS309 and SP81 up to the bridge located in via Volta) **Resolution of physical bottlenecks**	Venice Port Authority	<2020	4.40	Public funds and possible EU co-financing		Physical bottleneck (congestion problem inside the port area)
Mediterranean & Baltic Adriatic	Road15	Port & Road – last mile	Ravenna Port	Study and works	*Road works inside and outside the port area* SS 16 Adriatica: upgrading the junction of SS16 with SS 67 Ravegnana trough the realization of a new split-level roundabout **Resolution of a physical bottleneck**	ANAS e Comune di Ravenna	<2020	2.10	Public funds and possible EU co-financing		Physical bottleneck (road access to the port should be improved)
Mediterranean & Baltic Adriatic	Road16	Port & Road – last mile	Ravenna Port	Study and works	*Road works inside and outside the port area* SS309 dir adaptation to ex III CNR standard **Resolution of a physical bottleneck**	Evaluation on-going	Evaluation on-going	Evaluation on-going	Evaluation on-going		Physical bottleneck (road access to the port should be improved)
Mediterranean & Baltic Adriatic	Road17	Port & Road – last mile	Ravenna Port	Study and works	*Road works inside and outside the port area* Improvement of SS67 between Classe and the port area **Resolution of a physical bottleneck**	Evaluation on-going	Evaluation on-going	Evaluation on-going	Evaluation on-going		Physical bottleneck (road access to the port should be improved)
Mediterranean & Baltic Adriatic	Road18	Port & Road – last mile	Ravenna Port	Study and works	*Road works inside and outside the port area* SS16 Adriatica upgrading of A14 junction and Classe Juction **Resolution of a physical bottleneck**	ANAS	<2020	72.00	Public funds and possible EU co-f		Physical bottleneck (road access to the port should be improved)
Mediterranean & Baltic Adriatic	Road19	Port & Road – last mile	Ravenna Port	Study and works	*Road works inside and outside the port area*	Comune di Ravenna	<2020	270	Public funds, private funds and possible		Physical bottleneck (road access to the port should be improved)

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
					New connection between SS 67 and Bassette area with a by-pass of Candiano channel **Resolution of a physical bottleneck**			Resources allocated to be defined	EU co-financing		
Mediterranean, Scandinavian Mediterranean & Baltic Adriatic	RRT1	RRT	Rail – Road Terminal Bologna	Study and works	Reach Compliance / Improve technical parameter to achieve the objective set for 2030. **Development of multimodal logistics platform**	Evaluation on-going	<2030	Evaluation on-going	Evaluation on-going		
Mediterranean, Scandinavian Mediterranean & Baltic Adriatic	RRT2	RRT	Rail – Road Terminal Bologna	Study and works	ICT system application in RRT on the Italian part of corridor, for operations synchronization and management efficiency with other nods **Intermodal integration tackling lack of interoperability**	Interporto di Bologna	<2020	Evaluation on-going	Public funds and possible EU co-financing		Need of improved traffic management system

Table 111 Proposed list of projects for Italian sections and nodes belonging to the Mediterranean corridor

All white rows concern projects related to core sections of the Mediterranean corridor.

***The pre-identified projects listed in Regulation 1316/2013 annex 1 are not clearly defined, therefore this analysis is an attempt to filter the potential pre-identified projects from the others*

The following projects concern internventions that have been proposed by Member State. Although they regard sections/nodes that are not part of the Mediterranean corridor (comprehensive sections/nodes or core sections not included in the alignment), these projects could be considered important for development of the corridor.

Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Note
Comprehensive Road7	Road	Brescia node	Study	Ring road south of Brescia. The project allow the link between A4 motorway, in Ospitaletto, and Brescia Montichiari airport. A segment, 17 km long, is completed. **Resolution of a physical bottleneck**	Austrade Centro Padane S.p.A.	<2020	295	Private funds	Comprehensive section
Core 1 (proposal of inclusion in the Med alignment)	IWW	Fissero-Tartaro-Canalbianco section: sections:Ostiglia-Rovigo; Rovigo-Baricetta.	Study and works	Adaptation to the Class V of the Fissero-Tartaro- Canalbianco requires works to increase the headroom under the bridges. The objective is to increase for all of them, the headroom to 6.5 m. Main points to focus on, are the rail bridges of Rosolina and Arqua. Ongoing works for Canozio bridge **Freight transport services –other inland waterways works** **Resolution of a physical bottleneck**	Sistemi Territoriali (Veneto Region)	<2020	Cost: works, 26 mln (possible co financing 20-40%) Resources allocated Works - 15 mln	Public funds and possible EU co-financing	Core section still not included in the alignment. Its inclusion has been proposed
Core 2 (proposal of inclusion in the Med alignment)	IWW	IWW core Port of Mantova	Study and works	Located in the terminal West section of Fissero-Tartaro- Canalbianco Canal. The intervention consist in the realization II Lot of Valdaro Lock, aiming at permit the connection between Mantua lakes and the Canal; this action will improve the direct link to the private quays in Mantua for freight and touristic traffic **Resolution of a physical bottleneck** **Freight transport services –other inland Waterways works**	AIPo – Province of Mantova (Lombardia Region)	<2020	Cost: II Lot works, 9 mln (possible co financing 20-40%) Resources allocated Works 9 mln	Public funds and possible EU co-Financing	Core section still not included in the alignment. Its inclusion has been proposed
Core 3 (comprehensive port)	IWW	IWW comprehensive port of Rovigo	Study and works	Realization of LNG pipe line connection, in Rovigo docks to Sperimental new deposit area. Development of port infrastructure, and CO2 abatement **Development of port infrastructure, and CO2 abatement**	Interporto Rovigo S.p.A.	<2020	Cost: Study 2 mln Works 20 mln Possible co-financing 20% Resources allocated 0 mln	Public funds and possible EU co-Financing and Private	Comprehensive port
Core 4 (proposal of inclusion in the Med alignment)	IWW	Fissero-Tartaro-Canalbianco section: All Section Ostiglia – Porto levante	Study and works	Adaptation to the Class V of the Fissero-Tartaro- Canalbianco, dredging in some relevant sections to allow for Class V navigation **Compliance with class V requirements**	Sistemi Territoriali S.p.A. – AIPo (Lombardia, Veneto Region)	<2020	Cost: Works 6 mln Possible co-financing 20-40% Resources allocated Available To be defined	Public funds and possible EU co-Financing and Private	Core section still not included in the alignment. Its inclusion has been proposed

Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Note
Core 5 (proposal of inclusion in the Med alignment)	IWW	Fissero-Tartaro-Canalbianco section Porto Levante	Study and works	Safety upgrade and development. Improvement of the functionality of the Canal with a construction of a turning basin. Construction of new docks for the Port. **Development of inland ports**	Sistemi Territoriali S.p.A. (Regione Veneto)	<2020	Cost: Study 1.5 mln Works : Turning basing 3,5 mln New docks 50 mln Possible co-financing 20-40% Resorce allocated 3,5 mln	Public fund and possible EU co-financing	Core section still not included in the alignment. Its inclusion has been proposed
Core 6 (proposal of inclusion in the Med alignment)	IWW	Fissero-Tartaro-Canalbianco, all section	Study and works	To upgrade navigation of the Fissero-Tartaro- Canalbianco to the Class V, are required works to realize in some relevant locations (5 locations identified), inbound and outbound docks (localized enlargements) to allow barges crossing and overtaking. **Freight transport services –other inland waterways works**	Sistemi Territoriali S.p.A. (Veneto Region)	<2020	Cost: Study 0.3 mln Works 6,5 mln Possible co-financing 20-40% Resources allocated 0,4 mln	Public funds and possible EU co-Financing	Core section still not included in the alignment. Its inclusion has been proposed
Core 7 (proposal of inclusion in the Med alignment)	IWW	IWW comprehensive port of Rovigo	Study and works	Enhancement of the rail connection of Rovigo inland port docks, and electrification of the rail segment **Rail Connections to inland ports** **Enhancement of the rail connection of Rovigo inland port docks, and electrification of the rail segment**	Interoporto Rovigo S.p.A. (Veneto Region).	<2020	Cost: Study 0,5 mln Works 5 mln Possible co-financing 20% Resources allocated 0 mln	Public funds and possible EU co-Financing and Private	Core section still not included in the alignment. Its inclusion has been proposed
Core 8 (comprehensive port)	IWW and TLC	IWW comprehensive port of Rovigo – Porto Levante	Study and works	Works to develop a new industrial logistic Area through the implementation of urbanisation works, improvement of rail connection; improvement of the inland traffic through the realization of new river quays **Development of a new industrial logistic Area**	Consorzio AIA (Veneto Region)	<2020	Cost: Study 0.3 mln Works 10 mln Resources allocated 2,3 mln	Public funds and possible EU co-Financing	Comprehensive port
Core 9 (proposal of inclusion in the Med alignment)	IWW	New canal Milan-Cremona (section Milano-Pizzighettone)	Study	Realisation of a new canal linking Milan East area in Truccazzano, in which new road (Bre-Be-Mi, external east Milan motorway) and rail (HS speed and High capacity rail) development axis will intersect, and the area of the main existing inland port of North Italy, Cremona, already provided with rail and road connection. (LENGTH 60km). **Resolution of physical bottlenecks**	AIPO (Lombardia Region)	<2020	Cost: works, 1.000 mln (possible 20-40% Co –finance) Project, 1 mln (on-going) Resource allocated 1mln - Study	Private, Public funds and possible EU co-Financing	Core section still not included in the alignment. Its inclusion has been proposed
Core 10 (proposal of inclusion in the Med alignment)	Rail	Milan - Bologna (conventional line) -Core network	Study and works	Upgrade of loading gauge to PC/80 **Interventions concerning compliance with Core Network standards on loading gauge (Gabarit**)	RFI S.p.A.	<2020	5	State and EU	Core section still not included in the alignment. Its inclusion has been proposed
Core 11 (proposal of inclusion in the Med alignment)	Rail	Vicenza-Treviso-Portogruaro (Comprehensive line); Milan - Bologna (core line, still not included in the alignment)	Study and works	Upgrade of train length to 740 m **Interventions concerning compliance with Core Network standards on trains length (Target: 740 m)**	RFI S.p.A.	<2020	55	State and EU	Comprehensive section still not included in the alignment. Its inclusion has been proposed
Core 12 (proposal of inclusion in the Med alignment)	Rail	Milan - Bologna (core line, still not included in the alignment)	Study and works	Technological upgrading*	RFI S.p.A.	<2020	250.00	State and EU	Core section still not included in the alignment. Its inclusion has been proposed
Com13	Rail	Milano node	Study and works	Rail connection Seregno – Bergamo. It is the extension of the Chiasso – Monza rail line, that allows freight traffic to by-pass Milan node. It is a link between Rhine-Alpine Corridor and Mediterranean Corridor.	RFI S.p.A.	<2030	1,000	State	Comprehensive section

Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Note
Com14	Rail	Faenza-Granarolo-Ravenna	Study and works	Faenza cut off line to link Faenza-Granarolo-Ravenna and Faenza-Rimini lines, aimed to improvement of freight traffic to/from Ravenna Porto	Emilia Romagna Region (network RFI)	<2030	20.00 (still not allocated)	Private, Public funds and possible EU co-Financing	Comprehensive section
Com15	RRT	Brescia –comprehensive node	Study and works	Realisation of a new terminal **Development of multimodal logistics platforms**	RFI S.p.A.	<2020	To be defined	State and EU	Comprehensive node
Com16	Rail andRRT	Terminal Modena Marzaglia[75]	Study and works	Realisation of a new terminal, Technological upgrading and relocation of the railway line Modena-Rubiera **Development of multimodal logistics platforms**	RFI S.p.A.	<2020	138	State and EU	New RRT located on a Core section still not included in the alignment. Its 60inclusion has been proposed
Com 17	Road	Dalmine – Como – Varese – Valico del Gaggiolo	Study and works	Pedemontana Lombarda motorway. A segment, between A8 motorway, in Cassano Magnago, and A9 motorway, in Lomazzo, is still completed; the segment between A9 motorway, in Lomazzo, and SP ex SS35 freeway, in Lentate sul Seveso, is under construction.	CAL S.p.A.	<2020	4,166.00	Project financing	Comprehensive road section not included in the alignm ent, surrounding a core urban node

Table 112 Proposed projects related to nodes / sections which are not part of the corridor - Italy
**adjustment to price increase should be considered*

[75] This project is related to construction of a new terminal currently not included in the TENt core network. It is linked to Milano-Bologna line, a line that should be included in the official corridor alignment *(please see paragraph 5.5.2)* .

5.9.4 Slovenia

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs *(in mln Euro)*	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean	R1	Rail	Pragersko–Hodoš (SI)	Works	Reconstruction, electrification and upgrading of the railway line Pragersko – Hodoš for 160 km/h and modernisation of level crossings and construction of subways on railway stations **Electrification**	Ministry of Infrastructure	< 2020	460.00	Public funds and possible EU co-financing	**Yes**	Physical bottleneck (single track) and low technical standards (lack of capacity, not electrified section, ERTMS not in operation)
Mediterranean & Baltic Adriatic	R2	Rail	Zidani Most – (Celje) Pragersko (SI)	Studies (Eligibility pre-study, Project documentation)	Reconstruction or upgrading of track (evaluation is on-going) in order to increase throughput and capability (category D4) **Resolution of physical bottlenecks** **Interventions concerning compliance with Core Network standards for loading gauge.**	Ministry of Infrastructure	< 2020	Evaluation on-going	State and EU (TEN-T)	**Yes**	Physical bottleneck and low technical standards (lack of capacity, ERTMS not in operation, limited speed, axle load limitation)
Mediterranean & Baltic Adriatic	R3	Rail	Station Pragersko (SI)	Works (Reconstruction of the hub)	Upgrading of the station in order to increase capacity **Resolution of physical bottlenecks**	Ministry of Infrastructure	< 2020	185.00	State, Cohesion Fund	**Yes**	Physical bottleneck
Mediterranean & Baltic Adriatic	R4	Rail	Slovenska Bistrica – Pragersko Core network	Works	Upgrading of tracks **Resolution of physical bottlenecks**	Ministry of Infrastructure	< 2020	35.64	Public funds and possible EU co-financing	**Yes**	Physical bottleneck and low technical standards (lack of capacity, ERTMS not in operation, limited speed)
Mediterranean & Baltic Adriatic	R5	Rail	Zidani Most-Pragersko Core network	Works	Upgrading of the Poljčane railway station: this project comprises the upgrade of tracks and catenaries, renewal of the safety signalling and telecommunication devices, construction of new passenger platform including out-of-level access to the new platform. **Resolution of physical bottlenecks**	Ministry of Infrastructure	< 2020	26.30	Public funds and possible EU co-financing	**Yes**	Physical bottleneck
Mediterranean & Baltic Adriatic	R6	Rail	Zidani Most-Pragersko Core network	Works	Upgrading of the Dolga Gora-Poljčane railway line: radical upgrade of the section over a length of 7.5 km, including upgrading of tracks, renewal of the safety signalling and telecommunication devices, modernisation of the catenary, sanitation of dyke and retaining walls, settlement of out-of-level crossings, etc. **Resolution of physical bottlenecks**	Ministry of Infrastructure	< 2020	45.43	Public funds and possible EU co-financing	**Yes**	Physical bottleneck and low technical standards (lack of capacity, ERTMS not in operation, limited speed)
Mediterranean & Baltic Adriatic	R7	Rail	Zidani Most–Celje (SI)	Works (track upgrade)	Upgrading of tracks in order to assure D4 down the whole section Benefit (Capacity improvement) **Resolution of physical bottlenecks** **Interventions concerning compliance with Core Network standards for loading gauge.**	Ministry of Infrastructure	< 2020	156.00	State, Cohesion Fund	**Yes**	Low technical standards (axle load limitation)
Mediterranean & Baltic Adriatic	R8	Rail	Ljubljana – Zidani Most (SI)	Works	Upgrading of the existing line in order to assure D4 down the whole track, signalling enhancement, increase of throughput and capability of the track to 180-190 trains per day, improvement of running speed, enable the use of trains up to 740m. **Resolution of physical bottlenecks** **Interventions concerning compliance with Core Network standards** **Development of traffic management system.**	Ministry of Infrastructure	Evaluation on-going	747.00	Public funds and possible EU co-financing	**Yes**	Physical bottleneck and low technical standards (ERTMS not in operation, D3 already developed, train length limitation)
Mediterranean & Baltic Adriatic	R9	Rail	Ljubljana Railway Hub (LRH) (SI)	Studies (Preliminary study)	Construction of substitute by-pass line under the city or around it in order to eliminate cargo traffic from city centre and main train station in Ljubljana **Resolution of physical bottlenecks**	Ministry of Infrastructure	< 2030	1,053	Public funds and possible EU co-financing	**Yes**	Physical bottleneck (intervention of traffic diversion needed)
Mediterranean & Baltic Adriatic	R10	Rail	Ljubljana-Sežana (SI)	Studies (Eligibility pre-study)	Upgrading of stations and open line safety-signalling devices, installation of automatic block section and upgrade of track (for some sections) **Resolution of physical bottlenecks**	Ministry of Infrastructure	< 2020	Evaluation on-going	State and the EU (CEF)	**Yes**	Safety interventions needed

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs *(in mln Euro)*	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean & Baltic Adriatic	R11	Rail	Divača-Koper (SI)	Works	Construction of a new line in order to increase capacity and to achieve TEN-T standard. **Resolution of physical bottlenecks**	Ministry of Infrastructure	< 2020	194.00	Public funds and possible EU co-financing	**Yes**	Insufficient integration among transport modes, physical bottleneck (single track, speed limitations, unfavourable route)
Mediterranean & Baltic Adriatic	R12	Rail	Divača–Koper (SI)	Studies	Construction of the 2nd track (new line, tunnels, bridges) in order to increase the capacity, running speed and degree of safety. **Resolution of physical bottlenecks**	Ministry of Infrastructure	< 2020	819.00	State, CEF, IPE – Cohesion, IPE – private funding	**Yes**	Insufficient integration among transport modes, physical bottleneck (single track, speed limitations, high gradients, unfavourable route)
Mediterranean & Baltic Adriatic	R13	Rail	Trieste-Divača (SI)**	Studies (Preliminary study)	Construction of a new line in order to increase capacity and to achieve TEN-T standard. **Actions concerning Rail cross-border sections**	Ministry of Infrastructure	< 2020	280.00	Public funds and possible EU co-financing	**Yes**	Physical bottleneck
Mediterranean & Baltic Adriatic	R14	Rail	Sezana/Koper-Ljubljana-Hodos Core network	Traffic Management System / Telematics System	Signalling enhancement (ERTMS) **Development of traffic management system**	Ministry of Infrastructure	< 2020	56.00	Public funds and possible EU co-financing	**Yes**	Low technical standard (all sections not equipped with ERTMS)
Mediterranean & Baltic Adriatic	R15	Rail	Sezana/Koper-Ljubljana-Hodos Core network	Study	GSM-R implementation **Development of traffic management system**	Ministry of Infrastructure	< 2020	149.00	Public funds and possible EU co-financing	**Yes**	Need of improved traffic management system
Mediterranean & Baltic Adriatic	R16	Rail	Tivoli ARCH, Ljubljana knot (SI)	Studies (Preliminary study, preliminary design for 3 km of track)	Construction of a new line (creation of siding, pax tracks, extra tracks) **Resolution of physical bottlenecks**	Ministry of Infrastructure	< 2020	0.10	Public funds and possible EU co-financing	**Yes**	Physical bottleneck (intervention of traffic diversion needed)
Mediterranean & Baltic Adriatic	R17	Rail	Tivoli Arch (SI)	Works (Conceptual project and geographical location)	Upgrading of Ljubljana station in order to assure direct connection, increase capacity improvement **Resolution of physical bottlenecks**	Ministry of Infrastructure	< 2020	50.00	State, CEF	**Yes**	Physical bottleneck (intervention of traffic diversion needed)
Mediterranean & Baltic Adriatic	S1	Seaport	Port of Koper	Works	*Dredging works and quay adjustments:* **a)** Extension of Pier I in order to support the expected growth of container traffic. *(Costs Phase I: 100.00, Phase II: 60.00. Timing: Studies ongoing, co-financed by TEN-T project NAPA PROG, Phase I: 2014-2020, Phase II: after 2020.Financing phase 1: CEF (MOS) and EIB)* **b)** Construction and improvement of new berthing facilities port Basins I, II and III. *(Costs: Phase I: 40.00, Phase II: 20.00. Timing: Studies: ongoing, most co-financed by Project NAPA STUDIES, Phase I: 2014-2020, Phase II: after 2020.Financing: Phase I: CEF and EIB)* **c)** Dredging of port's basins according needs due to the increase of vessels size (global trend). *(Costs: Phase I: 10.00, Phase II: 10.00. Timing: Studies: to be prepared, Phase I: 2014-2020, Phase II: after 2020. Financing: Phase I: CEF)* **d)** Dredging of port's accessing canal to Basin II due to the increase of vessels size (global trend). *(Costs: 15 MLN. Timing: Studies: to be prepared, 2014-2020. Financing: Cohesion Fund (investor Republic of Slovenia)*	Luka Koper d.d.	Dredging works and quay adjustments: >2020 New port facilities/upgrading of existing facilities >2020	Dredging works and quay adjustments: 705.00 New port facilities/upgrading of existing facilities 25.00	ERDFand Cohesion (CEF)and EIB		Physical bottleneck (lack of capacity in the medium run, objective: achieve an increase above 24 mio tonnes/year by 2020)/ Physical bottleneck (lack of capacity in the long run, objective: achieve an increase above 30 mio tonnes/year by 2030)/

Overlap with other corridors	Code	Transport mode	Location*	Type of project	Description of project	Project promoter	Timing	Costs *(in mln Euro)*	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
					e) Extension of Pier II. *(Costs: 200 MLN. Timing: Studies: to be prepared after 2020. Financing: CEF (MOS) and EIB).* **f)** Construction of Pier III. *(Costs: 250 MLN. Timing: Studies: to be prepared after 2020. Financing: CEF)* **Resolution of physical bottlenecks** *New port facilities/upgrading of existing facilities* **g)** Passenger terminal infrastructure *(Costs: 3 MLN. Timing: Studies: ongoing, to be completed 2014-2020. Financing: Phase I: ERDF, Cohesion CEF)* **h)** Arrangement of port's back areas (extension of port area in its direct interland) *(Costs: Phase I:12.00, Phase II: 10.00. Timing: Studies: to be prepared, Phase I: 2014-2020, Phase II: after 2020. Financing: Phase I: CEF)* **Resolution of physical bottlenecks**						
Mediterranean & Baltic Adriatic	S2	Seaport-rail/road last miles	Port of Koper	Works	*Upgrading road access (last mile):* **a)** Construction of port new entries and supporting road infrastructure, enabling a direct last mile access to the motorway *(Costs: Phase I: 20.00, Phase II: 10.00. Timing: Studies: mostly completed, potentially some additional studies to be prepared, Phase I: 2014-2018, Phase II: after 2020. Financing: Phase I: CEF/MOS priority last mile or Cohesion)* **Resolution of physical bottlenecks** **Connection to rail network** *Upgrading rail access (last mile)* **b)** Construction of additional connecting rail infrastructure network within the port, and adapting it to the up-graded public infrastructure connections *(Costs: Phase I: 20.00, Phase II: 20.00. Timing: Studies: ongoing, some co-financed by project NAPA STUDIES, Phase I: 2014-2020, Phase II: after 2020. Financing: Phase I: CEF/MOS priority)* **Connection to road network**	Luka Koper d.d.	Upgrading road access (last mile): >2020 Upgrading rail access within the port >2020	Upgrading road access (last mile) 30.00 Upgrading rail access within the port 40.00	CEF/MOS priority last mile Possible Cohesion or ERDF Funding		Road/rail last mile links to be enhanced
Mediterranean	Road 1	Road	Ljubljana	Works	Ljubljana motorway ring: extension in 6 lines **Resolution of physical bottlenecks**	Ministry of Infrastructure	> 2030	900.00	Evaluation on going		Physical bottleneck (an intervention it would be required ameliorate the traffic conditions and ensure a better safety standard)

Table 113 Proposed list of projects for Slovenian sections and nodes belonging to the Mediterranean corridor

All white rows concern projects related to core sections of the Mediterranean corridor.

***The pre-identified projects listed in Regulation 1316/2013 annex 1 are not clearly defined, therefore this analysis is an attempt to filter the potential pre-identified projects from the others*

The following projects concern internventions that have been proposed by Member State. Although they regard sections/nodes that are not part of the Mediterranean corridor (comprehensive sections/nodes or core sections not included in the alignment), these projects could be considered important for development of the corridor.

Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Note
Com1	Rail	Maribor–Šentilj (SI)	Studies (Preparation of project documentation)	Rehabilitation of existing line, Construction of the 2nd track (new line) Benefits: D4, running speed and degree of safety Increase the capacity, TEN-T standard	Slovenian railways	< 2020	245.00	Public funds and possible EU co-Financing	Comprehensive section

Table 114 Proposed projects related to nodes / sections which are not part of the corridor - Slovenia

5.9.5 Croatia

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs *(in mln Euro)*	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean	R1	Rail	Križevci – State border Core network	Study Works – new construction and upgrade	Improvement of the existing single rail track (short term target). Construction of the second track on the railway line section Križevci – State border (long term target), upgrading to ERTMS level 1 **Resolution of physical bottlenecks** **Interventions concerning compliance with Core Network standards and gradient**	HZI d.o.o.	Study < 2020 *On going* Works < 2030	275.00	Study: IPA Works: Cohesion fund CEF	**Yes**	Physical bottleneck(single track line) and low technical standards (limited train length, operating speed, ERTMS not in operation)
Mediterranean	R2	Rail	D. Selo Križevci Core network	Study Works – new construction and upgrade	Improvement of the existing single rail track (short term target). Construction of the second track on the railway line section D. Selo Križevci (long term target), upgrading to ERTMS level 1. **Resolution of physical bottlenecks** **Interventions concerning compliance with Core Network standards and gradient**	HZI d.o.o.	Study < 2020 *On going* Works < 2020	250.00	Study: IPA Works: ERDF	**Yes**	Physical bottleneck(single track line) and low technical standards (limited train length, operating speed, ERTMS not in operation)
Mediterranean	R3	Rail	Hrvatski Leskovac – Karlovac Core network	Study Works – new construction and upgrade	Improvement of the existing single rail track (short term target). Construction of the second track on the railway line section Hrvatski Leskovac – Karlovac (long term target), upgrading to ERTMS level 1. **Resolution of physical bottlenecks** **Interventions concerning compliance with Core Network standards**	HZI d.o.o.	Study < 2020 *On going* Works < 2030	350.00	Study: IPA Works: Cohesion fund	**Yes**	Physical bottleneck(single track line) and low technical standards (limited train length, operating speed, ERTMS not in operation)
Mediterranean	R4	Rail	Goljak – Skradnik Core network	Works – new construction	Construction of the new double-track line, electrified line 25 kV, 50 Hz, max gradient 12.5 ‰, min. curve radii 3500m, heavy haul train mass up to 2000 tonnes, passenger train speed 160 (200) km/h, upgrading to ERTMS level 1, structure gauge GC **Resolution of physical bottlenecks** **Interventions concerning compliance with Core Network standards and gradient**	HZI d.o.o.	Study < 2020 *On going* Works < 2030	650.00	Study: IPA Works: Cohesion fund	**Yes**	Physical bottleneck (single track line)
Mediterranean	R5	Rail	Ogulin-Delnice-Škrljevo	Feasibility Study Works – new construction and upgrade	This feasibility study and related cost benefit analysis concern: improvement of the existing single rail track; extension of the maximum admissible train length up to 740m. by of infrastructural works on stations, namely Ogulin, Ogulinski Hreljin, Gomirje, Moravice, Skrad; the upgrading to ERTMS level 1; electrification 25kV. Moreover, the realisation of a second track is foreseen. **Resolution of physical bottlenecks** **Interventions concerning compliance with Core Network standards and gradient**	HZI d.o.o.	Study < 2020 Works > 2030	667.00	Works: Cohesion fund	**Yes**	Physical bottleneck (single track line, limited loading gauge PC 52/368)) and low technical standards (limited train length, limited operating speed, ERTMS not in operation)
Mediterranean	R6	Rail	Škrlievo-Rijeka	Feasibility Study Works – new construction and upgrade	This feasibility study and related cost benefit analysis concern: Improvement of existing single rail track in compliance with TEN-t requirements such as electrification 25kW, ERTMS level 1; moreover the construction of a second track and the upgrading of several stations are foreseen. **Resolution of physical bottlenecks** **Interventions concerning compliance with Core Network standards and gradient**	HZI d.o.o.	Study completed < 2020 Works < 2030	183.00*	Study: Fund Works: Cohesion fund	**Yes**	Physical bottleneck (single track line, limited loading gauge PC 52/368)) and low technical standards (limited train length, limited operating speed, ERTMS not in operation)
Mediterranean	R7	Rail	Zagreb railway bypass	Feasibility Study	This feasibility study and related cost benefit analysis concern: construction of a new double track freight railway bypass of Zagreb with connections to the railway lines to Rijeka and Novska and construction of the stations for the maximum admissible train length up to 740m, ERTMS level 1, electrification 25kV. **Resolution of physical bottlenecks**	HZI d.o.o.	Study < 2020 Works < 2030	900.00	Study: Fund Works: Cohesion fund	**Yes**	Physical bottleneck (construction of a new double track freight line bypassing the node of Zagreb)

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs *(in mln Euro)*	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
					Interventions concerning compliance with Core Network standards and gradient						
Mediterranean	P1	Port	Rijeka port/rail access Core node	Works – new construction	<u>*Upgrading rail access outside the port:*</u> **a)** Reconstruction of Rijeka-Brajdica railway station and construction of an intermodal yard *(Costs: 25.00, VAT is not included, Land acquisition is included. Timing: 2015 – 2017. Financing: TEN – CEF financing, Non-EU financial instruments (IBRD))* **b)** Reconstruction of Rijeka-Cargo railway station and construction of intermodal yard *(Costs: 40.00, VAT is not included, Land acquisition is included. Timing: 2016 – 2019. Financing: TEN – CEF financing, Non-EU financial instruments (IBRD))* **Resolution of physical bottlenecks** **Connection to rail network**	Port of Rijeka authority	<2020	65.00	TEN – CEF financing EBRD EIB Non-EU financial instruments (IBRD)	**Yes**	Physical bottleneck, insufficient integration among transport modes (poor railway capacity in Rijeka port)/**(a,b)**
Mediterranean	P3	Port	Rijeka port Core node	Works – new construction	<u>*Capacity increase:*</u> **a)** Construction of a new deep-sea pier at Zagreb pier container terminal (Costs: 52.00 , VAT is not included, Land acquisition is included. Timing: 2016 – 2019. Financing: TEN – CEF financing, Non-EU financial instruments (IBRD)) **Resolution of physical bottlenecks** **Actions to support the development of motorways of the sea** <u>*Traffic Management System / Telematics System:*</u> **b)** Implementation of port community system within port of Rijeka (Costs: 2.00 , VAT is not included. Timing: 2015 – 2016. Financing: TEN – CEF financing, Non-EU financial instruments (IBRD)) **Actions to support the development of motorways of the sea** **Development of traffic management system**	Port of Rijeka authority	Capacity increase <2020 TMS / Telematics System <2020	Capacity increase 52.00 TMS / Telematics System 2.00	TEN – CEF financing EBRD EIB Non-EU financial instruments (IBRD)	**Yes**	Physical bottleneck (limited Container storage capacity)/**(a)** Administrative and operational barriers (Low level of information integration among port community)/ **(b)**

Table 115 Proposed list of projects for Croatian sections and nodes belonging to the Mediterranean corridor
All white rows concern projects related to core sections of the Mediterranean corridor.
***The pre-identified projects listed in Regulation 1316/2013 annex 1 are not clearly defined, therefore this analysis is an attempt to filter the potential pre-identified projects from the others*

The following projects concern internventions that have been proposed by Member State. Although they regard sections/nodes that are not part of the Mediterranean corridor (comprehensive sections/nodes or core sections not included in the alignment), these projects could be considered important for development of the corridor.

Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs (in mln Euro)	Financing sources	Note
Com1	Rail	Škrljevo – Rijeka – Jurdani Core network	Works – new construction	Upgrading of the existing line (including construction of second track parallel to the existing track), electrified line 25 kV, 50 Hz, max gradient 27‰, min. curve radii 250m, heavy haul train mass up to 1500 tonnes, passenger train speed 70-80km/h, structure gauge GC, upgrading to ERTMS level 1, reconstruction of the stations Opatija-Matulji, Jurdani and Šapjane and building new stops. **Resolution of physical bottlenecks** **Interventions concerning compliance with Core Network standards and gradient**	HZI d.o.o.	Study < 2020 Works < 2030	120.00*	Works: Cohesion fund	Comprehensive railway section

*The total estimated cost (about 300 mln) includes a comprehensive section of the Mediterranean Corridor Rijeka-Sapjane (please see intervention “Com1”).
Table 116 Proposed projects related to nodes / sections which are not part of the corridor - Croatia

5.9.6 Hungary

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs *(in mln Euro)*	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean	R1	Rail	Budapest Ferencváros - Székesfehérvár	Work	ETCS2 implementation on rail line between Budapest-Ferencváros and Székesfehérvár **Development of traffic management system**	Government	< 2020	5.48	ITOP/IKOP; Cohesion Fund		Outdated telecommunications systems in use
Mediterranean	R2	Rail	Székesfehérvár - Veszprém and Boba	Work	ETCS2 implementation and upgrading of Székesfehérvár - Veszprém - Boba rail line. **Development of traffic management system** **Resolution of physical bottleneck**	Government	< 2020	270.88	Connecting Europe Facility (CEF)	**Yes**	Upgrade needed and Outdated telecommunications systems in use
Mediterranean	R3	Rail	Bajánsenye - Boba	Work	ETCS2 implementation on Bajánsenye - Boba **Development of traffic management system**	Government	< 2020	3.55	ITOP/IKOP; Cohesion Fund		Outdated telecommunications systems in use
Mediterranean	R4	Rail	Budapest-Kelenföld and Százhalombatta	Work	Upgrading of Kelenföld - Százhalombatta rail line (22,5 t, 120 km/h, ETCS2) **Interventions concerning compliance with Core Network standards** **Development of traffic management system**	Government	< 2020	151.56	Connecting Europe Facility (CEF)		Assure inter-operability and Outdated telecommunications systems in use
Mediterranean	R5	Rail	Százhalombatta - Pusztaszabolcs	Work	Upgrading of Százhalombatta - Pusztaszabolcs rail line (22,5 t, 160 km/h, ETCS2) **Interventions concerning compliance with Core Network standards** **Development of traffic management system**	Government	< 2020	274.11	Connecting Europe Facility (CEF)		Assure inter-operability and Outdated telecommunications systems in use
Mediterranean	R6	Rail	Pusztaszabolcs - Dombóvár	Work	Upgrading of Pusztaszabolcs - Dombóvár rail line. **Interventions concerning compliance with Core Network standards**	Government	< 2020	225.73	Connecting Europe Facility (CEF)		Single track line, axle load<22.5
Mediterranean	R7	Rail	Dombóvár - Kaposvár - Gyékényes	Work	Upgrading of Dombóvár - Kaposvár - Gyékényes rail line **Interventions concerning compliance with Core Network standards**	Government	< 2020	174.14	Connecting Europe Facility (CEF)		Single track line, Limited speed, axle load<22.5
Mediterranean	R8	Rail	Rákos - Hatvan	Work	Upgrading of Rákos - Hatvan rail line **Interventions concerning compliance with Core Network standards on axle load**	Government	< 2020	383.75	Connecting Europe Facility (CEF)	**Yes**	axle load<22.5
Mediterranean	R9	Rail	Nagyút -Mezőkeresztes-Mezőnyárád	Work	Upgrading and resolution of physical bottlenecks on Nagyút - Mezőkeresztes-Mezőnyárád rail line **Interventions concerning compliance with Core Network standards on axle load**	Government	< 2020	46.76	ITOP; Cohesion Fund	**Yes**	axle load<22.5
Mediterranean	R10	Rail	Stations on railway line between Nagyút and Mezőkeresztes-Mezőnyárád	Work	Upgrading of the rail lines and resolution of physical bottlenecks of Nagyút - Mezőkeresztes-Mezőnyárád Stations **Resolution of a physical bottleneck**	Government	< 2020	34.83	ITOP; Cohesion Fund	**Yes**	Stations reconstruction needed
Mediterranean	R11	Rail	Hatvan –Miskolc	Work	Upgrading of Hatvan - Miskolc rail line. **Resolution of a physical bottleneck**	Government	< 2020	180.59	ITOP; Cohesion Fund	**Yes**	axle load<22.5
Mediterranean	R12	Rail	Miskolc – Nyíregyháza	Work	Upgrading of Miskolc - Nyíregyháza line rail line. **Resolution of a physical bottleneck**	Government	< 2020	203.16	ITOP; Cohesion Fund	**Yes**	Single track line, axle load<22.5
Mediterranean, Rhine- Danube & Orient East corridor	R13	Rail	Szolnok railway station	Work	Upgrading of Szolnok station. **Resolution of a physical bottleneck**	Government	< 2020	131.25	Connecting Europe (CEF)		Szolnok railway junction complete development necessary,
Mediterranean	R14	Rail	Szajol – Püspökladány	Work	Upgrading of Szajol - Püspökladány rail line **Resolution of a physical bottleneck**	Government	< 2020	0.77	ITOP/IKOP; Cohesion Fund		Budapest-Szajol-Debrecen-Nyiregyhàza: there is mainly passenger traffic, so section Szajol-Puspokladàny will be for 160 km/hour. Section reconstruction needed

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs *(in mln Euro)*	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
Mediterranean	R15	Rail	Szajol – Debrecen	Work	Upgrading of Püspökladány – Debrecen rail line and ETCS2 implementation between Szajol and Debrecen rail line **Resolution of a physical bottleneck** **Development of traffic management system**	Government	< 2020	226.06	ITOP; Cohesion Fund		Assure inter-operability and Outdated telecommunications systems in use
Mediterranean, Rhine- Danube & Orient East corridor	R16	Rail	Budapest Node	Study(a) Works (b)	Upgrading of Budapest Southern Danube Railway Bridge **Resolution of a physical bottleneck**	Government	< 2020	112.87	Connecting Europe Facility (CEF) (a) / Financing credit (b)		Need for extension (widening) to 3 tracks of the Southern Rail Bridge in Budapest simultaneously with a full reconstruction of the existing, deteriorated bridge. This measure is needed due to extremely high traffic load.
Mediterranean, Rhine- Danube & Orient East corridor	R17	Rail	Szolnok (120a), Dombóvár (40), Vinár railways bridges, etc	Work	Bridge upgrading programme of Hungarian Railways (MÁV) (I. phase) **Resolution of a physical bottleneck**	Government	< 2020	28.38	ITOP; Cohesion Fund		Outdated railway bridges along the Mediterranean corridori
Mediterranean, Rhine- Danube & Orient East corridor	R18	Rail	Hegyeshalom (HU-AT border) - Budapest - Lőkösháza (HU - RO border), Hodos (SI - HU border) and Boba and Győr, Budapest and Székesfehérvár, Sopron, Szombathely and Szentgotthárd	Work	GSM-R implementation 1st phase on several rail lines (935 km), namely: Hegyeshalom (HU-AT border) - Budapest - Lőkösháza (HU - RO border), Hodos (SI - HU border) and Boba and Győr, Budapest and Székesfehérvár, Sopron, Szombathely and Szentgotthárd. **Development of traffic management system**	Government	< 2020	15.16	ITOP/IKOP; Cohesion Fund	**Yes**	Outdated telecommunications systems in use
Mediterranean, Rhine- Danube & Orient East corridor	R19	Rail	Rail lines between Székesfehérvár and Boba, Győr and Sopron, Székesfehérvár and Nagykanizsa and Murakeresztúr and Gyékényes, Budapest-Kelenföld and Dombóvár, Dombóvár and Gyékényes, Dombóvár and Pécs and Magyarbóly (HU-HR border) Budapest-Ferencváros and Kelebia (HU-SR border), Cegléd and Szeged and Röszke (HU-SR border), Szajol and Záhony, Püspökladány and Biharkeresztes (HU-RO border), Budapest Rákos and Miskolc and Nyíregyháza, Miskolc and Hidanémeti (HU-SK border), Rákos and Újszász and Szolnok, Budapest and Vác and Szob (HU-SK border), Budapest and Esztergom, Budapest Kőbánya Kispest and Lajosmizse	Work	GSM-R implementation 2nd phase on several rail lines (2.554 km), namely: Székesfehérvár and Boba, Győr and Sopron, Székesfehérvár and Nagykanizsa and Murakeresztúr and Gyékényes, Budapest-Kelenföld and Dombóvár, Dombóvár and Gyékényes, Dombóvár and Pécs and Magyarbóly (HU-HR border) Budapest-Ferencváros and Kelebia (HU-SR border), Cegléd and Szeged and Röszke (HU-SR border), Szajol and Záhony, Püspökladány and Biharkeresztes (HU-RO border), Budapest Rákos and Miskolc and Nyíregyháza, Miskolc and Hidanémeti (HU-SK border), Rákos and Újszász and Szolnok, Budapest and Vác and Szob (HU-SK border), Budapest and Esztergom, Budapest Kőbánya Kispest and Lajosmizse **Development of traffic management system**	Government	< 2020	111.25	Connecting Europe Facility (CEF)	**Yes**	Outdated telecommunications systems in use
Mediterranean, Rhine- Danube & Orient East corridor	R20	Rail	Railway line between Szolnok and Szajol	Work	Upgrading of Szolnok - Szajol rail line **Resolution of a physical bottleneck**	Government	< 2020	9.35	ITOP/IKOP; Cohesion Fund		Szolnok-Szajol section reconstruction needed (in particular, heavy mixed traffic on out-dated Szolnok-Szajol-Püspökladány section, including at

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs *(in mln Euro)*	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
											worn-down Szolnok station)
Mediterranean	R21	Rail	Székesfehérvár railway station	Work	Upgrading of tracks, upper wire, safety systems and buildings (Székesfehérvár station) **Resolution of a physical bottleneck**	Government	< 2020	74.17	ITOP/IKOP; Cohesion Fund	**Yes**	Upgrading needed
Mediterranean, Rhine- Danube & Orient East corridor	R22	rail	MÁV Railway lines	Work	Improvement of transport safety of MÁV (II phase) **Safe and secure infrastructure**	Government	< 2020	58.37	ITOP; Cohesion Fund		Safety interventions needed
Mediterranean, Rhine- Danube & Orient East corridor	R23	rail	Hungarian railway lines (sections belonging to the Mediterranean corridor)	Other	Software and IT application development for infrastructure and fleet management. **Safe and secure infrastructure**	Government	< 2020	10.32	ITOP; Cohesion Fund		
Med corridor & Rhine- Danube & Orient East corridor	R24	rail	TEN-T rail network belonging to the Mediterranean corridor	Work	Projects along the rail network belonging to the Mediterranean corridor with tight implementation schedule **Resolution of a physical bottleneck**	Government	< 2020	5.00	ITOP/IKOP; Cohesion Fund		
Mediterranean, Rhine- Danube & Orient East corridor	A1	Airport/rail last mile	Budapest Liszt Ferenc Airport	Work	Construction of the railway connections of Budapest Liszt Ferenc Airport. **Connection to railway network**	Government	< 2020	145.11	Connecting Europe Facility (CEF)	**Yes** (Rhine-Danube & Orient East corridor)	Physical bottleneck, insufficient integration between transport modes (there is no direct connection to railway network)
Mediterranean, Rhine- Danube & Orient East corridor	IWW/road	IWW	IWW and inland port belonging to the Mediterranean corridor	Study	Interventions related to the upgrading of the TEN-T IWW and port infrastructure **Resolution of a physical bottleneck**	Government	< 2020	50.78	Connecting Europe Facility (CEF)	**Yes** (Rhine-Danube & Orient East corridor)	Technical features (e.g. draught) of IWW (Danube) not aligned to the EU standard.
Mediterranean, Rhine- Danube & Orient East corridor	Road1	Road	Budapest node (M0 motorway)	Study	**a)** Upgrading of the Western section between "main road no. 10. - main road no. 1." (Costs: 17,74. Timing: 2014-2018. Financing: TOP (KözOP) and ITOP (IKOP); Cohesion Fund) **b)** Upgrading of the Western section between "main road no. 10. - main road no. 1." *(phase 2)* (Costs: n/a. Timing: 2020-2023. Financing: TOP (KözOP) and ITOP (IKOP); Cohesion Fund) **c)** Upgrading of the M0 motorway around Budapest: Southern section (between M1 and M5 motorways) upgrade *(1 phase)* (Costs: 70,34. Timing: 2015-2017. Financing: ITOP/IKOP; Cohesion Fund) **d)** Upgrading of the M0 motorway around Budapest: Eastern section (between M5 and M3 motorways) (Costs: 1,78. Timing: 2014-2015. Financing: ITOP/IKOP; Cohesion Fund) **Actions implementing transport infrastructure in nodes of the core network, including urban nodes**	Government	<2030	89.85	ITOP/IKOP; Cohesion Fund (a,b,c,d)		M0 resurfacing of first carriageway needed between 0 and000-29+500 km. The deteriorated asphalt pavement of the old carriageway on the Southern Section of M0 Ring Motorway between interchanges M1/M0 and M51/M0 is to be replaced by concrete pavement (including the renewal of the bridge across the Danube). The missing second carriageway (2x3 traffic lanes + emergency lane) of the M0 ring motorway is to be built between interchanges M1/M0 and M7/M0 (2.8 km)
Mediterranean	Road2	Road	M7 motorway (Zalakomár)	Work	**a)** Upgrading of M7: intervention on Zalakomár station (Costs: 2,03. Timing: 2014-2015. Financing: ITOP/IKOP; Cohesion Fund)	Government	< 2020	7.62	ITOP/IKOP; Cohesion Fund		

Overlap with other corridors	Code	Transport mode	Location	Type of project	Description of project	Project promoter	Timing	Costs *(in mln Euro)*	Financing sources	Potential Pre identified projects on the Core Network *(Regulation 1316/2013 - Annex I)***	Aim at solving the main critical issues
					b) Upgrading of M7: Érd, Iparos street junction upgrade *State:* Public procurement in progress. (Costs: 5,59. Timing: 2014-2015. Financing: TOP (KözOP) and ITOP (IKOP); Cohesion Fund) **Resolution of a physical bottleneck**						
Mediterranean	Road3	Road /cross border	M34 expressway between Vásárosnamény and Záhony (HU-UA border)	Study	M34: upgrading of expressway between Vásárosnamény - Záhony **Resolution of a physical bottleneck**	Government	< 2020	5.08	ITOP/IKOP; Cohesion Fund	**Yes**	Construction of last 23 km of motorway to UA border crossing necessary as an extension of Motorway M3
Mediterranean	Road4	Road	TEN-T road network	Work	Upgrading of road pavement, traffic safety and environmental interventions on high traffic intensity sections. **Safe and secure infrastructure**	Government	< 2020	94.66	ITOP/IKOP; Cohesion Fund		Intervention needed in order to decrease road traffic esternalities
Mediterranean	Road5	Road /cross border	M3 motorway between Vásárosnamény and Beregdaróc HU-UA border	Study	Upgrading of M3: section between Vásárosnamény - Beregdaróc HU-UA border (2x1 lanes). *Status* planning. Border crossing intersection has agreed. Ukrainian section continuation still not prepared. **Resolution of a physical bottleneck**	Government	< 2020	12.44	Connecting Europe Facility (CEF)	**Yes**	Measures concerning border—crossing HU-UA
Mediterranean	Road6	Road /cross border	M3 motorway between Vásárosnamény and Beregdaróc HU-UA border	Work	Road construction **Safe and secure infrastructure**	Government	< 2020	81.80	Connecting Europe Facility (CEF)	**Yes**	Measures concerning border—crossing HU-UA
Mediterranean	Road7	Road /cross border	M70 expressway between Letenye and Tornyiszentmiklós HU-SI border	Work	M70: section between Letenye – Tornyiszentmiklós HU-SI border. **Resolution of a physical bottleneck**	Government	< 2020	41.92	Connecting Europe Facility (CEF)	**Yes**	Lack of motorway connection to Slovenia (Letenye-SI/HU border).
Mediterranean, Rhine- Danube & Orient East corridor	Road8	Road	TEN-t Road network (sections belonging to the corridor)	Work	Interventions related to upgrading of service level, sustainability, operation support devices and machinary **Safe and secure infrastructure**	Government	< 2020	8.20	KözOP/TOP and ITOP/IKOP; Cohesion Fund		
Mediterranean, Rhine- Danube & Orient East corridor	Road9	Road	TEN-t Road network (sections belonging to the corridor)	Work	Service level, sustainability, operation development of facilities on the TERN sections of Hungary **Safe and secure infrastructure**	Government	< 2020	1.50	KözOP/TOP and ITOP/IKOP; Cohesion Fund		

Table 117 Proposed list of projects for Hungarian sections and nodes belonging to the Mediterranean corridor
All white rows concern projects related to core sections of the Mediterranean corridor.
***The pre-identified projects listed in Regulation 1316/2013 annex 1 are not clearly defined, therefore this analysis is an attempt to filter the potential pre-identified projects from the others*

5.10 Comparison of TMS with the RFC6 market study

Base year data

The transport market study of the RFC6 is based on the same sources of the TMS of the Mediterranean corridor (TMS), such as in particular: Etisplus and CAFT data.

Nevertheless, the following changes have been done in order to create a consistent database:

1/ Flows between France and Italy:

Analysis of CAFT data undertaken under the TMS gives 25,8 Mtons by road instead of 22 Mtons provided by the ETISplus database and 23,2 Mt in the tables of the RFC6 implementation plan (p.93); TMS data has been specifically adjusted on Alpinfo 2010 data for all relevant alpine crossings.

Alpinfo and CAFT data give 5,3 Mtons by rail (flows in Modane, Vintimille and Swiss crossings, including rolling motorway), whereas flows shown in ETISplus and RFC6 tables are 3,0 Mtons.

In RFC6, an analysis of possibly preferred paths among different alternatives for any "NUTS3 level OD pair" has been considered to assign flows to different border crossings.

2/ Flows on eastern borders:

The Eurostat data (which is the statistic sources of the ETISplus database) are based on the information provided by the Member States that could be partial or missing in some cases.

Following an in-depth analysis, the following "critical" origin-destination road flows have been identified:

- Croatia – Italy;
- Slovenia – Croatia;
- Italy – Hungary;
- Slovenia – Hungary;
- Croatia – Hungary. (In line with the regulation 913/2010, in the first phase of the RFC 6 TMS, Croatia hasn't been considered as part of the corridor; it will be the case in the upcoming follow up of the study);

In those cases, data provided by ETISplus leads to overestimate the rail shares. In addition, these data are not consistent to the observed flows on the cross-border roads.

As a result, the road flows between these countries have been estimated using a simplified gravity model and checking the consistence of the related results with the observed cross-border flows.

The above additional estimations has led to significant differences on the mentioned sections with the RFC6 estimation directly based on the Etisplus data.

All the other relations have the same sources at country – country level.

On the other hand, at Nuts2 level, some differences has been revealed (please see p. 107 of the RFC6 implementation plan).

For example, according to the RFC6 estimation on the relation Cataluña- Languedoc-Roussillon 4,6 million tons are exchanged in comparison to the 1,6 million tons assumed in the TMS.

In this case, TMS is based on the Etisplus database. For the RFC6 TMS , the Etisplus database have been fine tuned according to CAFT data.

Definition of the "catchment area" of the corridor

Under the TMS, the "catchment area" of the corridor is defined as the origin-destination flows that cross at least one border between the corridor countries, using a minimum cost assignment procedure on a 2030 network assuming the corridor implementation (using TransCAD software).
In RFC6 TMS the catchment area is considered as the sum of all zones crossed by Corridor 6 and the adjacent ones.

An O/D flow is then considered as part of the market area of the corridor its minimum cost path on this network crosses one of the above mentioned borders.This definition is more restrictive than the one of the RFC6: RFC6 includes in the "potential market" also flows that are not included in TMS ; As a matter of fact in RFC 6 TMS the OD pairs in market area of RFC6 includes also the following ones:

- Origin and Destination in NUTS3 zones crossed by Corridor 6, but in 2 different Countries;

- Origin or Destination in NUTS3 zones crossed by Corridor 6 and connected at least by a path through Corridor 6 and crossing at least one border between 2 of the 5 countries;

- Origin and Destination outside the NUTS3 zones crossed by Corridor 6 but connected at least by a path through Corridor 6 and crossing at least one border between 2 of the 5 countries, not longer than 1,5 times the "shortest path" from Origin and Destination;

As a logical consequence of the two different hypothesis, the TMS market area has lower global volumes (152 Mtons) than the one of the RFC6 market study (233 Mtons).

Growth of overall demand by 2030

In the RFC6 market study (p.154), the global freight demand in the corridor area is assumed to grow from 233 Mtons to 296 Mtons (worst case), to 359 Mtons (regular case) or to 457 Mtons (best case) in 2030, which leads to an average annual growth rates of respectively 1,2%, 2,2% and 3,4%.
In the TMS, the average annual growth rate, based on the EU commission GdP assumptions, is 2,8%.
In the regular case the RFC6 growth rate is 2,2%, lower than TMS due the following reasons reasons:

1- RFC6 considers other parameters and not only the GDP assumptions

2- GDP assumptions in TMS 2014 and in RFC6 are different