

Adriatic Ionian Region Masterplan for Transport Interconnectivity (AIM-TI)

Masterplan elaboration steps and development of the EUSAIR Multimodal Transport Model

EUSAIR - 11th TSG2 Meeting, November 2019

Belgrade, November 2019



CONTENT

Masterplan purposes:

Adriatic Ionian Region Masterplan for Transport Interconnectivity – AIM-TI

- Structure
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- Development path

EUSAIR Multimodal Transport Model – EMTM

- Purpose of the EMTM
- EMTM zoning system
- EMTM road, rail and IWW networks
- EMTM network model inputs validation and integration

Annex A: EMTM Zoning System Technical Note



STRUCTURE OF THE MASTERPLAN

Masterplan purposes:

- Support the coordinated implementation of the macro-regional strategy in the framework of the EU policies for the Union's Enlargement and Cooperation with Neighbouring Countries, Territorial Integration and Cohesion, Single European Transport Area;
- Identify projects of macro-regional relevance and support their implementation towards a more competitive and resource efficient transport system in the Adriatic-Ionian Region with a focus on:
 - The maritime dimension of the macro-regional transport and economic systems; and
 - The promotion of green and multimodal accessibility to urban, transport and touristic nodes

Main components of the Adriatic Ionian Region Master Plan for Transport

Interconnectivity – AIM-TI:

- Adriatic Ionian Region Master Plan for Transport Interconnectivity – AIM-TI - Maritime dimension
- Adriatic Ionian Region Master Plan for Transport Interconnectivity – AIM-TI - Land and air accessibility
- EUSAIR Multimodal Transport Model – EMTM



INDICATIVE CONTENT OF THE MASTERPLAN – MAIN REPORT

ADRIATIC IONIAN REGION MASTERPLAN FOR TRANSPORT INTERCONNECTIVITY: TOWARDS AN INTERCONNECTED GROWTH	
	Executive summary
	Introduction
Ch01	The Masterplan in the framework of the EU policies for the Union's Enlargement and Cooperation with Neighbouring Countries, Territorial Integration and Cohesion, Single European Transport Area
Ch02	The Masterplan as a tool for the implementation of the EUSAIR Macro-regional Strategy
Ch03	Adriatic Ionian Region socio-economic evolution
	Socio-economic characteristics of the Adriatic Ionian Region
	The Adriatic Ionian Region at the crossing of global trade and logistics routes to Europe
Ch04	Transport sector overview
	The backbone of the Adriatic Ionian Region transport infrastructure
	Passengers and freight transport flows across the Adriatic Ionian Region
Ch05	Masterplan vision, policy and strategy
	Review of the national transport plans
	Macro-regional transport priorities
	Infrastructure projects for the development of the Adriatic Ionian Region transport system
	Soft measures for the development of the Adriatic Ionian Region transport system
	Labelled projects
	Cross-pillar initiatives
	Capacity building initiatives
	Promotion of the masterplan and synergies with other international actions (i.e. TCT, ADRION, other Macro-regional strategies... TEN-T CNCs implementation process)
Ch06	Transport scenarios
	The baseline scenario at 2017
	The do nothing scenario at 2030
	The project scenario at 2030
Ch08	Conclusions
Annexes	Reports from AIM-TI Maritime dimension & AIM-TI Land and air accessibility



INDICATIVE CONTENT OF THE MASTERPLAN – MARITIME DIMENSION

REPORT 1	WATERBORNE TRANSPORT SECTOR
	Introduction
Ch01	Overview of the maritime sector
	Maritime infrastructure
	Last mile and hinterland connections
	Cruise terminals accessibility
	Main routes interconnecting ports in the Adriatic Ionian Region
	Maritime traffic at Adriatic Ionian Region ports
	VTMIS and eMaritime solutions
	Port electrification, hydrogen and LNG supply facilities
Ch02	Overview of the IWW transport sector
	IWW routes and ports
	Last mile and hinterland connections of ports
	IWW traffic at Adriatic Ionian Region ports
	RIS and ICT solutions
	Port electrification, hydrogen and LNG supply
Ch03	Waterborne planned investments
	Review of the national transport plans
	Labelled projects
	Project impact assessment and gap analysis with respect to TEN-T standards and targets
Ch04	Key investments and recommendations for the development of waterborne transport



INDICATIVE CONTENT OF THE MASTERPLAN – MARITIME DIMENSION

REPORT 2	WATERBORNE TRANSPORT AND INTERMODALITY
	Introduction
Ch01	Overview of the intermodal infrastructure at ports
	Bi-modal and tri-modal terminals and logistics platforms at ports
	Last mile connections of ports
	Intermodal traffic volumes
	ICT and innovative transport measures to promote intermodality
Ch02	Planned investments to promote intermodality at ports
	Review of the national transport plans
	Labelled projects
	Project impact assessment and gap analysis with respect to TEN-T standards and targets
Ch03	Key investments and recommendations for the development of intermodality at ports



INDICATIVE CONTENT OF THE MASTERPLAN – LAND AND AIR ACCESSIBILITY: RAIL SECTOR

REPORT 1	RAIL TRANSPORT SECTOR AND INTERMODALITY
	Introduction
Ch01	Overview of the rail sector
	Rail infrastructure
	Rail terminals and Rail-road terminals
	Traffic volumes on the rail network and at terminals
	Rail transport performance at BCPs
	ERTMS deployment
Ch02	Rail planned investments
	Review of the national transport plans
	Labelled projects
	Project impact assessment and gap analysis with respect to TEN-T standards and targets
Ch03	Key investments and recommendations for the development of the rail sector



INDICATIVE CONTENT OF THE MASTERPLAN – LAND AND AIR ACCESSIBILITY: ROAD SECTOR

REPORT 2	ROAD TRANSPORT SECTOR
	Introduction
Ch01	Overview of the road sector
	Road infrastructure
	Road traffic volumes
	Road transport performance at BCPs
	Road transport safety
	ITS solutions for traffic and demand management
	Alternative clean fuels
Ch02	Road planned investments
	Review of the national transport plans
	Labelled projects
	Project impact assessment and gap analysis with respect to TEN-T standards and targets
Ch03	Key investments and recommendations for the development of the road sector



INDICATIVE CONTENT OF THE MASTERPLAN – LAND AND AIR ACCESSIBILITY: AIR TRANSPORT SECTOR

REPORT 3	AIR TRANSPORT SECTOR
	Introduction
Ch01	Overview of the air transport sector
	Airport infrastructure
	Traffic at airports
	Airport accessibility from main urban and touristic nodes
	Interconnection between airports and the main logistics platforms
	SESAR and alternative clean fuel deployment
Ch02	Airport planned investments
	Review of the national transport plans
	Labelled projects
	Project impact assessment and gap analysis with respect to TEN-T standards and targets
Ch03	Key investments and recommendations for the development of the rail sector



INDICATIVE CONTENT OF THE MASTERPLAN – LAND AND AIR ACCESSIBILITY: URBAN TRANSPORT TOURISM AND ACCESSIBILITY

REPORT 4	URBAN TRANSPORT AND TOURISM ACCESSIBILITY
	Introduction
Ch01	Overview of the major urban and touristic sites in the EUSAIR
	Description of the rail and road infrastructure system interconnecting the urban and main touristic sites in the EUSAIR with its backbone infrastructure
	Description of the infrastructure and services for cycling mobility interconnecting main urban nodes and touristic sites
	Interconnecting services between the main transport nodes, urban nodes and touristic sites
	Future oriented mobility solutions to improve accessibility at urban nodes and touristic sites
	City logistics solutions at urban nodes and touristic sites
	Solutions and strategies for the diffusion of alternative clean fuels at urban nodes and touristic sites
Ch02	Urban transport major planned investments
	Check availability and review of SUMP and SUIPs and or dedicated tourism accessibility strategies
	Labelled projects
	Project impact assessment and gap analysis with respect to TEN-T standards and targets
Ch03	Key investments and recommendations for the development for an improved accessibility at urban nodes and touristic sites



INDICATIVE CONTENT OF THE MASTERPLAN – FEASIBILITY ANALYSES

The Masterplan supports the elaboration of feasibility studies in view of the implementation of specific projects:

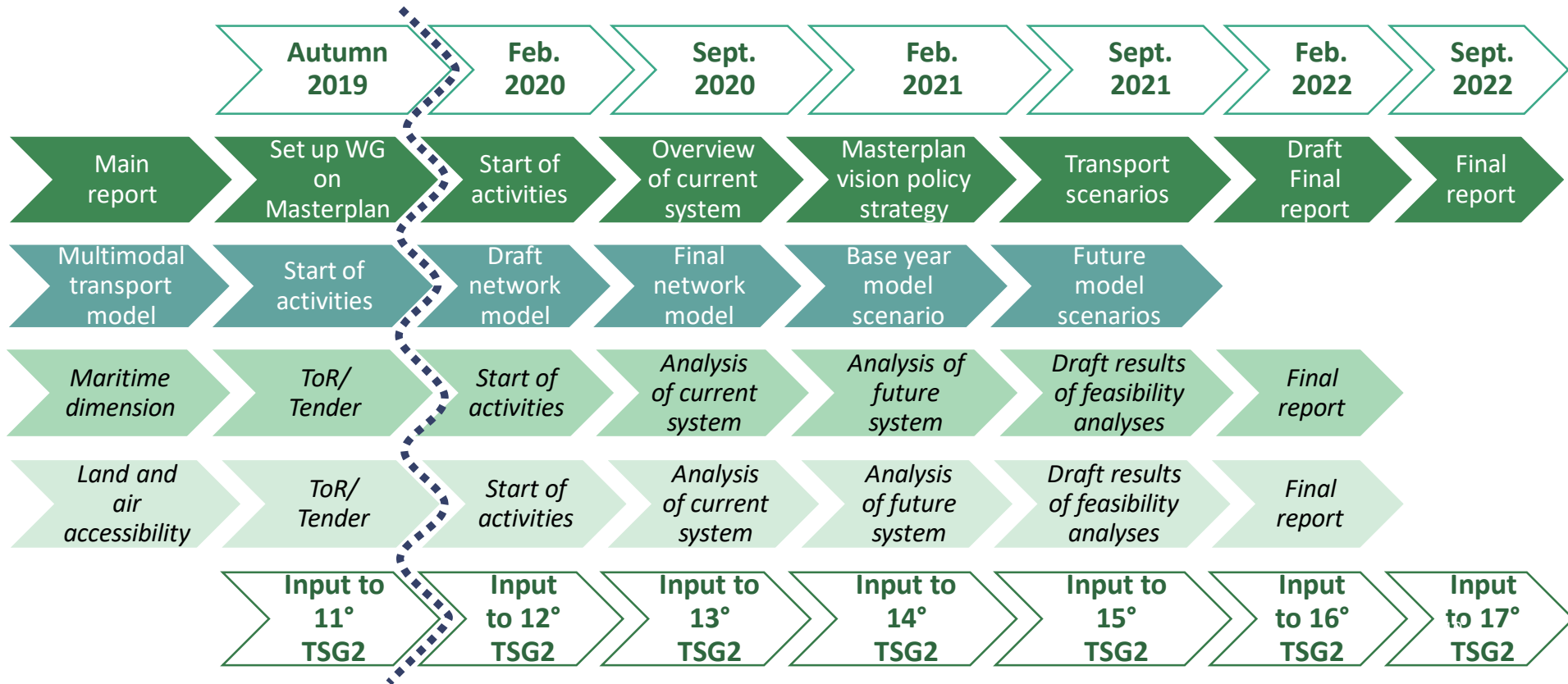
- 3-4 studies related to the maritime sector and associated intermodality
- 3-4 studies in the field of land transport and related intermodality/accessibility

FEASIBILITY PROJECT REPORT

	Executive summary
	Introduction
Ch01	Project objectives and targets
Ch02	Project technical scope and description
Ch03	Demand analysis
Ch04	Options Analysis
Ch05	Cost Benefit Analysis
Ch06	Implementation and funding strategy
Ch07	Conclusions



MASTERPLAN DEVELOPMENT PATH 2019-2022



PURPOSE OF THE EMTM

Transport model in support of the elaboration of the Adriatic Ionian Region Master Plan for Transport

- Describe the current situation of the road and rail networks
 - Describe and map the network parameters
 - Identify gaps with reference to relevant regulations (TEN-T)
- Assess the performance of the road, rail and short sea shipping (limited to freight) transport system
 - Analyse and map traffic flows along the network
 - Support the identification of capacity bottlenecks
- Assess the impact of the planned projects on the road and rail network
 - 2030 scenarios (2014-2020 and 2021-2027 programming periods)
 - Identify persisting gaps in terms of infrastructure performance and capacity
- The model will cover the full national network for all countries

GIS based maps in support of the elaboration of the Adriatic Ionian Region Master Plan for Transport

- Rail, Road and Inland Waterways



TRAFFIC ANALYSIS ZONES (TAZS)

In transport models the study area needs to be disaggregated into zones that are usually referred to as Traffic Analysis Zones (TAZs)

- TAZs are used to describe the distribution of Origin and/or Destination of transport flows in the study area
- The number and size of the TAZs depends on the geographic scale and purposes of the models
- As a general praxis for large scale models, TAZs correspond to individual or aggregated statistical units as defined by national or international institutes of statistics

As part of modelling exercises demand for transport is estimated based on socioeconomic information with reference to TAZs, i.e. population, GDP, employment, motorisation, household structure...

Zoning system of the EMTM

- For the EMTM NUTS 3 regions as defined by EUROSTAT will be used for the following EU Member States and Candidate Countries, i.e. Albania, Croatia, Greece, Italy, North Macedonia, Serbia, Slovenia
- For Montenegro where only one NUTS 3 is defined, it was decided to divide this unit in smaller units (aggregating data on the basis of municipality information) that are generally comparable in terms of area with NUTS 3 regions
- For Bosnia and Herzegovina and Kosovo* TAZs have been defined based on administrative/statistical units that are comparable to NUTS 3

* Reference to KOSOVO in this Presentation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence



STUDY AREA AND ZONING SYSTEM

NUTS3 or
equivalent level
of detail zones:

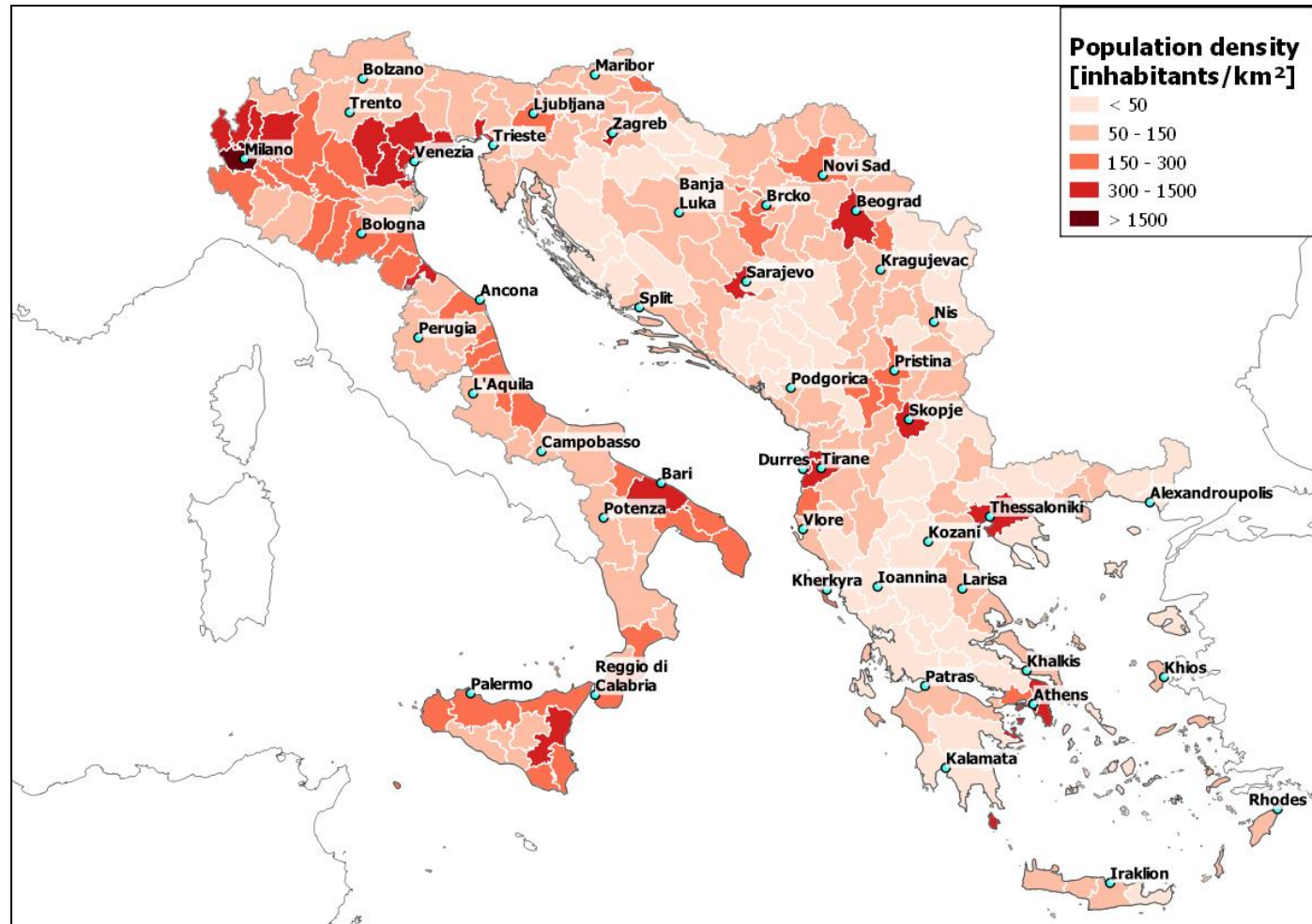
COUNTRY	ZONES
ALBANIA	12
BOSNIA AND HERZEGOVINA	18
CROATIA	21
GREECE	52
ITALY	69
KOSOVO (under United Nations Security Council Resolution 1244/99)	7
MONTENEGRO	8
NORTH MACEDONIA	8
SERBIA	25
SLOVENIA	12
TOTAL	232



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SOCIO-ECONOMICS DATA: POPULATION DENSITY

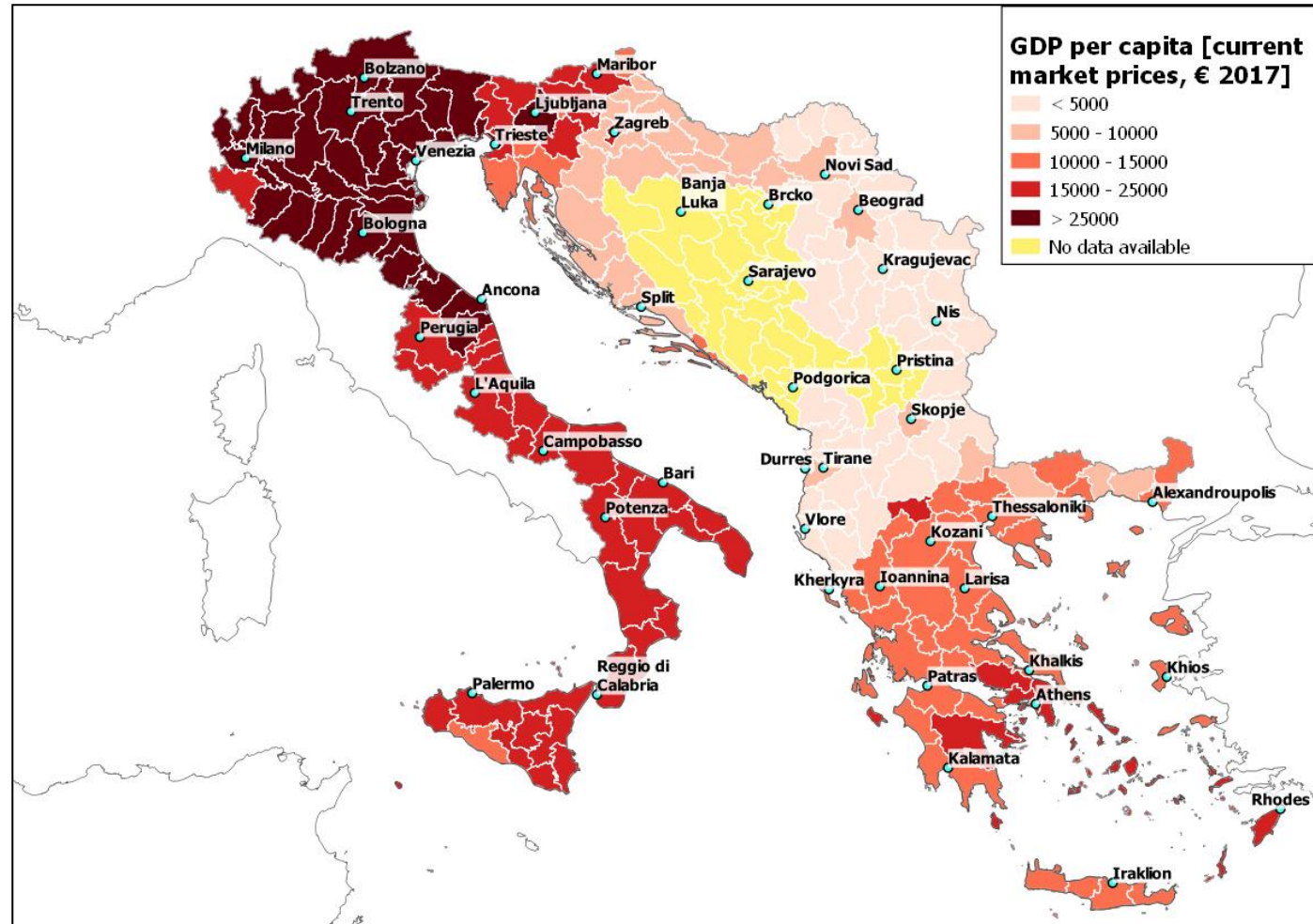


Population data refer to 2017 for most countries except for Federation of Bosnia and Herzegovina and Brcko District (2013), and Kosovo (2016)

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SOCIO-ECONOMICS DATA: GDP PER CAPITA

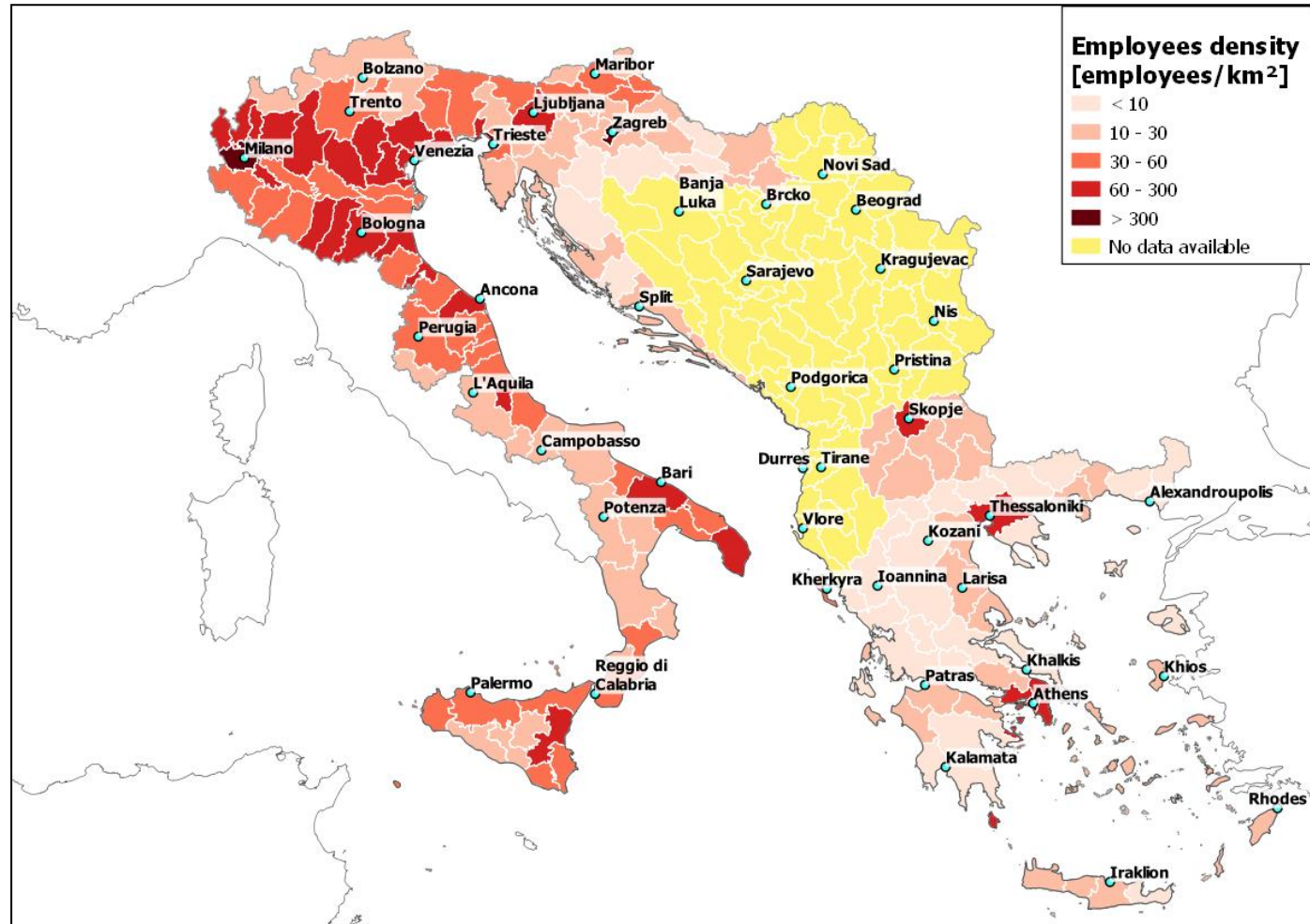


GDP per capita data refer to 2016 for most countries except for Albania (2017) and Slovenia (2017). No data are available for Bosnia and Herzegovina, Kosovo and Montenegro

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SOCIO-ECONOMICS DATA: EMPLOYEES DENSITY



Employment data refer to 2016 for most countries except for Slovenia (2017). No data are available for Albania, Bosnia and Herzegovina, Kosovo, Montenegro and Serbia

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TRAFFIC ANALYSIS ZONES (TAZS)

Rail network

- Elaborated on the basis of the European network developed as part of the ETISplus European Project and TENtec
- Updated on the basis of OpenRailwayMap encoded information and data from the network statements of the national Infrastructure Managers

Road network

- Elaborated on the basis of the European network developed as part of the ETISplus European Project and TENtec
- Updated on the basis of information available in documents published by European motorway concessionaires

IWW network

- Elaborated on the basis of the TENtec



CLASSIFICATION OF THE LINKS

Road and/or rail links

Primary links

- Links of highest importance for long-distance traffic across and beyond the borders of the Adriatic Ionian Region (generally corresponding to core network links and additional comprehensive links where appropriate)

Secondary links

- Links of highest importance for interconnecting the main regions (NUTS 2) within the Adriatic Ionian Region (generally corresponding to the comprehensive links not classified as primary roads)

Tertiary links (i.e. regional roads and railways)

- Other links not belonging to the primary and secondary networks, providing connectivity between the EMTM TAZs (NUTS 3)

Inland waterway links

Single classification corresponding to the core network



ROAD AND IWW PARAMETERS

Road parameters

Number of traffic lanes

- Classifies the road network according to the number of traffic lanes per direction

Tolled/toll free

- Classifies the road network according to the application of tolls (direct /indirect) to users

IWW parameters

CEMT class

- Classifies the IWW network according to the lowest categories of navigable inland waterways on the section (Class (length/beam) I to III, IV, V a, V b, VI a, VI b, VI c, VII). According to the definition in 1992: see also <http://www.itf-oecd.org/resolution-no-922-new-classification-inland-waterways>

Maximum draught of vessel/convoy (cm)

- Classifies the IWW network according to the maximum allowed vessel/convoy size in draught in centimetres at reference water level. A default value is provided based on the CEMT classification (CEMT class)

Minimum bridge clearance (cm)

- Classifies the IWW network according to the minimum height under bridges in centimetres on the section at reference high water level available for vessel/convoy to pass the section. A default value is provided based on the CEMT classification (CEMT class)



RAIL PARAMETERS 1/3

Number of tracks

- Classifies the rail network according to the number of tracks

Traction

- Classifies the rail network according to the electrification (electrified / non-electrified)

Voltage (Volt)

- Classifies the rail network according to the voltage for electrified sections (25000 Volts, 50Hz AC / 15000 Volts, 16 2/3 Hz AC / 3000 Volts DC / 1500 Volts DC / Other)

Track gauge (mm)

- Classifies the rail network according to the track gauge in mm (1000, 1435, 1520, 1524, 1600, 1668)

Structure gauge (EN 15273)

- Classifies the rail network according to the structure gauge. 3 international gauges defined in EN 15273, UK gauges W9 and above defined in Railway Group Standard GE/RT8073. GA GAUGE: Total height 3.85 m above the rail and 1.28 m on either side of the track axis / GB GAUGE: Total height 4.08 m above the rail and 1.28 m on either side of the track axis / GC GAUGE: Total height 4.65 m above the rail and 1.45 m on either side of the track axis. W GAUGES (for UK only) to indicate W9 and above (see reference Railway Group Standard GE/RT8073). Other (to be noted according to the Standard EN 15273 Annex C and D)



RAIL PARAMETERS 2/3

Combined transport profile for swap bodies

- Classifies the rail network according to the combined transport profile for swap bodies, as defined in UIC Code 596-6. The technical number is made up of the wagon compatibility code (1 letter) and the standard combined transport profile number (2 digits when width ≤ 2500 mm or 3 digits when, $2500 < \text{width} \leq 2600$ mm). (C 22, C 32, C 38, C 45, C 50, C 55, C 60, C 65, C 70, C 80, C 90, C 341, C 349, C 351, C 357, C 364, C 380, C 385, C 390, C 395, C 400, C 405, C 410, C 420, Other)

Combined transport profile for semi-trailers

- Classifies the rail network according to the combined transport profile for semi-trailers, as defined in UIC Code 596-6. The technical number is made up of the wagon compatibility code (1 letter) and the standard combined transport profile number (2 digits when width ≤ 2500 mm or 3 digits when $2500 < \text{width} \leq 2600$ mm). (P 32, P 38, P 45, P 50, P 55, P 60, P 65, P 70, P 80, P 90, P 341, P 349, P 351, P 357, P 380, P 385, P 390, P 395, P 400, P 405, P 410, P 420, Other)

Maximum operating speed for passenger trains (km/h)

- Classifies the rail network according to the highest operating speed allowed for passenger service taking into account technical characteristics of the infrastructure (No speed limit set, $V < 80$, $80 \leq V < 100$, $100 \leq V < 120$, $120 \leq V < 160$, $160 \leq V < 200$, $200 \leq V < 250$, $250 \leq V < 300$, $V \geq 300$)



RAIL PARAMETERS 3/3

Maximum operating speed for freight trains (km/h)

- Classifies the rail network according to the highest operating speed allowed for freight service taking into account technical characteristics of the infrastructure (No speed limit set, $V < 80$, $80 \leq V < 100$, $100 \leq V < 120$, $120 \leq V < 160$)

Number of tracks

- Classifies the rail network according to the number of tracks

Maximum axle load (tonnes)

- Classifies the rail network according to the maximum axle load ($m < 16$ t, 16 t $\leq m < 18$ t, 18 t $\leq m < 20$ t, 20 t $\leq m < 22,5$ t, $22,5$ t $\leq m < 25$ t, 25 t $\leq m < 27,5$ t, $27,5$ t $\leq m < 30$ t, $m \geq 30$ t)

Maximum train length (m)

- Classifies the rail network according to the maximum train length ($L < 200$ m, $200 \leq L < 400$ m, $400 \leq L < 500$ m, $500 \leq L < 600$ m, $600 \leq L < 740$ m, $740 \leq L < 1050$ m, $1050 \leq L < 1500$ m, $m \geq 1500$ m)

Sources for the analysis of the rail network and related parameters:

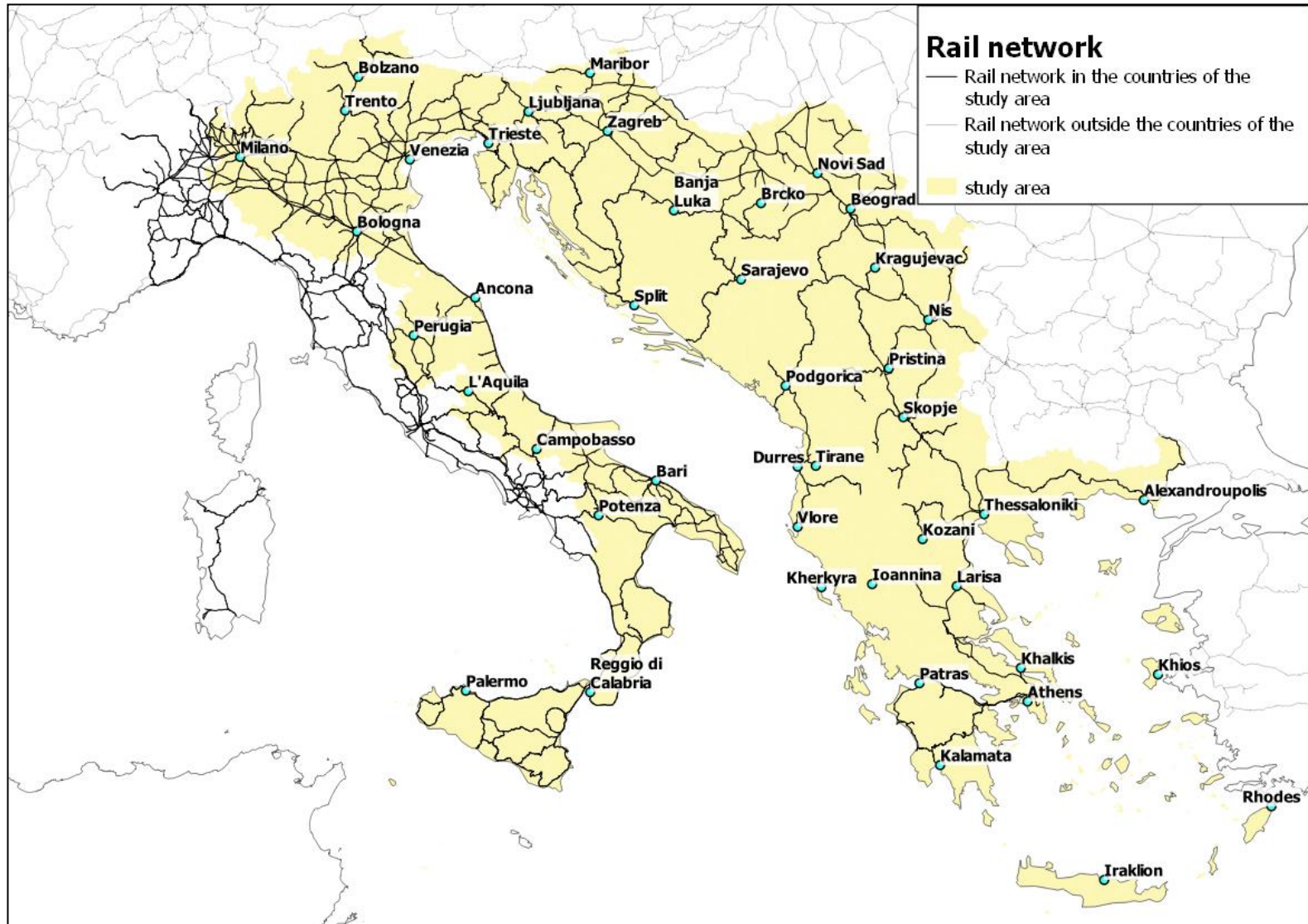
- TENtec data 2015 for Italy, Slovenia, Croatia and Greece
- Network statement 2019 for Serbia and Montenegro
- Network statement 2017 for North Macedonia
- Network statement 2015 for Kosovo
- No sources available for Bosnia and Herzegovina and Albania



ROAD NETWORK LAYOUT



RAIL NETWORK LAYOUT



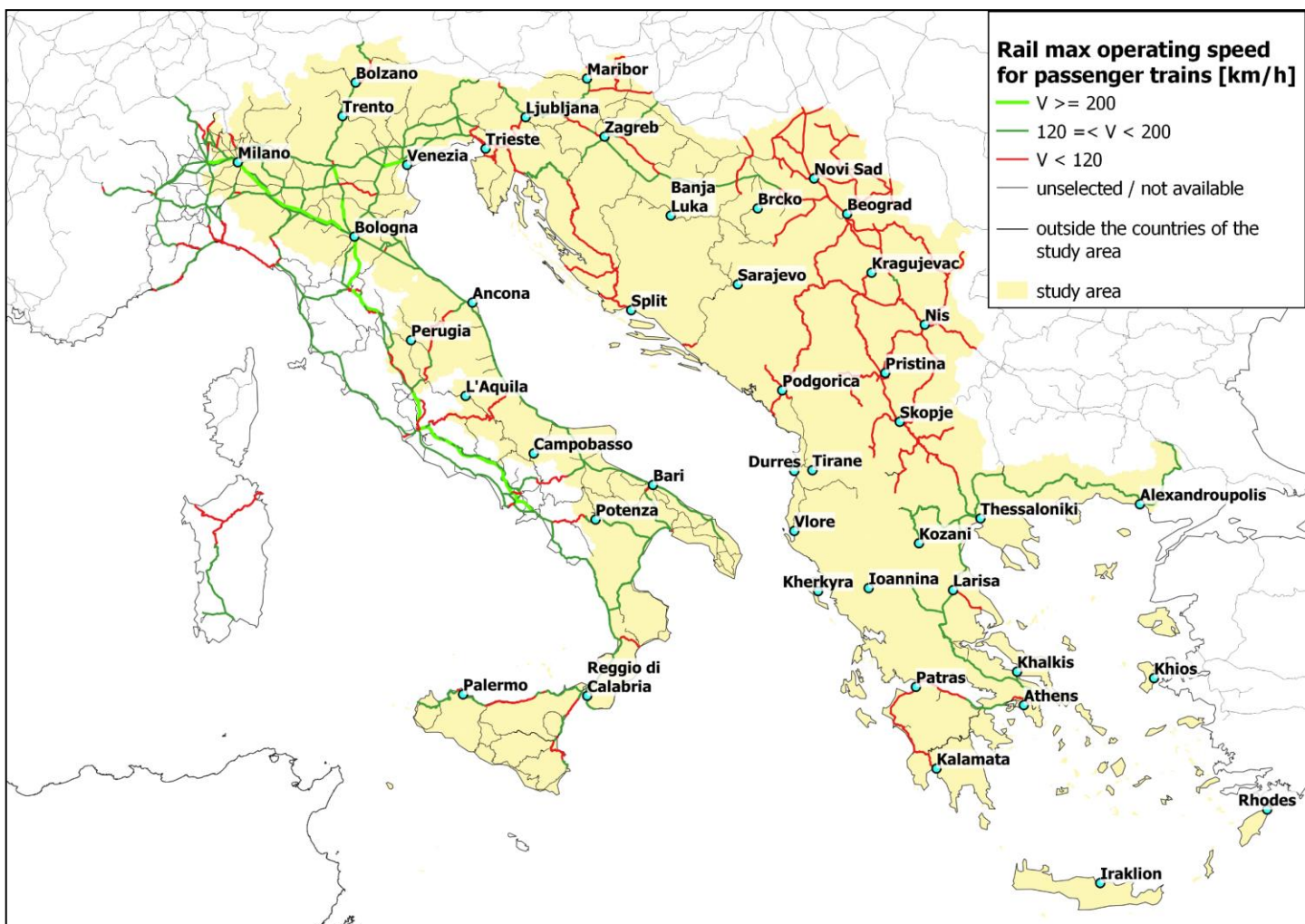
RAIL NETWORK: MAX OPERATING SPEED (PASSENGER TRAINS)

$V > 200$ km/h for high speed network in Italy

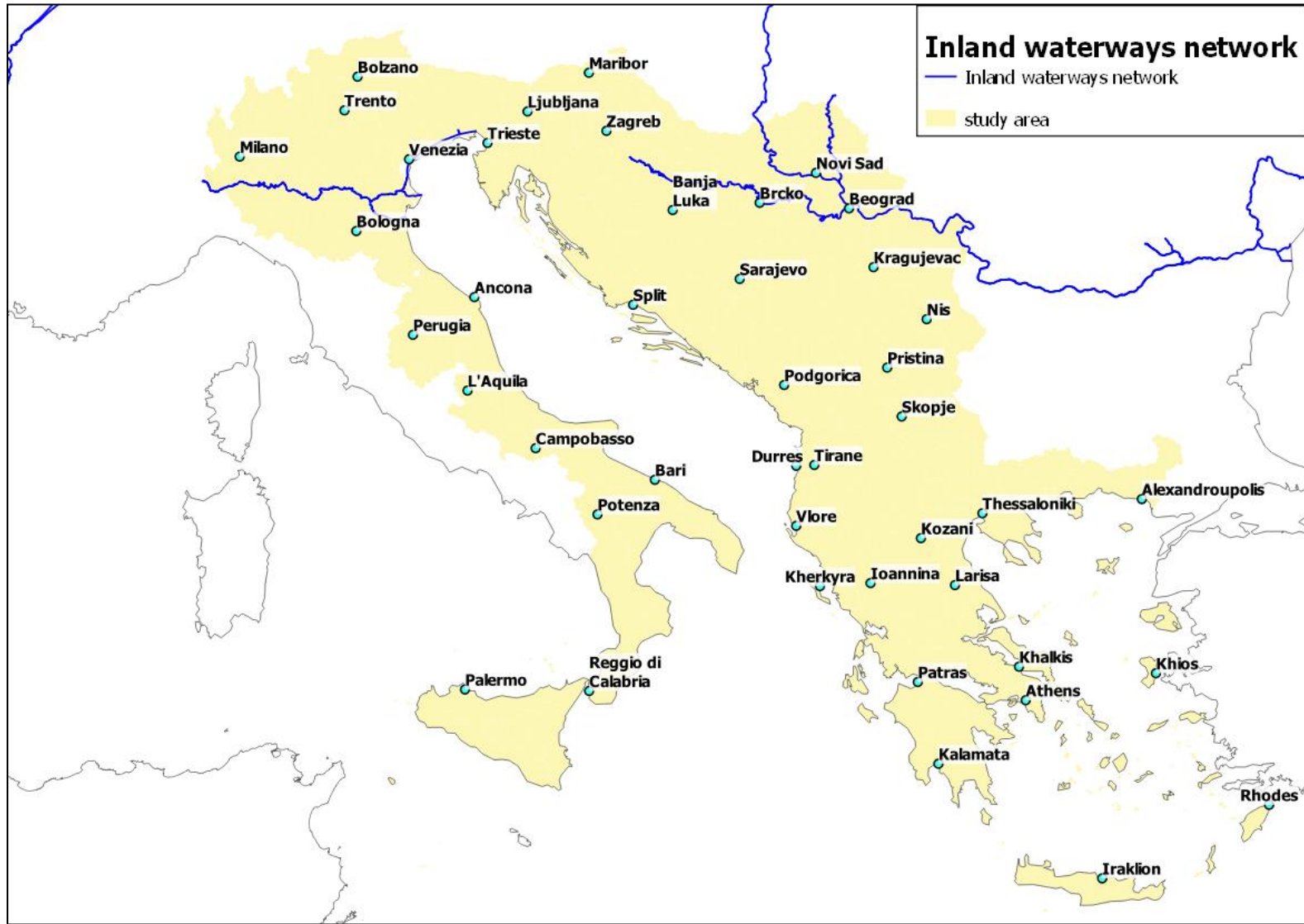
$V > 120$ km/h for almost entire main network in Italy

$V < 120$ km/h for almost entire network in Serbia, Kosovo, Montenegro and North Macedonia rail networks

No data available for Bosnia Herzegovina and Albania



INLAND WATERWAYS NETWORK (IWW)



TASKS BETWEEN 11TH AND 12TH TSG2

Task	Deadline	Responsibility
Send feedback to Consultant on the presentation given at the 11 th TSG2 Meeting and related EMTM zoning system technical note	End November 2019	TSG2 Members
Identify members of the Working Group on Masterplan and provide contact details to Coordinators/Consultant	End November 2019	TSG2 Members
Provide maps by country on road, rail and IWW sections of the EMTM to WG and TSG2 Members	Mid December 2019	Consultant
Validate and integrate network maps provided by Consultant	Mid of January 2020	TSG2 Members
Meeting of the WG on Masterplan on the elaboration process of the EMTM, and monitor data collection process towards its finalisation	First week of February 2020	WG Members
Elaboration of an updated documentation on the EMTM network model and traffic data collection in view of the 12 ^o TSG2 Meeting	March 2020	Consultant
Presentation on the progresses of the elaboration of the ETMT at the 12 th TSG2 Meeting	April 2020	Consultant



TASKS BETWEEN 11TH AND 12TH TSG2

Road, rail and IWW networks:

- Validate and integrate where required and available the data processed by the Consultant on the basis of the maps that will be provided by country for each network and their main parameters by the Consultant by mid of December 2019

Demography and economy

- Validate and integrate where required and available the data provided by the Consultant in the Technical Note on the EMTM Zoning System annexed to this presentation and concerning Population, Employment and GDP

Other input data for modelling

- Additional socioeconomic data (Registered vehicle fleet, trade)
- Road, rail and IWW traffic by section and traffic volumes at nodes (ports and airports)
- Data formats and requirements to be discussed in the first meeting of the WG on Masterplan in February 2019 if set up, or at the 12th TSG2 meeting



***Presentation prepared by Tplan Consulting
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