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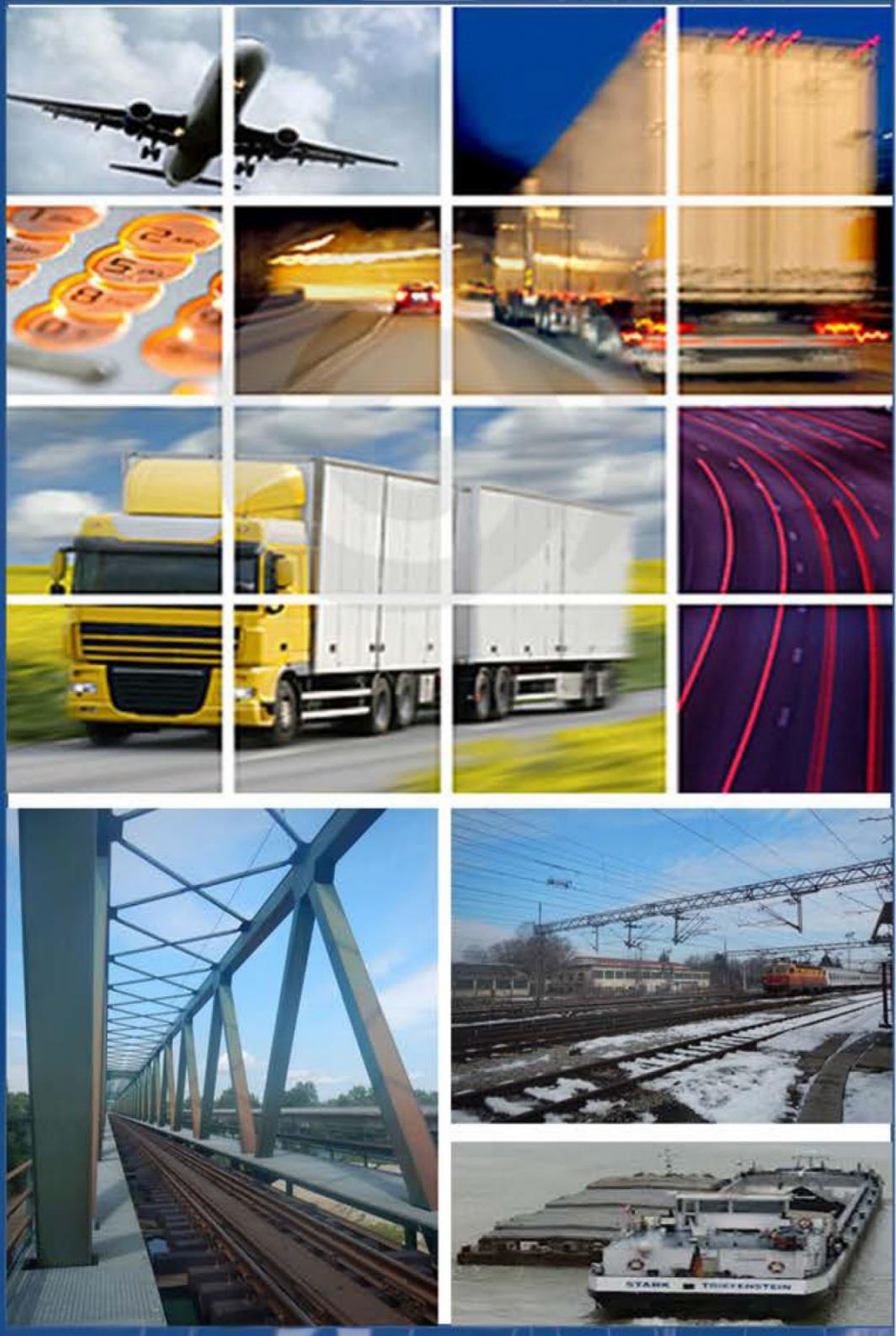
TRANSPORT DEVELOPMENT STRATEGY OF THE REPUBLIC OF CROATIA (2014 – 2030)



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Republic of Croatia
MINISTRY OF MARITIME AFFAIRS, TRANSPORT AND INFRASTRUCTURE

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INDEX OF CONTENTS

INDEX OF FIGURES

INDEX OF TABLES

LIST OF ABBREVIATIONS

AGIN	European Agreement on Main Inland Waterways of International Importance
ATM	Air Traffic Management
CBS	Croatian Bureau of Statistics
CETC	Central European Transit Corridor
CNG	Compressed natural gas
DPSIR	Driving forces, Pressures, State, Impact and Responses
EASA	European Aviation Safety Agency
EC	European Commission
ECAA	European Common Aviation Area
ERTMS	European Rail Traffic Management System
ESI Funds	European Structural and Investment Funds
ETCS	European Train Control System
EU	European Union
EUSAIR	EU Strategy for the Adriatic and Ionian Region
EUSDR	EU Strategy for the Danube Region
GDP	Gross Domestic Product
GHG	Greenhouse gasses
GT	Gross tonnage
ICAO	International Civil Aviation Organization
IPA	Instrument for Pre-accession Assistance
ISPA	Instrument for Structural Policies for Pre-Accession
ITS	Intelligent Transport Systems
KPI	Key Performance Indicators
LNG	Liquefied natural gas
MARPOL	International Convention for the Prevention of Pollution from Ships
MET	Maritime Education and Training
MMATI	Ministry of Maritime Affairs, Transport and Infrastructure
N/A	Not available
NTM	National Traffic Model
OG	Official Gazette
PSC	Public Service Contracts
PT	Public Transport
RIS	River Information Services
RRT	Rail Rapid Transit/Rail Road Terminal
SAR	Search and rescue
SEA	Strategic Environmental Assessment
SEETO	South East Europe Transport Observatory
SESAR	Single European Sky ATM Research
SUMP	Sustainable urban mobility plan
SWOT	Strengths, Weaknesses, Opportunities and Threats
TAC	Track Access Charges
TEN-T	Trans-European Transport Networks
TEU	Twenty-foot equivalent units

TOP	Transport Operational Programme
VTMIS	Vessel Traffic Monitoring and Information System Service

1. INTRODUCTION

1.1. BACKGROUND

In the last few years, there has been notable progress with regard to the development of transport networks in the Republic of Croatia.

After attaining the status of the accession country in June 2004, Croatia benefited from various pre-accession instruments provided by the European Union relevant to the transport sector, namely on ISPA (Instrument for Structural Policies for Pre-Accession) and IPA (Instrument for Pre-accession Assistance) getting big impact in the Croatian transport sector. In order to ensure an uninterrupted structural adjustment process in the transport sector and the utilisation of the finance under the IPA Component III – *Regional Development*, Croatia drafted a Transport Operational Programme (TOP) for the period 2007-2013. The TOP covers the key issues and information such as the transport policy background, status of transposition of EU transport acquis into national legislation, transport sector assessment and strategies and measures to meet transport sector development needs, in line with accession and post accession requirements.

Croatia has also maintained an active role in cooperation under the Memorandum of Understanding on development of the South-East Europe Core Regional Transport Network and has continued implementation of the multi-annual development plan for 2011-2015 for the South East Europe Transport Observatory (SEETO).

Since the Republic of Croatia joined the EU on 1 July 2013, the definition of its transport infrastructure development, mainly according to the framework of EU transport policies is crucial. It is necessary to base the long term development and future investments in the transport sector of the Republic of Croatia on the grounds of revision and improvement of the National Transport Strategy of Republic of Croatia from 1999[1], addressing the future requirements of the transport infrastructure and enabling effective and efficient planning and prioritization processes to ensure that transportation facilities and services are functioning and available.

This new Transport Development Strategy is the first step of the new definition of the Country's strategy, but not the only one, as this is a dynamic process of continuous revisions and updates.

The whole strategic process undergoes different phases, having this Strategy as a basis of the new strategic process in transport planning, which the Republic of Croatia started by developing this document. The key stage of development of the strategic process that is to follow is the

[1] Transport Development Strategy of the Republic of Croatia, 1999, (OG 139/99)

development of the National Traffic Model (NTM). In 2016, once the NTM will be elaborated and main results available, the Strategy 2014 will be assessed and updated if necessary. Later revisions of the Strategy will be made as a preparation for the EU upcoming programming periods but also in case of any significant impacts to the transport sector in Croatia in the future arise.

1.2. STRATEGIC PLANNING - TRANSPORT DEVELOPMENT STRATEGY

1.2.1. Strategic Framework

The strategic planning of the Transport Sector is to be the basis of the transport sector development, defined as a tool at the service of major economic and social policy objectives. As a result, the strategic planning will consider transport to be the essential support providing Croatian inhabitants with quality services for their mobility needs and at the same time to be an effective instrument to promote economic development and social and territorial cohesion, so guaranteeing the best use in society's service.

The Strategy sets out the basic guidelines for the development of the transport sector within the Republic of Croatia over a medium and long-term horizon (2014-2030), aiming to define an overall and coherent framework to ensure the linkage of infrastructure and transport policy and enabling decision making.

The Strategy is the result of a deep analysis and reflection process but also of participation and debate open to the whole of society for this purpose. A high level of social and technical consensus has been pursued for the elaboration of the Strategy, with the higher possible input and transparency. For this a specific procedure for participation and debate has been set up. As a result, a committed participation of main stakeholders has been registered, getting important contributions in the form of suggestions and proposals to improve and enrich the Strategy.

The Transport Development Strategy has taken into account the concern for sustainable development and by great sensitivity to environmental concerns and criteria.

As a result, it constitutes a decisive commitment to the future of the Republic of Croatia, to its economic development and its competitiveness, to its social and territorial cohesion and to the improvement of the quality of life of its citizens, with a set of measures designed to create a transport system which is more integrated, safer, efficient and respectful of its environment.

1.2.2. Strategic Planning

The Transport Development Strategy has used "planning" as the tool by which to frame its medium-term objectives and measures. Planning procedures facilitate political decision-making and allow the prioritisation of actions to be developed according to certain criteria and priorities based on the outcomes of the performed analyses.

As a result, decision-makers and society as a whole will benefit of the following deliveries:

- Deep assessment of existing necessities,
- Transparent decision-making,
- Appropriate decision-making information,
- Anticipation of the effects of actions,
- On-going and flexible process,
- Synergies establishment with other policies,
- Corrective and accompanying measures identification.

Below are the most important elements of the strategic planning dealt with in the Strategy:

- Establishment of a coherent planning system, from strategic to sector planning, dealing with the planning of both infrastructure and transport services,
- Work with a planning system which, based on the intermodal objectives set for the transport sector, establishes the most suitable future measures,
- Incorporating social, environmental and territorial objectives on the same footing as their functional and economic counterparts,
- Active cooperation with other administrations to enhance coordination and reach the objectives set for the plan,
- Sustainable development targets integration into the transport sector.

1.3. DESCRIPTION OF THE APPROACH

According to methodological guidelines agreed by the Republic of Croatia and the European Commission, the Transport Development Strategy of the Republic of Croatia incorporates common strategic planning methods.

In that order, drafting the National Transport Development Strategy is mainly based on sectorial inputs (studies and documents), which were developed according to the same methodology, analysed and merged in this step taking into account multimodal considerations, thus obtaining the overall National Strategy.

As a result,

- Data inventory is developed, allowing in the future the definition of a data generation plan to obtain the necessary missing data,
- Different layers of analysis are performed to obtain a clear picture of the current situation of the transport sector,
- Objectives are defined as an intermodal list of objectives,
- Measures to be implemented to meet these objectives are identified.

This 4 steps methodology has been performed in parallel with the Strategic Environmental Assessment procedure (SEA) to which the preparation of the Strategy is subjected, according to the European and Croatian Laws and International Conventions[2]. As a result of the SEA process, an Environmental Report has been prepared, the findings of which have been integrated into the Strategy. Among other mandatory contents, the Environmental Report identifies, describes and evaluates the likely significant effects of the Strategy on the environment and the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the Strategy.

Main steps of the methodology used in drafting the Transport Development Strategy are the following:

1.3.1. Data Screening

All relevant data/information about the organization, operations and infrastructure of the relevant transport system are collected ("**data inventory**") and presented in a way appropriate to

[2] Legal basis: a) Croatian legislation: Environmental Protection Act (OG no. 80/13), Regulation on strategic environmental assessment of plans and programs (OG no. 64/08), Ordinance on the committee for strategic assessment (OG no. 70/08) and amendments; b) European legislation: Directive 2001/42/EC on environmental assessment of plans and programs; c) International Conventions: Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context (ESPO Convention).

a strategic analysis. Based on that, a "**data analysis**" on the quality and actuality of the collected data as well as the identification of the missing data is performed.

As a result a "**data generation plan**" defines which data shall be collected, as well as how the data shall be collected (surveys, regular data generation - counting equipment, micro census etc.) and how this might be institutionalised. This analysis of the data availability and its quality is the basis for the revision of the National Strategy to be made in 2016.

1.3.2. Situation analysis

1.3.2.1. Functional regional analysis

Functional regions are regions with a high level of transport interaction and not necessarily identical with administrative regions or borders of the Republic of Croatia. Each functional region has been a part of a deep analysis. The analysis has been based on the existing data, focussing on the transport needs from a long distance, regional, suburban and local perspective considering the sectorial inputs prepared as a basis for the Transport Development Strategy, and identifying key aspects that should be improved, taken in advantage and/or solved.

1.3.2.2. Sectorial analysis

For each sector the relevant analyses (demand analysis, accessibility analysis, infrastructure quality assessment, capacity assessment, interoperability assessment, operational constraints analysis, delay analysis, accident black spot analysis, functionality, environment, etc.) have been performed taking into account various levels of spatial/network aggregation in order to identify significant/key issues. The analysis is based on the existing data. The layers of analysis, which could not have been performed due to insufficient data, are clearly identified.

1.3.2.3. Hypothesis testing

The establishment of hypothesis is a methodological tool used due to the lack of transport data and/or complete information allowing appropriate decision making. A long list of hypotheses has been developed in order to elaborate the Strategy, as a previous step to define objectives.

A hypothesis can be extracted from existing National Strategy, sectorial inputs, expert surveys or expert workshops or directly from the analysis of the Strategy etc.

A hypothesis can relate to

- A strength,
- A weakness (internal problem),

- A potential (opportunity) or
- A threat (external problem).

Through an inter-dependence assessment, the long list of hypotheses can be reduced in order to reach the highest level of inter-dependence. For each hypothesis the relevant analysis levels are identified in order to be able to:

- Confirm the hypothesis,
- Dismiss the hypothesis or
- Indicate the necessity to do the assessment at a later stage due to insufficient data/information.

1.3.3. Objectives

Taking into account the outcomes of the previous analysis, a list of intermodal specific objectives has been established to address the potentials, to keep the strengths or to overcome the weaknesses or threats of the National Transport Sector.

These objectives constitute the main goals to achieve in order to establish a sustainable and efficient Multimodal Transport System. For each objective, targets and indicators are set.

1.3.4. Measures

In order to reach the set intermodal objectives, measures for each sector have been identified. Measures have been developed in the area of:

- **Organization** (ticketing, traffic associations, harmonization of time schedules, etc.),
- **Operation** (elimination or introduction of new stops and stations, re-routing of lines, changes in operational concept, rolling stock, traffic management, etc.),
- **Infrastructure** (extension, capacity increase, increase of design speed, reconstruction of stops and stations, etc.).

2. DIAGNOSIS OF TRANSPORT IN THE REPUBLIC OF CROATIA

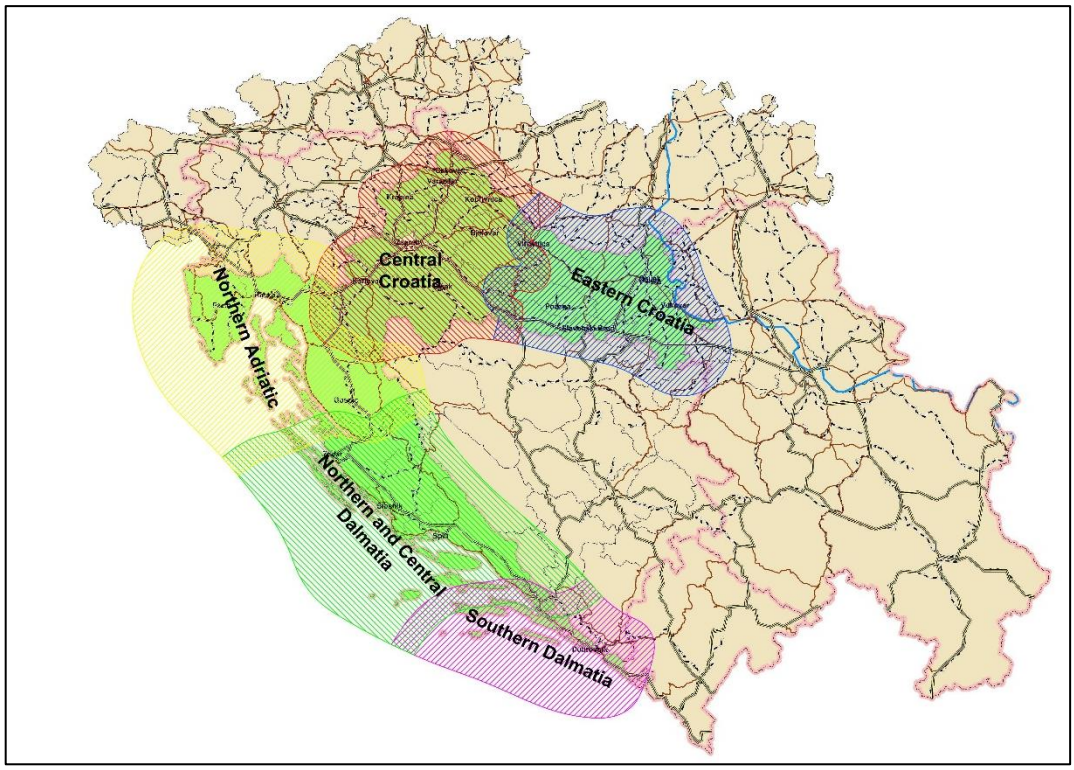
2.1. FUNCTIONAL REGIONAL ANALYSIS

This chapter represents the functional regional analysis based on the existing data available. The functional regions were initially defined based on the key characteristics of the regions, establishing zones which are sometimes overlapping. As mentioned in section 1.3.2.1, functional regions are based on the analysis of the transport interactions and are not necessarily identical with administrative regions and can be multinational. Nevertheless, once further analysis is carried out and more information is available (e.g. National Traffic Model), the resulting data will allow assessing the exact size of functional regions.

The objective of the functional regional analysis is to consider the existing and future needs of the regions causing transport demand, such as development of business infrastructure (factories, business zones, plant-processing, etc.), development of scientific institutions (schools, colleges, institutes, etc.), development of health rehabilitation facilities (hospitals, spas), development of shopping malls (shopping areas and shopping centres), development of sports and recreational facilities (sports facilities) and development of cultural and entertainment facilities (halls, cultural facilities, amusement parks, etc.). The identified need will be then used as an input for the definition of the future needs of the transport system in parallel with the needs identified in the relevant sectorial analyses.

With the current data available, the following functional regions have been defined:

- Central Croatia,
- Eastern Croatia,
- Northern Adriatic,
- Northern and Central Dalmatia and
- Southern Dalmatia.



1 Figure Zones for Functional Regional Analysis

2.1.1. Central Croatia

2.1.1.1. Description of the Functional region

Given its geographic position, Central Croatia plays a prominent role in the transport network of Croatia and Central-Eastern Europe.

To the north, the region borders with Hungary and with Slovenia to the west and Bosnia and Herzegovina to the south. The region also borders two of the other functional regions, the Northern Adriatic and Eastern Croatia, the west and east respectively. The region is characterised by mainly flat, but occasional hilly terrain having the Karlovačka County as the most mountainous area of the region. The Drava and Sava rivers cross the region and the main city of the region is the City of Zagreb.

The economic-social development of the region goes back hundreds of years with the begging of trade with neighbouring regions and countries. It was influenced by the Amber Road, which run nearby this region connecting Southern Scandinavia with the Adriatic ports; in a north-south direction crossing the territory of Poland and the Hungarian Kingdom of that age. Nowadays this route is becoming important once again with active cooperation among Swedish, Polish, Czech, Slovakian, Hungarian and Croatian regions. This corporation has been formalized through the Central European Transit Corridor (CETC) European Territorial Agreement.

The economy is mainly based on industry and agriculture.

Industry in Croatia is based mainly in Zagreb and its surroundings. Zagreb is primarily the centre of government, science and culture. The industrial plants located in the region belong to the subsectors of steel industry, electronics, drug industry, clothing, trade and packing industry. The industrialized areas of Koprivnica and Varaždin along the river Drava are locations for the textile, food and wood industry and in the area of Sisak by the river Sava there are locations for oil refinery and the petrochemical industry.

The intermediate territories of Sava and Drava are given over to intense agriculture use, specifically; sugar beet, potato, wheat and corn. Depending on climate, there are also vineyards and orchards. Livestock farming is based mainly on cows, pigs and poultry.

Zagreb, the capital, is the most important economic centre of the country, and is home to 790.117 inhabitants[3]. There are no other macro-regional centres in Central Croatia. The next most important towns include Karlovac, Sisak, Bjelovar (which are on the border of the region) and Koprivinica and Varaždin (with populations of below 50,000). These last two towns are considered as third level nomenclature settlements.

Central Croatia is more competitive than the other regions; however the economic trends are lower. The biggest advantage of this region is the level of entrepreneurial development and the region presents favourable indicators in relation to demographics, health, cultural activities, education and basic infrastructure. However, development problems can be observed in the counties of Krapinsko-zagorska and Koprivničko-križevačka. According to the statistical indicators (investment and entrepreneurial trends, education, demographics and the results of the business sector), they are still not competitive as the rest of the region. For the area of Koprivničko - Križevačka County it is important to mention planned regional waste management centre and fields for exploitation of mineral resources as well as fields for exploitation of oil and natural gas, considering the freight transport significantly affects the condition of roads in these areas.

The region is quite well known for its spas which lead to the creation of new health care services. Other touristic attractions, on a smaller scale, include fishing, hunting and active leisure activities (like rafting and kayaking). The role of Zagreb as a centre for economics makes it an attractive location for conferences, and therefore, business tourism.

The reasons for considering Central Croatia as a functional region are varied. On one hand, the capital's economic-cultural potential; its central role means that it has a radial structure of the

[3] Source: CBS, Census 2011

road network. However, it should be noted that the counties surrounding Zagreb are lacking transversal connections.

Travel requirements are concentrated mainly on the Capital and a considerable level of daily traffic between the Capital and the counties can be observed.

The border crossing traffic is quite concentrated on few available crossing points.

2.1.1.2. Description of the transport system in the Functional region

- Long distance

The region and specifically the capital is a centre/hub for long distance traffic. It is the crossing point and the transport infrastructure axis for both road and rail. It also has an International airport.

The traffic volumes are quite high both in road (for passengers and freight) and in rail traffic (passenger and freight traffic that is mainly linked to the ports). The ratio of railway kilometres over the population of the county is 1,654[4], which is slightly greater than that for the Republic of Croatia, which is 1,566 (please refer to Annex 1 of the Strategy).

Although the main roads and motorways are quite busy, local citizens try to avoid these because of the daily toll charges. There is considerable road traffic on the D30 in direction to Sisak, the D28 in direction to Karlovac, and the international traffic routes D206, which is the main connection towards Slovenia, and D3 and D209 towards Hungary (passing through Varaždin and Čakovec).

Of all functional regions, in terms of inland waterways transport, Central Croatia is the least important. The River Sava, in terms of international shipping, is only navigable up to Sisak, however navigation is possible on a limited number of days per year up to Zagreb (and up to Slovenian border for small crafts). The River Una and Kupa are navigable but at a level which is limited; with 20 km of the inland waterways being classified as I and II (Kupa is navigable 5,9 km in class I and Una 11 km in class I and 4 km in class II).

- Regional

Regional traffic is characterised by the radial transport structure which is highly concentrated in Zagreb. A demand for transportation from the smaller settlements of the region to the Capital can be observed, mainly for commuting or for business purposes. However given that Zagreb is the location of education centres, many students commute on a daily basis.

[4] Source: Statistics of HŽ Infrastruktura d.o.o. for 2012 and CBS, Census 2011

- Suburban

Of the ten most populated cities in Croatia, three are located in Central Croatia (Zagreb, Karlovac, Velika Gorica). The attraction of the Capital for reasons of employment is greater than other bigger cities despite the concentration of industries in these municipalities. Therefore, road and rail infrastructure density is high and there are regular bus and rail services. The suburban rail transport system serves around 55,000 commuters daily[5].

- Local

Transport figures are mainly available for Zagreb. The size of the fleet of transport and amount of services is being progressively adjusted to meet demand, with the tramway network acting as the backbone of the system. The bus fleet is relatively new (the average age of the vehicles is around 8,1 years[6]) and CNG engine vehicles are also in use. The average age of tram fleet is 21,66[7] years (motor cars: 18,12 and tram trailers 371,11 years).

The cities of the functional region with own public transport systems are:

- Zagreb (population of 790.017 inhabitants[8])
  - TRAM[9]: 19 trams lines (15 day and 4 night lines) which transport 171 million passengers per year
  - BUS[10]: 118 day lines of which 100 lines are local only in the City of Zagreb, 18 lines connect the region and Zagreb (local and regional area) and 4 night lines. Zagreb`s bus transport transports 79 million passengers annually.
- Sisak (population of 47.768 inhabitants[11]), 4 bus lines,
- Varaždin (population of 46.946 inhabitants[12]), 8 bus lines,
- Karlovac (population of 55.705 inhabitants[13]), urban and suburban lines.

2.1.2. Eastern Croatia

2.1.2.1. Description of the Functional region

The functional region of Eastern Croatia is bordered to the north by Hungary, Serbia to the east and Bosnia and Herzegovina to the south. The functional region of Central Croatia is to the west. Eastern Croatia is a polycentric region as none of the settlements in the region dominates the others. The region is characterized by two main routes; the northern axis between Varaždin and

[5] Source: Statistical Yearbook of the City of Zagreb, 2012
[6] 30 April 2014, Source: ZET
[7] Ibid
[8] CBS, Census 2011
[9] Source: ZET
[10] Source: Ibid
[11] Source: CBS, Census 2011
[12] Ibid
[13] Ibid

Osijek which is partly bordered by the river Drava, and southern axis between the Capital and Vinkovci along the river Sava.

The main cities of the region are Osijek and Slavonski Brod. While Osijek is located close to the Serbian and Hungarian border, Slavonski Brod is on the border with Bosnia and Herzegovina; therefore, they are important transport/economic nodes in the international network.

Agriculture is the main economic activity. The rate of unemployment is above the national average of 18,6%[14].

While GDP for Eastern Croatia is relatively low[15], the region is moderately competitive. However, investments will be required for the region to reach the level of other regions. This applies to all of the competitiveness pillars. Although, it should be noted that in a situation like this, when there is much to gain, the dynamics of achievement in the business sector and tangible economic results are greater than those in Central Croatia, which is at a similar level as Northern Adriatic and Dalmatia. All five counties in the region are among the lowest in the country, when both competitiveness and GDP per capita are considered.

The region is less competitive than other regions in terms of tourist attraction. However, there is potential to generate active tourism (fishing, hunting, and biking) and enhance gastronomic tourism. Viniculture is quite developed. The cultural heritage of a number of settlements makes them interesting destinations. Domestic tourism such as weekend tourism and agro tourism is quite typical and has a special mood at river Sava and Drava and the Kopački rit, a well-known birds and animal habitat is already known as a tourist destination.

2.1.2.2. Description of the transport system in the Functional region

The transport network of the region is quite unbalanced. The motorway and the railway line running West-East are of prime importance, carrying traffic between Western Europe and the Middle- Eastern Balkans.

The transport demand on the western side of Slavonija is in the direction of the Capital, while on the east side the transit traffic in the direction of Bosnia and Herzegovina and Hungary is important.

- Long distance

The most important roads for long distance travel include the motorway A3: (Bregana – Zagreb – Lipovac) connecting Slovenia and Serbia, D2 (Dubrava Križovljanska border crossing to Slovenia to

[14] Ibid
[15] Source: CBS, 2011 and EU Competitiveness Index, 2013

Ilok border crossing to Serbia), D5 road connecting Hungary and West Bosnia and Herzegovina and the A5 with D7 connecting Sarajevo and central Bosnia (through Osijek).

The region is crossed by two international railway corridors; one from Slovenia in the direction of Serbia (through Slavonski Brod and Vinkovci), a double track with high capacity but with low utilization rate; and the other is in the North-South axis connecting Hungary and Bosnia and Herzegovina through Osijek, which, as opposed to the first, has low capacity and a high rate of utilisation (passenger traffic).

Eastern Croatia is characterized by three rivers: the Danube, Sava and Drava.

The Danube flows about 137 km along the border with Serbia and is part of the Rhine-Danube corridor, which connects the Black Sea with West Europe. This river is classed as VIc and is an important international waterways route for the country. The only international and the largest inland port on the Croatian section of the Danube is Vukovar, which is the country's gateway to the Rhine-Danube corridor.

The longest river in Croatia is Sava, 562 km length. Of this, only 380 km are navigable, from Račinovci to Sisak. However navigation is possible on a limited number of days per year up to Zagreb (and up to Slovenian border for small crafts). The largest ports on the Sava River are Sisak and Slavonski Brod.

Of the 330 km of the river Drava, just 198.6 km are navigable. From the estuary of the Danube, 70.0 km of the Drava River are considered an international inland waterway with free navigation for all flags. There is commercial transport on this section up to the international port of Osijek located on rkm 13 class IV international inland waterways. The region also has an international airport at Osijek.

- Regional

In Eastern Croatia, there are three important cities: Osijek, Slavonski Brod and Vukovar. Besides administrative roles of these cities, Slavonski Brod is an industrial centre and Osijek is an agricultural centre of the region. A large volume of heavy traffic can be observed in the south of the region, mainly around the cities. Vukovar is the largest Croatian town and inland port on the Danube.

Main agricultural centre towns are near the Hungarian border in the northern part of Eastern Croatia. Between these points agricultural traffic can be observed. Osijek is the main education centre in the region.

- Suburban

The two biggest cities of the region are Osijek and Slavonski Brod; both are considered border cities. The suburban extension of Osijek is "from border to border" (between Hungary, Serbia and Bosnia and Herzegovina). Part of the functional suburban area of the city of Slavonski Brod is in Bosnia and Herzegovina. These two suburban areas are overlapping each other. They are connected by motorway and rail.

- Local

Osijek has 108.048 citizens[16] and has its own public transport consisting of a tramway (2 lines) and bus services (15 lines). The tramway vehicle fleet is old but the fleet of buses has been refurbished.

Slavonski Brod has 59,141 citizens[17] and a public transport system that comprises of 7 bus lines.

2.1.3. Northern Adriatic

2.1.3.1. Description of the Functional region

The geographic location and the archipelago of the region is one of the main advantages of the structure of the region (close to Western Europe (Italy, Slovenia)). The functional region is characterised by three territories:

- The Istria peninsula with Pula, a city of 57.460 citizens[18], has a special historic heritage and development. Istria is the most important tourist destination in Croatia (25,27% of all tourist visitors in Croatia[19]).
- The Kvarner bay region with city of Rijeka (128.624 citizens[20]) and with the port of Rijeka has the third largest population in Croatia. The port of Rijeka means that the city is well-known in the European context. It is one of the most important trade and industrial centres. The Kvarner bay includes 4 big islands: Krk, Cres, Rab and Pag. The island of Krk along with the island of Cres are the largest in the Adriatic and are very well developed, especially the island of Krk, due to the connection with the mainland by bridge.
- The third territory is the Ličko-senjska County which has no major cities and its economic importance is quite low.

[16] Source: CBS, Census 2011
[17] Source: CBS, Census 2011
[18] Ibid
[19] Source: Tourism in Figures, 2012, Ministry of Tourism
[21] Source : CBS, Census 2011

In relation to transport, while the connection with the Capital is important, the main attraction of the region is that it is the shortest sea connection for the tourists coming from Western and Central Europe

The Northern Adriatic region which is ranked second in the competitiveness analysis of Croatia, has a notably different competitiveness profile than Central Croatia, with a GDP per capita around 22% lower than that of Central Croatia[21]. The reason for it being ranked second is its very good business environment (demographics and education). The region has good business sector indicators (investments and entrepreneurial trends and results in business economic). However, the region still faces problems with respect to the quality of basic and business infrastructure and entrepreneurship development. The Ličko-senjska County is the most disadvantaged county in the region in terms of competitiveness.

The main city of the region is the City of Rijeka.

The region has various tourist attractions ranging from ancient cultural heritage, gastronomy, to business/conference and health care tourism. Its coastline is the closest to the Central Europe and well accessible by motorway. It has two international airports (Rijeka and Pula).

The tourist attractions of the hinterland include tourist activities in the area of natural environment and ecotourism (e.g. National park Plitvička jezera, North Velebit and Paklenica and Nature parks natural Velebit and Gorski kotar).

2.1.3.2. Description of the transport system in the Functional region

- Long distance

In the road network, the busiest motorways are the A6 and the A7. In the area of Istria, the busiest motorways are the A8 and A9. The D8 road is important for the region as it was the main arterial along the Croatian coastline before the completion of the motorways.

For the development of the North Adriatic functional region it is of extreme importance to develop the railway line on the Mediterranean corridor, the so-called Rijeka traffic route. The main feature of the Rijeka traffic route is the possibility of intermodal approach which can connect the port of Rijeka with the railway and Danube waterway representing the shortest distance from the Adriatic to the Danube region. The Northern Adriatic region transport is characterized as well by the presence of the Adriatic Sea coast and its ports, mainly Umag, Poreč, Rovinj, Pula, Rijeka and Senj.

[21] Source: CBS, 2011 and EU Competitiveness Index, 2013

International maritime freight transport is limited to Rijeka. The capacity of the container terminal of Rijeka is 250,000 TEU per year. Development is planned as part of the Rijeka Gateway project and includes a new container terminal (due for completion in 2017) giving a total capacity of 600,000 TEU. The future expansion of the container facilities of the Port of Rijeka will take place away from the Rijeka Basin.

- Regional

Transport is centralized in Rijeka. There are connection with Pula and Istria, the surrounding islands and the southern part of Northern Adriatic. Rijeka is also an important industrial centre not just in the region, but in Croatia.

- Suburban

Rijeka is the largest city in the region and its suburban area includes almost the entire Kvarner bay as well as the eastern part of Istria. Currently, the public transport is based on buses but, in the past there were tram and trolley bus services.

The islands Cres, Pag and Rab are connected by ferry with the Croatia mainland. Cres and Rab have two lines and Pag has one line and it is connected with a bridge to the mainland.

- Local

The local transport of Rijeka includes 18 local bus lines and additional 25 suburban bus lines. These altogether carry 35 million passengers per year[22]. Local transport in the city of Rijeka implements the Energy Strategy (20x20x20 Strategy) by shifting to natural gas buses with the aim of environmental protection.

Public transport in Pula includes 10 local bus lines and additional 6 suburban lines. It is used by 3.5 million passengers per year.

2.1.4. Northern and Central Dalmatia

2.1.4.1. Description of the Functional region

This functional region includes Dalmatia, a territory which gradually narrows to a point in the functional region of Southern Dalmatia. The major cities of the region, Zadar, Šibenik and Split have port infrastructures.

The Dalmatian mountain range runs parallel to the sea, separating the main arterial roads and railways. At present, the motorway bypasses these cities, thus major traffic flows are isolated from the residential areas.

[22] Source: K.D. Autotrolej d.o.o. Rijeka

The functional region is characterised by three territories:

- The coastline stripe with touristic attractions such as sea sports, passenger ships, ancient cultural heritage, some of which are on the World Heritage lists (e.g. Šibenik, Split), and related industries, especially fishing. The wide extension of the archipelago is also important for sea tourism.
- The remaining territories which are further off the sea are isolated and their touristic attractiveness is quite moderate.
- Large number of inhabited islands some of which (e.g. Brač, Hvar) are well populated and very important tourist areas. Good-quality connection between islands and mainland in this Functional region is to be stressed out as an advantage.

Due to the existing regional functional activities (schools, hospitals, etc.), this region of Northern and Central Dalmatia has been considered to overlap with Southern Dalmatia. As a result, there are cities that are mentioned in both functional regions.

2.1.4.2. Description of the transport system in the Functional region

- Long distance

An important fact to stress out is that most of the road network connections between Bosnia and Herzegovina and sea ports are located in this Functional region. Also, south part of Bosnia and Herzegovina is connected to Adriatic Ionian corridor (part of TEN T network) which is located in this Functional region.

The main roads run between the coastline and the Bosnian border. The most important state roads are the D1 and D8 which connect with county and local roads. The A1 Motorway runs parallel between these state roads, up to Ploče, stretching almost to the Bosnian border in the east.

The only railway line is not a part of international corridors. It connects the Capital with the main cities of Dalmatia and ports (Zadar, Šibenik, Split). The capacity of the railway line is low and the rate of utilisation is moderate. The line ends in Split. The port of Ploče can be reached by rail from Bosnia and Herzegovina (Pan-European Corridor Vc).

The region is home to important international ports i.e. ports of special (international) economic interests for the Republic of Croatia which are Zadar, Šibenik, Split and Ploče.

The level of cargo transport in the ports of Zadar and Šibenik is low, between 250,000 tons/year and 450,000 tons/year. The port of Split which is the largest passenger port in Croatia and one of

the largest passenger ports in EU (4.421.568 passenger and 654.944 vehicles during 2013) also handles cargo traffic (2.825.192 tons/year in 2012 and 3.108.247 tons/year in 2013)[23]. International maritime freight transport is located in Ploče, which handles about 2.5 million tonnes of transport cargo per year, of which 22% is forwarded by rail. The goods are mostly carried in the direction of the hinterland, Bosnia and Herzegovina and Serbia.

The economy of the region is based mainly on tourism, where a part of the service is coastal line passenger transport, specifically in the port cities of Zadar, Split, Šibenik, and Trogir, which provides a quality connection with islands.

- Regional

The city of Split which is located in this region is the second largest city in the Republic of Croatia. The economic activity of the other important cities such as Zadar and Šibenik is based on some industrial, fishing and Mediterranean agriculture. The most important education centres in the region are located in Zadar and Split. Transport connection exists between the big cities, towns, the surrounding islands and other parts of the region. Tourism generates an important volume of traffic in this region, especially in comparison to other regions.

- Suburban

There are a number of cities along the coastline of the functional region of Northern and Central Dalmatia from Zadar to Split. Šibenik, Zadar and Split are among the top fifteen cities of Croatia in terms of population.

The physical growth of many of these municipalities has been restricted because of the topography of the terrain of the surroundings; however, many do experience high peak traffic flows from the suburbs.

The ports of Zadar and Split are the main ferry ports providing the coastal liner shipping service, thereby achieving a regular line between the islands and the mainland coast.

- Local

The city of Split has the most developed local public transport in the region, with 44 local lines (city) and 25 suburban bus lines. The public transport dependence on subsidies is growing.

Other cities in the region with own local public transport systems include:

  - Zadar has a population of 72,062 inhabitants[24], 12 bus lines and regular ship services,
  - Šibenik has a population of 46,332 inhabitants[25], 7 bus lines,

[23] Source: MMATI
[24] Source: CBS, Census 2011

- Split has a population of 178,102 inhabitants[26], 22 bus lines.

2.1.5. Southern Dalmatia

2.1.5.1. Description of the Functional region

The functional region Southern Dalmatia comprehends mainly the territory of Dubrovačko-neretvanska county. Again it is a coastal region which has the peculiarity of being surrounded almost entirely by Bosnia and Herzegovina and is physically separated from the rest of the Croatian territory due to fact that Republic Bosnia and Herzegovina, at the town of Neum, with its territory intersects the territory of the Republic of Croatia and thus its territorial integrity. The city of Dubrovnik is the most important of this region with Ploče being one of the most important ports. The Valley of river Neretva, a big agricultural area located near Ploče can also be highlighted, as an important economic centre. The other large towns of the region include Korčula, Metković, and Opuzen.

This functional region is characterised by two territories:

- The coastline stripe with tourism places and sights with ancient cultural heritage, some of which are on the World Heritage lists (Dubrovnik), National parks (Mljet), and related industries, especially fishing. The wide extension of the archipelago is also important for sea tourism.
- The remaining territories which are further off the sea are isolated and their touristic attractiveness is quite moderate.

Due to the existing regional functional activities (schools, hospitals, etc.), this region of Southern Dalmatia has been considered to overlap with Northern and Central Dalmatia. As a result, there are cities that are mentioned in both functional regions.

2.1.5.2. Description of the transport system in the Functional region

- Long distance

In terms of traffic, a major feature is the region's overall isolation from the rest of Croatian and also European territory which is caused by the physical separation from the rest of the country with the access corridor of Bosnia and Herzegovina to Adriatic Sea. In order to develop this region and with regional connection to the rest of Croatian and EU territory, the strategic interest of the Republic of Croatia is connectivity via the Pelješac bridge, which was identified by the prefeasibility study as the best solution in the context of finding the optimal solution for connecting the region of South Dalmatia with the rest of Croatian territory. The main roads are

[25] Ibid
[26] Ibid

running between the coastline and the Bosnian border. The most important national road is the D8 which connects with county and local roads. The motorway A1 runs up to Ploče, and the border of Bosnia and Herzegovina (near Ploče).

The railway line which connects the Capital with the larger Dalmatian towns ends in Split; however the port of Ploče can be reached by rail from Bosnia and Herzegovina (Pan-European Corridor Vc).International maritime freight transport is located in Ploče. The port of Ploče handles about 2.5 million tonnes of transport cargo per year, of which 22% is forwarded by rail. The goods are mostly carried in the direction of the hinterland, Bosnia and Herzegovina and Serbia.

Since the city of Dubrovnik is one of the most know cruising destinations in the Mediterranean, the port of Dubrovnik stands out as a passenger port mostly characterized by cruise ships, which bring steady growth in passenger traffic.

Dubrovnik has an international airport. In 2012, 1,480,470 passengers passed through the Dubrovnik Airport.

The economy of the region is based mainly on tourism. Dubrovnik is one of the most prominent tourist destinations in the Mediterranean.

- Regional

The main activity of the region is concentrated around Dubrovnik. There are many educational institutions. Transport connection exists between the city and other parts of the region. Tourism generates an important volume of traffic volume in this region.

- Suburban

The local bus system connects all the neighbourhoods of Dubrovnik. The quality of service is good with the buses running frequently.

- Local

The local transport system of Dubrovnik includes 13 local bus lines serving the city's population of around 42.615 inhabitants[27].

[27] Source: CBS, Census 2011

2.1.6. SWOTs of the functional regions of Croatia

Below are presented main conclusions regarding the general view of each Croatian region.

2.1.6.1. Central Croatia

STRENGTHS	WEAKNESSES
• Prominent role in the transport structure and network of Croatia and Central-Eastern Europe • Favourable transport and geographical position of the region (intersection of two Pan-European Corridors) • Intense agriculture utilisation • Concentrated industry • Hub of long distance traffic	• Some counties are not competitive compared to the rest of the region • Transversal connections are missing • The main roads and highways are quite busy • Relatively high road toll charges • Lowest significance in terms of water transport • Poor cycling infrastructure
OPPORTUNITIES	**THREATS**
• Economic-social development of the region • Faster Capital accessibility after the EU membership • Functional collaboration with the neighbouring regions • The level of entrepreneurial development • Health tourism developing • The growth of cross-border traffic at the current crossings	• Growing travel needs between the Capital and the county seats • Growing border crossing traffic on the present crossing point • Growing unemployment rate • Emigration of highly educated people from the country

1 Table SWOT Central Croatia

2.1.6.2. Eastern Croatia

STRENGTHS	WEAKNESSES
• Polycentric functional region • Good agriculture conditions • Developed vine culture • Industrial capacity	• High unemployment rate • The poorest and least competitive • Unequal transport network • Inconsistency between agricultural and tourism sector
OPPORTUNITIES	**THREATS**
• Osijek and Slavonski Brod are important transport/economic/industrial nodes of the international network • The main source of living is the agriculture • Processing industry builds on the current economy • Improving accessibility because of road and railways development • Development of agricultural and eco-tourism	• Weakening business sector and economic results • Growing unemployment rate

2 Table SWOT Eastern Croatia

2.1.6.3. Northern Adriatic

STRENGTHS	WEAKNESSES
• Special historic heritage and development • Rijeka port is well-known in European context • Global competitiveness of the port of Rijeka • The shortest sea connection for the traffic coming from West and Central Europe • Strong business/conference and health care tourism • Most important transport corridors inside of Croatia • Developed tourism	• Loose structure of the region • Some counties are not competitive compared to the rest of the region • Low population density in Ličko – senjska county
OPPORTUNITIES	**THREATS**
• Very good business environment Investments and entrepreneurial trends • Utilization of many touristic attractions • Development of Rijeka traffic route.	• Missing development of basic and business infrastructure and entrepreneurship • Growing unemployment rate

3 Table SWOT Northern Adriatic Croatia

2.1.6.4. Dalmatia

Main conclusions regarding the general view of both Northern and Central Dalmatia and Southern Dalmatia are presented together.

STRENGTHS	WEAKNESSES
• Strong tourism (sea sports, passenger ships, ancient cultural heritages, nautical tourism) • Active cities with their suburbs • Connected industry (shipbuilding, fishing) • Mediterranean agriculture • Preserved marine environment	• Separated main traffic connections (road, rail) • Dominating separation effect • Missing connection with north part of CroatiaBig distances between the parts (and isles) of the functional region
OPPORTUNITIES	**THREATS**
• Connection on motorway with other areas of Croatia • Possibility of expanding passenger services and cruise ships • The possibility of expanding tourism and its capacities. • The attractiveness of coastal areas as a place of life and work	• Intensifying separation effect • Decreasing cargo transport • Polarisation of developments to the coastline • Growing unemployment rate • Weakening of industrial production, • High risk of marine pollution, • Depopulation and the reduction of economic activity on the islands

4 Table SWOT Dalmatia Croatia

2.2. TRANSPORT SECTOR DIAGNOSIS

Moreover to the previous Functional Regional analysis, below are presented the main conclusions regarding Transport Sector assessment. The whole sectors' analyses are presented in the corresponding Annexes of the Transport Development Strategy.

2.2.1. Croatian transport in the wider context

2.2.1.1. The EU Strategy for the Danube Region (EUSDR)

The EU Strategy for the Danube Region (EUSDR) is a macro-regional strategy adopted by the European Commission in December 2010 and endorsed by the European Council in 2011. The Strategy was jointly developed by the Commission, together with the Danube Region countries and stakeholders, in order to address common challenges together. The Strategy seeks to create synergies and coordination between existing policies and initiatives taking place across the Danube Region. The Danube Strategy has put in place a cooperation structure to address common challenges. Four strategic policy objectives have been identified:

(1) Connecting the Danube Region,

(2) Protecting the environment of the Danube Region,

(3) Building prosperity in the Danube Region and

(4) Strengthening the Danube Region.

Structured through these four pillars, the Danube Strategy provides a framework for policymakers to coordinate national and regional policies both across borders and at different levels.

The transport sector of the Republic of Croatia is especially interested and active in ensuring coordination and complementarities between ESI Funds and actions implemented in the context of EUSDR within the pillar Connecting the Danube region and Priority Areas 1A "To improve mobility and intermodality of inland waterways" which is coordinated by Austria and Romania, and 1B "To improve mobility and intermodality of rail, road, air" which is coordinated by Slovenia and Serbia.

2 Figure Danube Region, Source: http://www.danube-region.eu/

2.2.1.2. The EU Strategy for Adriatic-Ionian Region

The Adriatic-Ionian Region covers 4 EU countries (Croatia, Greece, Italy and Slovenia) and 4 non-EU countries (Albania, Bosnia-Herzegovina, Montenegro and Serbia).

The general objective of the future Strategy[28] is to promote sustainable economic and social prosperity of the Region through growth and jobs creation, by improving its attractiveness, competitiveness and connectivity, while preserving the environment and ensuring healthy and balanced marine and coastal ecosystems.

The Strategy is also expected to substantially contribute to the EU integration of the Western Balkan countries.

Four pillars have been identified, focusing on:

1) Driving innovative maritime and marine growth;
2) Connecting the region (transport and energy);
3) Preserving, protecting and improving the quality of the environment and
4) Increasing regional attractiveness (tourism)

The transport sector in the Republic of Croatia is especially interested and active in ensuring coordination and actions implemented in the context of EUSAIR within the pillar "Connecting the Region (transport and energy)" which should focus on three strategic topics: improving maritime

[28] The European Council of 13-14 December 2012 requested the European Commission to present a new EU Strategy for the Adriatic and Ionian Region before the end of 2014. Building on the lessons learnt and experience from the two current macro-regional strategies (EU Strategy for the Baltic Sea Region, EU Strategy for the Danube Region), the Commission is now proceeding to draw up an EU Strategy for the Adriatic and Ionian region. The new Strategy will integrate the Maritime Strategy for the Adriatic and Ionian Seas, adopted by the Commission on 30 November 2012.

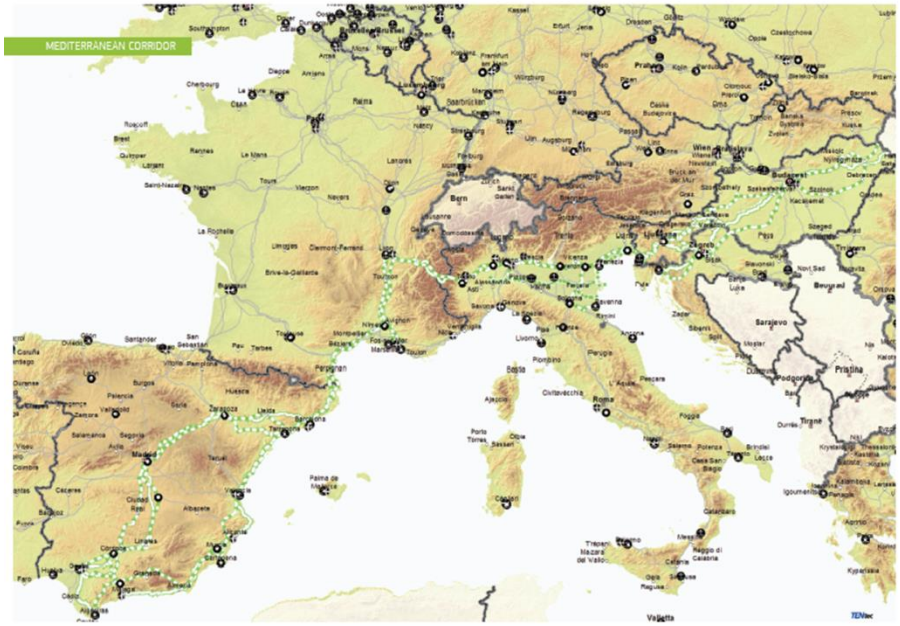
transport, developing intermodal links to the hinterland and, with regards to energy, improving interconnections.

3 Figure Adriatic-Ionian Region, Source: http://www.southeast-europe.net/en/about_see/adriaticionianprogramme/

2.2.1.3. TEN-T Network

The main strengths of the transport sector in Croatia come from its geostrategic position as a natural access to the Balkan region, an area of natural expansion of Europe towards East. Croatia has 2 Core Network Corridors crossing its country:

1) The **Mediterranean Corridor** which links the Iberian ports of Algeciras, Cartagena, Valencia, Tarragona and Barcelona through Southern France, with link to Marseille, and Lyon to Northern Italy, Slovenia and a branch via Croatia to Hungary and the Ukrainian border. It covers rail and road, airports, ports, RRT's and, in Northern Italy, also the Po river inland waterway. The Corridor`s integral part is the Rijeka-Zagreb-Budapest rail and road corridor, i.e. the Rijeka traffic route which also represents the Pan-European Corridor Vb. The main feature of the Rijeka traffic route is the possibility of intermodal approach which can connect the port of Rijeka with rail and Danube waterway, representing the shortest distance from the Adriatic to the Danube region. A continuation of the Mediterranean Corridor and its integral part is also the road and rail corridor from Zagreb to Slovenia (Pan-European Corridor X). Through this corridor the Republic of Croatia is connected to the Baltic-Adriatic Corridor, which runs from the Baltic Sea through Poland, via Vienna and Bratislava to Northern Italy.



4 Figure Mediterranean Corridor, Source: ec.europa.eu

2) The **Rhine-Danube Corridor** connects Strasbourg and Mannheim via two parallel axes in southern Germany, one along Main and Danube, the other one via Stuttgart and Munich, and with a branch to Prague and Zilina to the Slovak-Ukrainian border, through Austria, Slovakia and Hungary to the Romanian ports of Constanta and Galati. It covers rail, road, airports, ports, RRT's and the inland waterways system of Main, Main-Danube Canal, the entire Danube downstream of Kelheim and the Sava river. The Rhine-Danube Corridor represents also the Pan-European Corridor VII in the Republic of Croatia.

5 Figure Rhine-Danube Corridor, Source: ec.europa.eu

2.2.2. Railways

Within the territory of the Republic of Croatia, international Corridors are named as follows, according to the Decision on the Classification of Railroads of the Government of the Republic of Croatia (OG no. 03/14):

- RH1. TEN-T core and comprehensive network (Pan European Corridor X), Salzburg – Thessaloniki,
- RH2. TEN-T Mediterranean corridor (Pan European corridor Vb), Budapest – Rijeka,
- RH3. TEN-T comprehensive network (Pan European corridor Vc), Budapest – Ploče.

The aforementioned corridors correspond to the Core Network both for passenger and freight traffic. Besides, there are other international lines belonging to the Comprehensive Network.

6 Figure Comprehensive and Core Network: Railways (passengers), Source: ec.europa.eu

7 Figure Comprehensive and Core Network: Railways (freight), Source: ec.europa.eu

The well-developed rail network in Zagreb and other cities is considered as strength because of the opportunity that brings for the inclusion of rail within the urban transport system.

The particular morphology of the Croatian territory together with the high degree of completion of the motorway network and the existence of several international airports makes this transport system hardly competitive against other modes like roads and/or air. In the same sense, the tough geomorphologic features of the coastline makes technically difficult and cost expensive the connection from the Adriatic to the inland areas.

The aim of this Strategy is to set the path (through objectives reachable by measures) for the railways to be as competitive as the other modes of transport.

The Croatian railway network comprises 2.604 km and presents a good ratio of railway kilometres over the population of the country, 1.556 people per kilometre, close to countries like Switzerland and higher than others like Czech Republic or Hungary. However the 90% are single

track lines and only 36% of lines are electrified. Almost 55% of the network is dedicated to those lines that are significant for the international transport.

Of these 2.604 km, only 5,4% is capable to reach speeds between 141 and 160 km/h, 17% has a maximum speed above 100 km/h, and 37,5% has maximum speeds below 60 km/h[29]. The low speeds, together with the long distance between stations and the outdated traffic control and signalling systems have a direct impact on the transportation capacity of the lines. Low speeds, with the problem of the distance between stops and stations along with the outdated traffic control and signalling systems, have a direct impact on traffic capacity and competitiveness of the railways as a transport subsystem.

With these speeds currently used on the railway network, Zagreb can be reached with a one-day round journey only from a small part of the country by rail, which means that rail mode is at present not competitive against other modes of transport, especially for this kind of trips. Possibility of increasing traffic on regional (county) and local lines is clearly limited by its capacity.

Freight traffic has a clear international component as it connects Adriatic ports with the continent. All ports are connected to the railway network which is in poor infrastructure condition. The port of Ploče doesn`t have a direct connection to the Croatian railway network but it is connected to it via Bosnia and Herzegovina. The freight railway traffic is predominantly transit, as Adriatic ports serve as an entry-point for international cargo to Middle European markets. To increase intermodal maritime-rail traffic a logistic intermodal platforms network has to be developed by building up these platforms at ports sites and at the main consumer centres. This is needed to involve the supply chain roots through the Croatian ports competing with other ports in the area.

Although the well-developed motorway network is clearly strength for the transport sector in Croatia, when considering only the rail sector, it must be considered as a weakness, due to the added difficulty for competition between both modes.

The opportunities for the rail sector in Croatia are connected to the potential increase of its share within the total inland transport which can be achieved by improving or construction of infrastructure, including intermodal terminals and industrial tracks, purchasing or modernisation of the rolling stock, integration with other transport modes and with user-oriented approach. Shift to rail transport will also increase the effect of intermodal transport, which will result in reduction of noise and greenhouse gases, using rational energy consumption and increasing efficiency.

[29] Source: HŽI

When entering the Schengen area new business opportunities with surrounding countries will arise but at the same time they can aggravate business with non-EU countries. In this sense, companies HŽ Passenger transport Ltd. and HŽ Cargo Ltd. are to be trained and prepared at all levels for the upcoming competition. HŽ Infrastructure Ltd. as infrastructure manager and the Republic of Croatia as the owner of the infrastructure must increase efforts to modernize the entire railway network. Close cooperation with all stakeholders is required especially with the Ministry of Interior and the Ministry of Finance in order to eliminate bottlenecks at border crossings.

The main priorities regarding the railway sector will be focussed on:

- Modernisation of the remaining sections of the TEN-T core network lines according to their functionality,
- Analysing the potential to increase the use of railways for commuters in Zagreb and Rijeka and implement the measures defined through this analysis,
- Increase the sustainability of the railway network by performing a reorganisation of the sector, improve the efficiency of the maintenance, reduce the environmental impact and implement measures to increase the safety and the interoperability of railways,
- Modernisation of local and regional lines with the objective of creating preconditions for the development of integrated public transport system.

2.2.3. Roads

Owing to its geostrategic position Croatia has certain advantages that have been, in part, recognized in the process of defining international transport corridors. Consequently, Pan - European transport corridors Vb, Vc, X and Xa cross the Croatian territory and now form a part of the TEN-T network as follows: Vb (TEN-T Mediterranean corridor), Vc (TEN-T comprehensive network), X (TEN-T core network) and Xa (TEN-T comprehensive network).

8 Figure Comprehensive & Core Network: Roads, Source: ec.europa.eu

There is another corridor with special importance for the country which is a part of TEN-T core network, namely the Adriatic Ionian Road Transport Corridor which connects 7 countries (Italy, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Albania and Greece) between Trieste and Kalamata. Along the Adriatic coast it connects the main sea ports (Trieste, Koper, Rijeka, Zadar, Šibenik, Split, Ploče, Dubrovnik, Bar, Durresi, Igoumenitsa, Patras, Kalamata), and a number of Pan European corridors (V, Vb, Vc, and VIII). The possibility of building new roads at present corridor will be defined by the Prefeasibility study.

Croatia's accession to the European Union on 1 July 2013 has significantly changed its status and importance within the new European community and redefined its political relations with other countries in the neighbourhood. As an EU member Croatia is obliged to harmonize its development strategy documents and to implement specific guidelines concerning further road

infrastructure development. Regarding its integration in international traffic, it should be emphasized that Croatia is already today, with its highly developed motorway network (90% constructed), close to high European standards regarding international road connections.

The highway network of Croatia in international corridors TEN-T Mediterranean corridor/Pan-European corridor Vb: Rijeka – Zagreb- Budapest; TEN-T comprehensive network/Pan-European corridor Vc: Ploče- Sarajevo- Osijek- Budapest; TEN-T core network/Pan-European corridor X: Salzburg- Ljubljana- Zagreb- Beograd- Niš- Skopje- Veles-Thessaloniki; TEN-T comprehensive network/Pan-European corridor Xa: Graz- Maribor- Zagreb) meets the highest quality standards and huge part of it has already been built (90%). Nevertheless, there are some sections in construction like for example Pan – European Corridor Vc, which is to be completed in the following years.

It is also necessary to analyse and determine the real need and sustainability of building a bypass of Zagreb Area, which would interconnect the highway network (A1, A2, A3, A4 and A11) and by this would improve connection between different corridors.

Zagreb is the main industrial and business node of the country and as such the road network in its area needs to be reorganised to prepare to the future mobility needs, especially considering the new challenges that Croatia will face in terms of transport when joining Schengen.

State roads as well as county roads and roads of local importance constitute a significant part of the overall road network and form the basis for linking lower level roads primarily needed for linking cities and villages on interregional, intercounty and county level, whereas local roads have the greatest importance in traffic distribution on the lowest level. In this sense, lack of accessibility was detected in some areas, which will be improved by building interchange points with highway network, national road network and also regional and local road networks. This will improve accessibility for passengers and freight and boost economic growth of the area.

The improvement of interoperability of the highway network is also important. The system of highways has to be homogenous at different layers: user information, toll system and integrated equipment.

County and local road networks need to strengthen the field of maintenance in order to improve their accessibility.

With Croatia's accession to the EU the problem of the Dubrovačko-neretvanska County has arisen due to the fact that its territory is physically separated from the rest of Croatian territory, resulting in transport isolation. Part of the route connecting the County with the rest of the Croatian territory crosses the territory of Bosnia and Herzegovina, which is not a member of the

EU. The issue of having to cross the territory of Bosnia and Herzegovina has so far been Croatia's problem. But with Croatia's accession to the EU this matter gains wider importance since traffic taking place in Croatia involves also crossing non-EU territory. Therefore, with regard to the road sector and road connectivity it is necessary to put forward a permanent solution in agreement with Bosnia and Herzegovina and the EU. In this respect the strategic interest of the Republic of Croatia is connectivity via the Pelješac Bridge, which the prefeasibility study identified as the best solution in the context of finding the optimal solution for connecting the region of South Dalmatia with the rest of Croatian territory.

The safety of Croatian roads also needs to be improved. Croatia's accession to the EU can significantly contribute to future decision making and definition of important international routes and corridors. Croatia is to use certain traffic potentials and strive to channel future planning and development considerations for the road network in Croatia.

Development of road infrastructure is part of the overall transport development policy in the country which will also focus on the development of other segments of traffic as well as of combined models where Croatia's road infrastructure surely already has an important role and a good basis for further development.

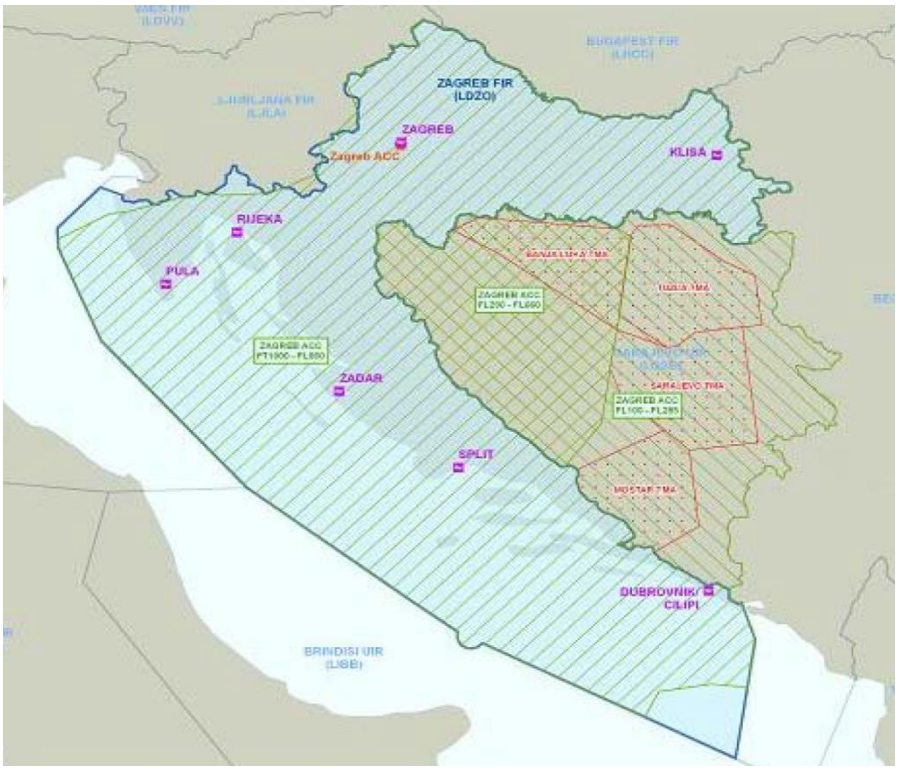
The main priorities regarding the road sector will be focussed on:

- Completion of the modernisation of the remaining sections of the TEN-T core network lines according to their functionality,
- Improving connectivity of Dubrovnik with the rest of Croatian territory,
- Improving connectivity of Dubrovnik with the neighbouring countries,
- Increase the sustainability of the road system by performing a reorganisation of the sector, increase the efficiency of the maintenance of the network, reduce the environmental impact (especially the reduction of greenhouse gas emissions) and implement measures to increase the safety and reduce the influence of the seasonal constraints,
- Improve the accessibility to ports, airports and other relevant nodes considering local and regional transport needs.

2.2.4. Aviation

The aviation subsector is mainly composed of: air navigation, airlines, airports, and aviation authorities.

The air navigation system is well equipped and aligned with European regulatory framework (Single European Sky I and II, SESAR, European ATM Master Plan, etc.).

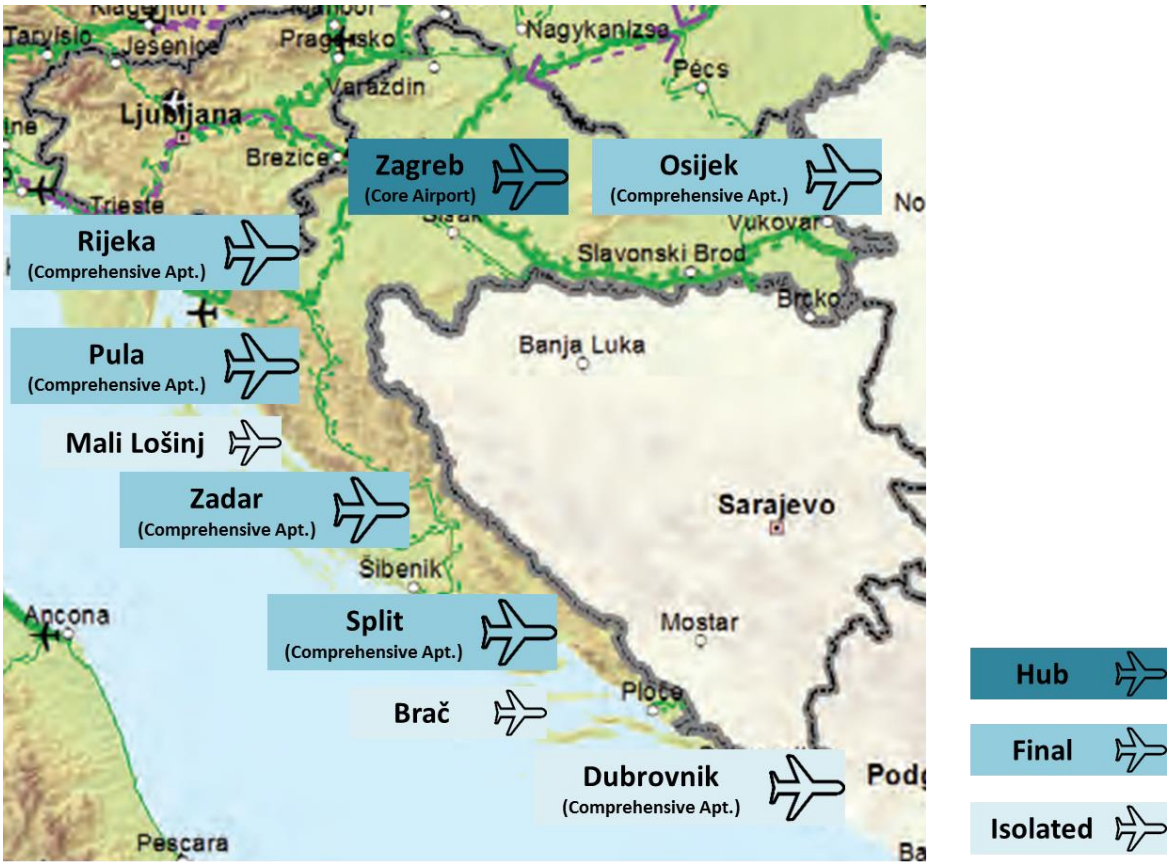


9 Figure Zagreb FIR and ATC units and area of responsibility of Croatia Control Ltd., Source: Local Single Sky Implementation (LSSIP) Croatia 2012

The historical legacy and political, market and financial circumstances resulted in one main national airline, Croatia Airlines, which is now in the process of restructuring. Croatia Airlines is also a member of Star Alliance.

The approximate position of the nine relevant airports in Croatia is shown below, complemented with a colour classification regarding their status as *Hub, Final (Destination)* and *Isolated*. The overall traffic has changed from less than 5 million passengers in 2009 to 6 million in 2012[30].

[30] Source: Airports Council International



10 Figure Main airports in Croatia, Source: MMATI

The subsector demand is above all linked to the tourism sector, with the seasonal behaviour that generates bottlenecks especially in some key destinations.

Apart from tourism, the business trips and connectivity to "remote" destinations (Dalmatia) may give the big picture of demand in Croatia.

In 2006 Croatia signed the Multilateral Agreement on the establishment of a European Common Aviation Area (ECAA agreement)[31]. The ECAA agreement created new market opportunities due to an integrated aviation market of 36 countries and more than 500 million people. At the same time, the agreement offered equally high standards in term of safety and security across Europe, through the uniform application of rules. From that time Croatian air transport market recorded a high growth of competition in the international market. Number of competitors (traditional carriers & LCC) in international scheduled traffic increased to 44 in 2013 from 16 in 2004, which mainly operate during the high (summer) season.

[31] ECAA agreement was signed between the European Community and its Member States, the Republic of Albania, Bosnia and Herzegovina, the Republic of Bulgaria, the Republic of Croatia, the Former Yugoslav Republic of Macedonia, the Republic of Iceland, the Republic of Montenegro, the Kingdom of Norway, Romania, the Republic of Serbia and the United Nations Interim Administration Mission in Kosovo.

Both the recent integration in the EU and the adhesion to Schengen Treaty give Croatian Aviation Subsector some challenges and tests for the close future.

The main priorities regarding the aviation sector will be focussed on:

- Modernisation of Zagreb as the core airport of the Republic of Croatia and the Dubrovnik Airport due to need to improve accessibility of the Dubrovnik region,
- Adaptation of the relevant airports to the required safety and traffic management European requirements, to cope with the demanding seasonal peaks and to prepare airports to the potential adhesion of Croatia to the Schengen treaty,
- Increase the sustainability of the aviation system by performing a reorganisation of the sector, increasing the efficiency of the maintenance of the airports and reducing the environmental impact,
- Improve the accessibility to airports, especially by means of public transport.

2.2.5. Inland navigation

Although the Republic of Croatia, with its long Adriatic coast, is dominantly an Adriatic and Mediterranean country oriented towards the sea and sea transport, it is equally a Danube oriented country which must not be underestimated as such a geo-strategic position enables the development of inter-modal transport and connection of Central and West Europe with the Adriatic Sea by means of inland waterways, inland and sea ports. The Croatian network of inland waterways represents a significant, but at the same time, completely unexploited part of national values of Croatia. Therefore, a thoroughly elaborated and rational approach regarding the future development and inland waterways management is necessary.

The overall length of the current inland waterways in Croatia is 1016.8 km, of which 601.2 km has been integrated into the European network of inland waterways of international importance**.** The Danube part of the Republic of Croatia`s inland waterways system forms a part of the Rhine-Danube Corridor. Ports Vukovar and Slavonski Brod are classified as core ports in the EU TEN-T network, while Osijek and Sisak are classified as comprehensive ports.

11 Figure Comprehensive & Core Networks: Inland waterways and ports, Source: ec.europa.eu

Within the complete inland waterways sector in the Republic of Croatia there are two separated sub-systems with their specific characteristics: Danube`s basin sub-system which encompasses the Danube's waterway as well as Drava's waterway, and the Sava basin sub-system which encompasses the waterways of the Sava, Kupa, and Una. The Croatian inland waterways ports Vukovar, Osijek, Slavonski Brod and Sisak and their port areas have been characterised by an undeveloped infrastructure and unconnected logistical port network.

According to the "European Commission: WHITE PAPER Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system, 2011" inland waterways navigation plays a significant role in the development of a competitive transport system. Regarding infrastructure, the *European action programme for inland waterways navigation* (NAIDES I, NAIDES II) states that inland waterways navigation needs to be completely integrated

into the TEN-T multimodal corridors, especially because seven out of the nine corridors have a significant inland waterways navigation component. Also, the document warns that until now the role of inland ports in the total development of inland waterways navigation has been underestimated.

The overarching sector strategic documents related to the inland waterways and ports are the Strategy for Development of Inland Waterways in Republic of Croatia (2008-2018), adopted on 16 May 2008, as well as the Mid-term Plan of Development of Inland Waterways and Ports in the Republic of Croatia (2009-2016) adopted in 2009.

The Croatian accession to the EU has opened some new opportunities for the improvement of transport on inland waterways. Favourable geographical location of the Croatian inland waterways in the heart of Europe, and most cost-effective and safe transport compared to other types of transport, are the main strengths of this sector. However, the sector has a lot of weaknesses. There is a need for systematic work on the elimination of weaknesses and deficiencies within the sector, in terms of improvement of the organisation, fleet modernisation, education, construction of infrastructure (waterways and ports), maintenance and safety of navigation (full operation of the RIS system), as well as improved cooperation with the neighbouring countries. Croatian inland waterways are specific in that most of the waterways are rivers which follow Croatia's borders. In consequence, the river bed regulation projects have to be coordinated with neighbouring countries.

The main priorities regarding the inland waterways sector will be focussed on:

- Establishing and maintaining conditions for safe and reliable inland navigation, especially to maintain international waterways according to the required international navigational class standard,
- Developing and modernising international inland ports according to international standards in order to satisfy the existing and expected transport demand,
- Increase the sustainability of the system by performing a reorganisation of the sector, improving the efficiency of the maintenance, reducing the environmental impact and implementing measures to increase the safety and the interoperability of the system,
- Improve the accessibility of the ports and their connections to other transport modes to facilitate the development of multi-modal transport.

2.2.6. Maritime transport

Croatia is sided by the Adriatic Sea from the west, providing access to the Mediterranean Sea.

Total length of the Croatian coastline is 6,278 km, including a coastline that stretches around 1,244 islands, islets, reefs and rocks. From the total number of islands, 49 are inhabited.

From the total area of the Republic of Croatia (87,661 km2), internal waters and territorial sea extends over an area of 31,479 km2 (internal waters 12,498 km2 and 18,981 km2 territorial sea). Croatia has a long maritime tradition and maritime sector has always played a key role in the economic, trade and social development of the country.

Today, Croatian ports annually reload about 19 million tons of cargo and transport more than 12 million passengers (data for 2012). Croatian ports are integrated into a comprehensive network of European transport corridors, which represents a growth potential that allows the inclusion of trade flows to the intra-European and world markets, as well as the transformation of port systems in modern logistics and distribution of economic centres.

For a balanced development of the country it is particularly important to ensure the sustainable development of the islands and prevent further migration of the island's population. In this context, the development of the island's major coastal line service that takes place on a total of 56 public lines of national importance, and which in 2012 transported 11.1 million passengers and 2.76 million vehicles is very important.

According to data from the association of Croatian shippers MARE NOSTRUM for 2012, the Croatian fleet consists of 1,245 vessels 1,274,833.36 GT, of which 121 ships are in international shipping. Due to the reduction in the number of vessels in the fleet, it is necessary to adopt measures that will ensure the survival and modernization of the Croatian fleet in order to be competitive on the world market. In addition, due to the tradition and the existing "know-how" which are fundamental prerequisites for success, Croatia needs to take care of this industry.

Croatian registers and records register 72 floating objects, 4 fixed offshore structures, more than 1,900 yachts and 118.000 boats (data for 2012). In Croatia on average around 60,000 foreign recreational vessels (data for 2012) enters yearly.

Croatia has around 22,000 seafarers, of which around 7,500 are serving on national lines, or about 14,500 on international voyages on ships with Croatian and foreign flags (data for 2012). Seafarers are educated in a system that includes 8 maritime high schools, 4 naval colleges and 22 specialized maritime colleges (data for 2012).

Six major ports (Rijeka, Zadar, Šibenik, Split, Ploče and Dubrovnik) are located along the mainland coast and all are declared ports of special (international) economic interests for the Republic of Croatia. Croatian seaports are conveniently positioned to facilitate maritime transport between Central and Eastern Europe and Southern Asia, Australia and Oceania and Europe (via the Suez Canal). They enable a shortening of voyages by 5 to 8 days, or by a minimum of 2 000 km compared to north European ports. Currently on EU market, Adriatic ports take only 3% of total freight. Therefore there is a large potential to increase freight transport of all Adriatic ports.

The Ports of Rijeka and Ploče and lately Split have the highest market potential for transhipment of cargo. Port of Rijeka is a core port (TEN-T), part of Mediterranean Corridor: Ljubljana/Rijeka – Zagreb – Budapest – UA border and port of Ploče is a comprehensive port (*See figure 11 Comprehensive & Core Networks: Inland waterways and ports*). The further development of Ports of Rijeka and Ploče depends partially on the development of their connections to the railways. The most important common interest project for cargo maritime sector is the development and reconstruction of railway section from Rijeka to Hungary while further railway development in Bosnia and Herzegovina is of crucial importance for the development of port of Ploče.

Ports Pula, Zadar, Šibenik, Split, Dubrovnik and Ploče are classified as comprehensive ports on the TEN-T Network.

Public transport in "Coastal line passenger transport" is considered to be the key factor for maritime transport segment as it ensures permanent and regular connections between coast and islands and between islands, without which there would be no sustainable development of the inhabited islands in internal waters and territorial sea of Croatia. This sector provides regular lines between the Croatian islands (73 island ports) and the mainland coast (22 inland ports). The development of transport services in the coastal line passenger transport is considered to be extremely important because without it there would be no further economic development of coastal area, which is consequently reflected in the depopulation of the island's population.

Therefore it is necessary to optimize the capacity and efficiency of existing and new infrastructure, promote intermodality and improvement of the safety and reliability of the transport network by establishing and improving infrastructure for docking ships which provide services in coastal line passenger transport and their access infrastructure (access roads).

It is necessary to maintain and develop an adequate level of safety of navigation and protection of the sea from pollution in accordance with international and European standards and the needs of participants in maritime transport.

In the area of public services for safe navigation and in accordance with the International Convention for the Safety of Life at Sea (SOLAS), the UN Convention on the Law of the Sea (UNCLOS), the Convention of the International Hydrographic Organization (IHO) and the Act on hydrographic activities, hydrographic service has been established and is functioning. Hydrographic Service is a set of activities that is systematically and continuously carried out by National Hydrographic Office (Croatian Hydrographic Institute). The main objective of the hydrographic service is to ensure availability of hydrographic and navigation information that are directly related to safety of navigation to end users on ships. Hydrographic Service is organized and operates as an ongoing activity 24/7/365. In the coming period the priority objective will be to systematically and continuously improve hydrographic service and thereby decrease the safety of navigation and environmental risks by collecting hydrographic data, using the latest technology in accordance with the relevant standards, publishing data in the official paper and electronic navigational charts and publications, maintaining the published data and ensuring availability of official maps and publications around the world.

The main priorities regarding the inland maritime sector will be focussed on:

- Specialisation of the ports according to the demand potential,
- Increase the sustainability of the system by performing a reorganisation of the sector, improving the efficiency of the maintenance, reducing the environmental impact and implementing measures to increase the safety and the interoperability of the system,
- Improve the accessibility of the ports and their connections to other transport modes to facilitate the development of multi-modal transport.

2.2.7. Urban, sub-urban and regional transport

The Transport Development Strategy observes the citizen mobility in the sense of the use of public transport (rail, tram, bus, waterborne, etc…), as well as individual mobility (transport by car or bicycle and walking). The emphasis is put on public passenger transport and zero emission modes for the purpose of daily migrations. Addressing the issue of mobility at the level of cities, municipalities and regions through the implementation of the principle of ”Intermodality”, creates the basis for the interconnection of regions and enables cross-border connectivity and access to the major infrastructure (TEN-T).

In recent years, public transport (PT) in Croatia has registered a decrease in the number of passengers in all modes of transport. In the period from January to December 2012, passenger

transport registered [32] a decrease of 20,1% compared to the same period of 2011. The decrease in railway transport was 45,5%, and 0,5% in road transport. Sea and coastal water transport has decreased by 3,5%, while air transport has decreased by 5,7%.

At the same time, an increase in the number of registered cars, passenger car mileage and the general use of passenger cars has been observed. The predominance of private transport is made evident by the big traffic jams on access roads to urban centres, which contribute to increased pollution and noise level, lack of parking space and rising costs for citizens. At present, public transport in the Republic of Croatia is not integrated, as there are no coordinated timetables or single tickets for different modes of transport. Intermodal terminals, which enable transit from one mode of transport to another, do not exist or are extremely rare. On certain lines, bus and rail carriers have "parallel routes". The contribution of rail transport is penalized by the fact that average age of the rolling stock is close to the end of its service life, while in road transport; the average age of buses is approximately 15 years. PT services exist in the areas of the major cities such as Zagreb, Rijeka, Osijek, Split and their agglomerations, as well as Varaždin, Karlovac, Zadar and Pula.

PT by tram is conducted in Zagreb and Osijek, while PT by railway is conducted in Zagreb and Split. In inland waterways navigation, public passenger transport for the purpose of daily migrations is not existing, while public transport in the maritime sector is focussed on the connection of islands with the mainland.

From the legal and administrative points of view, it must be stated that almost all state administrative bodies and bodies of local and regional governments have direct or indirect influence on public transport, lacking of a common financial, organisational and infrastructural strategy and policy. The legal framework needs to be more active in encouraging the integration of different modes. An in-depth analysis is required for the purpose of detecting all primary and secondary legislation which influences the conditions and development of urban, suburban and regional public mobility, as well as concluded international agreements, development strategies of local and regional governments and transport studies.

PT in the Republic of Croatia is facing similar problems to almost all EU countries. This is confirmed by the existing modal split, according to which Croatia falls under the EU-27 average, 84% share of transport by car (EU-27) and 85.4% (HR).

[32] Communication no. 5.1.1/4 of the CBS, May 2013 (www.dzs.hr)

The main priorities regarding local and regional transport will be focussed on:

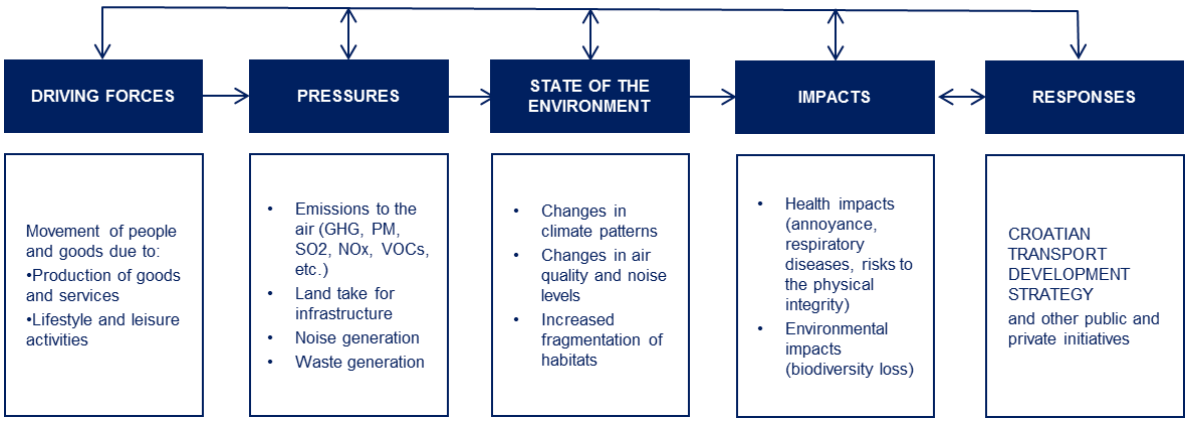
- Establishing integrated transport systems in the main cities and their suburban and/or regional areas,
- Developing measures to increase the share of public transport and zero emission modes such as P&R, restriction to private traffic in the centres of the cities, prioritisation for public transport through ITS systems, etc.,
- Increase the sustainability of the system by performing a reorganisation of the sector, in the organisational and legislative sense in line with the regulation (EC) No 1370/2007, improving the efficiency of the maintenance, reducing the environmental impact and implementing measures to increase the safety of the system.

2.2.8. Environmental transport issues

The Republic of Croatia is facing nowadays environmental problems generated by transport, similar in nature to those which are being faced by other European countries, given that transport is a global process.

To give insight and understanding of the complex cause-effect relationships between transport and environment, a DPSIR approach has been used. DPSIR stands for Driving forces, Pressures, State, Impact and Responses. It is a tool often used to analyse and report on sector environmental policies. The DPSIR model shows the connections between the causes of environmental problems, their impacts and policy responses, in an integrated way.

The following figure shows the DPSIR model applied to the Croatian transport and environment.



12 Figure DPSIR model of Croatian transport sector

Like the transport sector in most European countries, Croatian Transport shows an unfavourable environmental structure in the present baseline scenario, and negative environmental trends are foreseen for the future. Some of the key figures that support this conclusion are:

- In the year 2011, the Croatian transport sector contributed 20% to the National Inventory of Greenhouse gas emissions (GHG), with road transport being responsible for 95% of total transport emissions[33]. National projections made in the framework of the preparation of the Energy Strategy, foresee an increase of Greenhouse gas emissions from the transport sector in the period 2012-2025, even in a favourable scenario, after the implementation of measures.
- Atmospheric pollution of particulate matter (PM) is the most widespread air quality problem in Croatia, and transport is one of its main sources.
- The most serious threat to wild species in Croatia is degradation and loss of habitats, as consequence (among other factors) of construction of roads and other communications, which frequently causes habitat fragmentation.
- National projections foresee that energy consumption in transport is expected to grow in the period 2006-2020 for the business-as-usual scenario and for the energy efficiency scenario alike (3.3% and 2.9% respectively)[34].

An active and decisive policy action is, then, required to ensure the environmental sustainability of the future Croatian transport sector.

2.2.9. SWOT conclusions

This section summarizes the main conclusions of the diagnosis regarding the general view of Transport Sector in the country (definition of strengths, weaknesses, opportunities and threats).

The main goal of a SWOT definition is to help in finding its critical strategic factors, using and supporting them for any change considered: consolidating the strengths, minimizing weaknesses, taking advantage of opportunities, and reducing threats.

It also helps to design the action plan in a way that takes best advantage of the abilities and opportunities. Below are presented those main conclusions:

[33] Source: National Inventory Report 2013 – Greenhouse gas inventory for the years 1990-2011
[34] Source: 5th National Communication of the Republic of Croatia under the UNFCCC

STRENGTHS	WEAKNESSES
• Geostrategic position of Croatia in the natural area of EU expansion and cross-point of transport flows • The geographical location and the geomorphological characteristics of coastline and inland waterways Existence of cultural and historical heritage • Existence of developed public transport in bigger cities Port infrastructure that meets the needs of international maritime transport High standards of maritime safety • Political stability • Strong industry background • Strong political support and determination for constructing a sustainable transportation sector • Good motorway connection between regions and majors cities in Croatia • Solid tourism industry • Highly conserved marine environment • Member of the European Union • Strong technical educational background	• Geographical configuration of the country • Insufficient transport planning, mainly due to the lack of systematic collection of statistical data • Poor condition of transport infrastructure, mainly because of insufficient infrastructure maintenance • Lack of seasonal capacity in coast roads and in airports • Absence of integrated transport network • Underdeveloped multimodal transport • Absence of institutional coordination • Old railway equipment and operation structure • Unregulated public transport market • Unbalanced regional development • Insufficient class of inland waterways navigability according to EU standards • Inadequate structure and aging vehicles fleet • Lack of territory integration because of remotes islands • Emissions of the Croatian Transport Sector, including greenhouse gas emissions will continue to grow if actions are not taken to curve it • Low diversification in the economy, over-dependence on tourism • High unemployment rates • Public passenger transport is not integrated • Infrastructure for intermodal transport is not developed
OPPORTUNITIES	**THREATS**
• Tourism development • EU funding availability • Increase of population mobility • High density of railway network • Possibility of integration of Republic of Serbia (pre-accession process) and Republic of Bosnia and Herzegovina into European Union • New technologies in transport sector, in terms of efficiency and development of new markets • Potential freight gateway for countries with no coastline, mainly Hungary and Bosnia and Herzegovina • Transit country for North and Central Europe for freight flow from Asia • Potential Croatian membership in Schengen Treaty because of simplification of procedures for cross border traffic with Schengen members • Transport sector as a driver for the Economy, reduction of cost, improvement of accessibility • Introducing integrated public passenger transport • Development of infrastructure for intermodal freight transport	• Global economic crisis • Potential mobility restriction for people and goods with neighbouring countries because of Croatia Schengen treaty adhesion • Lack of investment in Slovenia to complete the link of Slovenian network with the Croatian motorway network • New foreign competitors in the local market • Croatian natural and urban environment are extraordinary but extremely fragile and could be seriously hit by the development and operation of new transport infrastructure. • Emigration from regional to urban areas • Lack of integration of public transport

5 Table General SWOT

3. OBJECTIVES OF THE TRANSPORT DEVELOPMENT STRATEGY

3.1. VISION & MISSION

3.1.1. Vision

Vision

Enhancement of the Economy and the Development of the Republic of Croatia, through the establishment of an intermodal, sustainable, efficient and safe transport system.

3.1.2. Mission

Mission

Improvement of the Transport system of the Republic of Croatia providing sufficient resources to get sustainable (social, economic and environmental), efficient and quality infrastructures and services.

3.2. OBJECTIVES DEFINITION

Transport Development Strategy is based on the analysis of the current situation of the Country; having identified opportunities and problems and having analysed best solutions to accomplish and respond to existing needs.

The Strategy is a document which determines a medium and long-term development in the Republic of Croatia and constitutes a positive development in relation to the existing situation and the achievement of a new stage, which consists in increasing the quality of transport system and the transport infrastructure.

For that purpose the definition of accurate objectives are considered a basic and crucial stage of the Transport Development Strategy process.

3.2.1. General goal of the Transport Development Strategy

The general goal of the Strategy is to achieve an efficient and sustainable transport system in the territory of the Republic of Croatia, taking into account its new role after its accession to the European Union in July 2013. In order to fulfil this objective, all the interventions defined by the Strategy will consider the following principles, which are in line with the European Union policies, standards and regulations:

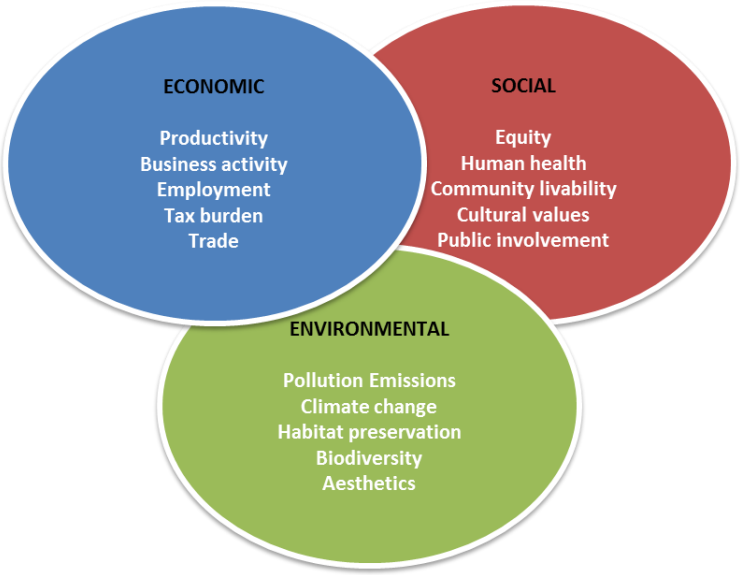
- Ensure environmental and social sustainability,
- Ensure safety and security,
- Ensure efficiency,
- Ensure financial sustainability,
- Improve accessibility and social inclusion,
- Improve energy efficiency,
- Improve modal split in favour of public transport, environmental friendly and soft modes (pedestrians and bicycle),
- Increase level of service,
- Ensure quality of service,
- Ensure interoperability of the system.

Ensuring financial, social, and environmental sustainability and energy efficiency

A sustainable transportation system is one that:

- *Allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations.*
- *Is affordable, operates efficiently, offers choice of transport mode and supports a vibrant economy.*
- *Limits emissions and waste within the planet's ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components and minimises the use of land and the production of noise.*

This definition is often used because it is comprehensive and indicates that sustainable transport must balance economic, social and environmental goals, the so called **triple bottom line,** as indicated in the following figure. Although these imply that each goal fits into a specific category, they often overlap.



13 Figure Sustainability Goals

In fact, economic and social sustainability, on the one hand, and social and environmental sustainability on the other, have been found to be not only compatible, but also largely complementary.

Ensure safety and security

Safety and security has to be of primary concern for the Croatian transport system. They are at the forefront of everyone's mind when they travel.

Transport safety: Creating the environment for safe transport is essential for Croatian citizens. The European Commission strives to provide the highest standards of safety worldwide. To improve the safety, the following measures will be considered. Creation of user rights charters, adaptation of practices of safest modes to other modes, establishment of effective internalisation systems for the costs of accidents in each mode.

Transport security: Transport security is a sensitive issue that affects us all across the world. As rare as an event might be, the risk remains, and exposes the vulnerabilities of the entire transport supply chain.

Ensure efficiency of the transport system (including quality of services)

Improvement of the efficiency of the system will be achieved through the following measures:

- enhanced transparency and public involvement:

  Creation of formal channels through which to inform stakeholders, society, partners and professionals about transport policy programs and strategic lines, and to foment social debate about these issues or decisions. Establishment of a set of socially agreed indicators to

control the implementation of transport policies of the Strategy, providing a basis for a review of the plan.

- greater integration of transport modes:

Promote the use of environmentally friendly transport modes through a proper integration of all the modes to facilitate the exchange among them.

- better-quality services, including adequate conservation systems:

Offer quality services especially in the public transport systems for passengers and the environmental friendly modes for freight to increase their attractiveness. One of the key aspects to offer quality services is to properly maintain the infrastructure and the transport fleet. Quality control systems for services and infrastructure, complemented with new tools such as periodic external audits will be implemented.

- higher safety standards in all transport modes:

Increasing the safety standards will help to increase the efficiency of the transport systems.

Increase accessibility and social inclusion

Guaranteed universal minimum access to public services (education, healthcare, social assistance, Public Transport, etc.) for all citizens, with particular attention to vulnerable groups (children, the elderly, those with reduced mobility) constitutes one basic goal to achieve for all regions. This means that access to public transport must be ensured for all, within the whole country reaching the levels of quality defined for public transport services.

True territorial accessibility is provided by the services, not just by infrastructure. Improvements will be based on the creation of effective public services for access to the main demand generator nodes.

Due to the particularities of the Croatian territory, special attention will be paid to the development of cross-border links to the neighbouring countries and the accessibility to the islands and to the Dubrovnik region to guarantee adequate conditions of mobility for persons and goods, in line with the differing features of each of these territories.

Improve modal split in favour of public transport, environmental friendly and soft modes (pedestrians and bicycle)

To improve the modal split it is necessary to conceive the transport system as a network of networks in terms of both the infrastructure and the services they carry, and requires an intermodal view to be taken in order to take advantage of the benefits of each transport mode and ensure and facilitate the transfer between modes. Integration of the various modes must

take into account all areas of action: the physical connection, service coordination, tariffs, management and planning.

Increase the level of service

Adequate level of services for all the modes will be provided to increase the efficiency and the attractiveness of the transport system.

Ensure interoperability of the system

In order to facilitate the integration of Croatian transport system in the EU transport chains, it is necessary to ensure its interoperability, being this one of the main drivers of the Strategy.

3.2.2. Multimodal objectives definition

A set of multimodal objectives for the Transport Development Strategy has been defined taking into account the outcomes of the analysis of the current situation in all the modes.

To facilitate the presentation and clearly show the link between the analysis (represented through the SWOT analysis) and the objectives, a SWOT matrix shape is presented below.

14 Figure SWOT Matrix

According to the previous analysis, based on different hypothesis[35] carried out per sector, and the subsequent SWOT analysis and aggregation, the following are the main objectives of the Croatian National Transport Development Strategy.

[35] See Annex 2 of the Transport Development Strategy, Sector Analysis

3.2.3. Description of the multimodal objectives

As indicated above, a set of six major strategic multimodal objectives and twenty eight specific multimodal objectives integrating respectively each major multimodal objective have been defined for the improvement of the transport system in Croatia.

Some of those objectives have been established with a more unique and specific purpose in relation to the sector, and others with a general or transversal component. This distinction has a practical purpose, related to the future implementation and, therefore, the way to manage their development.

The objectives of the Transport Development Strategy are the following:

Objective 1: Improvement of transport connectivity and coordination with neighbouring countries

According to EU policy of stronger cross border cooperation between regions of neighbouring countries, it is necessary to emphasize importance of regional cross border corridors between EU and non EU countries. This will be even more important after Croatian accession to "Schengen area", which will provide easier way for these kinds of connections. In addition, the geographical situation of Croatia in Europe makes the consideration of the transport connectivity with neighbouring countries of special importance, in particular the consideration of transit traffic in terms of freight and passengers. International traffic in Croatia (with origin or destination in Croatia and transit traffic) is relevant for all the transport modes: rail, road, air, maritime and inland navigation. For these reasons, it is crucial for a proper system planning to improve passengers' and freight's accessibility and to eliminate bottlenecks at national borders.

- **1a Border bottlenecks elimination**

  Infrastructural, operational and/or organisational bottlenecks at borders often result in high travel times and low average speeds reducing the attractiveness of international journeys. The elimination of bottlenecks at borders is a special challenge for Croatia due to its accession to the European Union and the expected adhesion to the Schengen treaty, which on the one side will imply the suppression of currently relevant border crossings with EU countries, but on the other will bring a higher relevance of border crossings with Serbia, Bosnia and Herzegovina and Montenegro. In order to succeed in

the elimination of the border bottlenecks, it is necessary to establish the proper coordination mechanisms with the neighbouring countries.

In order to succeed in the abovementioned challenge, it is very important to prepare a plan to identify and eliminate the bottlenecks at borders, since the resolution of these issues will enhance the role of Croatia as a transit country in terms of international mobility, in particular for goods, with positive impacts on economy.

- **1b Improvement of international passengers long distance accessibility (including transit traffic)**

  International transport of passengers in Croatia is of relevance mainly for road transport. Other modes have relevance for international passengers only for specific groups of passengers (maritime for tourists and air for tourist and business travellers). In order to enhance the role of Croatia as a transit country in terms of international mobility and to increase its positioning as a main tourist destination, it is necessary to improve passengers international accessibility by completing the missing links on the main transit corridors, modernising the ports and airports in the main tourist and business centres and improving their accessibility.

- **1c Improvement of international freight accessibility (including transit traffic)**

  In the case of international freight traffic, the relevant modes are rail, road, maritime and inland navigation. In order to increase the relevance of Croatia as a transit country in terms of freight international mobility and to increase the role of the selected TEN-T core freight harbour (Rijeka) as one of the main entrance points for freight in Europe, it is necessary to improve freight international accessibility by completing the missing links on the main transit corridors, modernising the freight relevant ports and improving their accessibility.

Objective 2: Improvement of passengers' long distance accessibility inside Croatia

The particular morphology of the Croatian territory and the clear leading role of Zagreb as the main industrial and business node of the country make the long distance passenger transport within the country particularly relevant despite Croatia not being a big country in terms of extension and population. Long distance accessibility is mainly served by motorway connections on the main corridors, by air transport-supported by the relatively large number of international

airports, and in some parts of the country by rail, where the modernisation of the main corridors needs to be carried out.

The improvement of the long distance accessibility for passengers will help "reducing the distance" from the remote regions to the Capital, reducing regional disparities on one hand by allowing an increased participation of remote regions' citizens in the industrial, political and business spheres of the country, and on the other hand by helping to enhance the relevance of regional industrial and business centres so diversifying the currently very centralised focus.

- **2a Improvement of passengers long distance accessibility - Central Croatia (Zagreb)**

  Zagreb is the main economic and transport node of Croatia and the clear centre of the functional region in terms of long distance accessibility. The majority of the long distance trips inside Croatia start or end in Zagreb. The relevant transport modes for the functional region's long distance accessibility are road (high degree of completion of the motorway network), rail (high number of sections under modernisation) and air (airport to be modernised and extended and its accessibility by public transport to be improved). Given the considerations above on the relevance of this area and its main centre, it is of high importance to increase the long distance passenger accessibility to the functional region, with a specific focus on the city of Zagreb, in particular its public transport system - by road and by rail where justified.

- **2b Improvement of passengers long distance accessibility - Northern Adriatic (Rijeka)**

  Passenger long distance accessibility in this functional region is dominated by road and air transport. The motorway network connecting its principal nodes with Zagreb is already completed. In terms of air transport, the relevance for passenger long distance accessibility is limited to the airports of Rijeka and Pula and their accessibility by public transport is to be ensured. Rail transport is not relevant in this functional region in terms of passenger long distance accessibility, which in particular suffers from a lack of competitiveness in comparison with road. Moreover, the rail network around Pula is disconnected from the rest of the Croatian railway network.

- **2c Improvement of passengers long distance accessibility - Eastern Croatia (Osijek - Slavonski Brod)**

  In the Eastern functional region, long distance passenger mobility has a predominant focus on the accessibility to Zagreb. The relevant transport connections are road-based - the main motorway corridor is already completed as well as the connection to Osijek (the missing motorway links are the connections to the neighbouring countries Hungary and Bosnia and Herzegovina but their relevance in terms of long distance passenger accessibility is mainly related to international and transit traffic). Also the rail network is in a good status, with the main corridor in this area currently under modernisation.

  The priority in this functional region is to increase the long distance passenger accessibility by public transport both road and rail-based.

- **2d Improvement of passengers long distance accessibility - Northern and Central Dalmatia (Split - Zadar)**

  The national long distance accessibility for passengers to this functional region has two predominant focuses: tourism (with a big seasonality factor) and connectivity to Zagreb. In this case the relevant connections are based on road, with the main motorway corridor almost completed, and air transport; the main focus therefore is on improving the public transport accessibility to the airports. Rail transport is less relevant in this functional region as its accessibility levels are not competitive with the road system - the main priority here therefore is to improve the connectivity of train stations in cities with the public transport systems. Another important focus is the improvement of the connectivity to the main ferry ports in Zadar and Split.

- **2e Improvement of passengers long distance accessibility - Southern Dalmatia (Dubrovnik)**

  Dubrovnik functional region's main constraint is its physical separation from the rest of the country caused by Bosnia and Herzegovina's access corridor to the Adriatic Sea. This implies the need for different/additional measures to guarantee its accessibility. In this sense, the airport plays an important role for long distance accessibility while the issue of road accessibility, jeopardised by the necessity to cross the border with Bosnia and Herzegovina twice in a short distance, is already considered with prefeasibility study which identified the Pelješac Bridge as the best solution in the context of finding the optimal solution for connecting the region of South Dalmatia with the rest of Croatian

territory. This issue will be even more relevant when Croatia joins the Schengen area, thus implying a higher level of controls at the border.

Objective 3: Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion

Territorial cohesion and reduction of regional disparities is one of the objectives of EU transport policies, in order to ensure accessibility and connectivity for all regions of the Union. A high level of regional connectivity is one of the necessary steps in order to reduce regional disparities and ensure the country's sustainable growth. Croatia faces two different issues in this sense: accessibility of remote towns and villages in less populated and poorer areas, and side connections to the islands, some of which are quite far away from the continental coast. As in many countries, also in Croatia the main issue is to guarantee adequate connectivity/accessibility to the main national and regional economic centres.

- **3a Improving the regional connectivity on the mainland**

  Despite the long distance to the main economic centres (especially Zagreb) and the low population density of some of the regions in Croatia, it is very important for the sustainable growth of the country to provide these areas with adequate regional connectivity in order to stimulate economy and facilitate the generation of new jobs. In order to optimise available resources and provide affordable public transport for all the citizens, it is crucial to identify the most suitable solution for each region. In this case, on top of the traditional rail and road modes, for the regional connectivity of some regions a good potential might be represented by some public transport solutions based on the development of inland waterways regional public transport, in connection/as a complement to the traditional ground public transport. It is also important to optimise public transport operational schemes and in order to achieve that, it is a priority to increase the efficiency and physical, operational and organisational integration of all the modes: railway and bus with demand based public transport services, etc.

- **3b Improving the regional connectivity to/from/between the islands**

  The particular morphology of the Croatian territory, with a high number of inhabited islands, implies an extra constraint in order to assure the territorial cohesion of the country. Due to that, it is necessary to improve passenger accessibility to, from and between the islands. In this sense, the main transport mode is the maritime transport

(coastal line passenger transport) but it is very important also to provide the proper accessibility to the ports on the land side and consequently plan the road network and the related public transport services and other facilities of the coast cities with important passenger ports, taking into account the extra requirements of passengers between or from the islands.

Objective 4: Improvement of the passenger's accessibility to and within the main urban agglomerations

Cities suffer most from congestion, poor air quality and noise exposure. Urban transport is responsible for about a quarter of CO2 emissions from transport and 69% of road accidents occur in cities. These issues are felt in the main urban nodes/metropolitan areas of Croatia, while solutions differ due to the existing infrastructural provision, the geomorphologic characteristics and mobility patterns (e.g. presence of the sea and needs for connections to islands, etc.). In order to improve the situation it is necessary to increase the modal split in favour of public transport and soft modes (pedestrians and cyclists), and in order to achieve that, it is a priority to increase the efficiency and physical, operational and organisational integration of all the modes: railway, tram and bus. It is necessary to provide as well good public transport connections to the main demand generator centres (such as airports, sea ports, inland waterway ports, cultural centres, city centres, etc.). In cities, switching to cleaner transport is facilitated by usually higher availability of public transport services and higher population density. Pre-trip/on-trip users' information, electronic booking and integrated ticketing covering all transport modes should facilitate multimodal travel. The support to public transport and soft modes should start at policy level by committing to prioritise these modes, at the same time limiting/restricting private cars usage especially in the city centres. Also, SUMPs will be developed in all the regions and in the main cities, emphasising the support to public transport and soft modes. An appropriate set of passengers' rights has to accompany the wider use of collective modes.

- **4a Improvement of the passengers accessibility - Zagreb node**

  Zagreb is the main economic and transport node of Croatia (also for TEN-T core networks of urban, airports and rail-road terminals). This implies a heavy mobility burden on this area which has to be tackled by a mix of infrastructural, policy and

operational/organisational measures which stimulate integration with urban public transport.

Public transport in the city of Zagreb is offering good quality and reliable transport and one of the priorities is to include the surrounding cities and regions in an integrated transport system with the city of Zagreb to improve the modal split and expand the catchment area.

- **4b Improvement of the passengers accessibility - Rijeka node**

  Rijeka is characterised by the heavy presence of the port in the structure of the City. It is very important to consider the potential of maritime transport as a public transport mode to complement the bus system. Due to the expected relocation of part of the port installations, the possibility of using the railway network inside the City (currently used for freight accessibility to the port) for public transport considerations is to be analysed. It is important to improve the accessibility to the port and for that reason, a reorganisation of the municipal road network will be considered.

- **4c Improvement of the passengers accessibility - Zadar node**

  The accessibility of Zadar node is characterised by the important amount of passengers commuting from, between and to the islands. Due to this it is relevant to improve the coastal line passenger transport service and the accessibility to the port by public transport. The development plan of the port will be taken into account for the proper planning of the transport needs in Zadar.

- **4d Improvement of the passengers accessibility - Split node**

  Similar to Zadar case, the accessibility of Split node is characterised by the important amount of passengers commuting from and to the islands. Due to this it is relevant to improve the maritime public transport connections and the accessibility to the port by public transport. The development plan of the port will be taken into account for the proper planning of the transport needs in Split.

- **4e Improvement of the passengers accessibility - Osijek node**

  Public transport system of Osijek includes railway, tram and bus systems and it is necessary to integrate these subsystems into a single integrated public transport system also ensuring access to the port. The objective is to increase the efficiency and sustainability of the public transport system in order to increase public transport's modal share.

- **4f Improvement of the passengers accessibility - Dubrovnik node**

  On top of the important amount of passengers commuting from and to the islands, which implies the necessity to improve the maritime public transport connections and the accessibility to the port by public transport, Dubrovnik suffers from the physical separation from the rest of the country by Bosnia and Herzegovina's access corridor to the Adriatic Sea. This implies the need for different/additional measures to guarantee accessibility for local and suburban travellers. The solutions will be mainly based on public transport connections, with a limited increase in the road network. A relevant node in this sense is the airport, which will become increasingly the main traffic generator/attractor due to its role in long-distance accessibility to this area. These issues will be made even more relevant when Croatia joins the Schengen area, thus implying a higher level of controls at the border.

Objective 5: Improvement of freight accessibility inside Croatia

Croatia's accession to the EU has put the country in the position to take the leading role for freight connections in/to South-East Europe. European policies require especially developed freight corridors, which are attractive for the market thanks to their reliability, limited congestion and low operating and administrative costs. Those corridors shall also be conceived with an attention to optimise use of energy, limiting/minimising environmental impacts such as pollutants emissions. The challenge is to ensure structural changes to enable rail to compete effectively and take a significantly greater proportion of medium and long distance freight. Sea ports have a major role as logistics centres and require efficient hinterland connections. Their development is vital to handle increased volumes of freight both by short sea shipping within the European Union and with the rest of the world. Motorway connections on the main corridors are already implemented, while much still has to be done on the side of railway. In addition, connections to some airports still lack enough quality. Inland waterways, where unused potential exists, have to play an increasing role in particular in moving goods to the hinterland and in linking the European seas.

- **5a Improvement of freight accessibility - Central Croatia (Zagreb)**

  Zagreb is the main economic and logistic node of Croatia and the clear centroid of the functional region in terms of freight transport. The relevant transport modes in terms of

freight accessibility of the functional region are road (high degree of completion of the motorway network), rail (high number of sections under modernisation) and air (airport to be modernised and extended and its accessibility to be improved). Concerning inland waterways transport, freight accessibility in the functional region might have some importance in the future related to the port of Sisak, if the Sava navigability is improved and the Danube-Sava canal built.

The main objective is to complete the relevant freight railway network (especially the main international corridors and the corridor to Rijeka), and to improve accessibility to the airport. On the road side, it is important to analyse the freight flows when considering the reorganisation of Zagreb's road network, in order to limit the number of heavy trucks in the City.

- **5b Improvement of freight accessibility - Northern Adriatic (Rijeka)**

  Freight transport in this functional region has a clear link to the port of Rijeka, being the core TEN-T port of Croatia. Moreover, in the context of transport and economic development of Croatia, Port of Rijeka development and its connections within the Country and with the rest of Europe, especially its eastern part, is of particular significance. Apart from the obvious importance of the maritime transport for the region's freight accessibility, and taking into account that the main motorway corridors are already completed, the focus will be on the completion of the rail corridor to Zagreb (further to Hungary, Serbia, etc.).

- **5c Improvement of freight accessibility - Eastern Croatia (Osijek - Slavonski Brod)**

  In the Eastern functional region, national freight mobility's predominant focus is on accessibility to Zagreb. The relevant transport modes for this functional region are road, being the main motorway corridor already completed as well as the connection to Osijek (the missing motorway links are the connections to the neighbouring countries Hungary and Bosnia and Herzegovina but their relevance in terms of freight accessibility is mainly related to international and transit traffic) and rail, being the main corridor under modernisation. If the navigability of the Sava is improved and the Danube-Sava canal built, the relevance of inland waterways regarding the national freight accessibility of this functional region will increase but will not play a relevant role.

  The priority is to complete the missing parts of the main railway corridors.

- **5d Improvement of freight accessibility - Northern and Central Dalmatia (Split - Zadar)**

  Freight transport in this region is dominated by road, being the main motorway corridor almost completed, and maritime transport, mainly the port of Ploče (with a higher relevance for international freight flows). Rail transport is mainly relevant for the freight accessibility to the port of Ploče but the line is not connected to the Croatian railway network (it is linked to the Bosnian network). The priority is to improve the accessibility to the ports in the main cities to limit the amounts of heavy truck traffic in the centre and touristic areas.

- **5e Improvement of freight accessibility - Southern Dalmatia (Dubrovnik)**

  The functional region of Dubrovnik has the constraint of being physically divided from the rest of the country by the Bosnia and Herzegovina's access corridor to the Adriatic Sea. This implies the need for different/additional measures to guarantee accessibility. There is no railway line in the region and then freight is mainly transported by road and maritime transport. The priority is to improve the accessibility to ports and to the airport, limiting the impact of heavy traffic to the touristic and urban areas and prepare the road network to avoid excessive delays when Croatia joins the Schengen area, thus implying a higher level of controls at the border.

Objective 6: Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system

One of the necessary steps to increase the efficiency and sustainability of the transport system is the improvement of the organisational and operational setup. A transport system not properly organised, operated and maintained will not be successful, independently from the amount of funds it receives for its development. A more sustainable system means not only better use of financial resources, but also safer and more energy-efficient, with a lower impact on the environment and society.

- **6a Adaptation of the legislation, rules and standards to the European requirements and best practice**

  In order to fully achieve the objectives of the new Trans-European transport network policy, uniformed requirements regarding the infrastructure are to be established, establishing clear standards that the infrastructure of the Trans-European transport

network shall comply with. This will concern also smart mobility systems such as the air traffic management system of the future (SESAR), the European rail traffic management system (ERTMS) and rail information systems, maritime surveillance systems (SafeSeaNet) and Vessel Traffic Management Information System (VTMIS), River Information Services (RIS), Intelligent Transport Systems (ITS), and interoperable interconnected solutions for the next generation of multimodal transport management and information systems (including for charging). Planning, managing and operating Public Transport in a more efficient, transparent and financially sustainable way by means of a Public Service Contract (PSC) compliant with Reg. 1370/2007 falls also under this same perspective/vision. Also, unlocking the potential of private finances equally requires an improved regulatory framework and innovative financial instruments. Project assessment and authorisation must be carried out in an efficient and transparent manner that limits time, cost and uncertainty. Finally, in line with the EU Strategy for adapting to climate change and the document "Adapting infrastructure to climate change,"[36] which examines issues of adaptation of transport infrastructure impacts related to climate change, due to expected climate change and extreme weather events that can lead to damage to transport infrastructure, all transport infrastructure must be built in a manner that is resistant to these influences.

- **6b Improvement of the system organisational setup and cooperation between relevant stakeholders**

  States are still the principal entity in charge of creating and maintaining the transport infrastructure. However, other entities, including private-sector partners, have also become relevant for the implementation of a multimodal Trans-European transport network and the related investments, including regional and local authorities, infrastructure managers, concessionaires or port and airport authorities, etc. Through a better cooperation among them, better quality and more efficiency/effectiveness will be achieved. In addition, improved cooperation and engagement with the public will improve social inclusion and ensure development of a transport system which meets the needs of its users.

[36] SWD (2013) 137 final, Brussels 16.4.2013., Adapting infrastructure to climate change

Improving the organisational setup of the transport system and reorganising the structure of the relevant stakeholders to optimise their resources are of crucial importance for improving the sustainability and quality of the transport systems.

- **6c Improvement of the system operational setup**

  The quality, accessibility and reliability of public transport services will gain increasing importance in the coming years, inter alia due to the ageing of the population and the need to promote public transport. Attractive frequencies, comfort, easy access, reliability of services, and intermodal integration are the main characteristics of service quality. The availability of information over travelling time and routing alternatives is equally relevant to ensure door-to-door mobility, both for passengers and for freight. Human resources are a crucial component of any high quality transport system. It is also widely known that labour and skill shortages will become a serious concern for transport in the future. On the other hand improve the operational measures and strategy using transport and infrastructure more efficiently through use of improved traffic management and information systems (e.g. ITS, SESAR, ERTMS, SafeSeaNet, RIS) are key objectives to ensure sustainability of the sector. Proper maintenance of the existing transport network, facilities and rolling stock is of higher relevance for the sustainability and quality of the transport system. In this sense, establishing the proper maintenance system setup is a priority objective.

- **6d Improvement of the safety of the transport system**

  One of the main objectives of the Transport Development Strategy is to improve safety of the transport system/network by means of network-wide interventions such as road safety audits/reviews, ITS/TMS, traffic calming, measures to stimulate public transport usage, collecting, processing, publishing and distributing navigational safety data and information, and also measures for improvement of maritime traffic safety.

- **6e Reduction/mitigation of the environmental impact**

  Avoiding, reducing or mitigating the environmental impact of transport related activities is one of the main objectives of the Strategy. In particular, the Strategy aims at the reduction of transport-related GHG emissions (transport sector is one of the main sources) and atmospheric pollution. This will be achieved by a set of interventions both on mobility habits (modal shift to public transport, environmental friendly and soft modes such as pedestrians and bicycles) and improvement in vehicles technologies

(more efficient and cleaner). Avoiding, reducing and mitigating the (potential) environmental impacts are essential for both existing and new infrastructure. Protecting natural and man-made environments and landscapes, preventing the loss of biodiversity and ecosystem services, protecting heritage and ensuring a healthy environment (reducing the number of people disturbed by the impacts of transport such as noise and air emissions) are indispensable conditions for the development of a sustainable transport network.

- **6f Improvement of the energy efficiency**

  Better and more energy efficient mobility habits is one of the priorities of the European policies and of the Strategy as well. To achieve this objective, it is necessary to promote a more efficient usage of the transport network, in particular shifting users to public transport and soft modes. It is also necessary to promote the use of modern more efficient and cleaner vehicles and ships considering the use of alternative fuels, the use of energy recovery technologies and ensuring resource-efficient treatment of end-of-life vehicles.

- **6g Financial sustainability of the transport system**

  One of the priorities of the European Union is to increase the financial sustainability of the transport sector and reduce the needs for subsidies which currently represent a big part of the budget of the countries. This increase in financial sustainability will be achieved by means of a set of measures on organisation and operation, i.e. by making a more efficient management of the network (to be achieved by better planning - thus attracting more users - and management - e.g. by means of a PSC, which would allow also a possible future tendering of services thus opening to market economies). New financing instruments, for example the EU project bonds initiative, can support Private Public Partnerships (PPP) financing on a bigger scale.

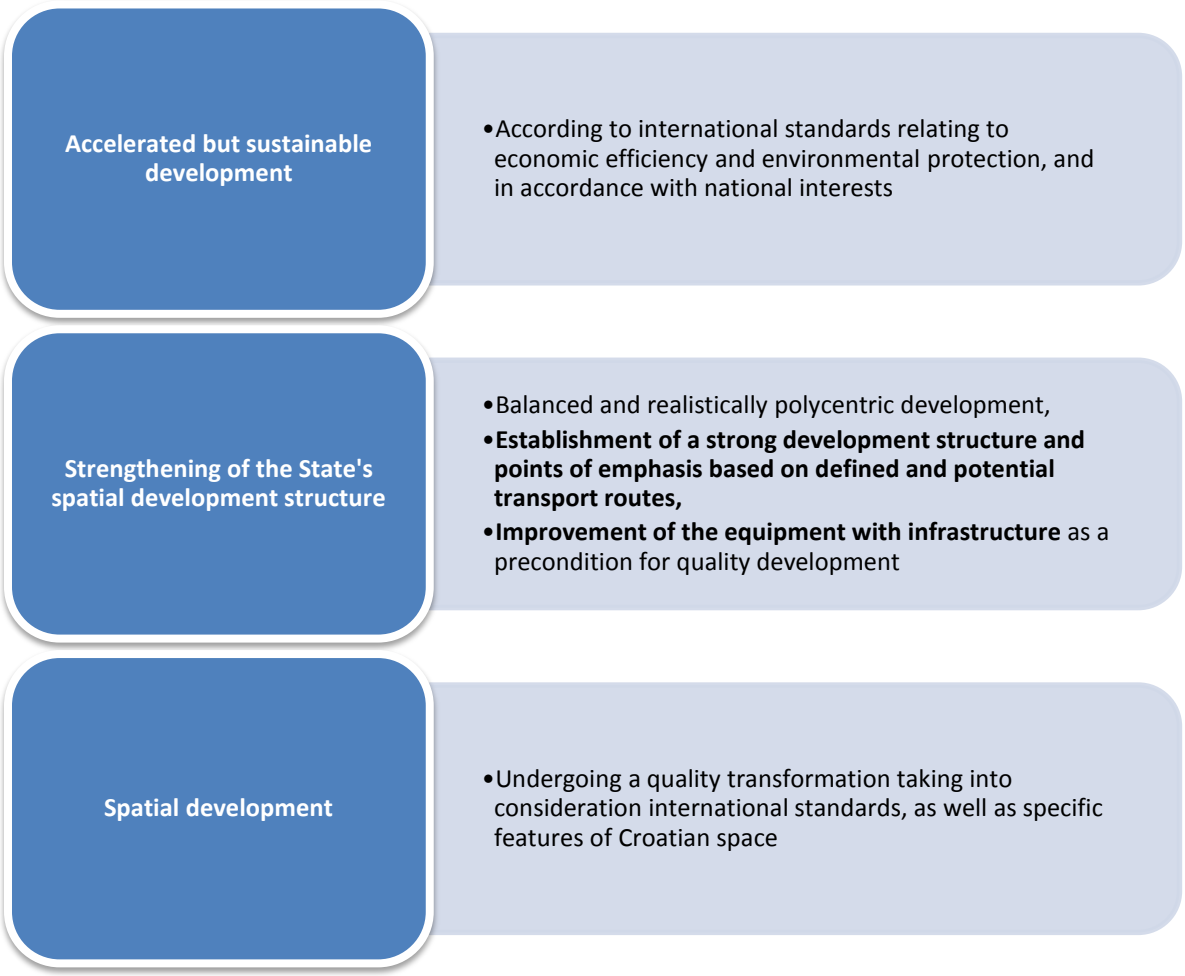
3.2.4. Coherence with other sectorial strategic documents and with the Physical Planning Strategy of Republic of Croatia

Consistency and compliance with the fundamental State document for development of orientation in space, the Physical Planning Strategy of the Republic of Croatia, and the Regional Development Strategy and Tourism Development Strategy is extremely important in achieving global goals such as raising the level of prosperity in the Republic of Croatia and its regions. Physical Planning Strategy as a fundamental State document and these other strategies set specific development goals aimed at socio-economic development of the country, in order to reduce regional disparities in development and strengthening of the development potential of the regions, in order to increase the general competitiveness of the country. It is therefore extremely important to consider all of these documents in order to define sectorial action plans which in a consistent and coordinated manner contribute to national development.

This chapter summarizes the main needs and goals arising from the above documents, as well as existing links and contribution of Traffic Development Strategy of Croatia in achieving these goals.

Physical Planning Strategy of Croatia[37] estimates that Croatian territory includes all the elements necessary for the development and integration into the EU's development systems, and especially a particularly favourable geographical position for the development of traffic on the routes linking western and central Europe to Eastern Europe and the Middle East. However, the present state of development is not compliant with potentials (ie. State of the economy affects domestic traffic as well as sales to other countries).Within the general target of achieving a higher degree of the State's development, the following major spatial development objectives have been pointed out. Transport links have been highlighted.

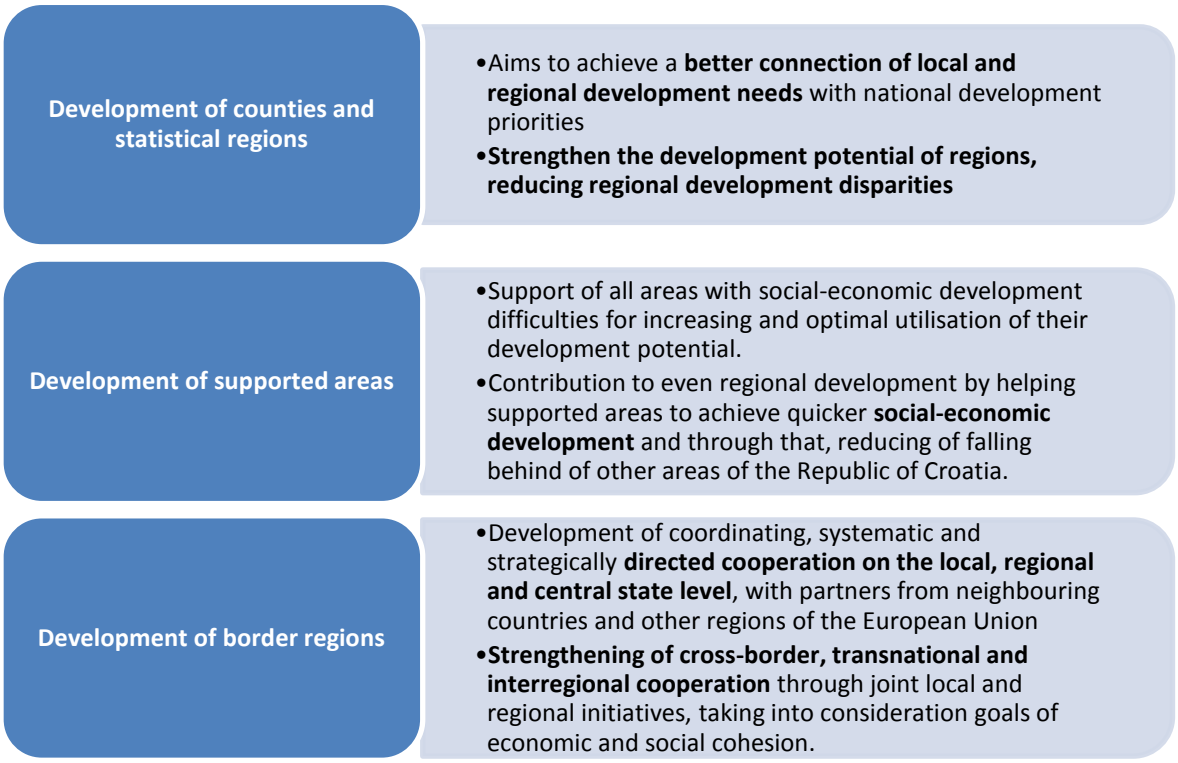
[37] Physical Planning Strategy of the Republic of Croatia (1997., 2013., OG no. 139/99, 76/13)



15 Figure Objectives of the Spatial planning Strategy of the Republic of Croatia

In terms of Regional Development, with the purpose to achieve more equal development and decrease social and economic differences, the Regional Development Strategy of the Republic of Croatia 2011-2013 (May 2010) pursues to ensure a coordinated approach to sustainable social and economic growth of all parts of the country and to connect the top-down/bottom-up management of development. The overall objective is to contribute to the economic growth of the Republic of Croatia in accordance with the sustainable development principles by creation of conditions which would contribute to strengthening the competitiveness and realisation of their own development potential.

The three basic strategic objectives for achieving the regional development policy goal are shown below. Transport links have been highlighted.



16 Figure Objectives of the Regional Development Strategy of the Republic of Croatia

In line with the Tourism Development Strategy of the Republic of Croatia until 2020 adopted in 2013, the vision of tourism by 2020 is that the Republic of Croatia is a globally recognised tourist destination, competitive and attractive for investments. It is important to emphasise that tourism sector is the main industry in the country and the main source of income for the Republic of Croatia. The spatial diversification of wide range of tourist products is shown below.

17 Figure Touristic regions, Source: Data from the Tourism Strategy of the Republic of Croatia

Taking into account the existing limiting factors for the future tourist development in the Republic of Croatia, as well as global tourism demand trends, the main goal for the development of Croatian tourism until 2020 is to **increase its attractiveness and competitiveness**, resulting in bringing Croatia into the 20 most competitive tourist destinations in the world.

Inadequate tourist infrastructure at destinations, long-standing orientation of the local population towards seasonal trade as well as **the connectivity by air and sea** are among the most important key limitations to the development of Croatian tourism.

In that order, although the general traffic network and accessibility of the country have been largely improved in the last years, (mainly the motorway system), it is important to point out that additional efforts need to be done at a regional and local level in order to improve traffic (organization of traffic in tourist destinations, especially in relation to public transport).

This fact is more unfavourable in other areas of traffic; and particularly difficult in the rail system due to poor quality of the tracks and slow speed, having very low significance for tourism. The situation with ferries requires improvements, especially in increasing the frequency and speed of the lines, namely between the islands. Air traffic is somewhat more favourable; however the organization, the commercial interest and the level of facilities remain areas of improvement.

Implementing the new operating visions and strategic development goals of Croatian tourism requires action in several key areas which will ensure the improvement of competitiveness and international perception of Croatian tourism.

As a conclusion, mobility and accessibility needs stemming from tourism and regional development strategies focus on the real need of transport development. The economic performance of regional economy and tourism are influenced in four ways:

- Long-distance accessibility of the key destinations,
- Local transport management of the destination areas,
- Regional accessibility from the hinterland and surrounding countries,
- Transport system Management and Organisation.

These accessibility needs characterize the importance of designing sustainable infrastructure (rail, maritime, inland, aviation and road improvements) where the particular functionality of the infrastructure should be assessed. The economy in general is considerably built on the mobility of freight and in this sense maritime, rail and inland waterways transport is addressed in long distance transport while road, mainly, in regional context. The ports of the Republic of Croatia serve as a gate for trade especially in the Central-European North-South axis. Central and South-Eastern Europe communication uses Sava and the East-West railway connection. It is crucial for the involved countries to ensure the freight movements in a sustainable way.

In transport development, the Republic of Croatia has to be **well connected within its own territory, as well as within the system of European transport network**. It is necessary to investigate the potentialities and define the optimal use of Croatian sea and inland ports, airports, and in particular to **establish integrated transport**, enhancing thereby the functionality of the single segments and achieve a better use of development corridors. Following this approach, the Transport Development Strategy will mostly contribute to solve the existing

needs arising from the regional and tourism field, and will facilitate the achievement of those strategic goals already defined in the respective strategic planning.

As a result, the **six main objectives of the Transport Development** are directly linked to some of the main objectives coming from the above listed parallel strategies; and their articulated goals. A matrix showing the existing links is presented below:

Objectives of the TDS	Needs/goals/objectives of parallel strategies
1 **Improvement of transport connectivity and coordination with neighbouring countries**	• In transport development the Republic of Croatia has to be well connected within its own territory, as well as within the system of European routes • it is necessary to establish integrated transport
2 Improvement of passengers long distance accessibility inside Croatia 3 Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion 4 **Improvement of the passengers accessibility to and within the main urban agglomerations**	• Increase Croatian attractiveness and competitiveness • Enhance and accelerate tourist development in the continental part of the country • The economic performance is influenced by three factors: ❑ long-distance accessibility of the key destinations, ❑ regional accessibility from the hinterland and surrounding countries for the workforce to serve the touristic regions, and ❑ local transport management of the destination areas
5 **Improvement of freight accessibility inside Croatia**	• The economy in general is considerably built on the mobility of freight and in this sense maritime, rail and inland waterway transport is addressed in long distance transport while road in regional context. • The ports of the Republic of Croatia serve as a gate for trade especially in the Central-European North-South axis. Central and South-Eastern Europe communication uses Sava and the East-West railway connection. It is crucial for the involved countries to ensure the freight movements in an ecologically sustainable way. • The preference of modes with low external costs is of high importance especially in the North-South axis since the efforts and investments of the countries along this axis makes no sense without Croatia since an additional transhipment cost is not acceptable by the market.
6 **Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system**	• Ensure coordinated approach to sustainable social and economic growth of all parts of the country • Achieve more equal development and decrease social and economic differences. • Strengthening the competitiveness ❑ Development of counties and statistical regions ❑ Development of supported areas ❑ Development of border regions

3.2.5. Transport Development Strategy Key Performance Indicators

When proposing a set of Key Performance Indicators to follow the implementation of the Strategy, the targets set in the European guidelines in the field of mobility and transport infrastructure, operation and sustainability have been followed. The basic targets set in these guidelines are listed below:

Mobility and infrastructure

- A 50% shift of medium distance intercity passenger and freight journeys from road to rail and waterborne transport. By 2050 the majority of medium-distance passenger transport should go by rail.
- 30% of road freight over 300 km should shift to other modes such as rail or waterborne transport by 2030, and more than 50% by 2050, facilitated by efficient and green freight corridors.
- A fully functional and EU-wide multimodal TEN-T 'core network' by 2030, with a high quality and capacity network by 2050 and a corresponding set of information services.
- By 2050, connect all core network airports to the rail network, preferably high-speed; ensure that all core seaports are sufficiently connected to the rail freight and, where possible, inland waterways system.

Operation and sustainability

- Deployment of modernised air traffic management infrastructure (SESAR) in Europe by 2020 and completion of the European Common Aviation Area. Deployment of equivalent land and waterborne transport management systems (ERTMS, ITS, SSN and LRIT, RIS).
- By 2020, establish the framework for a European multimodal transport information, management and payment system.
- By 2050, move close to zero fatalities in road transport. In line with this goal, the EU aims at halving road casualties by 2020. Make sure that the EU is a world leader in safety and security of transport in all modes of transport.
- Move towards full application of "user pays" and "polluter pays" principles and private sector engagement to eliminate distortions, including harmful subsidies, generate revenues and ensure financing for future transport investments.
- By 2020, the goal for transport will be to reduce GHG emissions to around 20% below their 1990 level.

- Halve the use of 'conventionally-fuelled' cars in urban transport by 2030; faze them out in cities by 2050; achieve essentially CO2-free city logistics in major urban centres by 2030.
- Low-carbon sustainable fuels in aviation to reach 40% by 2050; also by 2050 reduce EU CO2 emissions from maritime bunker fuels by 40%.

Based on the targets shown above, specific Key Performance Indicators for the Transport Development Strategy have been defined for each objective, so as to assess its success and therefore its consecution. In the cases where the indicator refers to an increase or a decrease, the baseline scenario is 2014 unless otherwise specified in the target and indicator definition.

TRANSPORT DEVELOPMENT STRATEGY KEY PERFORMANCE INDICATORS			
OBJECTIVE	**TARGET**	**TARGET YEAR**	**INDICATORS**
1 Improvement of transport connectivity and coordination with neighbouring countries			
1a Border bottlenecks elimination	30% reduction in waiting time at borders with non-Schengen States compared to the year when Croatia joins Schengen	2030	% reduction of waiting time at borders with non-Schengen States
1b Improvement of international passengers long distance accessibility (including transit traffic)	Reduction of passenger travel time on the main international connections to/from/across Croatia by 10%	2030	% reduction of passenger travel time
	10% modal shift from private car to public transport (buses, rail based, waterborne)	2030	% modal shift from private car to private transport (buses, rail based, waterborne)
1c Improvement of international freight accessibility (including transit traffic)	Increase of international freight volumes by 10%	2030	% increase of freight volume
	30% road freight volumes over 300 km shifted to more sustainable transport modes (rail or waterborne)	2030	% of road freight volumes over 300 km shifted to more sustainable transport modes (rail or waterborne)
	100% of the TEN-T railway network equipped with ERTMS	2030	% of the TEN-T railway network with implemented ERTMS
2 Improvement of passengers long distance accessibility inside Croatia			
2a Improvement of passengers long distance accessibility - Central Croatia (Zagreb) 2b Improvement of passengers long distance accessibility - Northern Adriatic (Rijeka) 2c Improvement of passengers long distance accessibility - Eastern Croatia (Osijek - Slavonski Brod) 2d Improvement of passengers long distance accessibility - Northern and Central Dalmatia (Split - Zadar)	Reduction of travel time to/from/across functional regions by 10%	2030	% reduction of travel time to/from/across functional regions
	10% modal shift from private car to public transport (buses, rail based, waterborne)	2030	% of modal shift private car to public transport (buses, rail based, waterborne)

TRANSPORT DEVELOPMENT STRATEGY KEY PERFORMANCE INDICATORS			
OBJECTIVE	**TARGET**	**TARGET YEAR**	**INDICATORS**
2e Improvement of passengers long distance accessibility - Southern Dalmatia (Dubrovnik)			
3 Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion			
3a Improving the regional connectivity on the mainland	80% of population within 1 km of a public transport connection to the main regional centre(s)	2030	% population within 1 km of a public transport connection to the main regional centre(s)
	Reduction of travel time within the functional regions by 10%	2030	% reduction of travel time within the functional regions
	10% of modal shift from private car to public transport (buses, railway, trams, waterborne)	2030	% of modal shift private car to public transport (buses, railway, trams, waterborne)
	100% of the territory covered by local/regional Transport Plan	2025	% of the territory covered by local/regional Transport Plan
3b Improving the regional connectivity to/from/between the islands	Reduction of travel time to/from/between the inhabited islands by 10%	2030	% reduction of travel time to/from/between islands
	100% of the territory covered by local/regional Transport Plan	2025	% of the territory covered by local/regional Transport Plan
4 Improvement of the passengers accessibility to and within the main urban agglomerations			
4a Improvement of the passengers accessibility - Zagreb node 4b Improvement of the passengers accessibility - Rijeka node 4c Improvement of the passengers accessibility - Zadar node 4d Improvement of the passengers accessibility - Split node 4e Improvement of the passengers accessibility - Osijek node 4f Improvement of the passengers accessibility - Dubrovnik node	10% of modal shift from private car to public transport	2025	% of modal shift from private car to public transport
	10% increase in usage of zero emission modes	2025	% increase in usage of zero emission modes
	90% of population within 400 m of a public transport stop/station	2025	% of population within 400 m of a public transport stop/station
	10% reduction in travel time	2025	% reduction in travel time
	All 6 nodes having developed transport Master plans	2020	Number of Master plans developed
5 Improvement of freight accessibility inside Croatia			
5a Improvement of freight accessibility - Central Croatia (Zagreb) 5b Improvement of freight	Increase of freight volumes by 10%	2025	% increase of freight volumes

TRANSPORT DEVELOPMENT STRATEGY KEY PERFORMANCE INDICATORS			
OBJECTIVE	**TARGET**	**TARGET YEAR**	**INDICATORS**
accessibility - Northern Adriatic (Rijeka) 5c Improvement of freight accessibility - Eastern Croatia (Osijek - Slavonski Brod) 5d Improvement of freight accessibility - Northern and Central Dalmatia (Split - Zadar) 5e Improvement of freight accessibility - Southern Dalmatia (Dubrovnik)	20% increase in freight distribution efficiency (km/freight volume)	2025	% increase in freight distribution efficiency (km/freight volume)
	10% increase in freight distribution by more sustainable means of transport (railway, waterborne, high efficiency road vehicles)	2025	% increase in freight distribution by more sustainable means of transport (railway, waterborne, high efficiency road vehicles)
	50% of non TEN-T lines leading to intermodal hubs equipped with ERTMS	2030	% of non TEN-T lines leading to intermodal hubs equipped with ERTMS
6 Improvement of the Transport System Organizational and Operational setup to ensure the efficiency and sustainability of the system			
6a Adaptation of the legislation, rules and standards to the European requirements and best practice 6b Improvement of the system organizational setup and cooperation between relevant stakeholders 6c Improvement of the system operational setup 6g Financial sustainability of the transport system	All Public Transport Services in line with the EU Regulation 1370/07 (and updates)	2020	Number of Public Transport Services in line with the EU Regulation 1370/07 (and updates)
	All the metropolitan areas identified in Objective 4 covered by suitable transport/public transport authorities	2025	Number of the metropolitan areas identified in Objective 4 covered by suitable transport/public transport authorities
	10% increase in ratio income from tariffs/O&M costs for public transport services	2025	% increase in ratio income from tariffs/O&M costs for public transport services
6d Improvement of the safety of the transport system	50% decrease of road deaths and injuries in transport related accidents	2020	% decrease of road deaths and injuries in transport related accidents
6e Reduction/mitigation of the environmental impact 6f Improvement of the energy efficiency	20% reduction in transport related GHG emissions in comparison to 1990 levels	2020	% reduction in transport related GHG emissions in comparison 1990 levels
	20% improvement in energy efficiency in comparison to 1990 levels	2020	% improvement in energy efficiency in comparison to 1990 levels
	20% share of renewable energy sources in transport	2020	% share of renewable sources energy in transport
	10% reduction of transport related noise levels	2020	% reduction of transport related noise levels
	10% reduction of pollutants (PM, NOx, SOx)	2020	% reduction of pollutants (PM, NOx, SOx)

6 Table Target and indicators' definition

4. MEASURES TO ACHIEVE THE MULTIMODAL OBJECTIVES

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

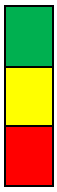
4.1. MEASURES

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

As mentioned at the beginning of the document, currently not all the data necessary for a comprehensive analysis of the transport system is available in Croatia, e.g. there is no National multimodal Transport Model available. Due to that, not all the proposed measures are fully confirmed by the analysis of the existing data and will need to be reassessed in the next revision of the Strategy or in specific Feasibility Studies to prove their need.

The methodology used for the development of the Strategy allows as well the definition of measures that after checking their content with the outcomes of the analysis prove not to be currently supported by the facts and are consequently dismissed until new data proves their need.

In order to distinguish between these groups of measures taking into account their alignment with the Transport Development Strategy objectives and whether they are justified or not with the current available data, the following colour code, which is included as well in the tables below, has been defined.



Duly aligned with the Strategy; the measure is needed and well defined, even if some further studies might be necessary.[38]

Missing data to determine the duly apparently alignment with the Strategy; some further studies are required to asses or verify the eligibility of the measure.

Non-aligned with the Strategy; the eligibility is remote, unless new data proves their need. Currently, no measures have been identified as red measures.

[38] A green measure might lead to a project or a group of projects. On the contrary, a project might respond to several green measures. In any case, it is important to highlight the fact that if a project is related to a green measure it does not imply that the project is justified. The justification of each project is necessary through the relevant feasibility studies including options analysis.

One of the main principles of the Transport Development Strategy is to ensure environmental sustainability of the transport system. In order to achieve this sustainability, all the measures proposed by the Strategy which imply the modernisation or construction of new infrastructure will be implemented using good construction practices through, among others, the following principles:

- Construction Environmental Management Plans will be in place in all construction sites,
- Site Waste Management Plans will be required in all construction sites,
- Quarry rehabilitation plans will be elaborated for the quarrying areas,
- The materials used in construction sites will be, if possible, locally sourced and/or recycled/reused,
- The materials excavated and the waste generated by dredging will be reused if possible,
- Waste will be segregated and hazardous waste will be properly treated and disposed,
- For the Maritime and Inland waterways sectors, the following mitigation measures will be applied to reduce the impacts of dredging on water:
    - planning measures, minimisation of dredging needs, selection of suitable placements sites, special exclusion zones, etc.,
    - equipment-related measures, including selection of the appropriate dredging plant, or use of special equipment,
    - institutional measures, tidal or seasonal timing restrictions, restrictions on location of dredging operation or disposal activity, constraints on the operation of the dredger, etc., and
    - construction will be planned in such a way that the renewal and circulation of water is ensured to prevent eutrophication;
- Measures referring to specialization of ports in the Maritime sector will be examined within an integrated model of development of the coastal area, in order to avoid phenomena of over-exploitation and adverse effects mainly on water, landscape and cultural heritage.

- **Rail**

Code	Measure	Alignment with the Strategy	Measure Description
Rail			
Rail network elements			
R.1	Zagreb - SI border towards Ljubljana (core/X/Mediterranean)		Line M101 belongs to the TEN-T core network and to RH1 and is one of the main international connections to Zagreb, the only urban node of the rail TEN-T core network in Croatia. As a result, RH1 historically has been the most relevant corridor in terms of long distance passenger traffic. Future scenarios like Croatia entering the Schengen area will increase the volume of traffic on this line. Although some specific activities for the improvement of this line are being developed, the fact is that at present, some sections of M101 line have a speed limit of 60 Km/h. Further studies will assess the technical requirements to be achieved in terms of capacity, permissible speed, taking into account also economic and environmental aspects. As the line is as well relevant for freight traffic, it will have to meet the following minimum technical criteria: 22.5 axle load, 750 m siding length, ERTMS.
R.2	Zagreb - Karlovac (core/Vb/Mediterranean)		The corridor connecting Zagreb and Rijeka in mainly relevant for freight and partially for commuter traffic. The analysis shows that this commuter activity is mainly related to the section from Zagreb to Karlovac. At present, this part of the line M202 runs on single track, which is limiting the potential to increase in capacity. It is expected that the importance of this line for freight will increase in the medium to long term due to the fact that Rijeka has been defined as the TEN-T core port of Croatia. Further studies will analyse the design speed and capacity requirements taking into account economic and environmental aspects. Besides increase in capacity, freight traffic requires that the line meets the following technical criteria: 22.5 axle load, 750 m siding length, ERTMS.
R.3	Karlovac+ to Rijeka (core/Vb/Mediterranean)		The analysis shows that this part of the corridor connecting Zagreb and Rijeka in mainly used for freight. At present, this part of the line M202 runs on single track which is electrified and some sections have speed limits of 50 km/h. Rijeka has been defined as the TEN-T core port of Croatia and consequently, the importance of this line for freight will increase in the medium to long term perspective. Therefore this section needs to meet the following technical criteria: 22.5 axle load, 750 m siding length, ERTMS. Further studies will analyse the design speed and capacity requirements taking into account economic and environmental aspects.
R.4	Rijeka regional		The development of the Port of Rijeka, which includes new rail terminals, creates opportunities for complementary measures to enhance the role of railways both in urban transport and in regional connectivity. Current preliminary analyses show that there might be a potential for a reorganisation of the Rijeka railway node with introduction of commuters services, thus favouring modal shift from private cars. All these issues will be analysed in the context of a multimodal city transport plan, which takes into consideration all the relevant economic, social and environmental aspects.
R.5	Zagreb - Križevci (core/Vb/Mediterranean)		The corridor connecting Rijeka and Zagreb to East Europe via Hungary is mainly used for freight and partially for commuter traffic. The analysis shows that in this part of the corridor, commuter activity is mainly related to Dugo Selo (15,568 passenger trains in 2012) and Križevci (11,516 passenger trains in 2012). At present line M102 runs on double track and line M201 runs on single track to Križevci. This fact is limiting the potential of increase in capacity, especially taking into consideration that the importance of this line for freight will increase in the medium to long term due to the fact that Rijeka has been defined as the TEN-T core port of Croatia. Besides the increase in capacity, as the line is as well relevant for freight traffic, it will have to meet the following minimum technical criteria: 22.5 axle load, 750 m siding length, ERTMS.
R.6	Križevci -HU border towards Budapest (core/Vb/Mediterranean)		The analysis shows that this part of the corridor connecting Zagreb and Rijeka to East Europe via Hungary is mainly relevant for freight and partially for commuter traffic. Complementary developments are currently under implementation on the Hungarian side (Gysev network development and Szekesfehervar - Boba line development). At present, this part of the line M201 runs on single track which is electrified and some sections have speed limits of 80 km/h. Rijeka has been defined as the TEN-T core port of Croatia and consequently, the importance of this line for freight will increase in the medium to long term perspective. Therefore, and taking into account that this section belongs to the TEN-T core network, it needs to meet the following technical criteria: 22.5 axle load, 750 m siding length, ERTMS.
R.7	Zagreb - Novska (core/X)		Lines M102 and M103 belong to the TEN-T core network and to RH1, one of the main international connections of Zagreb, the only urban node of the rail TEN-T core network in Croatia. As a result, RH1 historically has been the most important corridor in terms of long distance passenger traffic (between Zagreb and Dugo Selo over 59,000 passenger trains in 2012). Future scenarios like Croatia entering the Schengen area will increase the volume of traffic in this line. Although some specific activities for the improvement of the line from Dugo Selo to Novska are being developed, the fact is that at present, some sections of both lines have a speed limit of 50 Km/h. Further studies will analyse the design speed and capacity requirements taking into account economic and environmental aspects. As the line is as well relevant for freight traffic, it will have to meet the following minimum technical criteria: 22.5 axle load, 750 m siding length, ERTMS.
R.8	Novska - SRB border towards Belgrade (core/X)		Line M104 belongs to the TEN-T core network and to RH1, one of the main international connections of Zagreb. RH1 historically has been the most important corridor in terms of long distance passenger traffic. Future scenarios like Croatia entering the Schengen area, or other surrounding countries like Serbia entering EU will increase the volume of traffic in this line. At present, M105 runs on double track between Novska and Tovarnik, which has been designed as the core rail network crossing point between Croatia and Serbia. Further studies will assess the technical requirements to be achieved, taking into account also economic and environmental aspects. As the line is as well relevant for freight traffic, it will have to meet the following minimum technical criteria: 22.5 axle load, 750 m siding length, ERTMS.
R.9	HU border - Osijek - BIH border (comprehensive/Vc)		Line M303 belongs to the TEN-T comprehensive network in Croatia and Slavonski Šamac is the railway core network border crossing point to Bosnia and Herzegovina. Lines M301 and M302 belong to the comprehensive network but serve as a Bosnia Herzegovina-Croatia-Hungary link, following the Pan European corridor Vc. The potential of this international connection will increase in future scenarios in which Schengen borders will vary from its present configuration. Further studies will analyse the design speed and capacity requirements taking into account economic and environmental aspects. As the line is as well relevant for freight traffic, it will have to meet the following minimum technical criteria: 22.5 axle load, 750 m siding length, ERTMS.
R.10	Regional connection Vinkovci - Vukovar (core/access to corridor X)		Railway line M601 Vinkovci – Vukovar will serve as the railway line connection of RH1 and the only inland core port on the Danube within Croatia, Vukovar. Future scenarios related to the development of the port of Vukovar will increase the importance of freight traffic on this line for the medium to long term perspective. Further studies will assess the technical requirements to be achieved, taking into account also economic and environmental aspects. As the line is as well relevant for freight traffic, it will have to meet the following minimum technical criteria: 22.5 axle load, 750 m siding length, ETRMS.
R.11	Zagreb local		The present configuration of the Croatian rail network and the fact that Zagreb is the only urban node of the core transport network, outline the importance of the capital city of Croatia within the entire transport system. In order to enhance the role of railways in the urban transport system of Zagreb, matching needed time schedules, accessibility and travel times, existing stations must be adapted, new stations might be needed and dedicated tracks implemented. Further studies will analyse specific requirements to be fulfilled.
R.12	Zagreb regional		The present configuration of the Croatian rail network and the fact that Zagreb is the only urban node of the core transport network, outline the importance of the capital city of Croatia within the entire transport system. In order to enhance the role of railways in the regional connectivity with the rest of main cities in Croatia, enough capacity and competitive travel times must be achieved. Further studies will analyse specific requirements to be fulfilled in each case.
R.13	Zagreb freight		Zagreb is the only urban node of the rail TEN-T core network in Croatia. At the same time Zagreb is the distribution point of freight traffic in East-West direction and North-South direction. The transmissibility of the node is a key aspect for the attractiveness of the railway network in Croatia. Therefore the parts of its railway network focusing on freight will have to meet the following minimum technical criteria: 22.5 axle load, 750 m siding length, ETRMS. Further studies will analyse the potential creation of multimodal logistic centre(s).
R.14	Zagreb airport connection		Zagreb plays an important role as a business and tourist destination within Croatia, and its airport represents one of the main accesses to the city from abroad. A direct railway connection to the City centre could contribute to increase the modal split in favour of public transport and thus reduce congestion and ease regional and local connectivity. Further studies will assess if this railway connection is required, and in each case the required operational characteristics, capacity, design speed, configuration and location of stops.
R.15	Zagreb main station		Zagreb Main Station must play a key role not only in long distance traffic but also in local and regional traffic. Adaptation of the existing accesses and platforms, organization of passenger flows inside and outside the station, favouring modal interchange, are likely to be required. Specific technical requirements will be a result of further studies, which will take into consideration economic, social and environmental aspects.

Code	Measure	Alignment with the Strategy	Measure Description
Rail network			
R.16	ETCS L1, L2 on other lines, GSM-R		Installation of ETCS on lines other than the ones described in the previous measures would allow increasing the interoperability of the entire network. Dependent on the operational concept it might be feasible to install ETCS and GSM-R also on other lines of the Croatian network (comprehensive and non-TEN-T). Further studies will define specific needs and technical parameters in each case.
R.17	Electrification of other lines		Dependent on the operational concept, electrification of railway lines would allow increasing efficiency on existing infrastructure. Further studies will define specific needs and technical parameters as well as the source of electricity generation (ensuring the environmental efficiency of the measure) in each case.
R.18	Rehabilitation, upgrading of other lines		Case by case studies will identify the need to rehabilitate and upgrade lines other than the ones described in the previous measures, taking into account the operational concept and also economic and environmental aspects.
R.19	Regional traffic other than Zagreb and Rijeka (Split, Varaždin, Osijek, etc.)		Rail transport can play as well an important role in regional transport in regional centres outside the railway TEN-T core network, due to the existing configuration of the network in these areas. Specific studies will analyse this potential in cities such as Split, Varaždin and Osijek. These studies will also assess case by case the necessary technical parameters.
R.20	Improvements and new marshalling yards		Specific studies will analyse, based on demand forecasts, the necessity to develop new marshalling yards or improve the existing ones to increase the potential of railways for freight.
R.21	Improvement of safety at crossing, axle load detectors, hot axle detectors, etc.		It is necessary to take specific measures such as denivelation or elimination of level crossings, if justifiable by traffic flows. If there is justification to denivelate or eliminate a rail-road crossing, it is necessary to assure it with adequate safety devices. In order to increase safety at level crossings it is necessary to develop and implement educational marketing campaigns in order to raise awareness of drivers of road vehicles. It is also necessary to plan and carry out the installation of axle load detectors and overheating detectors, to enhance the level of safety of rail systems.
R.22	Added value services and improvement of the railway image		In order to increase competitiveness against other modes of passenger transport, railway infrastructure owners together with passenger transport operators should offer added value services that will make rail transport more attractive. Further studies will assess on the viability of implementing services like passenger information systems, internet access on certain types of rolling stock, other kinds of Infotainment, etc. This will include also increasing the attractiveness of the railway heritage including a better design for railway related spaces - inside and outside, to increase the comfort.
R.23	Intermodal passenger hubs		Improving and developing railway connections with other modes of transport is one of the priorities of the sector. The creation of points for intermodal exchange of passengers transport in urban, suburban and regional areas will be the result of further studies that in each case will also define their categorisation and technical requirements in terms of specific facilities to be implemented.
R.24	Intermodal freight hubs		Improving and developing railway connections with other modes of transport is one of the priorities of the sector. The creation of logistic centres for intermodal exchange of freight transport others than the one to be potentially located in the Zagreb area will be the result of further studies that in each case should also define technical requirements in terms of specific facilities to be implemented.
R.25	Development of concept of maintenance of the existing infrastructure		Adequate structures and organisation for maintenance must be put in place in order to provide an efficient and effective/sustainable rail service. The concept must derive from an appropriate and specific analysis of the Croatian and HZ Infrastructure Ltd. context, taking into account technical, financial and users' requirements, the indications from Directive 2008/57/EC on the interoperability of the rail system and the main international standards related to RAMS.
R.26	Energy efficiency		Promoting the efficient and sustainable use of the infrastructure is one of the priorities for railway infrastructure development according to the guidelines for development of the Trans-European transport network. In this sense, it is necessary to improve energy efficiency and prioritise low carbon and renewable energy sources and propulsion systems (encouraging the construction of the necessary infrastructure and modernising the rolling stock). Further studies will analyse specific requirements.
Rail operation/organization			
R.27	Reorganization of Track access charge		Track Access Charge can be used as a tool for improving the sustainability of the rail transport system. Track Access Charge has to be proportional to the emissions and therefore addressing the polluter pays principle. Coordinating Track Access Charge with rail administrations of neighbouring countries will facilitate international traffic.
R.28	Multi annual PSC		Public Service Contract(s) in compliance with EU Reg. 1370/2007 are a fundamental tool to assure transparency and efficiency in the provision of public transport services. A widespread implementation of PSCs is therefore required not only for compliance purposes, but also as a first step towards an improvement in sustainability of Croatian's transport system. Typology and duration of the PSC will have to be determined on a case-by-case analysis, together with the applicability of the in-house model (either based of pure compliance issues or after a thorough assessment of technical and financial requirements).
R.29	Increase financial sustainability		Increasing financial sustainability is one of the objectives of the Trans-European transport network. To achieve this objective it is necessary to optimise the organisational setup of the railway system and to increase the efficiency of the operation and maintenance. Financial sustainability of the railway transport system intends to reduce the dependence of the system on public subsidies. Further studies will assess concrete actions to be taken to optimise costs and incomes.
R.30	Reorganization of the railway transport system		In order to improve the efficiency and effectiveness of the railway system moving towards a more sustainable setup, changes in the organisation are required (improvements in the productions chain such as modalities for operating services, doing maintenance, offering added value services in a more user oriented approach etc.).
R.31	Improvement of passenger rolling stock		The current railway fleet is aged and based on outdated and inefficient technologies. In order to increase the competitiveness of rail transport in comparison with other transport modes it is necessary to modernise the rolling stock, in coordination to the foreseen improvements on the infrastructure. The first step to develop this measure is to perform a comprehensive analysis of the current organisational, operational and maintenance setup of the railway operator analysing the future requirements and operational and maintenance plan. Once the real needs are identified further studies will define the specific technical requirements for the rolling stock.
R.32	Improvement of freight rolling stock		The freight fleet consists mostly of conventional covered or open wagons, some suitable for combined traffic operations. A large number of locomotives are in need of replacement, with an estimated 70% reaching the end of their working lives within the next decade. The first step to develop this measure is to perform a comprehensive analysis of the current organisational, operational and maintenance setup of the railway operator analysing the future requirements and operational and maintenance plan. Once the real needs are identified further studies will define the specific technical requirements for the rolling stock.
R.33	Update legislation and planning guidelines		Railway related legislation and planning guidelines must support the development of the sector and should be in line with international best practice and European regulations, especially regarding safety, security, interoperability, sustainability and environment.
R.34	Prepare for changes in Schengen borders		Future scenarios of Croatia and surrounding countries entering the Schengen area will increase the importance of international traffic on certain lines. The adaptation of the rail system requires the elimination of infrastructure and administrative bottlenecks. Specific studies will assess on the technical requirements to be met in each specific case.
R.35	Preparation/adaptation of non-Schengen borders		Elimination of bottlenecks with non-Schengen surrounding countries will help in increasing the importance of international traffic in certain lines. Specific studies will assess on the technical requirements to be met in each specific case.
R.36	Liberalization of operations for passengers		Gradual opening of the transport market ensuring equal opportunities to all potential operators is one of the main criteria of compliance fulfilled by Croatia in the process of harmonization with the EU Acquis Communitaire, in line with the objectives of the White Paper. Croatian administrative institutions like the Regulatory Body and the Safety Agency must be prepared for the future situation.
R.37	Liberalization of operations for freight		On the open market of freight transport, improvement of market conditions for the applicants and ensuring equal opportunities to all potential operators is one of the main criteria of compliance fulfilled by Croatia in the process of harmonization with the EU Acquis Communitaire, in line with the objectives of the White Paper. Croatian administrative institutions like the Regulatory Body and the Safety Agency must be prepared for the future situation. It is necessary to remove barriers for discriminatory behaviour, extend the offer, segment rail services according to market needs and achieve market orientation of provider of railway services.

Code	Measure	Alignment with the Strategy	Measure Description
R.38	Increase administrative capacity/training		The lack of administrative capacity and properly trained staff is one of the key issues identified in the sector and is one of the priorities in the EU cohesion policies. In this particular sector, employment of additional administrative capacities is mainly needed in the area of project preparation and project implementation management. The implementation of new technologies will imply the necessity to train the existing and new staff to their specific needs.
R.39	Reorganization of the operations/time schedules		In order to increase the share of rail mode, reorganization of time schedules (e.g. TAKT) is necessary to improve connectivity and efficiency of the services provided. Further studies will analyse this possibility taking into account origin-destination patterns and the operational and infrastructural requirements.
R.40	Information platforms		Promoting and creating a positive image of rail transport mode as a reliable, safe and environmentally friendly mean of transport is important for encouraging the demand, and consequently the investments. For better promotion, it is necessary to have complete and up to date information and knowledge of the Croatian rail infrastructure, possibilities and development plans.
R.41	Reduce environmental impact		Reduction of the environmental impact of the transport system is in the core of European transport policy. Environmental impact mitigation during operation must be achieved by increased energy efficiency (in particular using low or zero carbon energy sources), by reducing noise emissions (introducing measures such as use of modern low noise rolling stock, proper maintenance of the tracks, installation of noise barriers, vegetation alongside of the rail tracks, introduction of speed limits in sensitive areas especially at night, etc), proper drainage to avoid the impacts of spillages and run-off, establishing adequate wildlife crossings, avoiding excessive lighting to minimise bird disturbance, implementing adequate planting plans to protect flora, reducing pollution and minimising waste. To ensure the long term viability of the sector, climate change adaptation should be taken into account in all the stages of the development (planning and construction) and operation phases for both new and already existing infrastructure.
R.42	Improvement of data collection		For further development of the rail sector, it is necessary to have “up to date” data of, among others: stations and infrastructure, rolling stock, freight and passenger current demand and forecasts, safety. It is necessary to improve and simplify the data collection, in order to increase the accessibility of data.

- **Road**

Code	Measure	Alignment with the Strategy	Measure Description
ROAD			
Road network elements			
Ro.1	Gradiška bridge connection		Gradiška bridge over the river Sava is a part of the road corridor HU border - Virovitica - Okučani – BiH border (Stara Gradiška). This road is located in the corridor of the existing D5 road, being the bridge part of international agreement between Croatia and Bosnia and Herzegovina. The Republic of Bosnia and Herzegovina has already finished the motorway from Banja Luka (B&H) to Gradiška, however, the planned bridge is required for the connection of the motorway from Bosnia and Herzegovina to the existing Zagreb – Lipovac Motorway (A3). GP Gradiška is one of two major border crossings between the Croatia/EU and Bosnia and Herzegovina for all types of traffic.
Ro.2	A5 Osijek - HU border Pecs (comprehensive/Vc)		The A5 motorway is a part of the comprehensive TEN-T network and corridor Vc. The total length of the A5 motorway is 86.8 km and it goes from the Bosnia and Herzegovina border towards Osijek, Beli Manastir to the Hungarian border. Several sections of the motorway are at different stages of development. The motorway section at the lowest stage of development is the one from Osijek to the HU border, section Osijek – Beli Manastir 24.6 km and Beli Manastir – HU border 5 km. Other sections, like the bridge over River Drava (length 2.4 km) are part of planned corridor and are under construction. Further studies will analyse the phasing and timing of the remaining sections, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects, e.g. the planned section passes through some “Natura 2000” areas.
Ro.3	A5 from A3 to BIH border (comprehensive/Vc)		The A5 motorway is part of the comprehensive TEN-T network and corridor Vc, being Svilaj included in the list of border crossing points of the EU core network. The total length of motorway A5 is 86.8 km and it goes from the Bosnia and Herzegovina border towards Osijek, Beli Manastir to the Hungarian border. Several sections of the motorway are at different stages of development. The section from Sredanci (motorway A3) to the B&H border is 3.5 km long and is under construction. The section includes a bridge over the river Sava (660m in length). The contract for the construction of the bridge is currently in the tendering process. The continuation on the BiH side is already constructed.
Ro.4	A7 Križišće to Žuta Lokva (comprehensive/Adriatic Ionian corridor)		The A7 motorway (SLO border - Rupa – Rijeka – Žuta Lokva (A7)) is part of the comprehensive TEN-T network and the Adriatic Ionian corridor. The total length of the A7 is 99 km, being several sections of the motorway at different stages of development. Almost half of the total length of the A7 motorway that runs from Rupa (Slovenian border) to Križišće is completed, while the sub section from Križišće to Žuta Lokva, is at an earlier phase of the project development phase. A7 motorway plays an important role in linking the Croatian motorway network, the A8 motorway (Istrian Y), A6 motorway (Rijeka -Bosiljevo) and A1 motorway (Zagreb – Split). In addition, given the international importance of the A7 motorway, it might become, at a regional and local level, a driver for the development of the coast, the islands and Adriatic-Ionian regions, and as a link between Adriatic towns and harbours. Further studies will analyse the phasing and timing of the remaining sections, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects, especially orographic features due to very complex coastal relief terrain.
Ro.5	A11 Lekenik - Sisak		The A11 Motorway (Zagreb – Sisak) is under construction, with one section already completed. The total length of the highway, between Zagreb and Sisak is 48, 1 km. The next planned section Lekenik – Sisak is 10.8 km long. The last section would be Sisak - Moščenica, which will be considered after finishing of the previous sections. Further studies will analyse the phasing and timing of the remaining sections in the light of inter-modality, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.
Ro.6	DC 10 Vrbovec - Križevci - Koprivnica - Hungarian border towards Kaposvar		The DC10 State road was previously categorized as a motorway, the A12. The A12 motorway is a partially built motorway in central Croatia, northeast from Zagreb, extending towards the city of Vrbovec. A 23 km dual carriageway exists between the A4 motorway and Sveta Helena. The DC10 represents the western arm of the so-called "Podravina Y", as the eastern arm is planned to be the DC12 and will finally connect Zagreb with the Hungarian border towards Kaposvar. The corridor is divided into several sections and the stage of project documentation (project design and permits) varies from section to section. Further studies will assess on the phasing and timing of the remaining sections, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.
Ro.7	DC 12 Vrbovec 2 interchange - Ivanja Reka - Vrbovec - Bjelovar - Virovitica - Hungarian border towards Barcsu		DC12 represents the eastern arm of the so-called "Podravina Y", as the western arm is planned to be the DC10 and will finally connect Zagreb with the Hungarian border towards Pecs. Only the Vrbovec 2 interchange, the starting (western) terminus of the DC12 has been completed. The rest of the corridor is divided into several sections, and the stage of project documentation (project design and permits) varies from section to section. Further studies will assess on the phasing and timing of the remaining sections, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.
Ro.8	Zagreb main network reorganization		Zagreb is the capital of Croatia and the interchange of main road corridors. Currently all the motorway corridors are connected through the Zagreb bypass, the road with the highest traffic load in Croatia. A new “Zagreb ring” motorway, Pojatno - Horvati-Ivanić Grad - Sveti Ivan Zelina is considered for the redirecting of transit traffic. Additional studies for “Zagreb ring” are necessary, assessing on the capacity, connections and technical parameters to be implemented, taking into consideration the expected demand and economic, environmental and social aspects. The main road network inside the city should be reorganised as well taking into account the outcomes of the Transport Masterplan to be developed which will consider the introduction of integrated public transport systems emphasising the prioritisation of public transport and soft modes against private cars.
Ro.9	D2 from SLO border to SRB border		D2 is the existing state road for transit traffic in the northern areas of Croatia, and spans from the border crossing with Slovenia at Dubrava Križovljanska in the west via Varaždin, Osijek, Vukovar, ending at the Ilok–Bačka Palanka Bridge border crossing to Serbia. Most of the D2 route runs parallel to the Drava River (Podravska magistrala). Relevant intensity of very high heavy traffic is affecting the features of the existing lanes and thus the level of safety is clearly decreasing. A new corridor for the D2 is planned but studies will assess on the phasing and timing of its development, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.
Ro.10	Rijeka network reorganization		The Rijeka road junction is one of Croatian main traffic junctions and plays an important role in linking the Croatian motorway network: A7 motorway links A8 motorway (Istrian Y) and A6 motorway (Rijeka – Bosiljevo). The Port of Rijeka is the main Croatian port (core port), and the development of the port must be harmonised with the road development. The planned west container terminal in Rijeka port is connected with the planned state road D403. The Rijeka bypass is part of the A7 motorway, being one of the roads in Croatia with the highest traffic intensities. In order to further upgrade the road network, a new corridor outside the city for A7 is planned, in the section: Permani – Grobničko polje (A6) – Križišće. The northern part of Krk island is planned as part of the potential further development of the port of Rijeka. The new state road D102 corridor, including the new bridge is planned for Krk island. All these measures must be coordinated with the reorganisation of the internal road network in the City of Rijeka taking into account the necessities for public transport and soft modes, the development of the port and the development plans of other relevant stakeholders such as the railway company. For that reason, further analyses are necessary to define the final set of interventions as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.
Ro.11	Dubrovnik - ME border		The Corridor Dubrovnik – ME border is at different stages of development per sections. The development of this corridor will increase the accessibility of the airport with of the city of Dubrovnik Further studies will assess on the phasing and timing of its development, as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.

Code	Measure	Alignment with the Strategy	Measure Description
Ro.12	Increase of capacity - dedicated PT lane between Zagreb and Karlovac		Road corridor from Zagreb to Karlovac is included in the EU core network because of international and regional relevance of the traffic coming from Rijeka to inland. The PT accessibility of Istria and Dalmatia is dependent on regional bus providers and the prioritization of PT services on the road. There has been a constant increase in commuter traffic between Zagreb and Karlovac, while the existing motorway has two traffic lanes in each direction plus an emergency lane and it is planned to increase the capacity through a dedicated public transport lane. Further studies analysing several options of increasing the capacity for public transport are necessary to identify the final solution. These studies will take into consideration the expected demand and economic, social and environmental aspects, as well as the developments planned in other modes of transport.
Ro.13	Increase of capacity - dedicated PT lane Zagreb bypass		The Zagreb bypass is the busiest traffic route in Croatia and the level of traffic is constantly increasing. Some sections of the Zagreb bypass need upgrade with a new PT lane. This needs to be seen in relation to competing projects like the Zagreb ring road. Additional studies are needed to decide if it is better to upgrade the existing bypass or build a new "Zagreb ring" motorway: Pojatno - Horvati-Ivanić Grad - Sveti Ivan Zelina. These studies will analyse the existing options to increase the capacity, assess on the phasing and timing of its development, as well as the required technical parameters, taking into consideration the expected demand and economic, social and environmental aspects, as well as the developments planned in other modes of transport.
Ro.14	Slavonski Brod port access improvement		Slavonski Brod, as the main port on the river Sava, is the only inland port in Croatia in the Sava river included in the list of nodes of the EU core network. The development of the port and the additional business zone must be coordinated with the improvement of other transport infrastructure, especially road. Further studies will define actual needs and analyse the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.
Ro.15	Split network reorganization		Split is one of the main centres of tourism in Croatia. Of special relevance for the road network is the tourism linked to the cruises as it creates a heavy seasonal burden on the road network. It is necessary to reorganise the road network in Split taking into account as well the public transport system and planned developments in the city, the port and other relevant transport systems such as rail. One of the potential measures is the Split bypass: Trogir – Split – Omiš which has been planned for regional and local traffic, being several sections at different stages of development: the section Trogir – Split has been already completed, while the connection road from Split to the A1 motorway is under construction. Further studies are necessary to define the final set of interventions as well as the required technical parameters, taking into consideration the expected demand and economical and environmental aspects.
Ro.16	Preparation for accessibility of Dubrovnik when Croatia joins Schengen		In order to maintain the accessibility of Dubrovnik and of the surrounding area from other parts of the country, taking into account the possible scenario of Croatian accession to the Schengen area, it is necessary to analyse all connectivity options taking into account all aspects of traffic and functionality. One of the ways to solve accessibility over large distances in the medium scenario is certainly the airport, while the purpose of finding the optimal solution for connecting this part of Croatian territory with the rest of the country in terms of road connectivity specific study analysis were made. Specifically, Prefeasibility study of covering the connectivity of the Croatian south with the rest of Croatian territory as the best solution to connect this area has identified the Pelješac Bridge. Connecting the south of Croatia with Pelješac bridge is a strategic interest of Croatia.
Road network			
Ro.17	Develop maintenance concept (including maintenance stations) of the road network		Road maintenance is essential in order to preserve the road in its originally constructed condition, protect adjacent resources and user safety, reduce environmental impacts and provide efficient, convenient travel along the route. For efficient and effective/sustainable maintenance, adequate structures and organisation for maintenance must be put in place. The concept must derive from an appropriate and specific analysis of the Croatian and relevant stakeholders context, taking into account technical, financial and users requirements.
Ro.18	Secondary and tertiary road rehabilitation and realignment		To ensure the cohesion of the territory and provide the proper accessibility to the high level network, the status of the existing county and local roads will be analysed to identify the needs for their rehabilitation. The main problem affecting these categories of roads is lack of maintenance and funding. It is necessary to provide the conditions for proper maintenance, especially taking into account the existing and forecasted levels of traffic on these roads.
Ro.19	Develop a resting station concept for the high level road network		According to EU Directive 2008/96/EC, sufficient roadside parking areas are very important with regards to road safety. Parking areas enable drivers to take breaks and continue their journey with full concentration. The provision of sufficient safe parking areas should therefore form an integral part of road infrastructure safety management. While some service facilities along the motorways and fast roads have been built, the number is still not sufficient, given the increase in traffic, especially during the tourist season. Additionally, Directive 2010/40/EU states that it is necessary to improve infrastructure for secure parking for trucks and buses. At the same time, renewal of the old parking lots with other facilities (gas stations, restaurants, toilets, playgrounds), is planned.
Ro.20	Traffic management, monitoring, traffic counting and information system		New technologies must be introduced to improve methods and ways of gathering information to ensure that the traffic management information collected has the content and quality required at international level. New technologies allow among others for real time data gathering and control of traffic conditions. In order to take advantage of these new technologies, the need for new centres for centralized management of the traffic, equipped with the latest advances in ITS solutions, will be analysed. Traffic management and monitoring is of special relevance to manage incidental situations and traffic jams in the peak traffic seasons. This will allow for a qualitative improvement in the planning and monitoring of alternative routes, passenger user information, traffic control and real time data gathering regarding congestion.
Ro.21	Interchange development plan		In order to improve the connectivity of the high level road network, it is necessary to develop an interchanges development plan. The plan will take into account the functionality of each road to identify the number and location of interchanges to avoid for example excessive amounts of local traffic in long distance corridors which might endanger the level of service. Specific seasonal requirements due to the touristic season will be considered as well.
Ro.22	Road safety		One of the main objectives of the Strategy is to increase the level of safety on road transport (for all road users including pedestrians and bikes), in order to effectively reduce the number of accidents and limit their negative consequences. The Commission has set as its overall objective in terms of road safety that the number of fatalities needs to be moved to zero by 2050. To improve road safety, the following measures will be developed: – Integrate road safety in all the stages of project implementation via road safety impact assessments which will demonstrate, on a strategic level, the implications on road safety of the different alternatives of an infrastructure project and they will play a relevant role in the selection of the routes and final alternative. At a more advanced stage of the project phase, during construction and operation, road safety audits should identify, in a detailed way, unsafe features of a road infrastructure project and propose corrective measures. – To reduce the negative impacts of accidents, the procedures to be followed in case of accidents will be reviewed and improved to reduce the response time. The information channels will be as well improved and simplified and monitoring of the situation on the black spots will be monitored. – Education of all participants in the field of road traffic safety based on education for children of all ages, by introducing traffic education in the overall education system.
Ro.23	Network development to intermodal hubs, agglomerations in line with demand		Improvement and development of road connections with other modes of transport is one of the priorities of the sector. The creation of points for intermodal exchange of passengers transport in urban areas must be the result of the relevant Transport Master plans or similar studies that in each case will also define the technical requirements in terms of specific facilities to be implemented.
Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)		To ensure the sustainability of the transport sector as a whole, it is important to increase the interoperability to be able to use the potential of each transport mode. In the road sector it is important to ensure the proper accessibility to demand generation/attraction nodes (such as ports, airports, railway stations, working areas, commercial zones, etc.). An increase in the number of parking spaces linked to public transport systems, port and airports will help to increase the modal shift in favour of public transport and consequently reduce the congestion on the roads.
Ro.25	Reduce environmental impact		Reduction of the environmental impact of the transport system is in the core of European transport policy. The road sector is one of the main polluters in Europe; measures to reduce the environmental impact (such as vegetation alongside of the roads, use of noise barriers and low noise road surface, proper drainage to avoid the impacts of spillages and run-off, establishing adequate wildlife crossings, avoiding excessive lighting to minimise bird disturbance, implementing adequate planting plans to protect flora, introduction of speed limits in sensitive areas especially at night, etc.) should consequently be applied in all the stages of the development (planning and construction) and operation. The main impacts from the road sector are noise, CO2 and other pollutant emissions from fuel combustion. It is important to promote the

Code	Measure	Alignment with the Strategy	Measure Description
			use of public transport and zero emission modes, the use of alternative fuels, the modernisation of private vehicles to increase energy efficiency and the use of more environmentally friendly vehicles. To ensure the long term viability of the sector, climate change adaptation should be taken into account in all the stages of the development (planning and construction) and operation phases
Ro.26	Energy efficiency		Energy efficiency of the entire transport system is in the core of EU policy, as EU transport still depends on oil and oil products for 96% of its energy needs. Encouraging the use of energy efficient vehicles and optimisation of the performance of multimodal logistical chains are examples of measures to increase the energy efficiency. The building of filling stations for alternative fuels and the use of renewable energies will be encouraged to reduce consumption of conventional fuels, therefore reducing CO2 emissions and particulates. Further studies will analyse specific requirements. In order to ensure long-term sustainability of the sector, it is necessary to consider adaptation to climate change in all stages of development (planning and construction) and operational efficiency for new and existing infrastructure.
Road operation/organization			
Ro.27	Update legislation and planning guidelines		Road related legislation and planning guidelines must support the development of the sector and must be in line with international best practice and European regulations, especially regarding safety, security, interoperability, sustainability and environment.
Ro.28	Increase administrative capacity/training		The lack of administrative capacity and properly trained staff is one of the key issues identified in the sector and is one of the priorities in the EU cohesion policies. In this particular sector, employment of additional administrative capacities is mainly needed in the area of project preparation and project implementation management and road safety. The implementation of new technologies will imply the necessity to train the existing and new staff to their specific needs.
Ro.29	Preparation/adaptation for Schengen borders		Future scenarios of Croatia and surrounding countries entering the Schengen area will increase the relevance of international traffic. The adaptation of the road system requires the elimination of infrastructure and administrative bottlenecks. Specific studies will assess on the technical requirements to be met in each specific case.
Ro.30	Preparation/adaptation of non-Schengen borders		Elimination of bottlenecks with non-Schengen surrounding countries will help in increasing the relevance of international traffic in certain roads with international connections. Specific studies will assess on the technical requirements to be met in each specific case.
Ro.31	Improve financial sustainability of the road network and tolling system		Increasing financial sustainability is one of the objectives of the Trans-European transport network. To achieve this objective it is necessary to optimise the organisational setup of the road system and to increase the efficiency of the operation and maintenance. Financial sustainability of the road transport system intends to reduce the dependence of the system on public subsidies. Road usage charging can address these issues as it can influence the choices of road transport users, besides supporting financial sustainability. Directive 2004/52/EC of the European Parliament and of the Council of 29 April 2004 on the interoperability of electronic road toll systems in the Community and Commission Decision 2009/750/EC of 6 October 2009 on the definition of the European Electronic Toll Service and its technical element provide legal basis for further studies, which will assess concrete actions to be taken to optimise costs and incomes.
Ro.32	Information platforms		In the road sector is very important to inform the users of the current situation of the traffic and weather conditions to reduce the amount of traffic jams and accidents by offering information's on alternative routes. It is also important to inform drivers of amendments to the existing or adoption of new laws in the sector relevant for the users and to provide instant information on the motorways of the incidental situations that might require changes in the allowable speed or restrictions to the use of lanes. For that reasons, the need to constantly revise and update the information technologies and channels is very relevant for the improvement of the sector. It is important as well to increase the involvement of the media as a crucial partner for the transmission of the information.
Ro.33	Recategorization of the road network		It is necessary to develop a study to analyse the need to recategorise the road network to adapt to the real demand and functionality of each road to increase the efficiency and sustainability of the system.
Ro.34	Enforcement		In the White Paper on European transport policy for 2010: time to decide the Commission has set as its overall objective in terms of road safety that the number of fatalities needs to be moved to zero by 2050. It appears from research that enforcement is an important and effective way of preventing and reducing accidents, deaths and injuries, but enforcement actions are only optimally effective if they are combined with actions to make the public aware of such enforcement actions and of the reasons why they are being held. Further studies will assess on specific actions both in public awareness, enforcement and cross border information management.
Ro.35	Improvement of data collection		For further development of the road sector, it is necessary to have "up to date" data of, among others: status of the road network, freight and passenger current demand and forecasts, safety. It is necessary to improve and simplify the data collection, in order to increase the accessibility of data.

- **Aviation**

Code	Measure	Alignment with the Strategy	Measure Description
Aviation			
Airports			
A.1	Dubrovnik airport development (comprehensive)		Dubrovnik is one of the main destinations on the Adriatic coast. The airport suffers from bottlenecks due to seasonal peaks. Given the characteristics and meteorological environment of the surrounding territory, an enclave, transport links must be maintained and enhanced to ensure the proper accessibility. The planned measures include expansion of existing transport/infrastructure capacity in order to maintain existing service quality levels, reduction/elimination of bottlenecks, reconstruction of existing and construction of new pavement structures and facilities necessary for the safe and smooth operation of the airport, implementation of environmental protection measures, implementation of measures aimed at improving energy efficiency and acquisition of necessary equipment and devices.
A.2	Pula airport development (comprehensive)		Pula airport is relevant for the long distance accessibility of the region. Traffic at the airport is seasonal which may lead to bottlenecks given the limited facilities. Two important operational aspects which must be considered include: 1) Quality of service, mainly because of competition with neighbouring foreign airports, 2) The balance of safety vs. operational capacity. These aspects, among others, highlight the need to increase the capacity of the airport by upgrading certain elements: approach lighting system, runway, aprons, terminal and accesses. Further analyses will identify the feasibility of these measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
A.3	Brač airport development		The development of Brač Airport is planned to eventually increase the long distance connectivity of the Island of Brač and therefore the Centre of Dalmatia; while complying with a variety of different safety and traffic demand requirements. The analyses show the need to achieve the ICAO 3C Code and to comply with ICAO, EASA and national standards. Further analyses will identify the feasible measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
A.4	Mali Lošinj airport development		The development of Mali Lošinj Airport is planned to eventually increase the long distance connectivity of the Island of Lošinj and therefore the North of Dalmatia; while complying with traffic demand requirements. The analyses show the potential necessity to extend the runway, apron and terminal area. Further analyses will identify the feasibility of these measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
A.5	Osijek airport development (comprehensive)		Regional and long distance connectivity, apart from national cohesion, is the main reason for the expansion of Osijek airport considering cargo as well due to synergies with other modes of transport. Further analyses will identify the feasible measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
A.6	Rijeka airport development (comprehensive)		Airport Rijeka presents large passenger traffic growth and has additional cargo potential due to the synergy with the Port of Rijeka. As part of the airports plans for development and alignment with ICAO, EASA and national standards, the reconstruction/expansion/displacement of apron, manoeuvring areas, protected areas, operations and control tower equipment and terminal building planning is in progress. In order to achieve energy efficiency and environment protection it is planned to realize projects related to the solar power plant, terminal building facade and waste liquids separator. Further analyses will identify the feasibility of these measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
A.7	Split airport development (comprehensive)		With a level of traffic similar to Dubrovnik airport, Split is the other main gate to the Dalmatian coast in term of passengers. The airport also suffers from bottlenecks due to seasonal peaks. Included in its master plan, the expansion of both landside and airside facilities is planned, tackling the issues of seasonality and quality of the service. Further analyses will identify the feasibility of these measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
A.8	Zadar airport development (comprehensive)		Long distance connectivity of Northern Dalmatia is the main driver for the expansion of the airport. The analyses show that the investment should be focused on the improvement of the airports transport and infrastructure capacities for the operation of ICAO 4E Code airplanes. Further analyses will identify the feasible measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
A.9	Zagreb airport development (core)		Zagreb Airport is the main gateway to Croatia operating as a hub for domestic and international destinations. At present, it is operated by a concessionaire who established a new company Zagreb International Airport Jsc., whose investment plan is reviewed periodically with the MMATI. Zagreb Airport Ltd. company is still active, now having the role of an intermediary between the Government of the Republic of Croatia and the concessionaire, with the aim of further development of the infrastructure and all the transport segments that are not subject to the concessionaire contract. Should the concessionaire withdraw from the project and operation of the airport, Zagreb Airport Ltd. will immediately takeover the airport from the concessionaire to ensure continuous and uninterrupted operation of Zagreb Airport. The development plans of the airport include the construction of a new terminal to increase the capacity.
A.10	Accessibility of airports		To improve the accessibility of touristic and business travellers in Croatia, it is very important to offer fast and efficient accessibility to/from the airports. It is important to provide regular, frequent and fast public transport services in line with the potential demand, ensuring that proper accessibility is provided for travellers with different economic resources. Further analyses will identify the needs case by case in line with the Transport Master plans of each city. It is also envisaged to conduct a Schengen compliance check of the airport in order to identify the measures to be introduced to allow for Croatia joining the Schengen area.
A.11	Airport safety		One of the main objectives of the Strategy is the development of highest level standards of air transport safety on international, regional and national level, in order to effectively reduce dangers of air transport reduce the possibility of accident occurrences and limit the negative consequences of such accidents. Airport infrastructure and planes must comply with all the international safety requirements.
A.12	Energy efficiency		Energy efficiency in air transport can be improved in airports and planes. Airports will reduce energy consumption with modernisation of airport equipment and the gradual replacement of the airport vehicles for other more efficient types of fuel (biodiesel, LNG, electricity, etc.). The fleet must also be modernized to increase the energy efficiency. It is very important as well to optimise the operations of planes while taxiing and while flying in order to reduce fuel consumption and optimise energy efficiency. Further studies will analyse specific requirements.
A.13	Closure or change of role/ownership of regional airports		In order to enhance the efficiency and sustainability of the system, new management strategies must be developed for airports; while considering the possible change of role/ownership for non-sustainable airports.
Air traffic operation/organization			
A.14	Adaptation of legal national framework as well as the implementation rules		Existing legislation should be modified and/or new legislation developed to create a comprehensive and flexible framework for the development of the aviation system and to facilitate development of new ideas and models which aim to improve the aviation system. It should be in line with international best practice and European regulations. The main areas which will be affected include, among others: safety, security, administrative procedures, quality of the service, sectorial KPI and their supervision.
A.15	Improvement of the cooperation with the relevant regional		Even though the main role of air transport is linked to long distance passengers, proper cooperation with the relevant regional (county) and local authorities is necessary to improve the accessibility of the airports and ensure that the airport development plans are in line with the development plans of the relevant cities and regions.

Code	Measure	Alignment with the Strategy	Measure Description
	authorities		
A.16	Restructuring of Croatia Airlines		In order to improve the sustainability of the system it is necessary to fully implement and finalize the restructuring of Croatia Airlines. An additional analysis should facilitate the process of preparation for the privatisation of the company and search for strategic partners which would bring in additional capital and create clear plans for future development and growth of Croatia Airlines.
A.17	Information platform		Promoting and creating a positive image of air transport as a reliable and safe mean of transport is important for encouraging the demand and consequently the investments. For better promotion it is necessary to have complete and up to date information and knowledge of Croatian airports, and their possibilities and development plans. It is necessary to monitor the key performance indicators (KPI) of the service quality and report clearly and effectively to society and stakeholders.
A.18	System reorganization and planning		In order to improve the efficiency and effectiveness of the air transport system moving towards a more sustainable setup, some realities are to be maintained and some changes in the organisation are necessary (ensuring the continuous connectivity of Croatia's regions and thus achieving major impacts for the economic and social development of Croatia's regions through PSO, establishing an alternative, reliable and flexible way of transport and connectivity of the Adriatic coast and the islands - added value could be establishment of better/alternative connections with the mainland, although the focus would be on the coastal region and the islands, improvements in the productions chain such as modalities for operating services, doing maintenance, offering added value services in a more user oriented approach, etc.).
A.19	Cooperation with aeronautical industry		The development of the aviation sector has to be achieved as well by means of joint innovation projects in air navigation and fleet modernisation, research and development and environmental protection, with the joint participation of private investors and the government in the form of special funds for this purpose. More attention has to be devoted to the implementation of innovations in transport technology and compliance with the new technical standards.
A.20	Air traffic management, Single European Sky, SESAR		Elaboration of a national agenda for the development of coordination regarding the implementation of SESAR program and the Centralised Services Concept. Definition of a national priorities policy within FAB CE integrations as well as improve coordination and cooperation with neighbouring countries and within the wider region. Notwithstanding Croatia Control Ltd.'s competitiveness in respect of the region and similar size providers, there is a need for capacity building, implementation of safety standards, cooperation in terms of joint air navigation and development of educational centre for flight controllers.
A.21	Improving consumer satisfaction awareness		To increase the customer satisfaction awareness, it is necessary to monitor the quality of service through KPIs. This should help to identify the differences (if any) between high and low season, the requirements of the passengers, their perception of the facilities, etc. The results should be disseminated in a clear and concise manner to include the opinions of the public and stakeholders.
A.22	Increase financial sustainability of airports		Increasing financial sustainability is one of the main objectives of the Strategy. To achieve this objective it is necessary to optimise the organisational setup of the system and to increase the efficiency of the operation and maintenance. Financial sustainability of the air transport system intends to reduce the dependence of the system on public subsidies. Further studies will assess concrete actions to be taken to optimise costs and incomes.
A.23	Limit environmental impact		Reduction of the environmental impact of the air transport system is in the core of European transport policy. Environmental impact mitigation during operation must be achieved by increased energy efficiency, encouraging the use of alternative fuels, introduction of noise-related operating restrictions and by minimising waste and reducing noise, CO2 emissions and other pollutants but also by measures related to the protection of flora and fauna such as avoidance of disturbances of bird migration paths. Airports should develop noise management plans; waste management plans and establish a clean air program when relevant. In order to ensure long-term sustainability of the sector, it is necessary to consider adaptation to climate change in all stages of development (planning and construction) and operational efficiency for new and existing infrastructure.
A.24	Review/update Airport Masterplans		The planning of infrastructure and its response to traffic demand is essential for the development of a sustainable airport system in the Republic of Croatia. The first step will be to coordinate actions and activities being carried out in each airport in an Airport Master Plan. The Airport Master plan should be complemented by an Environmental Management Plan for each airport to ensure the ongoing environmental and energy efficiency of the system. Once the Master Plan is completed, the next step will be to coordinate and prioritise the plan of actions.
A.25	Cooperation/agreements with other international airports		Although Croatian airports are competitive with those of neighbouring countries, there is a need for cooperation in terms of border control, security and safety standards that will benefit all parties. It may even be possible to reach agreements on specialisation, i.e. cargo airports, operative bases for airlines, etc.
A.26	Increase administrative capacity/training		The lack of administrative capacity and properly trained staff is one of the key issues identified in the sector and is one of the priorities in the EU cohesion policies. In this particular sector, there is a need for capacity building in order to achieve improvements in this area. The employees of sector related companies must be trained, among others, for the use of new technologies in the field of maintenance, air navigation and safety.
A.27	Improvement of data collection		For further development of the aviation sector, it is necessary to have up to date data of, among others: physical characteristics, operational, safety, capacity, quality of service, tariffs. Data is published by the Croatian Bureau of Statistic and collected through the annual reports; however, the reports do not include all relevant data for the sector. It is necessary to improve and simplify the data collection, in order to increase the accessibility of data.

- **Inland waterways**

Code	Measure	Alignment with the Strategy	Measure Description
Inland navigation			
Ports and navigability			
I.1	Upgrading Danube and Drava until Osijek		The Danube and Drava are part of the Rhine-Danube Corridor (TEN-T network). The total length of the Danube running through the Republic of Croatia is 137.5 km. A tributary of the Danube, the Drava is also considered an international waterway up to Osijek. As such, it is necessary to ensure the navigability in these international rivers in line with the required navigability level according to the European Agreement on Main Inland Waterways of International Importance (AGN), VIc class for the Danube and IV for the Drava up to the port of Osijek. To achieve that navigability requirements the dimensions of the waterways will be increased and the bottlenecks eliminated (trough among others dredging and/or construction of new waterways structures).
I.2	Upgrading Sava		Sava river does not meet the international waterways navigability requirements on its entire length in the territory of the Republic of Croatia according to AGN. Further analyses will determine the feasibility of upgrading the Sava river navigability to the required standards: (Va class) from the border with Serbia (rkm 210,8) to Gunja (rkm 234); (IV class) from Gunja (rkm 234) to Sisak (rkm 594). To achieve that navigability requirements the dimensions of the waterways will be increased and the bottlenecks eliminated (among others dredging and/or construction of new waterways structures).
I.3	Vukovar port development (core)		The Vukovar Port is located on the Danube river and has been classified as a TEN-T core port. Vukovar is an inland port that can service class 5 vessels. It has a VIc class of navigability. The traffic of goods and passengers in the port is increasing. In order to develop and upgrade the port of Vukovar the following measures have been identified: modernization and construction of new facilities to increase the capacity of the existing port; developing and building a New East Port; modernization of road and rail infrastructure connections; building of an industrial pier in Ilok; and developing passengers port facilities. Further analyses will identify the feasibility of these measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
I.4	Osijek port development (comprehensive)		The Osijek Port is located on the Drava river and has been classified as a TEN-T comprehensive port. The traffic of goods and passengers in the port is increasing. The Osijek port has a great opportunity to become an intermodal logistic centre due to the large port area and excellent potential from the point of view of the road and rail connections with the hinterland. In order to develop and upgrade the port of Osijek the following measures have been identified: construction of the port basin and developing of the business zone, construction of the bulk cargo terminal, construction and reconstruction of the existing banks, modernization of the basic port infrastructure and safety systems. Further analyses will identify the feasibility of these measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
I.5	Slavonski Brod port development (core)		The Slavonski Brod Port is located on the Sava river and has been classified as a TEN-T core port. The potential of Slavonski Brod, which is of particular importance for BIH, is largely dependent on the development of navigability of the Sava river in BiH and Serbia and/or on the construction of the Danube - Sava canal through Slavonia. Reliability and safety of navigation on the river Sava are crucial factors which influence the attractiveness of the port. The main goods transported are trans-shipment of crude oil together with general cargo. The current tendency shows that the crude oil traffic is decreasing, even though the general cargo is increasing. The port area Slavonski Brod is closely linked to international road and rail corridors (X and Vc) and is situated on the border with Bosnia and Herzegovina. Due to that, this port is also becoming an intermodal node. In order to develop and upgrade the port of Slavonski Brod the following measures have been identified: developing the complete port area and the business zone, modernization of the basic port infrastructure (including water supply, gas supply, waste-water, sewage systems, etc.) and safety systems, modernization of the passenger pier, construction of a dangerous cargo terminal and modernization of the road and rail connections. Further analyses will identify the feasibility of these measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
I.6	Sisak port development (comprehensive)		The Sisak Port is located on the Sava river and has been classified as a TEN-T comprehensive port. Reliability and safety of navigation on the river Sava are crucial factors which influence the attractiveness of the port. It is based on three locations: in the town Sisak on the river Kupa, on a location next the settlement Crnac on the river Sava, and in Galdovo on the river Sava. The potential of Sisak is largely dependent on the development of navigability of the Sava river in BiH and Serbia and/or on the construction of the Danube - Sava canal through Slavonia. A new port of Sisak is planned south of the Crnac settlement. Cargo transport in the port is mainly related to the Sisak oil refinery, i.e. transportation of crude oil. In order to develop and upgrade the port of Sisak the following measures have been identified: upgrading the existing port, developing the business zone, modernization of the basic port infrastructure (including electricity, water supply, gas supply, sewage systems, etc.) and safety systems, building the New port of Sisak with assuring the necessary connectivity to the road and rail network. Further analyses will identify the feasibility of these measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
I.7	Building the Danube Sava canal		Multipurpose canal Danube – Sava is planned to have four equally important functions: transport, irrigation, drying out and equalization of low water level. Due to its multiple functions, the canal will have an important impact on the Croatian economy. Regarding its potential transport functionality, besides connecting the Croatian network of inland waterways, construction of the canal will help connecting the Croatian maritime ports with the Danube and, therefore, with Central Europe. The feasibility of the canal will be analysed in further studies which will consider all the expected functionalities and take into account environmental requirements, and the real needs and potential according to the expected demand.
I.8	Safety, RIS, signalization system, etc.		The expected growth in traffic, the consequent increased risk of accidents and the impact of potential incidents on the water require the existing safety level to be brought up to a higher level. In order to achieve this in Croatia, besides the implementation of the River Information Services and the availability of timely and accurate information regarding the movement of vessels, it is necessary to establish clear procedures regarding the actions which should be taken in cases of incidents, as well as upgrading the existing systems of marking and monitoring the navigability of the inland waterways. For safety reasons, it is also necessary to modernize and upgrade the ports with safety systems.
I.9	Interoperability, accessibility with other modes		One of the objectives of the Strategy is to increase the share of inland waterways transport. The increase in the share of inland waterways transport can be achieved if this sector is integrated into the intermodal transport network. It is necessary to establish an intermodal transport network, especially on the Adriatic-Danube axis, and to join maritime and inland transport. The main requirements for establishing an intermodal network are: – Improvement of the connections of inland ports to the road and railway network, – Development of the Sava waterway – Upgrading, construction and extension of railway lines – Construction of cargo storage facilities – Establishment of a comprehensive Information and Communication Technology system (ICT) for intermodal transport.
I.10	Energy efficiency		Energy efficiency in inland transport can be improved in ports and in inland shipping. Ports will reduce energy consumption with modernization of port equipment, and gradual replacement of oil with other types of fuel (biodiesel, LNG, electricity, etc.). The shipping fleet must also be modernized, as the average age of Croatian ships is 40 years. Further studies will analyse specific requirements.
I.11	Dangerous goods terminal and waste management facilities		In accordance to the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN), the duty of port authorities is to ensure separate warehousing, processing and disposal of hazardless and dangerous waste in ports, as well as reception of waste from ships. Croatian inland ports are undeveloped, and in order to increase the safety and environmental protection it is necessary to build and upgrade terminals for dangerous goods and upgrade ports with waste management facilities, primarily international ports, but also other ports where necessary.
I.12	Environmental protection		Reduction of the environmental impact of the transport system is in the core of the European transport policy. In this specific sector it is necessary to consider that according to the "European Water Framework Directive", the waterways are becoming a part of the integral plan for water management, so that their biological diversity and ecological value can be preserved. The environmental protection of waterways can

Code	Measure	Alignment with the Strategy	Measure Description
			be increased by: – pollution prevention; ensuring the reception of waste water from all vessels navigating along the internal waterways, – increasing the efficiency of inspections, – planning for improved water management to preserve biological diversity and ecological value, – use of geotextiles to reduce sedimentation, – planning the design of the berths and the vessels in such a way that the erosion caused by the vessels is minimised, – restrict, limit or prohibit boat traffic in certain areas or during certain seasons to protect flora and fauna, – development of noise management plans, waste management plans, erosion and sedimentation control plans and establishment of a clean air program for ports, – mitigation of environmental impact during operation by increased energy efficiency, encouraging the use of alternative fuels and by controlling fugitive emissions and spillages. In order to ensure long-term sustainability of the sector, it is necessary to consider adaptation to climate change in all stages of development (planning and construction) and operational efficiency for new and existing infrastructure.
Inland navigability operation/organization			
I.13	Adaptation of legal national framework as well as the implementation rules		Inland waterways related legislation and planning guidelines must support the development of the sector and must be in line with international best practice and European regulations, especially regarding safety, security, interoperability, sustainability and environment. In this sector, it is of relevance to define more clearly and completely the legal framework for the implementation of RIS and to establish close cooperation with neighbouring countries.
I.14	Increase administrative capacity/training		The lack of administrative capacity and properly trained staff is one of the key issues identified in the sector and is one of the priorities in the EU cohesion policies. In this particular sector, employment of additional administrative capacities is mainly needed in the field of transport safety and control, as well as safety inspection of navigation in the Harbour master's offices. The employees must be trained - among others - for the use of new technologies in the field of maintenance of waterways and navigation safety.
I.15	Increase the financial sustainability		Increasing financial sustainability is one of the main objectives of the Strategy. To achieve this objective it is necessary to optimise the organisational setup of the system and to increase the efficiency of the operation and maintenance. Financial sustainability of the inland waterways transport system intends to reduce the dependence of the system on public subsidies. Further studies will assess concrete actions to be taken to optimise costs and incomes.
I.16	Cooperation with Croatian shipping industry		The support for shipping has to be achieved by means of joint innovation projects in shipping and shipbuilding, research and development and environmental protection, with the joint participation of private investors and the government in the form of special funds for this purpose. More attention has to be devoted to the fleet modernization, implementation of innovations in transport technology and compliance with the new technical standards.
I.17	Information platform		Promoting and creating a positive image of internal navigation as a reliable, safe and environmentally friendly means of transport is important for encouraging the demand and consequently the investments. For better promotion it is necessary to have complete and up to date information and knowledge of Croatian inland waterways and ports, and their possibilities and development plans.
I.18	Support to water transport companies		It is important to establish support instruments which will relieve the integration of shipping companies into the European transport market. The stimulation of inland shipping implies different measures of fiscal policy towards the sector, especially in the area of forming fuel prices.
I.19	Reorganization of the sector		The institutional framework for inland waterways sector in Croatia includes the Ministry of Maritime Affairs, Transport and Infrastructure as head authority, Harbour Masters Offices, Agency for Inland waterways and port authorities as regional units located in Sisak, Slavonski Brod, Osijek and Vukovar. In order to improve the efficiency and effectiveness of the inland waterways system moving towards a more sustainable setup, changes in the organisation are required (improvements in the productions chain such as modalities for operating services, doing maintenance, offering added value services in a more user oriented approach etc.). It is necessary as well to establish the National head office for the RIS and to define the organizational and hierarchical structure of the RIS.
I.20	Increase the fleet of safety and environmental protection vessels		For a more effective safety control and inspection, and installation and maintenance of signalization system on waterways, it is necessary to increase the fleet of safety and environmental protection vessels.
I.21	Cooperation/agreements with other international ports		The Sava, Drava, Danube and Una rivers, at some sections are bordering rivers; therefore the close cooperation with the neighbouring countries is necessary, especially in the field of safety and implementation of River Information Services. Close cooperation of Croatian inland ports with other international ports is also needed in order to be more competitive on international market and to be up to date with new port technologies.
I.22	Improvement of data collection		For further development of inland sector, it is necessary to have up to date data on, among others: waterways, navigability, ports and infrastructure, safety, shipping fleet, traffic of goods and passenger on waterways and in ports. Croatian Bureau of Statistic is in charge for data publishing and the data are collected through the monthly and Annual Reports on Inland Waterway Transport; however, reports do not include all relevant data for the sector. It is necessary to improve and simplify the data collection, in order to increase the accessibility of data.

- **Maritime**

Code	Measure	Alignment with the Strategy	Measure Description
Maritime			
Ports and navigability			
M.1	Increase intermodality and accessibility		The modal share of maritime transport is still very low, against road transport. It can be increased by increasing the intermodality and accessibility of ports. The development of ports of special (international) economic interest for Croatia must be linked to the development of intermodal infrastructure (road and railway connections and logistics areas). The planned expansions and developments of the ports must take in consideration, all the possibilities offered by the location for further development.
M.2	Implementation of the "Motorways of the sea" projects		Although there are RO-RO lines connecting Croatian and Italian ports, the "Motorways of the Sea" projects have yet to be developed in Croatia. The stages for implementation of the "Motorways of the sea" projects in Croatia are: – together with EC, establish the main corridors (combined "land-maritime" routes), – if necessary, upgrade the Croatian ports on the corridors to receive Ro-Ro traffic, – if necessary, upgrade road and railway connections to/from port.
M.3	Environmental protection		Responsible protection of the marine environment combines the elements of protection of the marine ecosystem and the coastal area as an integral whole, and undertakes the actions to prevent the pollution of the sea and air from ships and other sources of environmental pollution in maritime traffic. The main objective is to prevent environmental pollution and harmful impacts of floating structures on the Adriatic Sea. In this sense it is necessary to: – declare the Adriatic Sea a Particularly Sensitive Sea Area in cooperation with coastal countries of the Adriatic, according to guidelines of the International Maritime Organisation, – set the National and Regional Contingency Plan for Accidental Marine Pollution in full operational application, – perform training and equip the inspection services in port harbour master's offices and other competent services of the Ministries, for the purpose of finding and prosecuting pollution perpetrators, – form joint inventories of emissions and common approaches to evaluation of shipping and its impact on air pollution in countries in the area of the Adriatic and Ionian seas, – ensure the correct management and proper disposal of ship waste and cargo residues, avoiding accidental spillages and incorrect disposal of waste and untreated wastewater, – development of noise management plans, waste management plans, erosion and sedimentation control plans and establishment of a clean air program for ports, – improve the response system in emergency situations, – mitigate environmental impact during operation by increased energy efficiency (by, among others, using alternatives fuels such as liquefied natural gas (LNG), compressed natural gas, liquefied petroleum gas and hydrogen) and by controlling fugitive emissions and spillages. In order to ensure long-term sustainability of the sector, it is necessary to consider adaptation to climate change in all stages of development (planning and construction) and operational efficiency for new and existing infrastructure.
M.4	Bunkering facilities for gas powered and eco ships		The Croatian shipping fleet will be modernised in order to develop energy-efficient eco-shipping, by stimulating the procurement/construction of new eco-ships and by adapting existing ships according to the highest environmental standards and the MARPOL 73/78 Annex VI - Regulations for the prevention of air pollution from ships. Parallel with developing eco-shipping it is necessary to develop bunkering facilities for gas powered and eco ships, such as filling stations and facilities for LNG, compressed natural gas, liquefied petroleum gas and hydrogen.
M.5	Navigability		Total length of the Croatian coastline is 6,278 km, including a coastline that stretches around 1,244 islands, islets, reefs and rocks. From the total number of islands, 49 are inhabited. From the total area of the Republic of Croatia (87,661 km2), internal waters and territorial sea extends over an area of 31,479 km2 (internal waters of 12,498 km2 and 18,981 km2 of territorial sea). It is one of the most indented coastal regions in Europe with regulated and marked maritime waterways. Navigability on the east Adriatic coast is in navigational sense constrained because of coastline and islands and numerous islets, rocks and reefs, but the depth of the access waterway areas and most major ports and other are generally not a constraint for ships. The advantage of main Croatian ports is the depth; therefore, the main limitation to receiving big ocean ships is related to port infrastructure. Due to these reasons, it is very important to ensure that the navigability conditions are provided with the highest levels of safety. The systematic improvement of hydrographic services to ensure the availability of high-quality hydrographic and navigation information in official publications of navigational charts and manuals for users on ships will contribute to increasing the safety of maritime transport.
M.6	Improve the accessibility of islands, port development		Public transport service in the coastal line passenger transport is considered one of the key factors in the field of maritime transport, given that it provides a permanent and regular connection between the island and the mainland and between islands, and without it the sustainable development of the inhabited islands would be compromised. For the proper performance of the maritime public transport it is necessary to ensure the safety, regularity, reliability and comfort. To achieve the above objectives it is necessary to coordinate certain services to each other, with special emphasis on the integration of this system into the transport system on the mainland. Ports have to adapt and if necessary upgrade for Coastal passenger traffic (in terms of the necessary infrastructure for alternative fuels - liquefied natural gas, compressed natural gas, liquefied petroleum gas, hydrogen), and the availability and connectivity to the ports needs to be improved.
M.7	Other ports development (e.g. Korčula, Pula…)		Croatia has 409 ports open for public traffic, 95 of which have at least one shipping line. Apart from the 6 main ports of special (international) economic interest, there are numerous county and local ports. Their development is important for the sustainability of the islands themselves, as well as for tourism. Where relevant, the existing public ports in the counties must be adapted to receive coastal line passenger ships, and in the case of ports of interest to tourists, to receive smaller cruise ships. Further studies will identify the need to upgrade and reconstruct the existing county and local public ports for the needs of the local population, and for tourists.
M.8	Specialise Rijeka port (container, liquid cargo transport and LNG terminal)		Rijeka has been classified as the TEN-T core port of Croatia. It is a port open to public traffic of special (international) economic interest for the Republic of Croatia. It is the largest port in Croatia and benefits from the deepest natural channel in the Adriatic. The major part of the traffic is transit cargo to/from its wider hinterland in Central Europe, and is dominated in terms of volume by liquid and bulk cargo followed by container and general cargoes. Further development of the port will be focused on the specialisation of the port to container and liquid cargo transport and to development of the branch of the Mediterranean corridor of the Trans-European transport network. For the success of the port it is necessary to ensure the interoperability and accessibility of the port and ensure that the port development is complemented by the necessary developments of the road and railway infrastructure, as well as logistic areas. Further analyses will identify the necessary project to achieve this specialisation and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
M.9	Specialise Ploče port (container and bulk cargo)		The Ploče port has been classified as a TEN-T comprehensive port of Croatia and is of specific importance for B&H. Further development of the port will be focussed on the specialisation to container and bulk cargo transport. According to the development plans, the focus will be on the construction of a new dry bulk cargo terminal, a container terminal, modernisation of existing port infrastructure and a new logistic area. Although outside the scope of this strategy, it is necessary to mention that the success of the port is clearly linked to the development of the road and railway infrastructure across the Republic of Bosnia

Code	Measure	Alignment with the Strategy	Measure Description
			and Herzegovina. Further analyses will identify the feasibility of these measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
M.10	Specialise Dubrovnik port (cruising vessels)		The Dubrovnik port has been classified as a TEN-T comprehensive port of Croatia. It is a port open to public traffic of special (international) economic interest for the Republic of Croatia. The port of Dubrovnik has become in recent years one of the most popular destinations for cruise voyages in Europe, so its development is directed to accepting ships. Planned developments include the modernisation and reconstruction of the passenger terminal and the expansion of ferry traffic facilities. Further analyses will identify the feasibility of these measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
M.11	Specialise Split port (Ro-Ro, passenger and cruising)		The Split port has been classified as a TEN-T comprehensive port of Croatia. It is a port open to public traffic of special (international) economic interest for the Republic of Croatia. The port of Split, also called gateway to the islands, is the largest passenger port in Croatia, therefore, its development is mainly directed to passenger transport and accepting traffic of ships during cruising. Planned developments will be focussed on the construction of new berths for ferry, Ro-Ro and cruise vessels including the extension of the passenger wharves. Further analyses will identify the feasibility of these measures and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
M.12	Specialise Zadar port (Ro-Ro, passenger and cruising)		The Zadar port has been classified as a TEN-T comprehensive port of Croatia. It is a port open to public traffic of special (international) economic interest for the Republic of Croatia. The port of Zadar is the second largest Croatian port for passengers. Cargo traffic is limited due to physical constraints and proximity to Rijeka. The port development is directed to Ro-Ro, passenger and cruising transport. The construction of a new passenger port outside old town, in Gaženica is in progress. The new port will provide an extended berthing capacity for larger international ferries and modern cruise ships ("home port") and international standard on-shore facilities for passengers and vehicles. Further analyses will identify the necessary projects to achieve this specialisation and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
M.13	Specialise Šibenik port (small capacity cruising and super-yachts)		The Šibenik port has been classified as a TEN-T comprehensive port of Croatia. It is a port open to public traffic of special (international) economic interest for the Republic of Croatia. Further development of the port will be focussed on the specialisation to passenger traffic, as a port for exclusive cruising vessels of smaller capacities (boutique vessels) and super-yachts. Further analyses will identify the necessary projects to achieve this specialisation and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
M.14	Development of special purpose ports (shipbuilding ports, nautical ports, military ports, industrial ports, fishing ports, sport ports)		Depending on the activities carried out, special purpose ports are classified as shipbuilding ports, nautical ports, military ports, industrial ports, fishing ports, and sport ports. The Croatian coast has developed as a tourist destination and special purpose ports have also been developed in that direction: new nautical berths, dry docks and warehouses for yachts, etc. Shipbuilding ports should specialise for the specific needs of the shipbuilding sector (among others, for the construction of ships powered by alternative fuels - liquefied natural gas (LNG), compressed natural gas, liquefied petroleum gas and hydrogen). Fishing ports on islands are needed for the sustainable development of islands. Industrial ports are mainly berths for some industrial plants: thermal power plants, oil refinery. There is a potential to develop a LNG terminal with industrial port in Krk island. Further analyses will identify the feasible measures regarding the development of special purpose ports and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
M.15	Energy efficiency		Energy efficiency in maritime transport can be increased by: – developing energy-efficient eco-shipping (including modernisation of the shipping fleet), – modernisation of port equipment, – stimulate the use of renewable sources of energy in the port sector, – stimulate innovative pollution preventing decisions in ports, – gradual replacement of oil with alternative fuels (liquefied natural gas, compressed natural gas, liquefied petroleum gas, hydrogen), – construction of the necessary infrastructure for the supply of alternative fuels. Further studies will analyse specific requirements.
M.16	Closure or change of role/ownership of unused ports		Some military, industrial and shipbuilding ports are unused. It is necessary to decide how to make use of these unused or abandoned ports for the purpose of economic development (tourism, fishing and small industries). Further analyses will identify the feasible measures in this regard and prioritise them, taking into account environmental requirements and the real needs and potential according to the expected demand.
Maritime operation/organization			
M.17	Cooperation with shipping industry		The support for shipping has to be achieved by means of joint innovation projects in shipping and shipbuilding, research and development and environmental protection, with the joint participation of private investors and the government in the form of special funds for this purpose. More attention has to be devoted to the fleet modernization, implementation of innovations in transport technology and compliance with the new technical standards.
M.18	Strategical Maritime definition		Croatian maritime strategy and the strategy for intermodal transport must be developed in order to increase intermodality and accessibility to maritime transport. The development plans of ports of international economic interest (Rijeka, Šibenik, Zadar, Split, Ploče, Dubrovnik), must be harmonised with the national development plans and the transport infrastructure development plans. It is also necessary to launch and implement the national program for developing infrastructure and encouraging the use of LNG in the maritime sector.
M.19	Adaptation of national legal framework as well as implementation rules		The maritime regulatory framework in Croatia is arranged through various forms of legislation which are divided into five main categories: maritime affairs, maritime safety and security, prevention of marine pollution, public transport in liner coastal maritime transport, maritime domain and seaports and maritime administration. To improve the maritime sector the related legislation and planning guidelines must support the development of the sector and must be in line with international best practice and European regulations, especially regarding safety, security, interoperability, sustainability and environment.
M.20	Improvement of operational plan (ship routing, etc.)		A key segment of Croatian shipping is coastal line passenger transport, and it is necessary to improve and to develop an adequate operational plan for optimising ship routing and service schedules coordinated with the public transport systems in the relevant mainland cities. Ship routing should consider if necessary opening and closure of lines between islands. Irrespective of public transport, the operation plan must be improved by considering the need for cruise passenger ships in ports with important cruise liner traffic due to port and city congestion.
M.21	Traffic management and IT system, VTMIS		Traffic management with IT system for public maritime transport needs to be improved. Improvement in maritime safety and security and environmental protection, can be reached by enhanced cooperation with neighbouring countries, modernization of the Croatian Coast Radio Stations and upgrading of Vessel Traffic Monitoring and Information System (VTMIS).
M.22	Improvement of the maritime education and training (MET) systems		Croatia is a seafaring nation supplying both national and foreign vessels with qualified seafarers. Croatia must develop and promote itself as an international centre of excellence for schooling seafarers. The maritime education and training (MET) system needs improvement, including: – the development of an action plan about the needs and the future of the education system and seafarers' education with regard to the target markets, education programmes, the target number enrolled, etc. – development of an action plan on the needs and future training of engineers and experts for the implementation of new technologies and their use in shipbuilding and maritime sector, – encouraging the planning and implementation of the curriculum, as well as education programmes and tests for acquiring the certificate of proficiency in English to ensure access to foreign students and candidates, – promotion of cooperation of Faculties of Maritime Studies and colleges with the maritime industry.

Code	Measure	Alignment with the Strategy	Measure Description
M.23	Training and capacity building		It is necessary to strengthen the capacity of employees in the maritime sector (administrative, seafarers...) with training and education. The administrative capacity must be strengthened to develop and implement maritime projects that can be financed by the forthcoming EU structural and cohesion funds. The lack of administrative capacity and properly trained staff is one of the key issues identified in the sector and is one of the priorities in the EU cohesion policies. In this particular sector, employment of additional administrative capacities is mainly needed in the field of transport safety and control, safety inspection of navigation and in the area of project preparation and project implementation management. The employees must be trained - among others - for the use of new technologies in the field of maintenance and navigation safety.
M.24	Reorganization of the maritime transport system		The Government of the Republic of Croatia has established 6 state port authorities for the purposes of managing and constructing ports of exceptional (international) economic significance for the Republic of Croatia. On the other hand, counties were given the option of establishing one port authority (or more, based on their needs) for the purposes of managing and constructing public traffic ports significant on a local and county level. The situation resulted in 22 port authorities on a county level in 7 counties. In order to improve the efficiency and effectiveness of the maritime transport system moving towards a more sustainable setup, changes in the organisation are required (improvements in the productions chain such as modalities for operating services, doing maintenance, offering added value services in a more user oriented approach, etc.).
M.25	Information platform, database		The information platform and maritime database must be constantly upgraded and updated to ensure accurate, reliable and updated maritime data and information. It is necessary to: – establish effective and publically available exchange system for information from the main registers, – integrate management of all marine service actions in accordance with the needs of citizens and the maritime economy, – improve the services of the maritime meteorological office through the establishment of an Adriatic regional maritime weather centre, – establish e-services for all users of public services with particular emphasis on the development of the Croatian Integrated Maritime Information System (CIMIS), – establish "The maritime land register" as a national infrastructure of spatial data of the sea (MIPP) based on standards of the International Hydrographic Organization, – establish Hydrographic Information System (HIS) as an integrated spatial information system, based on the systematic collection of data, – continuously improve the hydrographic service in organizational, technical-technological and functional terms as being an activity of special interest for the Republic of Croatia.
M.26	PSC concession reorganization		Public Service Contract(s) in compliance with EU Reg. 1370/2007 are a fundamental tool to assure transparency and efficiency in the provision of public transport services. A widespread implementation of PSCs is therefore required not only for compliance purposes, but also as a first step towards an improvement in sustainability of Croatian's transport system. Typology and duration of the PSC will have to be determined on a case-by-case analysis, together with the applicability of the in-house model (either based of pure compliance issues or after a thorough assessment of technical and financial requirements).
M.27	Maritime safety, inspections, SAR cooperation		One of the main objectives of the Strategy is the development of highest level standards of maritime safety and security protection on international, regional and national level, in order to effectively reduce dangers of maritime navigation for Croatian and other countries maritime objects and reduce the possibility of marine accident occurrences and limit the negative consequences of such accidents. Maritime safety and availability and quality of SAR services and facilities must be enhanced, including increased cooperation with neighbouring countries and the implementation of a strict inspection regime and other measures for improving the safety of human lives and property at sea including optimizing services and maritime safety system based on the classification of navigable areas, and also increasing the availability and quality of public services navigational safety, security and hydrographic and navigational safety ...
M.28	Modernisation of the vessels (safety, energy efficiency and environment)		The maritime industry has to develop in a safe and sustainable manner. The objective is to continuously increase the efficiency of safety oversight and security safeguards of Croatian vessels and floating structures, to increase the share of energy efficient vessels and to reduce the environmental impact of ships through the implementation of modern technologies including the use of alternative fuels (liquefied natural gas, compressed natural gas, liquefied petroleum gas, hydrogen). It is necessary to develop a system of targeted inspection and technical control to implement the highest international, European and national safety standards to Croatian vessels and floating structures according to established priorities. An efficient monitoring system of recreational craft and marine must be established as well.
M.29	Cooperation/agreements with other international ports		In order to increase the traffic in Croatian ports, to be more competitive on international market and to be up to date with new port technologies, it is necessary to increase the cooperation with other international ports in Adriatic sea.
M.30	Increase the financial sustainability		Increasing financial sustainability is one of the main objectives of the Strategy. To achieve this objective it is necessary to optimise the organisational setup of the system and to increase the efficiency of the operation and maintenance. Financial sustainability of the maritime transport system intends to reduce the dependence of the system on public subsidies. Further studies will assess concrete actions to be taken to optimise costs and incomes.
M.31	Development of concept of maintenance		The concept of maintenance in maritime sector can be divided into: maintenance of maritime waterways and safe navigability facilities, ports and port infrastructure, and maintenance of shipping fleet. Adequate structures and organisation for maintenance must be put in place in order to provide an efficient and effective/sustainable maritime transport service. The concept must derive from an appropriate and specific analysis of the Croatian and maritime operators context, taking into account technical, financial and users requirements.
M.32	Improvement of data collection		For further development of the maritime sector, it is necessary to improve and simplify the collection of data in order to increase the availability of the same. It is necessary to establish new or revise existing methodology and dynamics of data collection, especially those related to navigability, ports and infrastructure, shipping fleet, goods and passenger traffic and navigation safety.

- **Urban, suburban and regional**

Code	Measure	Alignment with the Strategy	Measure Description
Urban, suburban and regional			
Infrastructure			
U.1	Intermodal terminals development		A network of intermodal terminals should be established to allow the passengers (including persons with reduced mobility) to easily interchange between transport modes. A well-conceived, balanced, intermodal network is a key for maximizing the efficiency of the overall system, minimising nuisances to users. Location and modes of each terminal will be determined according to a specific area study (e.g. Master plan).
U.2	Infrastructure development		A proper analysis of the existing situation and expected developments of the Transport System and socio-economic context in urban and regional areas, in a perspective of Sustainable Mobility/Integrated Public Transport Plans, should identify the needs of rehabilitating/upgrading existing infrastructure or of creating new ones where mobility levels will justify it. On the other side, this might also mean to dismiss or functionally downgrade some parts of the network where expected mobility levels become non relevant. Infrastructure investments will be primarily focused on public transport and low/zero emission modes and will be accompanied by complementary mobility management policies and interventions, together with appropriate ITS installations. Infrastructure investment will take into account the needs for persons with reduced mobility.
U.3	Stations and stops development		A proper analysis of the existing situation and expected developments of the Transport System and socio-economic context in urban and regional areas, in a perspective of Sustainable Mobility/Integrated Public Transport Plans, will identify the needs of reconstruction of existing stops and stations or of creating new ones where mobility levels will justify it. On the other side, this might also mean to dismiss or functionally downgrade some existing stops or stations where expected mobility levels become non relevant. Stops and stations development will be primarily focused on improving passenger's accessibility, especially for persons with reduced mobility, assuring safety and security of the passenger movements and introducing information and PA systems.
U.4	Separation of modes - prioritization to PT, removal of bottlenecks		Public transport (buses and tramways, mainly) has to coexist with the private car since the available space in cities is always limited. At the same time, more importance will be given to public transport and recovering part of the urban space for the use of the citizens. In this sense and in order to increase the efficiency of public transport and the use of zero emission modes, the level of separation of private traffic, public transport and zero emission modes will be increased by building reserved lanes for public transport, cyclists and pedestrians and/or dedicated public transport corridors (for tram and buses), and by implementing measures to increase the prioritisation of public transport and zero emission modes by means of traffic management, such as traffic lights preferentiality. Additionally, detected obstacles and bottlenecks that impede the efficient operation of public transport will be removed. These obstacles and bottlenecks often cause delays on public transport and can even compromise road safety (e.g. rail-road crossings).
U.5	Increase of intermodality (P&R, etc.)		One of the key aspects to achieve a good public transport system and for the success of integrated transport systems encouraging the modal shift from private to public transport and zero emission modes is to increase and facilitate the intermodality. In this sense, together with the development of proper intermodal terminals, the development of facilities such as Park & Ride, Kiss & Ride, Bike & Ride, etc. will help providing commuters another option to access the city, avoiding congestion in the core urban areas and encouraging the use of public transport. The location of these facilities will be analysed in detail case by case taking into account their functionality, e.g. Park & Ride should normally be located on the outskirts of the city next to public transport terminals. All these facilities will take into account the needs for persons with reduced mobility.
U.6	Filling stations for alternative fuel		Alternative fuels have been largely improved in recent years especially in the context of public transport in urban and suburban areas. The building of filling stations for alternative fuels will be encouraged to reduce the conventional fuel consumption, CO2 emissions and toxic particles.
U.7	Environmental protection		The transport sector is responsible for about a quarter of all the carbon dioxide (greenhouse gas emissions) produced in the world. To reduce the emission of greenhouse gasses, as well as other toxic particles in urban environments, the use of public transport and zero emission modes, modern rolling stock and vehicles with low emissions, alternative fuel power and energy recovery technologies for public transport will be prioritised. Other factors affecting the quality of life of city residents and urban environmental quality are noise and vibration produced by urban transport. To mitigate these effects, the focus will not only be on the procurement of new public transport vehicles but also on the modernisation of the infrastructure of the public transport systems, taking into account noise and vibrations reduction and protection measures as well as proper drainage to avoid the impacts of spillages and run-off. In order to ensure long-term sustainability of the sector, it is necessary to consider adaptation to climate change in all stages of development (planning and construction) and operational efficiency for new and existing infrastructure.
U.8	Improvement of safety and security		Safety and security in urban areas will be improved at least on two different levels: 1) Identifying and eliminating black spots such as rail-road crossings, signalling pedestrian crossings, providing additional protection to pedestrians and cyclists by using modern safety and traffic management technologies in rail based systems and road crossings and constructing new pedestrian footpaths and bike paths where needed, constructing pedestrian islands to minimize crossing distances and extending curbs where necessary and even construction of new pedestrian sidewalks / footpaths to improve the accessibility to the main public transport stations and terminals. 2) The rolling stock for public transport will be modernized. Procurement of new public transport vehicles that comply with the highest safety and quality standards is a priority. These vehicles are to incorporate the latest advances in safety and control and surveillance devices (e.g. video cameras). The infrastructure and stations will also be modernized with the necessary adaptations to increase safety and accessibility to the public transport and with the installation of surveillance and control devices to improve the security. All these measures will take into account the needs for persons with reduced mobility.
Operation and organization			
U.9	Sector reorganization		The transport sector in Croatia will be reorganized through the establishment of a common administrative body at national level and specific entities in charge of transport in the different functional regions, taking into account the concept of integrated transport systems at the functional regional level. In bigger cities and/or agglomerations, it might be necessary to establish as well specific entities in charge of transport. Having a specific administrative body in charge of urban, suburban and regional transport at national level is fundamental for establishing a coherent legislative framework for all functional regions and good coordination of the transport system decisions. On the other hand, a specific entity in charge of urban, suburban and regional transport at the functional regional level is a key factor in coordinating and defining the specific roles and responsibilities of the different stakeholders and in ensuring the efficient operation and management of the public transport system in each functional region. For example, a common administrative body at national level will be responsible for the preparation of the common legislation and acts, strategic decisions and coordination of the different entities in charge of public transport in the different functional regions, while entities in charge of transport on the functional regional level will be responsible for the good functioning of the public transport in its area, ensuring coordination of the different stakeholders and financial and environmental sustainability.
U.10	Improvement of data collection		To better understand the existing urban/regional transport systems and to forecast the future needs, continuous data collection and analysis is required in a simplified, clear and easily accessible manner. Transport related data and performance indicators must be regularly collected, to permit the statistical analysis and assessments on the transport sector. Necessary data and information will be obtained through secondary data or primary data collection (periodical surveys) or also using data collected and processed by intelligent transportation systems.
U.11	Adaptation of the legal framework and the		The planned introduction of integrated transport systems in the functional regions in Croatia will be supported by the relevant changes in the legal framework, implementation rules and planning guidelines. For this purpose, the current transport legal framework is being adapted. Regarding the transport planning obligations, the functional regions and/or cities will be required to develop proper Sustainable Urban

Code	Measure	Alignment with the Strategy	Measure Description
	implementation rules (PSC)		Mobility Plans (SUMP) (Mobility plans can cover the area of one city or several cities belonging to a joint agglomeration/functional region). The operation of public transport systems will be performed under the framework of Public Service Contract(s) in compliance with EU Reg. 1370/2007 in order to assure transparency and efficiency in the provision of public transport services. A widespread implementation of PSCs is therefore required not only for compliance purposes, but also as a first step towards an improvement in sustainability of Croatian's transport system. Typology and duration of the PSC will have to be determined on a case-by-case analysis, together with the applicability of the in-house model (either based of pure compliance issues or after a thorough assessment of technical and financial requirements).
U.12	Increase financial sustainability		Increasing financial sustainability of the transport systems is one of the objectives of the Strategy. To achieve this objective it is necessary to optimise the organisational setup of the system and to increase the efficiency of the operation and maintenance. Competitive prices should be offered for Public Transport users but at the same time it is also important to increase the incomes considering as well the possibility to cross-finance the public transport system with the incomes from among others parking or tolling systems. Financial sustainability of the transport systems intends to reduce the dependence of the system on public subsidies. Further studies will assess concrete actions to be taken to optimise costs and incomes.
U.13	Fare collection and joint ticketing systems		One of the most tangible benefits for users of the integrated transport systems is the introduction of integrated tariff systems. The level of integration of the tariff system and the type of tickets and technologies to be used (single tickets and/or e-ticketing, smart cards or contactless payment methods, etc.) will be analysed case by case based on the competences of the relevant transport authority and taking into account all the possibilities, such as the possibility to use smart cards to pay P&R, on-street parking, toll zones, etc.
U.14	Introduction of on-demand PT services		One of the main objectives of the Strategy is to increase the sustainability of the transport system and at the same time provide public transport solutions which are accessible for the majority of the population. Taking into account that some parts of the Croatian territory do not have enough demand to justify the introduction of regular public transport lines (e.g. rural or disperse areas), the introduction of on-demand public transport services will provide the opportunity to also offer public transport services to these areas. These on-demand services will take into account the needs for persons with reduced mobility.
U.15	Adjustment of timetable (coordinated)		In order to increase the share of public transport modes in the urban, suburban and regional transport, reorganization of time schedules (e.g. TAKT) is necessary to improve connectivity, efficiency and coordination of the different modes. Further studies will analyse this possibility taking into account origin-destination patterns and the operational and infrastructural requirements.
U.16	Administrative capacity and training		The introduction of integrated transport systems and new technologies together with the necessity to increase the financial sustainability and efficiency of the transport systems leads to the definition of the lack of administrative capacity and properly trained staff as one of the key issues in the sector, being at the same time one of the priorities in the EU cohesion policies. In this particular sector, employment of additional administrative capacities is mainly needed in relation to the creation of new entities in charge of integrated transport systems and in the area of project preparation and project implementation management. The implementation of new technologies will imply the necessity to train the existing and new staff to ensure the proper operation and maintenance of these systems. Due to the close relation of the urban, suburban and regional transport with the zero emission modes and private car users, trainings will be combined with educational programs for the users on how to safely use the different transport modes. Among others, the training and educational program will be developed to: – Increase the capacities and competences of the administration staff, – Train the different carriers' personnel in cost-effective and safe driving as well as communication with passengers, – Train students on the use and safety of bicycles and public transport, – Overall public education and information on safe driving, public transport, focusing on the vulnerable groups (e.g.: disabled people or the elderly), about the effective and safe use of public transport and its advantages. The program will be based on study cases and examples of good practices to provide an entertaining and enduring education.
U.17	Purchase of new rolling stock		With some exceptions, the current fleet of public transport vehicles is aged and based on outdated and inefficient technologies. In order to increase the competitiveness of public transport in comparison with private car it is necessary to modernise the rolling stock ensuring its compliance with the highest quality, safety and environmental standards and the accessibility for persons with reduced mobility. The purchase of new rolling stock will be performed in coordination to the foreseen improvements on the infrastructure. The first step to develop this measure is to perform a comprehensive analysis of the current organisational, operational and maintenance setup of the relevant operators analysing the future requirements and operational and maintenance plan. Once the real needs are identified further studies will define the specific technical requirements for the rolling stock.
U.18	Traffic reorganization		Offering competitive alternatives to the use of the private cars (considering also the potential of car sharing) is important to achieve the objectives of the Strategy and to ensure the sustainability of the transport system. The different transport modes' hierarchy will be rethought and traffic will be reorganized and integrated seeking prioritization of public transport and zero emission modes against private car. At the same time, more pedestrian areas and areas with limited access for private cars in urban centres and residential areas will be constructed, bike paths for daily commuters will be built, public bicycle systems will be implemented and traffic schemes will be planned to adapt the traffic to seasonal and specific requirements.
U.19	Information platform		Public awareness of the administration efforts and the advantages of public transport are relevant for a successful implementation of the rest of the measures. To help raise this awareness of the measures taken, promotion campaigns will be organized. These include traditional public media, advertisements, public workshops and the creation of specific information platforms which will be used as well as a forum for public participation.
U.20	Support of non-profit groups in the transport area		The role of non-profit groups that promote the use of alternatives to the private car has proven to be very successful in numerous cities across Europe. Among others, there are groups that promote daily bike use, groups that watch out for passenger rights, for the maintenance of pedestrian areas or even for traffic surveillance. These groups (neighbourhood associations or common interest groups, non-governmental organisations, etc.) can help the local administrations and transport authorities in their duties and help to promote the use of the public transport. The participation of such associations, local groups and non-governmental organizations in the transport planning decisions will hence be promoted and considered.
U.21	Traffic and logistics management and information		New technologies allow among others for real time data gathering and control of traffic conditions and public transport use. In order to take advantage of these new technologies, centres for centralized management of the public transport will be constructed and modernised, equipped with the latest advances in ITS solutions. New public transport vehicles will be equipped accordingly, ITS platforms for trip planning will be used and traffic signalling will be modernized so as to be integrated in the centralized management system (e.g. "Smart Traffic Lights" or public transport prioritization measures). This will allow for a qualitative improvement in the planning and monitoring of public transport, passenger user information, traffic control and real time data gathering regarding congestion, public vehicles arrival times.
U.22	Review/update local/regional transport Masterplans		Regarding the transport planning obligations, the functional regions and/or cities will be required to develop proper Sustainable Urban Mobility Plans (Mobility plans can cover the area of one city or several cities belonging to a joint agglomeration/functional region). These mobility plans will analyse the current situation of the transport systems considering not only infrastructural but also operational and organisational aspects, and based on the outcomes of these analyses the future needs will be identified. The existence of these plans is a pre-requisite for investing in public transport systems. These mobility plans will be periodically reviewed and updated and must be in line with the high level planning instruments such as the Transport Development Strategy. When developing these plans, it is important to take into account that the knock-on effects of improving the transport infrastructure can cause land-use changes elsewhere which should be addressed through sustainable community planning.

4.2. MEASURES IN RELATION TO OBJECTIVES

To facilitate understanding the link between the objectives and the measures, the following matrix has been created.

The cells highlighted in **green** indicate that **there is a clear and confirmed link between the objective and the measure**; the **yellow** ones mean that **there might be a link but further analysis is needed to confirm their linkage** and finally the **blank** cells show **that there is no link**.

As can be seen in the table, the proposed measures cover all objectives (each objective is covered by several measures).

MEASURES\OBJECTIVES		1 Improvement of transport connectivity and coordination with neighbouring countries			2 Improvement of passengers long distance accessibility inside Croatia						3 Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion		4 Improvement of the passengers accessibility to and within the main urban agglomerations						5 Improvement of freight accessibility inside Croatia					6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system						
		1a Border bottlenecks elimination	1b Improvement of international passengers long distance accessibility (including transit traffic)	1c Improvement of international freight accessibility (including transit traffic)	2a Improvement of passengers long distance accessibility - Central Croatia (Zagreb)	2b Improvement of passengers long distance accessibility - Northern Adriatic (Rijeka)	2c Improvement of passengers long distance accessibility - Eastern Croatia (Osijek - Slavonski Brod)	2d Improvement of passengers long distance accessibility - Northern and Central Dalmatia (Split - Zadar)	2e Improvement of passengers long distance accessibility - Southern Dalmatia (Dubrovnik)	3a Improving the regional connectivity on the mainland	3b Improving the regional connectivity to/from/between the islands	4a Improvement of the passengers accessibility - Zagreb node	4b Improvement of the passengers accessibility - Rijeka node	4c Improvement of the passengers accessibility - Zadar node	4d Improvement of the passengers accessibility - Split node	4e Improvement of the passengers accessibility - Osijek node	4f Improvement of the passengers accessibility - Dubrovnik node	5a Improvement of freight accessibility - Central Croatia (Zagreb)	5b Improvement of freight accessibility - Northern Adriatic (Rijeka)	5c Improvement of freight accessibility - Eastern Croatia (Osijek - Slavonski Brod)	5d Improvement of freight accessibility - Northern and Central Dalmatia (Split - Zadar)	5e Improvement of freight accessibility - Southern Dalmatia (Dubrovnik)	6a Adaptation of the legislation, rules and standards to the European requirements and best practice	6b Improvement of the system organisational setup and cooperation between relevant stakeholders	6c Improvement of the system operational setup	6d Improvement of the safety of the transport system	6e Reduction/mitigation of the environmental impact	6f Improvement of the energy efficiency	6g Financial sustainability of the transport system
Rail																															
Rail network elements																															
R.1	Zagreb - SI border towards Ljubljana (core/X/Mediterranean)	■	■	■						■		■						■													
R.2	Zagreb - Karlovac (core/Vb/Mediterranean)			■						■		■						■	■												
R.3	Karlovac+ to Rijeka (core/Vb/Mediterranean)			■						■								■	■												
R.4	Rijeka regional									■			■																		
R.5	Zagreb - Križevci (core/Vb/Mediterranean)		■	■						■		■																			
R.6	Križevci -HU border towards Budapest (core/Vb/Mediterranean)	■	■	■																											
R.7	Zagreb - Novska (core/X)		■	■	■		■			■		■						■													
R.8	Novska - SRB border towards Belgrade (core/X)	■	■	■	■		■											■		■											
R.9	HU border - Osijek - BIH border (comprehensive/core/Vc)	■		■																■											
R.10	Regional connection Vinkovci - Vukovar (core/access to corridor X)			■			■			■										■											
R.11	Zagreb local											■																			
R.12	Zagreb regional									■																					
R.13	Zagreb freight																	■													
R.14	Zagreb airport connection		■		■							■																			
R.15	Zagreb main station				■							■																			
Rail network																															
R.16	ETCS L1, L2 on other lines, GSM-R	■		■						■		■	■		■	■						■									
R.17	Electrification of other lines			■						■		■	■		■	■															
R.18	Rehabilitation, upgrading of other lines			■						■		■	■		■	■															
R.19	Regional traffic other then Zagreb and Rijeka (Split, Varaždin, Osijek, etc.)									■					■	■															
R.20	Improvements and new marshalling yards			■														■	■	■	■										
R.21	Improvement of safety at crossing, axle load detectors, hot axle detectors, etc.																											■			
R.22	Added value services and improvement of the railway image																														
R.23	Intermodal passenger hubs		■		■		■			■		■	■		■	■															
R.24	Intermodal freight hubs			■														■	■	■	■										
R.25	Development of concept of maintenance of the existing infrastructure		■	■	■		■			■		■	■		■	■		■	■	■	■										
R.26	Energy efficiency																													■	
Rail operation/organization																															
R.27	Reorganization of Track access charge																						■	■	■						■
R.28	Multi annual PSC									■		■	■		■	■							■	■	■						■
R.29	Increase financial sustainability																														■
R.30	Reorganization of the railway transport system																							■	■						■
R.31	Improvement of passenger rolling stock	■	■		■		■			■		■	■		■	■													■	■	
R.32	Improvement of freight rolling stock	■		■														■	■	■	■								■	■	■
R.33	Update legislation and planning guidelines	■																					■	■							■
R.34	Prepare for changes in Schengen borders	■	■	■																			■								
R.35	Preparation/adaptation of non Schengen borders	■	■	■																			■								
R.36	Liberalization of operations for passengers	■	■		■		■			■		■	■		■	■							■						■		■
R.37	Liberalization of operations for freight	■		■														■	■	■	■		■						■		■
R.38	Increase administrative capacity/training																							■	■						
R.39	Reorganization of the operations/time schedules		■	■	■		■			■		■	■		■	■		■	■	■	■				■						
R.40	Information platforms	■																						■	■	■					
R.41	Reduce environmental impact																										■				
R.42	Improvement of data collection																							■	■	■					

	MEASURES\OBJECTIVES	1 Improvement of transport connectivity and coordination with neighbouring countries			2 Improvement of passengers long distance accessibility inside Croatia					3 Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion		4 Improvement of the passengers accessibility to and within the main urban agglomerations						5 Improvement of freight accessibility inside Croatia					6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system						
		1a Border bottlenecks elimination	1b Improvement of international passengers long distance accessibility (including transit traffic)	1c Improvement of international freight accesstibility (including transit traffic)	2a Improvement of passengers long distance accessibility - Central Croatia (Zagreb)	2b Improvement of passengers long distance accessibility - Northern Adriatic (Rijeka)	2c Improvement of passengers long distance accessibility - Eastern Croatia (Osijek - Slavonski Brod)	2d Improvement of passengers long distance accessibility - Northern and Central Dalmatia (Split - Zadar)	2e Improvement of passengers long distance accessibility - Southern Dalmatia (Dubrovnik)	3a Improving the regional connectivity on the mainland	3b Improving the regional connectivity to/from/between the islands	4a Improvement of the passengers accessibility - Zagreb node	4b Improvement of the passengers accessibility - Rijeka node	4c Improvement of the passengers accessibility - Zadar node	4d Improvement of the passengers accessibility - Split node	4e Improvement of the passengers accessibility - Osijek node	4f Improvement of the passengers accessibility - Dubrovnik node	5a Improvement of freight accessibility - Central Croatia (Zagreb)	5b Improvement of freight accessibility - Northern Adriatic (Rijeka)	5c Improvement of freight accessibility - Eastern Croatia (Osijek - Slavonski Brod)	5d Improvement of freight accessibility - Northern and Central Dalmatia (Split - Zadar)	5e Improvement of freight accessibility - Southern Dalmatia (Dubrovnik)	6a Adaptation of the legislation, rules and standards to the European requirements and best practice	6b Improvement of the system organisational setup and cooperation between relevant stakeholders	6c Improvement of the system operational setup	6d Improvement of the safety of the transport system	6e Reduction/mitigation of the environmental impact	6f Improvement of the energy efficiency	6g Financial sustainability of the transport system
Road																													
Road network elements																													
Ro.1	Gradiška bridge connection																												
Ro.2	A5 Osijek - HU border Pecs (comprehensive/Vc)																												
Ro.3	A5 from A3 to B&H border (comprehensive/Vc)																												
Ro.4	A7 Križišče to Žuta Lokva (comprehensive/Adriatic Ionian corridor)																												
Ro.5	A11 Lekenik - Sisak																												
Ro.6	DC 10 Vrbovec - Križevci - Koprivnica - Hungarian border towards Kaposvar																												
Ro.7	DC 12 Vrbovec 2 interchange - Ivanja Reka - Vrbovec - Bjelovar - Virovitica - Hungarian border towards Barcsu																												
Ro.8	Zagreb main network reorganization																												
Ro.9	D2 from SLO border to SRB border																												
Ro.10	Rijeka network reorganization																												
Ro.11	Dubrovnik - ME border																												
Ro.12	Increase of capacity - dedicated PT lane between Zagreb and Karlovac																												
Ro.13	Increase of capacity - dedicated PT lane Zagreb bypass																												
Ro.14	Slavonski Brod port access improvement																												
Ro.15	Split network reorganization																												
Ro.16	Preparation for accessibility of Dubrovnik when Croatia joins Schengen																												
Road network																													
Ro.17	Develop maintenance concept (including maintenance stations) of the road network																												
Ro.18	Secondary and tertiary road rehabilitation and realignment																												
Ro.19	Develop a resting station concept for the high level road network																												
Ro.20	Traffic management, monitoring, traffic counting and information system																												
Ro.21	Interchange development plan																												
Ro.22	Road safety																												
Ro.23	Network development to intermodal hubs, agglomerations in line with demand																												
Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)																												
Ro.25	Reduce environmental impact																												
Ro.26	Energy efficiency																												
Road operation/organization																													
Ro.27	Update legislation and planning guidelines																												
Ro.28	Increase administrative capacity/training																												
Ro.29	Preparation/adaptation for Schengen borders																												
Ro.30	Preparation/adaptation of non Schengen borders																												
Ro.31	Improve financial sustainability of the road network and tolling system																												
Ro.32	Information platforms																												
Ro.33	Recategorization of the road network																												
Ro.34	Enforcement																												
Ro.35	Improvement of data collection																												

	MEASURES\OBJECTIVES	1 Improvement of transport connectivity and coordination with neighbouring countries			2 Improvement of passengers long distance accessibility inside Croatia					3 Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion		4 Improvement of the passengers accessibility to and within the main urban agglomerations						5 Improvement of freight accessibility inside Croatia					6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system						
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	Air																												
	Airports																												
A.1	Dubrovnik airport development (comprehensive)																												
A.2	Pula airport development (comprehensive)																												
A.3	Brač airport development																												
A.4	Mali Lošinj airport development																												
A.5	Osijek airport development (comprehensive)																												
A.6	Rijeka airport development (comprehensive)																												
A.7	Split airport development (comprehensive)																												
A.8	Zadar airport development (comprehensive)																												
A.9	Zagreb airport development (core)																												
A.10	Accessibility of airports																												
A.11	Airport safety																												
A.12	Energy efficiency																												
A.13	Closure or change of role/ownership of regional airports																												
	Airtraffic operation/organization																												
A.14	Adaptation of legal national framework as well as the implementation rules																												
A.15	Improvement of the cooperation with the relevant regional authorities																												
A.16	Restructuring of Croatia Airlines																												
A.17	Information platform																												
A.18	System reorganization and planning																												
A.19	Cooperation with aeronautical industry																												
A.20	Air traffic management, Single European Sky, SESAR																												
A.21	Improving consumer satisfaction awareness																												
A.22	Increase financial sustainability of airports																												
A.23	Limit environmental impact																												
A.24	Review/update Airport Masterplans																												
A.25	Cooperation/agreements with other international airports																												
A.26	Increase administrative capacity/training																												
A.27	Improvement of data collection																												
	Inland navigation																												
	Ports and navigability																												
I.1	Upgrading Danube and Drava until Osijek																												
I.2	Upgrading Sava																												
I.3	Vukovar port development (core)																												
I.4	Osijek port development (comprehensive)																												
I.5	Slavonski Brod port development (core)																												
I.6	Sisak port development (comprehensive)																												
I.7	Building the Danube Sava canal																												
I.8	Safety, RIS, signalization system, etc.																												
I.9	Interoperability, accessibility with other modes																												
I.10	Energy efficiency																												
I.11	Dangerous goods terminal and waste management facilities																												
I.12	Environmental protection																												
	Inland navigability operation/organization																												
I.13	Adaptation of legal national framework as well as the implementation rules																												
I.14	Increase administrative capacity/training																												
I.15	Increase the financial sustainability																												
I.16	Cooperation with Croatian shipping industry																												
I.17	Information platform																												
I.18	Support to water transport companies																												
I.19	Reorganization of the sector																												
I.20	Increase the fleet of safety and environmental protection vessels																												
I.21	Cooperation/agreements with other international ports																												
I.22	Improvement of data collection																												

MEASURES\OBJECTIVES		1 Improvement of transport connectivity and coordination with neighbouring countries			2 Improvement of passengers long distance accessibility inside Croatia					3 Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion		4 Improvement of the passengers accessibility to and within the main urban agglomerations					5 Improvement of freight accessibility inside Croatia					6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system						
		1a Border bottlenecks elimination	1b Improvement of international passengers long distance accessibility (including transit traffic)	1c Improvement of international freight accessibility (including transit traffic)	2a Improvement of passengers long distance accessibility - Central Croatia (Zagreb)	2b Improvement of passengers long distance accessibility - Northern Adriatic (Rijeka)	2c Improvement of passengers long distance accessibility - Eastern Croatia (Osijek - Slavonski Brod)	2d Improvement of passengers long distance accessibility - Northern and Central Dalmatia (Split - Zadar)	2e Improvement of passengers long distance accessibility - Southern Dalmatia (Dubrovnik)	3a Improving the regional connectivity on the mainland	3b Improving the regional connectivity to/from/between the islands	4a Improvement of the passengers accessibility - Zagreb node	4b Improvement of the passengers accessibility - Rijeka node	4c Improvement of the passengers accessibility - Zadar node	4d Improvement of the passengers accessibility - Split node	4e Improvement of the passengers accessibility - Osijek node	4f Improvement of the passengers accessibility - Dubrovnik node	5a Improvement of freight accessibility - Central Croatia (Zagreb)	5b Improvement of freight accessibility - Northern Adriatic (Rijeka)	5c Improvement of freight accessibility - Eastern Croatia (Osijek - Slavonski Brod)	5d Improvement of freight accessibility - Northern and Central Dalmatia (Split - Zadar)	5e Improvement of freight accessibility - Southern Dalmatia (Dubrovnik)	6a Adaptation of the legislation, rules and standards to the European requirements and best practice	6b Improvement of the system organisational setup and cooperation between relevant stakeholders	6c Improvement of the system operational setup	6d Improvement of the safety of the transport system	6e Reduction/mitigation of the environmental impact	6f Improvement of the energy efficiency	6g Financial sustainability of the transport system
Maritime																													
Ports and navigability																													
M.1	Increase intermodality and accessibility		■	■							■		■	■	■		■		■		■								
M.2	Implementation of the "Motorways of the sea" projects			■															■		■								
M.3	Environmental protection																										■		
M.4	Bunkering facilities for gas powered and eco ships			■															■		■								
M.5	Navigability		■	■							■		■	■	■		■		■		■					■			
M.6	Improve the accessibility of islands, port development		■								■		■	■	■		■												
M.7	Other ports development (ex. Korčula, Pula...)	■	■								■		■	■	■		■												
M.8	Specialise Rijeka port (container, liquid cargo transport and LNG terminal)	■	■	■							■		■																
M.9	Specialise Ploče port (container and bulk cargo)	■		■																									
M.10	Specialise Dubrovnik port (cruising vessels)	■	■								■						■												
M.11	Specialise Split port (Ro-Ro, passenger and cruising)	■	■								■				■														
M.12	Specialise Zadar port (Ro-Ro, passenger and cruising)	■	■	■							■			■															
M.13	Specialise Šibenik port (small capacity cruising and super-yachts)	■	■								■																		
M.14	Development of special purpose ports (shipbuilding ports, nautical ports, military ports, industrial ports, fishing ports, sport ports)																												
M.15	Energy efficiency																											■	
M.16	Closure or change of role/ownership of unused ports																												■
Maritime operation/organization																													
M.17	Cooperation with shipping industry																								■				
M.18	Strategical Maritime definition																								■	■			
M.19	Adaptation of national legal framework as well as implementation rules	■																					■			■			
M.20	Improvement of operational plan (ship routing, etc.)		■	■							■		■	■	■		■		■		■					■			
M.21	Traffic management and IT system, VTMIS	■	■	■							■		■	■	■		■		■		■		■			■	■		
M.22	Improvement of the maritime education and trainning (MET) systems																												
M.23	Training and capacity building																								■	■			
M.24	Reorganization of the maritime transport system																								■	■			
M.25	Information platform, database	■																								■			
M.26	PSC concession reorganization										■		■	■	■		■								■	■			
M.27	Maritime safety, inspections, SAR cooperation	■	■	■							■		■	■	■		■		■		■					■			
M.28	Modernisation of the vessels (safety, energy efficiency and environment)		■	■							■		■	■	■		■		■		■					■	■	■	
M.29	Cooperation/agreements with other international ports		■	■																					■	■			
M.30	Increase the financial sustainability																									■			■
M.31	Development of concept of maintenance		■	■							■		■	■	■		■		■		■				■	■			■
M.32	Improvement of data collection																								■	■			
Urban, sub-urban and regional																													
Infrastructure																													
U.1	Intermodal terminals development									■	■	■	■	■	■	■	■												
U.2	Infrastructure development									■		■	■	■	■	■	■												
U.3	Station development									■		■	■	■	■	■	■												
U.4	Separation of modes - prioritization to PT, removal of bottlenecks									■		■	■	■	■	■	■												
U.5	Increase of intermodality (P&R, etc.)									■		■	■	■	■	■	■												
U.6	Filling stations for alternative fuel																											■	
U.7	Environmental protection																										■		
U.8	Improvement of safety and security																									■			
Operation and organization																													
U.9	Sector reorganization																								■	■			■
U.10	Improvement of data collection																								■	■	■		
U.11	Adaptation of the legal framework and the implementation rules (PSC)									■	■	■	■	■	■	■	■								■	■			■
U.12	Increase financial sustainability																								■	■			■
U.13	Fare collection and joint ticketing systems									■	■	■	■	■	■	■	■								■	■			■
U.14	Introduction of on-demand PT services									■	■														■	■			■
U.15	Adjustment of timetable (coordinated)									■	■	■	■	■	■	■	■									■			
U.16	Administrative capacity and training																								■	■			
U.17	Purchase of new rolling stock									■	■	■	■	■	■	■	■									■	■	■	
U.18	Traffic reorganization									■	■	■	■	■	■	■	■									■	■		
U.19	Information platform																								■	■	■		
U.20	Support of non-profit groups in the transport area																								■	■			
U.21	Traffic and logistic management and information									■	■	■	■	■	■	■	■								■	■			■
U.22	Review/update local/regional Transport Masterplans																								■	■			

4.3. MEASURES RELEVANT FUNCTIONALITIES

The projects to be defined to implement a measure can differ completely depending on the main functionalities identified for the measure.

For example, a measure requiring the modernisation of a railway line will lead to completely different projects if the functionality of the line is related to freight (relevant criteria is primarily the axle load, siding length, traffic management and safety), long distance passengers (relevant criteria is primarily the speed, comfort, reliability) or commuters (relevant criteria is primarily the frequency, regularity, integration with other public transport modes, high density of stops).

Due to that and to complement the table containing the description of the measures, the following tables show the main functionalities for each measures distinguishing between:

- Commuter transport (Comm),
- Intercity Transport (IC-long distance passengers),
- Freight transport,
- IT systems.

RAIL					
Rail network elements		Comm	IC	Freight	IT system
R.1	Zagreb - SI border towards Ljubljana (core/X/Mediterranean)	x	x	x	x
R.2	Zagreb - Karlovac (core/Vb/Mediterranean)	x		x	x
R.3	Karlovac+ to Rijeka (core/Vb/Mediterranean)			x	x
R.4	Rijeka regional	x			x
R.5	Zagreb - Križevci (core/Vb/Mediterranean)	x	x	x	x
R.6	Križevci -HU border towards Budapest (core/Vb/Mediterranean)		x	x	x
R.7	Zagreb - Novska (core/X)	x	x	x	x
R.8	Novska - SRB border towards Belgrade (core/X)		x	x	x
R.9	HU border - Osijek - BIH border (comprehensive/core/Vc)			x	x
R.10	Regional connection Vinkovci - Vukovar (core/access to corridor X)	x	x	x	x
R.11	Zagreb local	x			x
R.12	Zagreb regional	x			x
R.13	Zagreb freight			x	x
R.14	Zagreb airport connection	x	x		x
R.15	Zagreb main station	x	x		x
Rail network		Comm	IC	Freight	IT system
R.16	ETCS L1, L2 on other lines, GSM-R				x
R.17	Electrification of other lines	x		x	
R.18	Rehabilitation, upgrading of other lines	x		x	x

RAIL					
R.19	Regional traffic other than Zagreb and Rijeka (Split, Varaždin, Osijek, etc.)	x			x
R.20	Improvements and new marshalling yards			x	x
R.21	Improvement of safety at crossing, axle load detectors, hot axle detectors, etc.	x	x	x	x
R.22	Added value services and improvement of the railway image	x	x		x
R.23	Intermodal passenger hubs	x	x		x
R.24	Intermodal freight hubs			x	x
R.25	Development of concept of maintenance of the existing infrastructure	x	x	x	x
R.26	Energy efficiency	x	x	x	x
Rail operation/organization		Comm	IC	Freight	IT system
R.27	Reorganization of Track access charge	x	x	x	x
R.28	Multi annual PSC	x	x		x
R.29	Increase financial sustainability	x	x	x	
R.30	Reorganization of the railway transport system	x	x	x	
R.31	Improvement of passenger rolling stock	x	x		x
R.32	Improvement of freight rolling stock			x	x
R.33	Update legislation and planning guidelines	x	x	x	x
R.34	Prepare for changes in Schengen borders	x	x	x	x
R.35	Preparation/adaptation of non-Schengen borders	x	x	x	x
R.36	Liberalization of operations for passengers	x	x		x
R.37	Liberalization of operations for freight			x	x
R.38	Increase administrative capacity/training	x	x	x	
R.39	Reorganization of the operations/time schedules	x	x	x	x
R.40	Information platforms	x	x	x	x
R.41	Reduce environmental impact	x	x	x	x
R.42	Improvement of data collection	x	x	x	x

ROAD					
Road network elements		Comm	IC	Freight	IT system
Ro.1	Gradiška bridge connection	x	x	x	x
Ro.2	A5 Osijek - HU border Pecs (comprehensive/Vc)	x	x	x	x
Ro.3	A5 from A3 to BIH border (comprehensive/Vc)	x	x	x	x
Ro.4	A7 Križišće to Žuta Lokva (comprehensive/Adriatic Ionian corridor)		x	x	x
Ro.5	A11 Lekenik - Sisak	x			x
Ro.6	DC 10 Vrbovec - Križevci - Koprivnica - Hungarian border towards Kaposvar		x	x	x
Ro.7	DC 12 Vrbovec 2 interchange - Ivanja Reka - Vrbovec - Bjelovar - Virovitica - Hungarian border towards Barcsu		x	x	x
Ro.8	Zagreb main network reorganization	x	x	x	x
Ro.9	D2 from SLO border to SRB border	x		x	x
Ro.10	Rijeka network reorganization	x	x	x	
Ro.11	Dubrovnik - ME border		x	x	
Ro.12	Increase of capacity - dedicated PT lane between Zagreb and Karlovac	x	x		x
Ro.13	Increase of capacity - dedicated PT lane Zagreb bypass	x	x		x
Ro.14	Slavonski Brod port access improvement			x	x
Ro.15	Split network reorganization	x	x	x	x
Ro.16	Preparation for accessibility of Dubrovnik when Croatia joins Schengen	x	x	x	x
Road network		Comm	IC	Freight	IT system
Ro.17	Develop maintenance concept (including maintenance stations) of the road network	x	x	x	x
Ro.18	Secondary and tertiary road rehabilitation and realignment	x			x
Ro.19	Develop a resting station concept for the high level road network		x	x	
Ro.20	Traffic management, monitoring, traffic counting and information system	x	x	x	x
Ro.21	Interchange development plan	x	x	x	x
Ro.22	Road safety	x	x	x	x
Ro.23	Network development to intermodal hubs, agglomerations in line with demand	x	x	x	
Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)	x	x		x
Ro.25	Reduce environmental impact	x	x	x	x
Ro.26	Energy efficiency	x	x	x	x
Road operation/organization		Comm	IC	Freight	IT system
Ro.27	Update legislation and planning guidelines	x	x	x	x
Ro.28	Increase administrative capacity/training	x	x	x	
Ro.29	Preparation/adaptation for Schengen borders	x	x	x	x

ROAD					
Ro.30	Preparation/adaptation of non-Schengen borders	x	x	x	x
Ro.31	Improve financial sustainability of the road network and tolling system	x	x	x	x
Ro.32	Information platforms	x	x	x	x
Ro.33	Recategorization of the road network	x	x	x	x
Ro.34	Enforcement	x	x	x	x
Ro.35	Improvement of data collection	x	x	x	x

AVIATION					
Airports		Comm	IC	Freight	IT system
A.1	Dubrovnik airport development (comprehensive)		x		x
A.2	Pula airport development (comprehensive)		x		x
A.3	Brač airport development		x		x
A.4	Mali Lošinj airport development		x		x
A.5	Osijek airport development (comprehensive)		x		x
A.6	Rijeka airport development (comprehensive)		x		x
A.7	Split airport development (comprehensive)		x		x
A.8	Zadar airport development (comprehensive)		x		x
A.9	Zagreb airport development (core)		x		x
A.10	Accessibility of airports		x	x	
A.11	Airport safety		x		x
A.12	Energy efficiency		x		x
A.13	Closure or change of role/ownership of regional airports		x		
Air traffic operation/organization		Comm	IC	Freight	IT system
A.14	Adaptation of legal national framework as well as the implementation rules	x	x	x	x
A.15	Improvement of the cooperation with the relevant regional authorities	x	x		
A.16	Restructuring of Croatia Airlines	x	x		
A.17	Information platform	x	x		x
A.18	System reorganization and planning	x	x		x
A.19	Cooperation with aeronautical industry				x
A.20	Air traffic management, Single European Sky, SESAR	x	x	x	x
A.21	Improving consumer satisfaction awareness	x	x		
A.22	Increase financial sustainability of airports	x	x		
A.23	Limit environmental impact	x	x		x
A.24	Review/update Airport Masterplans	x	x		x
A.25	Cooperation/agreements with other international airports		x		x
A.26	Increase administrative capacity/training	x	x		
A.27	Improvement of data collection	x	x	x	x

INLAND NAVIGATION					
Ports and navigability		Comm	IC	Freight	IT system
I.1	Upgrading Danube and Drava until Osijek	x		x	x
I.2	Upgrading Sava	x		x	x
I.3	Vukovar port development (core)			x	
I.4	Osijek port development (comprehensive)			x	
I.5	Slavonski Brod port development (core)			x	
I.6	Sisak port development (comprehensive)			x	
I.7	Building the Danube Sava canal	x		x	x
I.8	Safety, RIS, signalization system, etc.	x		x	x
I.9	Interoperability, accessibility with other modes	x		x	x
I.10	Energy efficiency	x		x	x
I.11	Dangerous goods terminal and waste management facilities			x	x
I.12	Environmental protection	x		x	x
Inland navigability operation/organization		Comm	IC	Freight	IT system
I.13	Adaptation of legal national framework as well as the implementation rules	x		x	x
I.14	Increase administrative capacity/training	x		x	
I.15	Increase the financial sustainability	x		x	
I.16	Cooperation with Croatian shipping industry			x	x
I.17	Information platform	x		x	x
I.18	Support to water transport companies	x		x	
I.19	Reorganization of the sector	x		x	x
I.20	Increase the fleet of safety and environmental protection vessels	x		x	x
I.21	Cooperation/agreements with other international ports			x	x
I.22	Improvement of data collection	x		x	x

MARITIME					
Ports and navigability		Comm	IC	Freight	IT system
M.1	Increase intermodality and accessibility	x		x	x
M.2	Implementation of the "Motorways of the sea" projects			x	x
M.3	Environmental protection	x		x	x
M.4	Bunkering facilities for gas powered and eco ships			x	
M.5	Navigability	x		x	x
M.6	Improve the accessibility of islands, port development	x			x
M.7	Other ports development (ex. Korčula, Pula…)	x			x
M.8	Specialise Rijeka port (container, liquid cargo transport and LNG terminal)	x		x	x
M.9	Specialise Ploče port (container and bulk cargo)			x	x
M.10	Specialise Dubrovnik port (cruising vessels)	x			x

MARITIME					
M.11	Specialise Split port (Ro-Ro, passenger and cruising)	x		x	x
M.12	Specialise Zadar port (Ro-Ro, passenger and cruising)	x		x	x
M.13	Specialise Šibenik port (small capacity cruising and super-yachts)	x			x
M.14	Development of special purpose ports (shipbuilding ports, nautical ports, military ports, industrial ports, fishing ports, sport ports)	x		x	x
M.15	Energy efficiency	x		x	x
M.16	Closure or change of role/ownership of unused ports		x	x	
Maritime operation/organization		Comm	IC	Freight	IT system
M.17	Cooperation with shipping industry			x	x
M.18	Strategical Maritime definition	x		x	x
M.19	Adaptation of national legal framework as well as implementation rules	x		x	x
M.20	Improvement of operational plan (ship routing, etc.)	x		x	x
M.21	Traffic management and IT system, VTMIS	x		x	x
M.22	Improvement of the maritime education and training (MET) systems	x		x	
M.23	Training and capacity building	x		x	
M.24	Reorganization of the maritime transport system	x		x	x
M.25	Information platform, database	x		x	x
M.26	PSC concession reorganization	x			x
M.27	Maritime safety, inspections, SAR cooperation	x		x	x
M.28	Modernisation of the vessels (safety, energy efficiency and environment)	x		x	x
M.29	Cooperation/agreements with other international ports			x	x
M.30	Increase the financial sustainability	x		x	
M.31	Development of concept of maintenance	x		x	x
M.32	Improvement of data collection	x		x	x

URBAN, SUBURBAN AND REGIONAL					
Infrastructure		Comm	IC	Freight	IT system
U.1	Intermodal terminals development	x			x
U.2	Infrastructure development	x			x
U.3	Stations and stops development	x			x
U.4	Separation of modes - prioritization to PT, removal of bottlenecks	x			x
U.5	Increase of intermodality (P&R, etc.)	x			x
U.6	Filling stations for alternative fuel	x			*
U.7	Environmental protection	x			x
U.8	Improvement of safety and security	x			x
Operation and organization		Comm	IC	Freight	IT system

URBAN, SUBURBAN AND REGIONAL					
U.9	Sector reorganization	x			
U.10	Improvement of data collection	x			x
U.11	Adaptation of the legal framework and the implementation rules (PSC)	x			x
U.12	Increase financial sustainability	x			x
U.13	Fare collection and joint ticketing systems	x			x
U.14	Introduction of on-demand PT services	x			x
U.15	Adjustment of timetable (coordinated)	x			x
U.16	Administrative capacity and training	x			
U.17	Purchase of new rolling stock	x			x
U.18	Traffic reorganization	x			x
U.19	Information platform	x			x
U.20	Support of non-profit groups in the transport area	x			
U.21	Traffic and logistics management and information	x			x
U.22	Review/update local/regional Transport Masterplans	x			x

4.4. ALTERNATIVE GROUPS OF MEASURES PER OBJECTIVE

The methodology applied for the preparation of the Transport Development Strategy has led to the definition of measures which can contribute to the fulfilment of each strategic objective.

For each objective, several measures have been identified in the different sectors which if implemented would contribute to achieving the relevant objective. However, due to budgetary and capacity limitations and to the level of readiness of the different measures, not all of them can be implemented simultaneously and in some cases the implementation of two measures can jeopardise the feasibility of the other one.

Due to that, the next step of the process is established taking into account a combination of technical, economic, social and environmental criteria.

To facilitate the process of prioritisation of measures, for each objective different groups of measures, each group of measures being an alternative, have been identified. However, due to the limited quantity and quality of the currently available transport data, the measures have been grouped per transport mode as it is currently not possible to do a more detailed analysis. For the same reasons, it has not been possible to identify which of the alternatives best meet the objective, from a strictly technical point of view. In the Environmental Report (the accompanying document which makes part of this Strategy) a preliminary analysis on the environmental and social impact of the different alternative groups of measures is presented.

Once the full amount of data is available in further assessment rounds of the Strategy, new alternatives (meaning combinations of several groups of measures totally or partially) could arise (e.g. due to the expected high level of demand, it is necessary to develop road and rail in one area), meaning that several or even all the identified measures might be implemented. At that stage a complete analysis of alternative measures will be made, based on a full range of technical, economic, environmental and social considerations.

The following tables show for each objective the currently identified alternatives (groups of measures). To facilitate the understanding of the tables, some explanations are provided:

- For each objective, measures that clearly show a high degree of internal compatibility, are complementary with each other and proved to be necessary independently of the final decision on the preferred(s) mode(s), will be implemented since they do not compete with any other group of measures. These measures are grouped under the name “GENERAL”.

- For each objective, the rest of the measures have been grouped in packages (alternatives), currently mainly divided per transport mode such as, road, rail, aviation, public transport rail, public transport.
- Some of the measures have a cell highlighted in yellow. This is related to the tables shown in chapter 4.2 linking the objectives and the measures. As stated there, the link between a measure and an objective is not always fully proved. Consequently, a yellow highlighted cell in this table means that the link between the objective and that measure is not fully confirmed.
- For objective **1a Border bottlenecks elimination**, no groups of measures have been defined as it is necessary to solve all the bottlenecks at borders, especially due to the potential adhesion of Croatia to the Schengen treaty.

ALTERNATIVE	OBJECTIVE	
	1 Improvement of transport connectivity and coordination with neighbouring countries	
	1b Improvement of international passengers long distance accessibility (including transit traffic)	
GENERAL	**R.25**	Development of concept of maintenance of the existing infrastructure
	R.34	Prepare for changes in Schengen borders
	R.35	Preparation/adaptation of non-Schengen borders
	R.36	Liberalization of operations for passengers
	R.39	Reorganization of the operations/time schedules
	Ro.17	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.29	Preparation/adaptation for Schengen borders
	Ro.30	Preparation/adaptation of non-Schengen borders
	A.25	Cooperation/agreements with other international airports
	M.5	Navigability
	M.20	Improvement of operational plan (ship routing, etc.)
	M.21	Traffic management and IT system, VTMIS
	M.27	Maritime safety, inspections, SAR cooperation
	M.29	Cooperation/agreements with other international ports
	M.31	Development of concept of maintenance
	Ro.21	Interchange development plan
	Ro.23	Network development to intermodal hubs, agglomerations in line with demand
	Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
	M.22	Improvement of the maritime education and training (MET) systems
AIR	**A.1**	Dubrovnik airport development (comprehensive)
	A.2	Pula airport development (comprehensive)
	A.3	Brač airport development
	A.4	Mali Lošinj airport development
	A.5	Osijek airport development (comprehensive)
	A.6	Rijeka airport development (comprehensive)
	A.7	Split airport development (comprehensive)
	A.8	Zadar airport development (comprehensive)

ALTERNATIVE		OBJECTIVE	
		1 Improvement of transport connectivity and coordination with neighbouring countries	
		1b Improvement of international passengers long distance accessibility (including transit traffic)	
		A.9	Zagreb airport development (core)
		A.10	Accessibility of airports
PUBLIC TRANSPORT	RAIL	**R.1**	Zagreb - SI border towards Ljubljana (core/X/Mediterranean)
		R.5	Zagreb - Križevci (core/Vb/Mediterranean)
		R.6	Križevci - HU border towards Budapest (core/Vb/Mediterranean)
		R.7	Zagreb - Novska (core/X)
		R.8	Novska - SRB border towards Belgrade (core/X)
		R.16	ETCS L1, L2 on other lines, GSM-R
		R.23	Intermodal passenger hubs
		R.31	Improvement of passenger rolling stock
	ROAD	**Ro.13**	Increase of capacity - dedicated PT lane Zagreb bypass
ROAD		**Ro.1**	Gradiška bridge connection
		Ro.2	A5 Osijek - HU border Pecs (comprehensive/Vc)
		Ro.3	A5 from A3 to BIH border (comprehensive/Vc)
		Ro.6	DC 10 Vrbovec - Križevci - Koprivnica - Hungarian border towards Kaposvar
		Ro.7	DC 12 Vrbovec 2 interchange - Ivanja Reka - Vrbovec - Bjelovar - Virovitica - Hungarian border towards Barcsu
		Ro.11	Dubrovnik - ME border
		Ro.16	Preparation for accessibility of Dubrovnik when Croatia joins Schengen
MARITIME		**M.1**	Increase intermodality and accessibility
		M.6	Improve the accessibility of islands, port development
		M.7	Other ports development (ex. Korčula, Pula…)
		M.8	Specialise Rijeka port (container, liquid cargo transport and LNG terminal)
		M.10	Specialise Dubrovnik port (cruising vessels)
		M.11	Specialise Split port (Ro-Ro, passenger and cruising)
		M.12	Specialise Zadar port (Ro-Ro, passenger and cruising)
		M.13	Specialise Šibenik port (small capacity cruising and super-yachts)
		M.28	Modernisation of the vessels (safety, energy efficiency and environment)

7 Table Alternative groups of measures for objective 1b

ALTERNATIVE	OBJECTIVE	
	1 Improvement of transport connectivity and coordination with neighbouring countries	
	1c Improvement of international freight accessibility (including transit traffic)	
GENERAL	**R.25**	Development of concept of maintenance of the existing infrastructure
	R.34	Prepare for changes in Schengen borders
	R.35	Preparation/adaptation of non-Schengen borders
	R.37	Liberalization of operations for freight
	R.39	Reorganization of the operations/time schedules
	Ro.17	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.29	Preparation/adaptation for Schengen borders
	Ro.30	Preparation/adaptation of non-Schengen borders
	A.20	Air traffic management, Single European Sky, SESAR
	A.25	Cooperation/agreements with other international airports
	I.8	Safety, RIS, signalization system, etc.
	I.21	Cooperation/agreements with other international ports
	M.5	Navigability
	M.20	Improvement of operational plan (ship routing, etc.)
	M.21	Traffic management and IT system, VTMIS
	M.27	Maritime safety, inspections, SAR cooperation
	M.29	Cooperation/agreements with other international ports
	M.31	Development of concept of maintenance
	Ro.21	Interchange development plan
	M.22	Improvement of MET systems
AIR	**A.10**	Accessibility of airports
INLAND WATERWAYS	**I.1**	Upgrading Danube and Drava until Osijek
	I.2	Upgrading Sava
	I.3	Vukovar port development (core)
	I.4	Osijek port development (comprehensive)
	I.7	Building the Danube Sava canal
	I.5	Slavonski Brod port development (core)

ALTERNATIVE	OBJECTIVE	
	1 Improvement of transport connectivity and coordination with neighbouring countries	
	1c Improvement of international freight accessibility (including transit traffic)	
	I.6	Sisak port development (comprehensive)
	I.11	Dangerous goods terminal and waste management facilities
ROAD	Ro.1	Gradiška bridge connection
	Ro.2	A5 Osijek - HU border Pecs (comprehensive/Vc)
	Ro.3	A5 from A3 to BIH border (comprehensive/Vc)
	Ro.9	D2 from SLO border to SRB border
	Ro.11	Dubrovnik - ME border
	Ro.16	Preparation for accessibility of Dubrovnik when Croatia joins Schengen
	Ro.6	DC 10 Vrbovec - Križevci - Koprivnica - Hungarian border towards Kaposvar
	Ro.7	DC 12 Vrbovec 2 interchange - Ivanja Reka - Vrbovec - Bjelovar - Virovitica - Hungarian border towards Barcsu
MARITIME	M.1	Increase intermodality and accessibility
	M.2	Implementation of the "Motorways of the sea" projects
	M.8	Specialise Rijeka port (container, liquid cargo transport and LNG terminal)
	M.9	Specialise Ploče port (container and bulk cargo)
	M.12	Specialise Zadar port (Ro-Ro, passenger and cruising)
	M.28	Modernisation of the vessels (safety, energy efficiency and environment)
	M.4	Bunkering facilities for gas powered and eco ships
RAIL	R.1	Zagreb - SI border towards Ljubljana (core/X/Mediterranean)
	R.2	Zagreb - Karlovac (core/Vb/Mediterranean)
	R.3	Karlovac + to Rijeka (core/Vb/Mediterranean)
	R.5	Zagreb - Križevci (core/Vb/Mediterranean)
	R.6	Križevci - HU border towards Budapest (core/Vb/Mediterranean)
	R.7	Zagreb - Novska (core/X)
	R.8	Novska - SRB border towards Belgrade (core/X)
	R.9	HU border - Osijek - BIH border (comprehensive/core/Vc)
	R.10	Regional connection Vinkovci - Vukovar (core/access to corridor X)
	R.16	ETCS L1, L2 on other lines, GSM-R
	R.17	Electrification of other lines

ALTERNATIVE	OBJECTIVE	
	1 Improvement of transport connectivity and coordination with neighbouring countries	
	1c Improvement of international freight accessibility (including transit traffic)	
	R.18	Rehabilitation, upgrading of other lines
	R.20	Improvements and new marshalling yards
	R.24	Intermodal freight hubs
	R.32	Improvement of freight rolling stock

8 Table Alternative groups of measures for objective 1c

ALTERNATIVE		OBJECTIVE	
		2 Improvement of passengers long distance accessibility inside Croatia	
		2a Improvement of passengers long distance accessibility - Central Croatia (Zagreb)	
GENERAL		**R.25**	Development of concept of maintenance of the existing infrastructure
		R.34	Prepare for changes in Schengen borders
		R.35	Preparation/adaptation of non-Schengen borders
		R.36	Liberalization of operations for passengers
		R.39	Reorganization of the operations/time schedules
		Ro.17	Develop maintenance concept (including maintenance stations) of the road network
		Ro.20	Traffic management, monitoring, traffic counting and information system
		Ro.21	Interchange development plan
		Ro.29	Preparation/adaptation for Schengen borders
		Ro.30	Preparation/adaptation of non-Schengen borders
		A.20	Air traffic management, Single European Sky, SESAR
		Ro.8	Zagreb main network reorganization
		Ro.23	Network development to intermodal hubs, agglomerations in line with demand
		Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
AIR		**A.9**	Zagreb airport development (core)
		A.10	Accessibility of airports
PUBLIC TRANSPORT	RAIL	**R.7**	Zagreb - Novska (core/X)
		R.8	Novska - SRB border towards Belgrade (core/X)
		R.14	Zagreb airport connection
		R.15	Zagreb main station
		R.16	ETCS L1, L2 on other lines, GSM-R
		R.23	Intermodal passenger hubs
		R.31	Improvement of passenger rolling stock
	ROAD	**Ro.12**	Increase of capacity - dedicated PT lane between Zagreb and Karlovac
		Ro.13	Increase of capacity - dedicated PT lane Zagreb bypass
ROAD		**Ro.33**	Recategorization of the road network

9 Table Alternative groups of measures for objective 2a

ALTERNATIVE	OBJECTIVE	
	2 Improvement of passengers long distance accessibility inside Croatia	
	2b Improvement of passengers long distance accessibility - Northern Adriatic (Rijeka)	
GENERAL	**Ro.10**	Rijeka network reorganization
	Ro.17	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.21	Interchange development plan
	Ro.29	Preparation/adaptation for Schengen borders
	Ro.30	Preparation/adaptation of non-Schengen borders
	A.20	Air traffic management, Single European Sky, SESAR
	Ro.23	Network development to intermodal hubs, agglomerations in line with demand
	Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
AIR	**A.2**	Pula airport development (comprehensive)
	A.6	Rijeka airport development (comprehensive)
	A.10	Accessibility of airports
	A.4	Mali Lošinj airport development
ROAD	**Ro.4**	A7 Križišće to Žuta Lokva (comprehensive/Adriatic Ionian corridor)
	Ro.33	Recategorization of the road network

10 Table Alternative groups of measures for objective 2b

ALTERNATIVE		OBJECTIVE	
		2 Improvement of passengers long distance accessibility inside Croatia	
		2c Improvement of passengers long distance accessibility - Eastern Croatia (Osijek - Slavonski Brod)	
GENERAL		**R.25**	Development of concept of maintenance of the existing infrastructure
		R.34	Prepare for changes in Schengen borders
		R.35	Preparation/adaptation of non-Schengen borders
		R.36	Liberalization of operations for passengers
		R.39	Reorganization of the operations/time schedules
		Ro.17	Develop maintenance concept (including maintenance stations) of the road network
		Ro.20	Traffic management, monitoring, traffic counting and information system
		Ro.21	Interchange development plan
		Ro.29	Preparation/adaptation for Schengen borders
		Ro.30	Preparation/adaptation of non-Schengen borders
		A.20	Air traffic management, Single European Sky, SESAR
		Ro.23	Network development to intermodal hubs, agglomerations in line with demand
		Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
AIR		**A.5**	Osijek airport development (comprehensive)
		A.10	Accessibility of airports
PUBLIC TRANSPORT	RAIL	**R.7**	Zagreb - Novska (core/X)
		R.8	Novska - SRB border towards Belgrade (core/X)
		R.10	Regional connection Vinkovci - Vukovar (core/access to corridor X)
		R.16	ETCS L1, L2 on other lines, GSM-R
		R.23	Intermodal passenger hubs
		R.31	Improvement of passenger rolling stock
ROAD		**Ro.33**	Recategorization of the road network

11 Table Alternative groups of measures for objective 2c

ALTERNATIVE	OBJECTIVE	
	2 Improvement of passengers long distance accessibility inside Croatia	
	2d Improvement of passengers long distance accessibility - Northern and Central Dalmatia (Split - Zadar)	
GENERAL	**Ro.15**	Split network reorganization
	Ro.17	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.21	Interchange development plan
	Ro.29	Preparation/adaptation for Schengen borders
	Ro.30	Preparation/adaptation of non-Schengen borders
	A.20	Air traffic management, Single European Sky, SESAR
	Ro.23	Network development to intermodal hubs, agglomerations in line with demand
	Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
AIR	**A.3**	Brač airport development
	A.7	Split airport development (comprehensive)
	A.8	Zadar airport development (comprehensive)
	A.10	Accessibility of airports
	A.4	Mali Lošinj airport development
ROAD	**Ro.4**	A7 Križišće to Žuta Lokva (comprehensive/Adriatic Ionian corridor)
	Ro.16	Preparation for accessibility of Dubrovnik when Croatia joins Schengen
	Ro.33	Recategorization of the road network

12 Table Alternative groups of measures for objective 2d

ALTERNATIVE	OBJECTIVE	
	2 Improvement of passengers long distance accessibility inside Croatia	
	2e Improvement of passengers long distance accessibility - Southern Dalmatia (Dubrovnik)	
GENERAL	**Ro.17**	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.21	Interchange development plan
	Ro.29	Preparation/adaptation for Schengen borders
	Ro.30	Preparation/adaptation of non-Schengen borders
	A.20	Air traffic management, Single European Sky, SESAR
	Ro.23	Network development to intermodal hubs, agglomerations in line with demand
	Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
AIR	**A.1**	Dubrovnik airport development (comprehensive)
	A.10	Accessibility of airports
ROAD	**Ro.16**	Preparation for accessibility of Dubrovnik when Croatia joins Schengen
	Ro.33	Recategorization of the road network

13 Table Alternative groups of measures for objective 2e

ALTERNATIVE	OBJECTIVE	
	3 Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion	
	3a Improving the regional connectivity on the mainland	
GENERAL	**R.25**	Development of concept of maintenance of the existing infrastructure
	R.28	Multi annual PSC
	R.36	Liberalization of operations for passengers
	R.39	Reorganization of the operations/time schedules
	Ro.8	Zagreb main network reorganization
	Ro.10	Rijeka network reorganization
	Ro.15	Split network reorganization
	Ro.17	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.21	Interchange development plan
	Ro.23	Network development to intermodal hubs, agglomerations in line with demand
	Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
	I.8	Safety, RIS, signalization system, etc.
	U.1	Intermodal terminals development
	U.4	Separation of modes - prioritization to PT, removal of bottlenecks
	U.5	Increase of intermodality (P&R, etc.)
	U.11	Adaptation of the legal framework and the implementation rules (PSC)
	U.13	Fare collection and joint ticketing systems
	U.15	Adjustment of timetable (coordinated)
	U.18	Traffic reorganization
	U.21	Traffic and logistics management and information
	I.9	Interoperability, accessibility with other modes
AIR	**A.13**	Closure or change of role/ownership of regional airports
INLAND WATERWAYS	**I.1**	Upgrading Danube and Drava until Osijek
	I.2	Upgrading Sava
	I.3	Vukovar port development (core)
	I.4	Osijek port development (comprehensive)
	I.5	Slavonski Brod port development (core)

ALTERNATIVE		OBJECTIVE	
		3 Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion	
		3a Improving the regional connectivity on the mainland	
		I.6	Sisak port development (comprehensive)
		I.7	Building the Danube Sava canal
PUBLIC TRANSPORT	RAIL	**R.1**	Zagreb - SI border towards Ljubljana (core/X/Mediterranean)
		R.2	Zagreb - Karlovac (core/Vb/Mediterranean)
		R.4	Rijeka regional
		R.5	Zagreb - Križevci (core/Vb/Mediterranean)
		R.7	Zagreb - Novska (core/X)
		R.10	Regional connection Vinkovci - Vukovar (core/access to corridor X)
		R.12	Zagreb regional
		R.14	Zagreb airport connection
		R.15	Zagreb main station
		R.16	ETCS L1, L2 on other lines, GSM-R
		R.17	Electrification of other lines
		R.18	Rehabilitation, upgrading of other lines
		R.19	Regional traffic other than Zagreb and Rijeka (Split, Varaždin, Osijek, etc.)
		R.23	Intermodal passenger hubs
		R.31	Improvement of passenger rolling stock
	ROAD	**Ro.12**	Increase of capacity - dedicated PT lane between Zagreb and Karlovac
		Ro.13	Increase of capacity - dedicated PT lane Zagreb bypass
	URBAN	**U.2**	Infrastructure development
		U.3	Stations and stops development
		U.14	Introduction of on-demand PT services
		U.17	Purchase of new rolling stock
ROAD		**Ro.1**	Gradiška bridge connection
		Ro.2	A5 Osijek - HU border Pecs (comprehensive/Vc)
		Ro.3	A5 from A3 to BIH border (comprehensive/Vc)
		Ro.5	A11 Lekenik - Sisak
		Ro.9	D2 from SLO border to SRB border

ALTERNATIVE	OBJECTIVE	
	3 Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion	
	3a Improving the regional connectivity on the mainland	
	Ro.16	Preparation for accessibility of Dubrovnik when Croatia joins Schengen
	Ro.18	Secondary and tertiary road rehabilitation and realignment
	Ro.33	Recategorization of the road network
	Ro.6	DC 10 Vrbovec - Križevci - Koprivnica - Hungarian border towards Kaposvar
	Ro.7	DC 12 Vrbovec 2 interchange - Ivanja Reka - Vrbovec - Bjelovar - Virovitica - Hungarian border towards Barcsu

14 Table Alternative groups of measures for objective 3a

ALTERNATIVE		OBJECTIVE	
		3 Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion	
		3b Improving the regional connectivity to/from/between the islands	
GENERAL		**Ro.10**	Rijeka network reorganization
		Ro.15	Split network reorganization
		Ro.17	Develop maintenance concept (including maintenance stations) of the road network
		Ro.21	Interchange development plan
		Ro.23	Network development to intermodal hubs, agglomerations in line with demand
		Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
		M.5	Navigability
		M.20	Improvement of operational plan (ship routing, etc.)
		M.21	Traffic management and IT system, VTMIS
		M.26	PSC concession reorganization
		M.27	Maritime safety, inspections, SAR cooperation
		M.31	Development of concept of maintenance
		U.1	Intermodal terminals development
		U.11	Adaptation of the legal framework and the implementation rules (PSC)
		U.13	Fare collection and joint ticketing systems
		U.15	Adjustment of timetable (coordinated)
		U.18	Traffic reorganization
		U.21	Traffic and logistics management and information
		M.22	Improvement of MET systems
		U.5	Increase of intermodality (P&R, etc.)
AIR		**A.13**	Closure or change of role/ownership of regional airports
PUBLIC TRANSPORT	URBAN	**U.14**	Introduction of on-demand PT services
		U.17	Purchase of new rolling stock
		U.2	Infrastructure development
		U.3	Stations and stops development
	MARITIME	**M.6**	Improve the accessibility of islands, port development
ROAD		**Ro.18**	Secondary and tertiary road rehabilitation and realignment
		Ro.33	Recategorization of the road network

ALTERNATIVE	OBJECTIVE	
	3 Improvement of the passenger regional connectivity in Croatia enhancing territorial cohesion	
	3b Improving the regional connectivity to/from/between the islands	
MARITIME	**M.1**	Increase intermodality and accessibility
	M.7	Other ports development (ex. Korčula, Pula…)
	M.8	Specialise Rijeka port (container, liquid cargo transport and LNG terminal)
	M.10	Specialise Dubrovnik port (cruising vessels)
	M.11	Specialise Split port (Ro-Ro, passenger and cruising)
	M.12	Specialise Zadar port (Ro-Ro, passenger and cruising)
	M.13	Specialise Šibenik port (small capacity cruising and super-yachts)
	M.28	Modernisation of the vessels (safety, energy efficiency and environment)
	M.14	Development of special purpose ports (shipbuilding ports, nautical ports, military ports, industrial ports, fishing ports, sport ports)

15 Table Alternative groups of measures for objective 3b

ALTERNATIVE		OBJECTIVE	
		4 Improvement of the passengers accessibility to and within the main urban agglomerations	
		4a Improvement of the passengers accessibility - Zagreb node	
GENERAL		**R.25**	Development of concept of maintenance of the existing infrastructure
		R.28	Multi annual PSC
		R.36	Liberalization of operations for passengers
		R.39	Reorganization of the operations/time schedules
		Ro.9	Zagreb main network reorganization
		Ro.17	Develop maintenance concept (including maintenance stations) of the road network
		Ro.20	Traffic management, monitoring, traffic counting and information system
		Ro.21	Interchange development plan
		Ro.23	Network development to intermodal hubs, agglomerations in line with demand
		Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
		U.1	Intermodal terminals development
		U.4	Separation of modes - prioritization to PT, removal of bottlenecks
		U.5	Increase of intermodality (P&R, etc.)
		U.11	Adaptation of the legal framework and the implementation rules (PSC)
		U.13	Fare collection and joint ticketing systems
		U.15	Adjustment of timetable (coordinated)
		U.18	Traffic reorganization
		U.21	Traffic and logistics management and information
PUBLIC TRANSPORT	RAIL	**R.1**	Zagreb - SI border towards Ljubljana (core/X/Mediterranean)
		R.2	Zagreb - Karlovac (core/Vb/Mediterranean)
		R.5	Zagreb - Križevci (core/Vb/Mediterranean)
		R.7	Zagreb - Novska (core/X)
		R.11	Zagreb local
		R.14	Zagreb airport connection
		R.15	Zagreb main station
		R.16	ETCS L1, L2 on other lines, GSM-R
		R.17	Electrification of other lines
		R.18	Rehabilitation, upgrading of other lines
		R.23	Intermodal passenger hubs
		R.31	Improvement of passenger rolling stock
	ROAD	**Ro.12**	Increase of capacity - dedicated PT lane between Zagreb and Karlovac
		Ro.13	Increase of capacity - dedicated PT lane Zagreb bypass
	URBAN	**U.2**	Infrastructure development
		U.3	Stations and stops development
		U.17	Purchase of new rolling stock
		U.14	Introduction of on-demand PT services
ROAD		**Ro.5**	A11 Lekenik - Sisak
		Ro.18	Secondary and tertiary road rehabilitation and realignment
		Ro.33	Recategorization of the road network

16 Table Alternative groups of measures for objective 4a

ALTERNATIVE		OBJECTIVE	
		4 Improvement of the passengers accessibility to and within the main urban agglomerations	
		4b Improvement of the passengers accessibility - Rijeka node	
GENERAL		**R.25**	Development of concept of maintenance of the existing infrastructure
		R.28	Multi annual PSC
		R.36	Liberalization of operations for passengers
		R.39	Reorganization of the operations/time schedules
		Ro.10	Rijeka network reorganization
		Ro.17	Develop maintenance concept (including maintenance stations) of the road network
		Ro.20	Traffic management, monitoring, traffic counting and information system
		Ro.21	Interchange development plan
		Ro.23	Network development to intermodal hubs, agglomerations in line with demand
		Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
		M.5	Navigability
		M.20	Improvement of operational plan (ship routing, etc.)
		M.21	Traffic management and IT system, VTMIS
		M.26	PSC concession reorganization
		M.27	Maritime safety, inspections, SAR cooperation
		M.31	Development of concept of maintenance
		U.1	Intermodal terminals development
		U.4	Separation of modes - prioritization to PT, removal of bottlenecks
		U.5	Increase of intermodality (P&R, etc.)
		U.11	Adaptation of the legal framework and the implementation rules (PSC)
		U.13	Fare collection and joint ticketing systems
		U.15	Adjustment of timetable (coordinated)
		U.18	Traffic reorganization
		U.21	Traffic and logistics management and information
		M.22	Improvement of MET systems
PUBLIC TRANSPORT	RAIL	**R.4**	Rijeka regional
		R.16	ETCS L1, L2 on other lines, GSM-R
		R.17	Electrification of other lines
		R.18	Rehabilitation, upgrading of other lines
		R.23	Intermodal passenger hubs
		R.31	Improvement of passenger rolling stock
	URBAN	**U.2**	Infrastructure development
		U.3	Stations and stops development
		U.17	Purchase of new rolling stock
		U.14	Introduction of on-demand PT services
	MARITIME	**M.6**	Improve the accessibility of islands, port development
ROAD		**Ro.18**	Secondary and tertiary road rehabilitation and realignment
		Ro.33	Recategorization of the road network
MARITIME		**M.1**	Increase intermodality and accessibility
		M.8	Specialise Rijeka port (container, liquid cargo transport and LNG terminal)
		M.28	Modernisation of the vessels (safety, energy efficiency and environment)
		M.7	Other ports development (ex. Korčula, Pula…)

17 Table Alternative groups of measures for objective 4b

ALTERNATIVE		OBJECTIVE	
		4 Improvement of the passengers accessibility to and within the main urban agglomerations	
		4c Improvement of the passengers accessibility - Zadar node	
GENERAL		**Ro.17**	Develop maintenance concept (including maintenance stations) of the road network
		Ro.20	Traffic management, monitoring, traffic counting and information system
		Ro.21	Interchange development plan
		Ro.23	Network development to intermodal hubs, agglomerations in line with demand
		Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
		M.5	Navigability
		M.20	Improvement of operational plan (ship routing, etc.)
		M.21	Traffic management and IT system, VTMIS
		M.26	PSC concession reorganization
		M.27	Maritime safety, inspections, SAR cooperation
		M.31	Development of concept of maintenance
		U.1	Intermodal terminals development
		U.4	Separation of modes - prioritization to PT, removal of bottlenecks
		U.5	Increase of intermodality (P&R, etc.)
		U.11	Adaptation of the legal framework and the implementation rules (PSC)
		U.13	Fare collection and joint ticketing systems
		U.15	Adjustment of timetable (coordinated)
		U.18	Traffic reorganization
		U.21	Traffic and logistics management and information
		M.22	Improvement of MET systems
PUBLIC TRANSPORT	URBAN	**U.2**	Infrastructure development
		U.3	Stations and stops development
		U.17	Purchase of new rolling stock
		U.14	Introduction of on-demand PT services
	MARITIME	**M.6**	Improve the accessibility of islands, port development
ROAD		**Ro.18**	Secondary and tertiary road rehabilitation and realignment
		Ro.33	Recategorization of the road network
MARITIME		**M.1**	Increase intermodality and accessibility
		M.12	Specialise Zadar port (Ro-Ro, passenger and cruising)
		M.28	Modernisation of the vessels (safety, energy efficiency and environment)
		M.7	Other ports development (ex. Korčula, Pula…)

18 Table Alternative groups of measures for objective 4c

ALTERNATIVE		OBJECTIVE	
		4 Improvement of the passengers accessibility to and within the main urban agglomerations	
		4d Improvement of the passengers accessibility - Split node	
GENERAL		R.25	Development of concept of maintenance of the existing infrastructure
		R.28	Multi annual PSC
		R.36	Liberalization of operations for passengers
		R.39	Reorganization of the operations/time schedules
		Ro.15	Split network reorganization
		Ro.17	Develop maintenance concept (including maintenance stations) of the road network
		Ro.20	Traffic management, monitoring, traffic counting and information system
		Ro.21	Interchange development plan
		Ro.23	Network development to intermodal hubs, agglomerations in line with demand
		Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
		M.5	Navigability
		M.20	Improvement of operational plan (ship routing, etc.)
		M.21	Traffic management and IT system, VTMIS
		M.26	PSC concession reorganization
		M.27	Maritime safety, inspections, SAR cooperation
		M.31	Development of concept of maintenance
		U.1	Intermodal terminals development
		U.4	Separation of modes - prioritization to PT, removal of bottlenecks
		U.5	Increase of intermodality (P&R, etc.)
		U.11	Adaptation of the legal framework and the implementation rules (PSC)
		U.13	Fare collection and joint ticketing systems
		U.15	Adjustment of timetable (coordinated)
		U.18	Traffic reorganization
		U.21	Traffic and logistics management and information
		M.22	Improvement of MET systems
PUBLIC TRANSPORT	RAIL	R.16	ETCS L1, L2 on other lines, GSM-R
		R.17	Electrification of other lines
		R.18	Rehabilitation, upgrading of other lines
		R.19	Regional traffic other than Zagreb and Rijeka (Split, Varaždin, Osijek, etc.)
		R.23	Intermodal passenger hubs
		R.31	Improvement of passenger rolling stock
	URBAN	U.2	Infrastructure development
		U.3	Stations and stops development
		U.17	Purchase of new rolling stock
		U.14	Introduction of on-demand PT services
	MARITIME	M.6	Improve the accessibility of islands, port development
ROAD		Ro.18	Secondary and tertiary road rehabilitation and realignment
		Ro.33	Recategorization of the road network
MARITIME		M.1	Increase intermodality and accessibility
		M.11	Specialise Split port (Ro-Ro, passenger and cruising)
		M.28	Modernisation of the vessels (safety, energy efficiency and environment)
		M.7	Other ports development (ex. Korčula, Pula…)

19 Table Alternative groups of measures for objective 4d

ALTERNATIVE		OBJECTIVE	
		4 Improvement of the passengers accessibility to and within the main urban agglomerations	
		4e Improvement of the passengers accessibility - Osijek node	
GENERAL		R.25	Development of concept of maintenance of the existing infrastructure
		R.28	Multi annual PSC
		R.36	Liberalization of operations for passengers
		R.39	Reorganization of the operations/time schedules
		Ro.17	Develop maintenance concept (including maintenance stations) of the road network
		Ro.20	Traffic management, monitoring, traffic counting and information system
		Ro.21	Interchange development plan
		Ro.23	Network development to intermodal hubs, agglomerations in line with demand
		Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
		U.1	Intermodal terminals development
		U.4	Separation of modes - prioritization to PT, removal of bottlenecks
		U.5	Increase of intermodality (P&R, etc.)
		U.11	Adaptation of the legal framework and the implementation rules (PSC)
		U.13	Fare collection and joint ticketing systems
		U.15	Adjustment of timetable (coordinated)
		U.18	Traffic reorganization
		U.21	Traffic and logistics management and information
		I.8	Safety, RIS, signalization system, etc.
INLAND WATERWAYS		I.9	Interoperability, accessibility with other modes
		I.1	Upgrading Danube and Drava until Osijek
		I.4	Osijek port development (comprehensive)
PUBLIC TRANSPORT	RAIL	R.16	ETCS L1, L2 on other lines, GSM-R
		R.17	Electrification of other lines
		R.18	Rehabilitation, upgrading of other lines
		R.19	Regional traffic other than Zagreb and Rijeka (Split, Varaždin, Osijek, etc.)
		R.23	Intermodal passenger hubs
		R.31	Improvement of passenger rolling stock
	URBAN	U.2	Infrastructure development
		U.3	Stations and stops development
		U.17	Purchase of new rolling stock
		U.14	Introduction of on-demand PT services
ROAD		Ro.2	A5 Osijek - HU border Pecs (comprehensive/Vc)
		Ro.9	D2 from SLO border to SRB border
		Ro.18	Secondary and tertiary road rehabilitation and realignment
		Ro.33	Recategorization of the road network

20 Table Alternative groups of measures for objective 4e

ALTERNATIVE		OBJECTIVE	
		4 Improvement of the passengers accessibility to and within the main urban agglomerations	
		4f Improvement of the passengers accessibility - Dubrovnik node	
GENERAL		Ro.17	Develop maintenance concept (including maintenance stations) of the road network
		Ro.20	Traffic management, monitoring, traffic counting and information system
		Ro.21	Interchange development plan
		Ro.23	Network development to intermodal hubs, agglomerations in line with demand
		Ro.24	Improve interoperability (intermodal hubs, P&R, etc.)
		M.5	Navigability
		M.20	Improvement of operational plan (ship routing, etc.)
		M.21	Traffic management and IT system, VTMIS
		M.26	PSC concession reorganization
		M.27	Maritime safety, inspections, SAR cooperation
		M.31	Development of concept of maintenance
		U.1	Intermodal terminals development
		U.4	Separation of modes - prioritization to PT, removal of bottlenecks
		U.5	Increase of intermodality (P&R, etc.)
		U.11	Adaptation of the legal framework and the implementation rules (PSC)
		U.13	Fare collection and joint ticketing systems
		U.15	Adjustment of timetable (coordinated)
		U.18	Traffic reorganization
		U.21	Traffic and logistics management and information
		M.22	Improvement of MET systems
PUBLIC TRANSPORT	URBAN	U.2	Infrastructure development
		U.3	Stations and stops development
		U.17	Purchase of new rolling stock
		U.14	Introduction of on-demand PT services
	MARITIME	M.6	Improve the accessibility of islands, port development
ROAD		Ro.16	Preparation for accessibility of Dubrovnik when Croatia joins Schengen
		Ro.18	Secondary and tertiary road rehabilitation and realignment
		Ro.33	Recategorization of the road network
MARITIME		M.1	Increase intermodality and accessibility
		M.10	Specialise Dubrovnik port (cruising vessels)
		M.28	Modernisation of the vessels (safety, energy efficiency and environment)
		M.7	Other ports development (ex. Korčula, Pula…)

21 Table Alternative groups of measures for objective 4f

ALTERNATIVE	OBJECTIVE	
	5 Improvement of freight accessibility inside Croatia	
	5a Improvement of freight accessibility - Central Croatia (Zagreb)	
GENERAL	**R.25**	Development of concept of maintenance of the existing infrastructure
	R.34	Prepare for changes in Schengen borders
	R.35	Preparation/adaptation of non-Schengen borders
	R.37	Liberalization of operations for freight
	R.39	Reorganization of the operations/time schedules
	Ro.17	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.21	Interchange development plan
	Ro.29	Preparation/adaptation for Schengen borders
	Ro.30	Preparation/adaptation of non-Schengen borders
	I.8	Safety, RIS, signalization system, etc.
INLAND WATERWAYS	**I.2**	Upgrading Sava
	I.6	Sisak port development (comprehensive)
	I.7	Building the Danube Sava canal
	I.9	Interoperability, accessibility with other modes
ROAD	**Ro.6**	DC 10 Vrbovec - Križevci - Koprivnica - Hungarian border towards Kaposvar
	Ro.7	DC 12 Vrbovec 2 interchange - Ivanja Reka - Vrbovec - Bjelovar - Virovitica - Hungarian border towards Barcsu
	Ro.9	D2 from SLO border to SRB border
	Ro.33	Recategorization of the road network
	Ro.8	Zagreb main network reorganization
RAIL	**R.1**	Zagreb - SI border towards Ljubljana (core/X/Mediterranean)
	R.2	Zagreb - Karlovac (core/Vb/Mediterranean)
	R.3	Karlovac + to Rijeka (core/Vb/Mediterranean)
	R.7	Zagreb - Novska (core/X)
	R.8	Novska - SRB border towards Belgrade (core/X)
	R.13	Zagreb freight
	R.16	ETCS L1, L2 on other lines, GSM-R

ALTERNATIVE	OBJECTIVE	
	5 Improvement of freight accessibility inside Croatia	
	5a Improvement of freight accessibility - Central Croatia (Zagreb)	
	R.17	Electrification of other lines
	R.18	Rehabilitation, upgrading of other lines
	R.20	Improvements and new marshalling yards
	R.24	Intermodal freight hubs
	R.32	Improvement of freight rolling stock
	R.5	Zagreb - Križevci (core/Vb/Mediterranean)
	R.6	Križevci - HU border towards Budapest (core/Vb/Mediterranean)

22 Table Alternative groups of measures for objective 5a

ALTERNATIVE	OBJECTIVE	
	5 Improvement of freight accessibility inside Croatia	
	5b Improvement of freight accessibility - Northern Adriatic (Rijeka)	
GENERAL	**R.25**	Development of concept of maintenance of the existing infrastructure
	R.34	Prepare for changes in Schengen borders
	R.35	Preparation/adaptation of non-Schengen borders
	R.37	Liberalization of operations for freight
	R.39	Reorganization of the operations/time schedules
	Ro.17	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.21	Interchange development plan
	Ro.29	Preparation/adaptation for Schengen borders
	Ro.30	Preparation/adaptation of non-Schengen borders
	M.5	Navigability
	M.20	Improvement of operational plan (ship routing, etc.)
	M.21	Traffic management and IT system, VTMIS
	M.27	Maritime safety, inspections, SAR cooperation
	M.31	Development of concept of maintenance
	M.22	Improvement of MET systems
ROAD	**Ro.4**	A7 Križišće to Žuta Lokva (comprehensive/Adriatic Ionian corridor)
	Ro.10	Rijeka network reorganization
	Ro.33	Recategorization of the road network
MARITIME	**M.1**	Increase intermodality and accessibility
	M.2	Implementation of the "Motorways of the sea" projects
	M.28	Modernisation of the vessels (safety, energy efficiency and environment)
	M.4	Bunkering facilities for gas powered and eco ships
	M.14	Development of special purpose ports (shipbuilding ports, nautical ports, military ports, industrial ports, fishing ports, sport ports)
RAIL	**R.2**	Zagreb - Karlovac (core/Vb/Mediterranean)
	R.3	Karlovac + to Rijeka (core/Vb/Mediterranean)
	R.16	ETCS L1, L2 on other lines, GSM-R
	R.17	Electrification of other lines

ALTERNATIVE	OBJECTIVE	
	5 Improvement of freight accessibility inside Croatia	
	5b Improvement of freight accessibility - Northern Adriatic (Rijeka)	
	R.18	Rehabilitation, upgrading of other lines
	R.20	Improvements and new marshalling yards
	R.24	Intermodal freight hubs
	R.32	Improvement of freight rolling stock

23 Table Alternative groups of measures for objective 5b

ALTERNATIVE	OBJECTIVE	
	5 Improvement of freight accessibility inside Croatia	
	5c Improvement of freight accessibility - Eastern Croatia (Osijek - Slavonski Brod)	
GENERAL	**R.25**	Development of concept of maintenance of the existing infrastructure
	R.34	Prepare for changes in Schengen borders
	R.35	Preparation/adaptation of non-Schengen borders
	R.37	Liberalization of operations for freight
	R.39	Reorganization of the operations/time schedules
	Ro.17	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.21	Interchange development plan
	Ro.29	Preparation/adaptation for Schengen borders
	Ro.30	Preparation/adaptation of non-Schengen borders
	I.8	Safety, RIS, signalization system, etc.
INLAND WATERWAYS	**I.1**	Upgrading Danube and Drava until Osijek
	I.2	Upgrading Sava
	I.3	Vukovar port development (core)
	I.4	Osijek port development (comprehensive)
	I.5	Slavonski Brod port development (core)
	I.7	Building the Danube Sava canal
	I.9	Interoperability, accessibility with other modes
	I.21	Cooperation/agreements with other international ports
	I.11	Dangerous goods terminal and waste management facilities
ROAD	**Ro.9**	D2 from SLO border to SRB border
	Ro.14	Slavonski Brod port access improvement
	Ro.33	Recategorization of the road network
	Ro.2	A5 Osijek - HU border Pecs (comprehensive/Vc)
RAIL	**R.7**	Zagreb - Novska (core/X)
	R.8	Novska - SRB border towards Belgrade (core/X)
	R.9	HU border - Osijek - BIH border (comprehensive/core/Vc)
	R.10	Regional connection Vinkovci - Vukovar (core/access to corridor X)
	R.16	ETCS L1, L2 on other lines, GSM-R
	R.17	Electrification of other lines
	R.18	Rehabilitation, upgrading of other lines
	R.20	Improvements and new marshalling yards
	R.24	Intermodal freight hubs
	R.32	Improvement of freight rolling stock

24 Table Alternative groups of measures for objective 5c

ALTERNATIVE	OBJECTIVE	
	5 Improvement of freight accessibility inside Croatia	
	5d Improvement of freight accessibility - Northern and Central Dalmatia (Split - Zadar)	
GENERAL	**R.25**	Development of concept of maintenance of the existing infrastructure
	R.34	Prepare for changes in Schengen borders
	R.35	Preparation/adaptation of non-Schengen borders
	R.37	Liberalization of operations for freight
	R.39	Reorganization of the operations/time schedules
	Ro.17	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.21	Interchange development plan
	Ro.29	Preparation/adaptation for Schengen borders
	Ro.30	Preparation/adaptation of non-Schengen borders
	M.5	Navigability
	M.20	Improvement of operational plan (ship routing, etc.)
	M.21	Traffic management and IT system, VTMIS
	M.27	Maritime safety, inspections, SAR cooperation
	M.31	Development of concept of maintenance
	M.22	Improvement of MET systems
ROAD	**Ro.4**	A7 Križišće to Žuta Lokva (comprehensive/Adriatic Ionian corridor)
	Ro.15	Split network reorganization
	Ro.16	Preparation for accessibility of Dubrovnik when Croatia joins Schengen
	Ro.33	Recategorization of the road network
MARITIME	**M.1**	Increase intermodality and accessibility
	M.2	Implementation of the "Motorways of the sea" projects
	M.28	Modernisation of the vessels (safety, energy efficiency and environment)
	M.4	Bunkering facilities for gas powered and eco ships
	M.14	Development of special purpose ports (shipbuilding ports, nautical ports, military ports, industrial ports, fishing ports, sport ports)
RAIL	**R.16**	ETCS L1, L2 on other lines, GSM-R
	R.20	Improvements and new marshalling yards

ALTERNATIVE	OBJECTIVE	
	5 Improvement of freight accessibility inside Croatia	
	5d Improvement of freight accessibility - Northern and Central Dalmatia (Split - Zadar)	
	R.24	Intermodal freight hubs
	R.32	Improvement of freight rolling stock
	R.17	Electrification of other lines
	R.18	Rehabilitation, upgrading of other lines

25 Table Alternative groups of measures for objective 5d

ALTERNATIVE	OBJECTIVE	
	5 Improvement of freight accessibility inside Croatia	
	5e Improvement of freight accessibility - Southern Dalmatia (Dubrovnik)	
GENERAL	**Ro.17**	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.21	Interchange development plan
	Ro.29	Preparation/adaptation for Schengen borders
	Ro.30	Preparation/adaptation of non-Schengen borders
ROAD	**Ro.11**	Dubrovnik - ME border
	Ro.16	Preparation for accessibility of Dubrovnik when Croatia joins Schengen
	Ro.33	Recategorization of the road network

26 Table Alternative groups of measures for objective 5e

ALTERNATIVE	OBJECTIVE	
	6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system	
	6a Adaptation of the legislation, rules and standards to the European requirements and best practice	
GENERAL	**R.27**	Reorganization of Track access charge
	R.28	Multi annual PSC
	R.33	Update legislation and planning guidelines
	R.34	Prepare for changes in Schengen borders
	R.35	Preparation/adaptation of non-Schengen borders
	R.36	Liberalization of operations for passengers
	R.37	Liberalization of operations for freight
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.27	Update legislation and planning guidelines
	Ro.29	Preparation/adaptation for Schengen borders
	Ro.30	Preparation/adaptation of non-Schengen borders
	A.14	Adaptation of legal national framework as well as the implementation rules
	A.20	Air traffic management, Single European Sky, SESAR
	I.8	Safety, RIS, signalization system, etc.
	I.13	Adaptation of legal national framework as well as the implementation rules
	M.19	Adaptation of national legal framework as well as implementation rules
	M.21	Traffic management and IT system, VTMIS
	M.26	PSC concession reorganization
	U.11	Adaptation of the legal framework and the implementation rules (PSC)
RAIL	**R.16**	ETCS L1, L2 on other lines, GSM-R

27 Table Alternative groups of measures for objective 6a

ALTERNATIVE	OBJECTIVE	
	6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system	
	6b Improvement of the system organisational setup and cooperation between relevant stakeholders	
GENERAL	**R.25**	Development of concept of maintenance of the existing infrastructure
	R.27	Reorganization of Track access charge
	R.28	Multi annual PSC
	R.30	Reorganization of the railway transport system
	R.33	Update legislation and planning guidelines
	R.38	Increase administrative capacity/training
	R.40	Information platforms
	R.42	Improvement of data collection
	Ro.28	Increase administrative capacity/training
	Ro.34	Enforcement
	Ro.35	Improvement of data collection
	A.15	Improvement of the cooperation with the relevant regional authorities
	A.16	Restructuring of Croatia Airlines
	A.18	System reorganization and planning
	A.19	Cooperation with aeronautical industry
	A.24	Review/update Airport Masterplans
	A.25	Cooperation/agreements with other international airports
	A.26	Increase administrative capacity/training
	A.27	Improvement of data collection
	I.14	Increase administrative capacity/training
	I.16	Cooperation with Croatian shipping industry
	I.18	Support to water transport companies
	I.19	Reorganization of the sector
	I.21	Cooperation/agreements with other international ports
	I.22	Improvement of data collection
	M.17	Cooperation with shipping industry
	M.18	Strategical Maritime definition
	M.23	Training and capacity building

ALTERNATIVE		OBJECTIVE	
		6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system	
		6b Improvement of the system organisational setup and cooperation between relevant stakeholders	
		M.24	Reorganization of the maritime transport system
		M.26	PSC concession reorganization
		M.29	Cooperation/agreements with other international ports
		M.32	Improvement of data collection
		U.9	Sector reorganization
		U.10	Improvement of data collection
		U.11	Adaptation of the legal framework and the implementation rules (PSC)
		U.13	Fare collection and joint ticketing systems
		U.16	Administrative capacity and training
		U.19	Information platform
		U.20	Support of non-profit groups in the transport area
		U.21	Traffic and logistics management and information
		U.22	Review/update local/regional Transport Masterplans
PUBLIC TRANSPORT	URBAN	**U.14**	Introduction of on-demand PT services

28 Table Alternative groups of measures for objective 6b

ALTERNATIVE	OBJECTIVE	
	6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system	
	6c Improvement of the system operational setup	
GENERAL	**R.25**	Development of concept of maintenance of the existing infrastructure
	R.27	Reorganization of Track access charge
	R.28	Multi annual PSC
	R.30	Reorganization of the railway transport system
	R.36	Liberalization of operations for passengers
	R.37	Liberalization of operations for freight
	R.38	Increase administrative capacity/training
	R.39	Reorganization of the operations/time schedules
	R.40	Information platforms
	R.42	Improvement of data collection
	Ro.17	Develop maintenance concept (including maintenance stations) of the road network
	Ro.20	Traffic management, monitoring, traffic counting and information system
	Ro.28	Increase administrative capacity/training
	Ro.32	Information platforms
	Ro.33	Recategorization of the road network
	Ro.34	Enforcement
	Ro.35	Improvement of data collection
	A.17	Information platform
	A.18	System reorganization and planning
	A.20	Air traffic management, Single European Sky, SESAR
	A.21	Improving consumer satisfaction awareness
	A.24	Review/update Airport Masterplans
	A.25	Cooperation/agreements with other international airports
	A.26	Increase administrative capacity/training
	A.27	Improvement of data collection
	I.8	Safety, RIS, signalization system, etc.
	I.14	Increase administrative capacity/training
	I.17	Information platform

ALTERNATIVE		OBJECTIVE	
		6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system	
		6c Improvement of the system operational setup	
		I.19	Reorganization of the sector
		I.21	Cooperation/agreements with other international ports
		I.22	Improvement of data collection
		M.5	Navigability
		M.18	Strategical Maritime definition
		M.20	Improvement of operational plan (ship routing, etc.)
		M.21	Traffic management and IT system, VTMIS
		M.23	Training and capacity building
		M.24	Reorganization of the maritime transport system
		M.25	Information platform, database
		M.26	PSC concession reorganization
		M.29	Cooperation/agreements with other international ports
		M.31	Development of concept of maintenance
		M.32	Improvement of data collection
		U.9	Sector reorganization
		U.10	Improvement of data collection
		U.11	Adaptation of the legal framework and the implementation rules (PSC)
		U.13	Fare collection and joint ticketing systems
		U.15	Adjustment of timetable (coordinated)
		U.16	Administrative capacity and training
		U.18	Traffic reorganization
		U.19	Information platform
		U.21	Traffic and logistics management and information
		U.22	Review/update local/regional Transport Masterplans
		M.22	Improvement of MET systems
AIR		**A.13**	Closure or change of role/ownership of regional airports
PUBLIC TRANSPORT	URBAN	**U.14**	Introduction of on-demand PT services
ROAD		**Ro.19**	Develop a resting station concept for the high level road network

ALTERNATIVE	OBJECTIVE	
	6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system	
	6c Improvement of the system operational setup	
MARITIME	**M.16**	Closure or change of role/ownership of unused ports
RAIL	**R.16**	ETCS L1, L2 on other lines, GSM-R
	R.22	Added value services and improvement of the railway image

29 Table Alternative groups of measures for objective 6c

ALTERNATIVE		OBJECTIVE	
		6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system	
		6d Improvement of the safety of the transport system	
GENERAL		R.21	Improvement of safety at crossing, axle load detectors, hot axle detectors, etc.
		R.40	Information platforms
		R.42	Improvement of data collection
		Ro.17	Develop maintenance concept (including maintenance stations) of the road network
		Ro.20	Traffic management, monitoring, traffic counting and information system
		Ro.22	Road safety
		Ro.34	Enforcement
		Ro.35	Improvement of data collection
		A.11	Airport safety
		A.20	Air traffic management, Single European Sky, SESAR
		A.27	Improvement of data collection
		I.8	Safety, RIS, signalization system, etc.
		I.22	Improvement of data collection
		M.21	Traffic management and IT system, VTMIS
		M.27	Maritime safety, inspections, SAR cooperation
		M.31	Development of concept of maintenance
		M.32	Improvement of data collection
		U.8	Improvement of safety and security
		U.10	Improvement of data collection
		U.18	Traffic reorganization
		U.19	Information platform
		M.22	Improvement of MET systems
INLAND WATERWAYS		I.20	Increase the fleet of safety and environmental protection vessels
PUBLIC TRANSPORT	URBAN	U.17	Purchase of new rolling stock
ROAD		Ro.18	Secondary and tertiary road rehabilitation and realignment
		Ro.19	Develop a resting station concept for the high level road network
MARITIME		M.4	Bunkering facilities for gas powered and eco ships
		M.28	Modernisation of the vessels (safety, energy efficiency and environment)
RAIL		R.16	ETCS L1, L2 on other lines, GSM-R

ALTERNATIVE	OBJECTIVE	
	6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system	
	6d Improvement of the safety of the transport system	
	R.31	Improvement of passenger rolling stock
	R.32	Improvement of freight rolling stock

30 Table Alternative groups of measures for objective 6d

ALTERNATIVE		OBJECTIVE	
		6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system	
		6e Reduction/mitigation of the environmental impact	
GENERAL		**R.41**	Reduce environmental impact
		Ro.25	Reduce environmental impact
		A.23	Limit environmental impact
		I.12	Environmental protection
		M.3	Environmental protection
		U.7	Environmental protection
		U.18	Traffic reorganization
AIR		**A.13**	Closure or change of role/ownership of regional airports
INLAND WATERWAYS		**I.11**	Dangerous goods terminal and waste management facilities
PUBLIC TRANSPORT	URBAN	**U.17**	Purchase of new rolling stock
MARITIME		**M.28**	Modernisation of the vessels (safety, energy efficiency and environment)
RAIL		**R.31**	Improvement of passenger rolling stock
		R.32	Improvement of freight rolling stock

31 Table Alternative groups of measures for objective 6e

ALTERNATIVE		OBJECTIVE	
		6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system	
		6f Improvement of the energy efficiency	
GENERAL		**R.26**	Energy efficiency
		Ro.26	Energy efficiency
		A.12	Energy efficiency
		I.10	Energy efficiency
		M.15	Energy efficiency
		U.6	Filling stations for alternative fuel
PUBLIC TRANSPORT	URBAN	**U.17**	Purchase of new rolling stock
MARITIME		**M.28**	Modernisation of the vessels (safety, energy efficiency and environment)
RAIL		**R.31**	Improvement of passenger rolling stock
		R.32	Improvement of freight rolling stock

32 Table Alternative groups of measures for objective 6f

ALTERNATIVE		OBJECTIVE	
		6 Improvement of the Transport System Organisational and Operational setup to ensure the efficiency and sustainability of the system	
		6g Financial sustainability of the transport system	
GENERAL		**R.27**	Reorganization of Track access charge
		R.28	Multi annual PSC
		R.29	Increase financial sustainability
		R.30	Reorganization of the railway transport system
		R.33	Update legislation and planning guidelines
		R.36	Liberalization of operations for passengers
		R.37	Liberalization of operations for freight
		Ro.17	Develop maintenance concept (including maintenance stations) of the road network
		Ro.31	Improve financial sustainability of the road network and tolling system
		A.22	Increase financial sustainability of airports
		I.15	Increase financial sustainability
		M.30	Increase the financial sustainability
		M.31	Development of concept of maintenance
		U.9	Sector reorganization
		U.11	Adaptation of the legal framework and the implementation rules (PSC)
		U.12	Increase financial sustainability
		U.13	Fare collection and joint ticketing systems
		U.21	Traffic and logistics management and information
PUBLIC TRANSPORT	URBAN	**U.14**	Introduction of on-demand PT services
MARITIME		**M.16**	Closure or change of role/ownership of unused ports

33 Table Alternative groups of measures for objective 6g