Interreg ADRION ADRIATIC-IONIAN
EUROPEAN UNION
European Regional Development Fund - Instrument for Pre-Accession II Fund
EUSAIR FACILITY POINT

EU Strategy for the Adriatic and Ionian Region
EUSAIR

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

EMTM Base Year Model

13th Meeting of the Thematic Steering Group for
Pillar 2 – Connecting the Region
(TRANSPORT sub-group)

CONTENT

EMTM network analysis (by mode)

- Updated networks
- Summary of the main infrastructure characteristics
- Road and rail network performance analysis

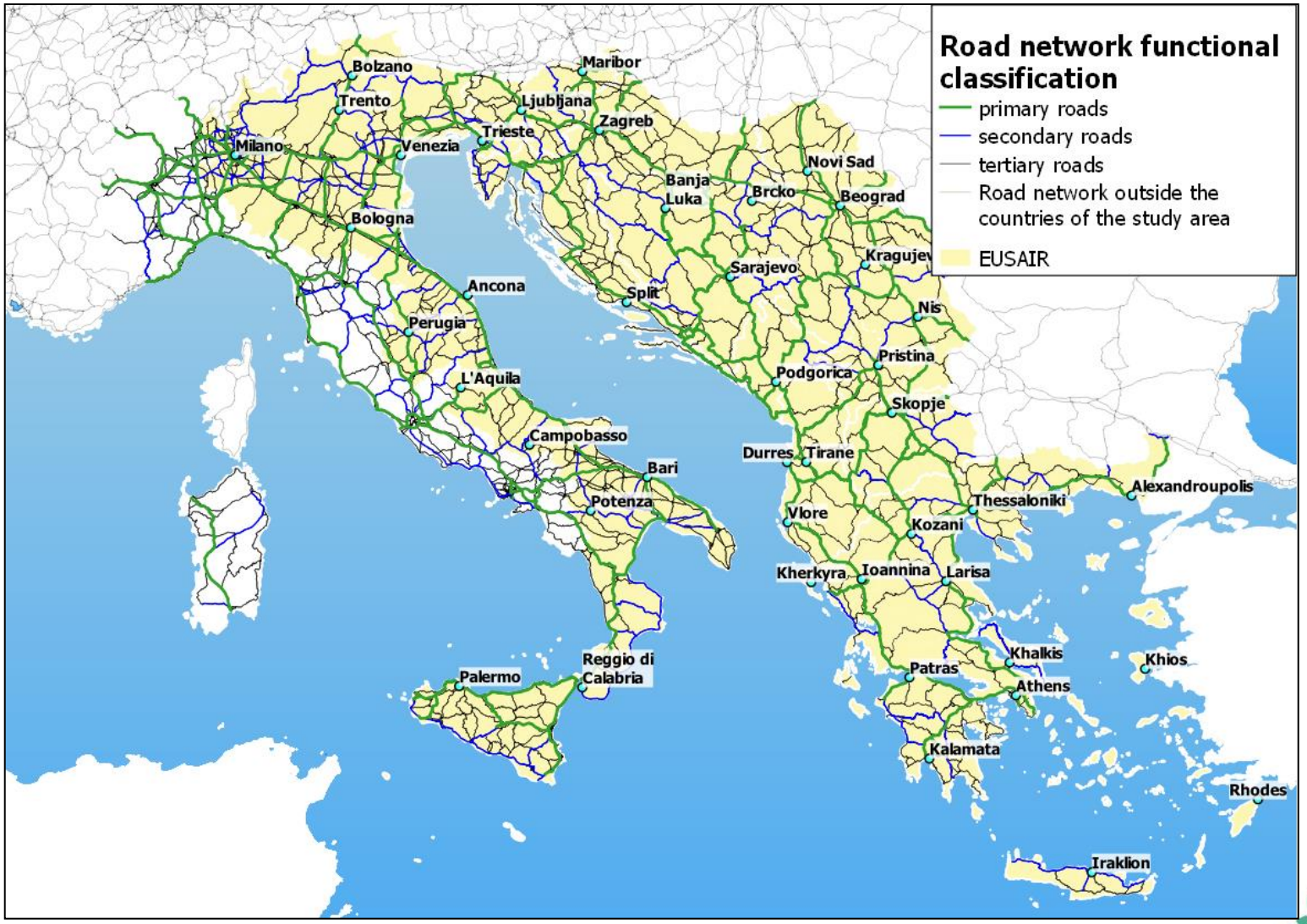
Transport and traffic (demand) data

- Summary of the available traffic and transport data

Status of implementation of the EUSAIR Multimodal Transport Model

EMTM network analysis

UPDATED ROAD NETWORK LAYOUT



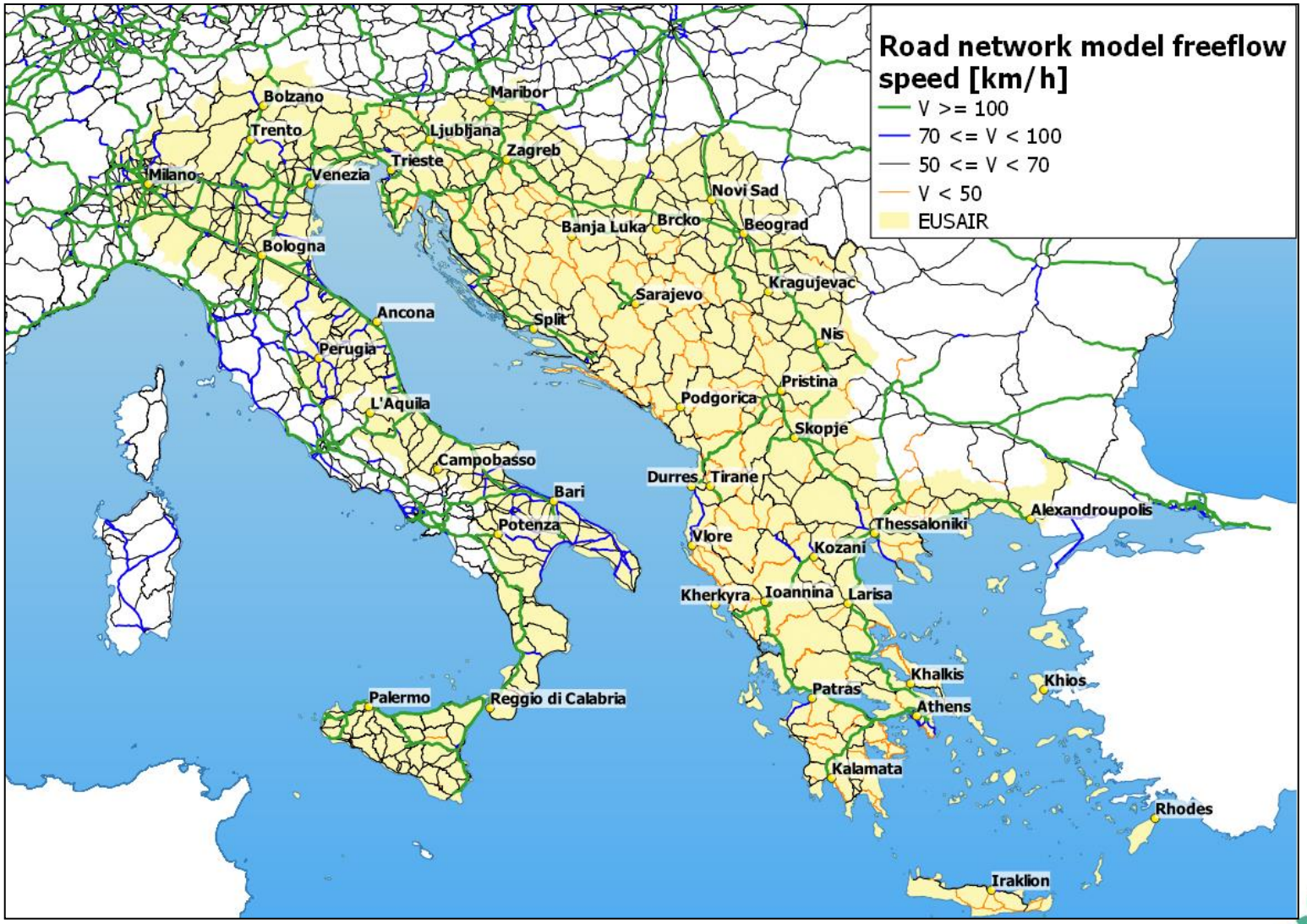
EMTM NETWORK CHARACTERISTICS: ROAD TRANSPORT

NUMBER OF TRAFFIC LANES PER DIRECTION	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
1	77%	87%	94%	76%	79%	70%	99%	79%	85%	75%	82%
2 or more	23%	13%	6%	24%	21%	30%	1%	21%	15%	25%	18%
Data availability	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

TOLL ROADS	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
Tolled	14%	5%	4%	20%	19%	13%	0%	18%	13%	24%	8%
Not tolled	86%	95%	96%	80%	81%	87%	100%	82%	87%	76%	92%
Data availability	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

* 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

ROAD NETWORK FREE FLOW SPEED



ROAD NETWORK PERFORMANCE ANALYSIS

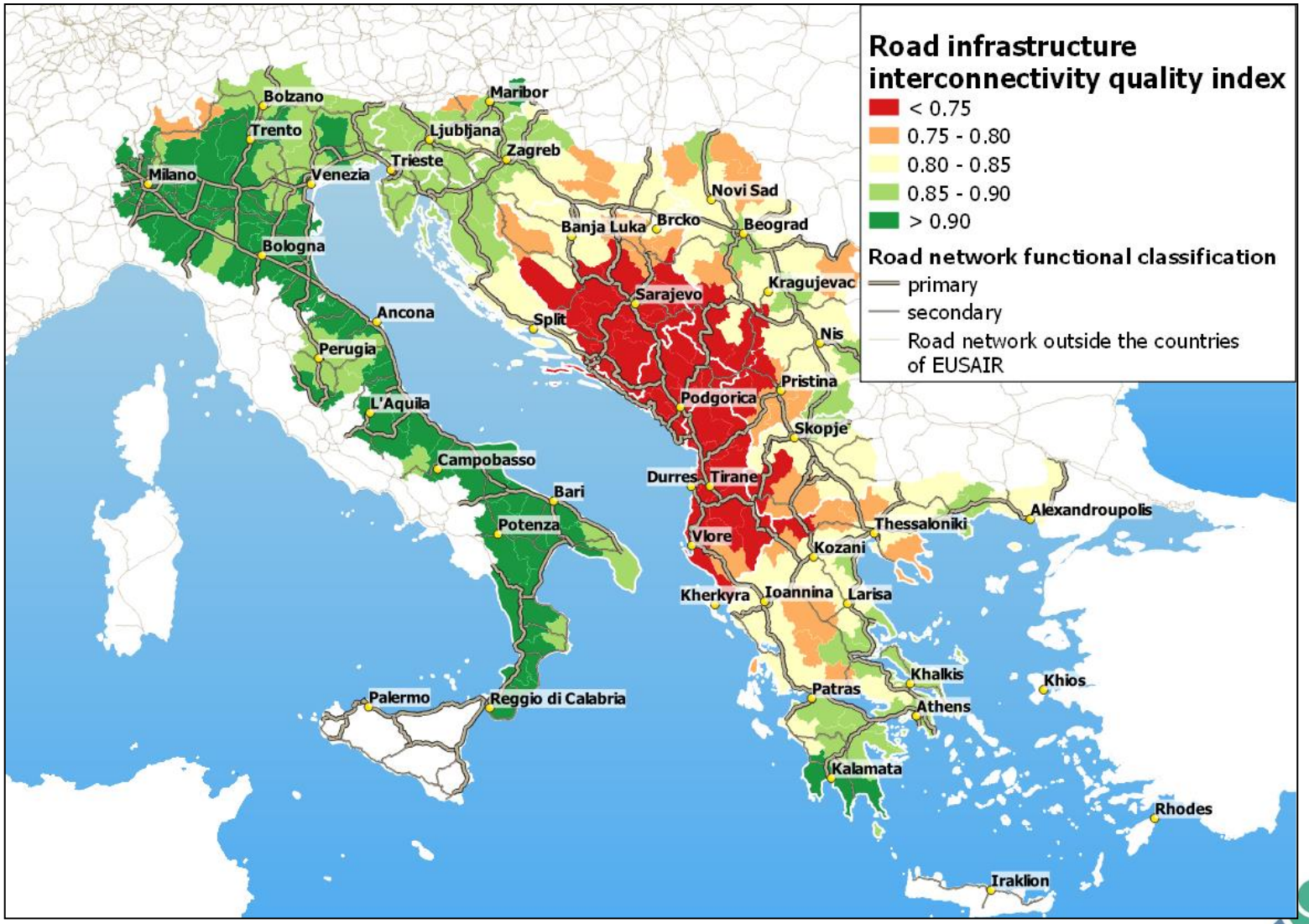
Interconnectivity Quality Index

- The index is calculated as the average of the ratios between inter-zonal free-flow travel time on the existing road network and a reference-speed travel time calculated assuming a reference speed of 120 km/h
- The index is evaluated for each EMTM zone as the average of the ratios between inter-zonal free-flow travel time and a reference-speed travel time. The values of the index ranges between 0 and 1 and represent the infrastructural gap compared to the reference performance
- For each zone, a value below 1 indicates the relative gap to the reference performance corresponding to the availability of a 120 km/h road infrastructure connecting to all other zones in the EUSAIR region
- The results clearly highlight the road infrastructural gap in the Western Balkan Region, especially along the coastline in South Croatia, Bosnia Herzegovina and Montenegro

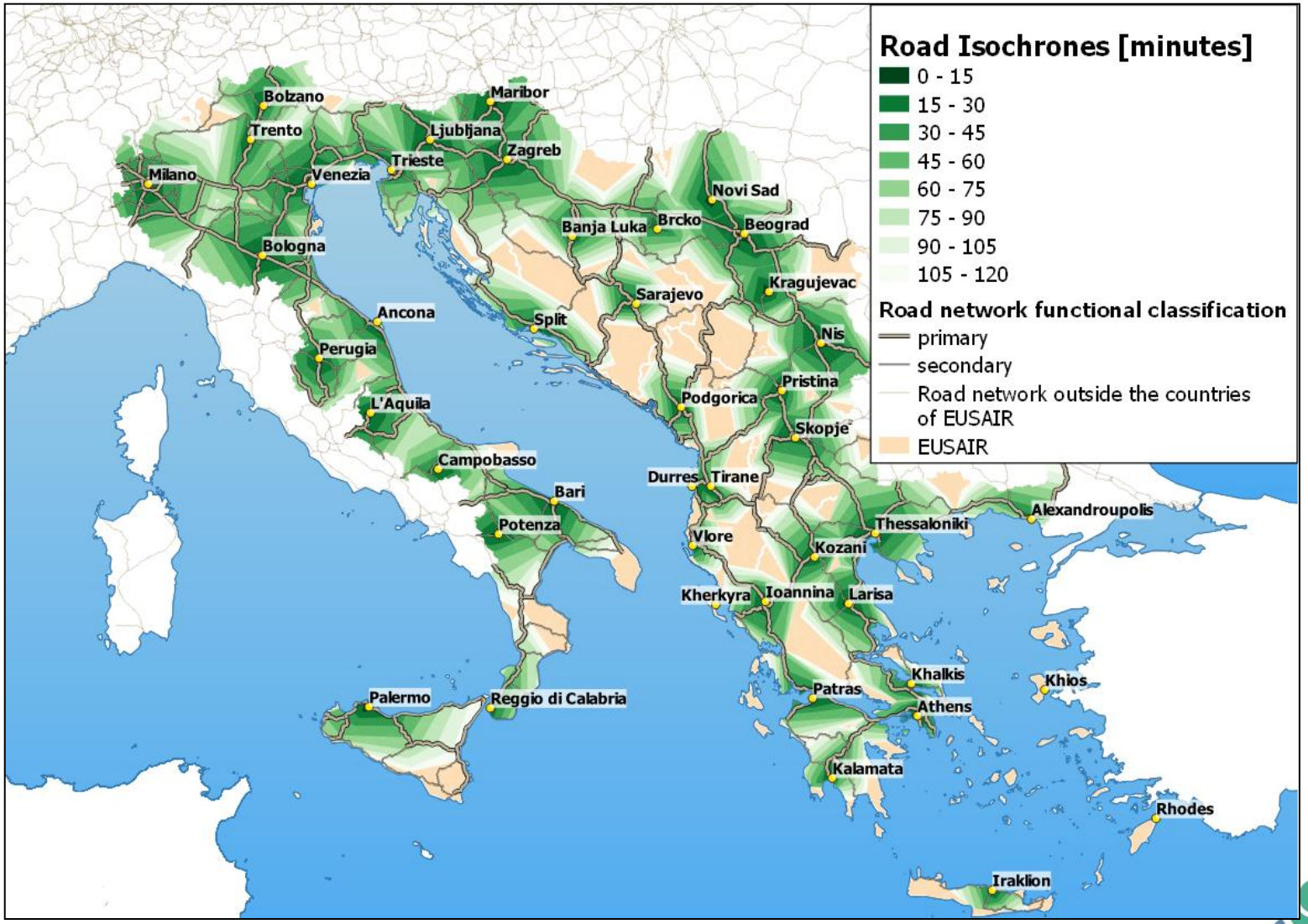
Isochrone maps to urban nodes

- Isochrone maps identify areas of the EUSAIR region that are at the same travel time to the closest NUTS2 urban zones
- The analysis confirms that potential road accessibility to the main regional centres is worse in the Western Balkans area
- The overlay with the population density however confirms that the areas with lower accessibility to regional urban nodes have a prevailing low density

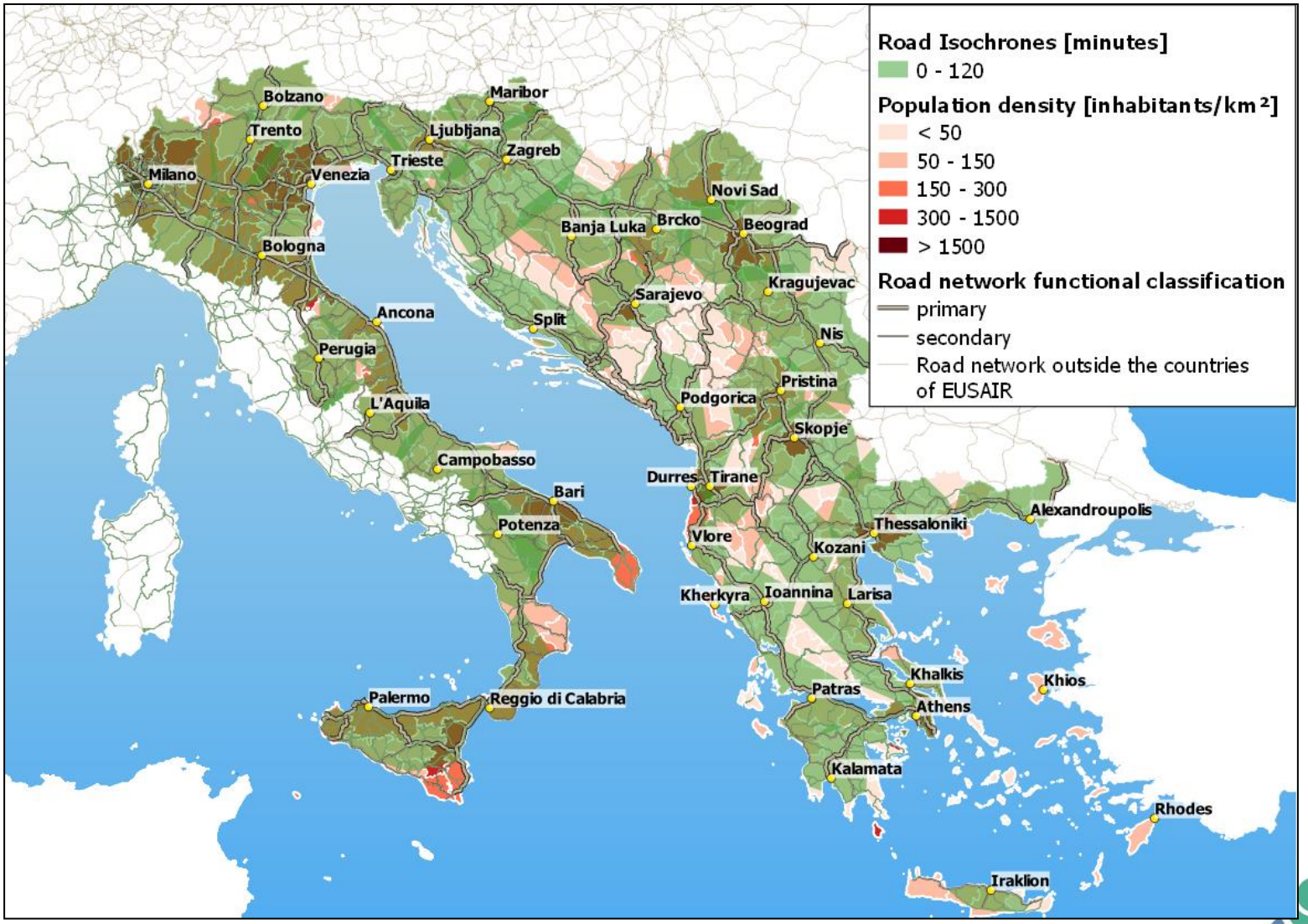
ROAD INFRASTRUCTURE INTERCONNECTIVITY QUALITY INDEX



ROAD INFRASTRUCTURE ISOCHRONES TO URBAN NODES (NUTS 2)



ROAD INFRASTRUCTURE ISOCHRONES TO URBAN NODES (NUTS 2)



UPDATED RAIL NETWORK LAYOUT

EMTM NETWORK CHARACTERISTICS: RAIL TRANSPORT

TRACTION	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
Electrified	53%	0%	70%	26%	36%	67%	91%	36%	42%	49%	0%
Non-electrified	47%	100%	30%	74%	64%	33%	9%	64%	58%	51%	100%
Data availability	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

TRACK GAUGE	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
1435	96%	100%	100%	76%	100%	97%	100%	100%	100%	100%	100%
Others	4%	0%	0%	24%	0%	3%	0%	0%	0%	0%	0%
Data availability	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

TRACKS	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
1	75%	100%	89%	77%	89%	63%	100%	100%	90%	73%	100%
2	25%	0%	11%	23%	11%	37%	0%	0%	10%	27%	0%
Data availability	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

* 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

EMTM NETWORK CHARACTERISTICS: RAIL TRANSPORT

MAX TRAIN LENGTH	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
L ≥ 740 m	0%	NA	0%	0%	0%	0%	0%	0%	2%	0%	0%
500 <= L < 740 m	56%	NA	19%	100%	36%	46%	100%	100%	72%	60%	72%
L < 500 m	44%	NA	81%	0%	64%	54%	0%	0%	27%	40%	28%
Data availability	Good	No	Good	Acceptable	Acceptable	Good	Good	Good	Good	Good	Good

MAX AXLE LOAD	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
m ≥ 22.5 t	46%	0%	87%	1%	55%	47%	100%	56%	58%	48%	50%
18t <= m < 22.5 t	46%	100%	13%	75%	40%	48%	0%	39%	22%	52%	43%
m < 18 t	8%	0%	0%	25%	4%	5%	0%	5%	20%	0%	8%
Data availability	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

* 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

EMTM NETWORK CHARACTERISTICS: RAIL TRANSPORT

MAX OPERATING SPEED (FREIGHT)	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
v ≥ 100 km/h	37%	NA	0%	0%	32%	61%	0%	37%	0%	15%	NA
80<=V<100 km/h	21%	NA	0%	77%	32%	16%	0%	31%	0%	29%	NA
V < 80 km/h	42%	NA	100%	23%	37%	23%	100%	32%	100%	57%	NA
Data availability	Good	No	Good	Accep table	Accep table	Good	Good	Good	Good	Good	No

MAX OPERATING SPEED (PAX)	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
v ≥ 200 km/h	2%	NA	0%	0%	0%	4%	0%	0%	0%	0%	0%
120<=V<200 km/h	32%	NA	0%	49%	16%	48%	0%	0%	1%	15%	0%
V< 120 km/h	66%	NA	100%	51%	84%	48%	100%	100%	99%	85%	100%
Data availability	Good	No	Good	Good	Good	Good	Good	Good	Good	Good	Good

* 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

EMTM NETWORK CHARACTERISTICS: RAIL TRANSPORT

STRUCTURE GAUGE	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
GA GAUGE	9%	NA	NA	NA	6%	100%	0%	59%	0%	NA	0%
GB GAUGE	66%	NA	NA	NA	42%	0%	100%	41%	100%	NA	0%
GC GAUGE	24%	NA	NA	NA	53%	0%	0%	0%	0%	NA	100%
Other	0%	NA	NA	NA	0%	0%	0%	0%	0%	NA	0%
Data availability	Poor	No	No	No	Good	Poor	Good	Good	Good	No	Good

VOLTAGE	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
25 000 Volts, 50Hz AC	18%	0%	70%	25%	36%	3%	91%	36%	42%	0%	0%
3 000 Volts, DC	35%	0%	0%	0%	0%	64%	0%	0%	0%	49%	0%
15 000 Volts, 16 2/3 Hz AC	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Non-electrified	47%	100%	30%	73%	64%	33%	9%	64%	58%	51%	100%
Other	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Data availability	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good

* 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

EMTM NETWORK CHARACTERISTICS: RAIL TRANSPORT

COMBINED TRANSPORT PROFILE (SWAP BODIES)	TOT.	AL	BA	EL	HR	IT	ME	MK	RS	SI	XK*
c >= C80	34%	NA	0%	0%	76%	26%	NA	89%	NA	63%	NA
C 45 <= c < C 80	18%	NA	0%	0%	6%	24%	NA	0%	NA	34%	NA
C 32 <= c < C 45	6%	NA	0%	0%	4%	8%	NA	11%	NA	3%	NA
c < C 32	12%	NA	0%	0%	14%	17%	NA	0%	NA	0%	NA
Other	31%	NA	100%	100%	0%	24%	NA	0%	NA	0%	NA
Data availability	Accep table	No	Good	Accep table	Good	Good	No	Good	No	Good	No

* 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

MAXIMUM OPERATING SPEED FOR PASSENGER TRAINS

RAIL NETWORK PERFORMANCE ANALYSIS

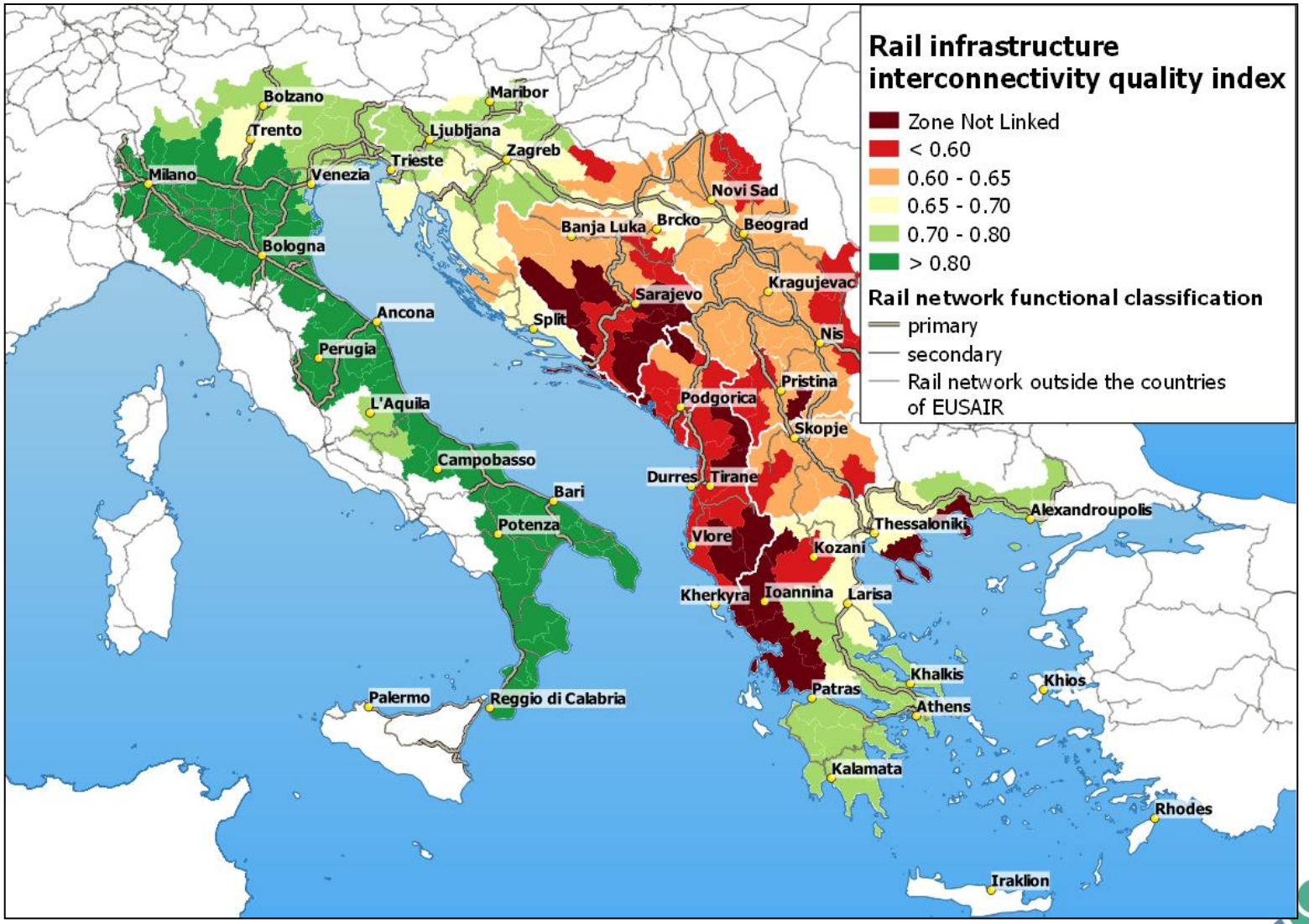
Interconnectivity Quality Index

- The index is calculated as the average of the ratios between inter-zonal free-flow travel time on the existing rail network and a reference-speed travel time calculated assuming a reference speed of 140 km/h
- For each zone, a value below 1 indicates the relative gap to the reference performance corresponding to the availability of a 140 km/h rail infrastructure connecting to all other zones in the EUSAIR region
- It shall be noted that this is a pure infrastructure-based index, so it doesn't take into account the actual commercial speed or any other performance indicator concerning the actual train services
- The results clearly highlight the large road infrastructural gap in the Western Balkan Region, including the entire Adriatic coastline in South Croatia, Bosnia Herzegovina, Montenegro, Albania and North-West Greece

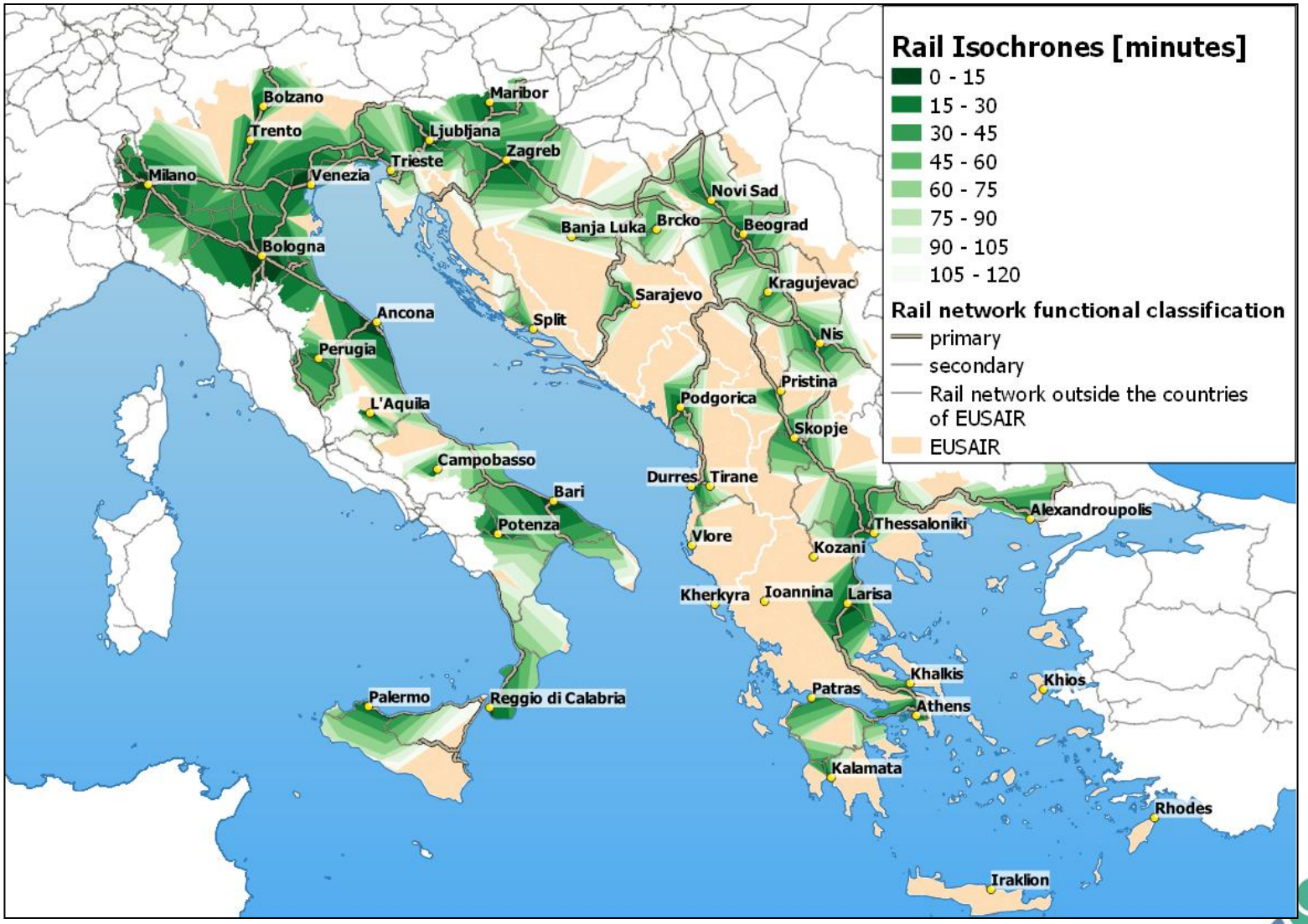
Isochrone maps to urban nodes

- The isochrone maps confirms that potential road accessibility to the main regional centres is worse in the Western Balkans area
- The overlay with the population density shows that the areas with lower accessibility to regional urban nodes have a low to medium density

RAIL INFRASTRUCTURE INTERCONNECTIVITY QUALITY INDEX



RAIL INFRASTRUCTURE ISOCHRONES TO URBAN NODES (NUTS 2)



RAIL INFRASTRUCTURE ISOCHRONES TO URBAN NODES (NUTS 2)

UPDATED INLAND WATERWAY NETWORK LAYOUT (IWW)

EMTM NETWORK CHARACTERISTICS: IWW TRANSPORT*

CEMT CLASS	TOT.	BA	HR	IT	RS
III	13%	55%	49%	0%	0%
IV	41%	45%	25%	57%	35%
V	15%	0%	0%	36%	6%
VI	15%	0%	26%	7%	23%
VII	16%	0%	0%	0%	36%
Data availability	Good	Good	Good	Good	Good

MAXIMUM DRAUGHT OF VESSEL	TOT.	BA	HR	IT	RS
d > 500 cm	3%	0%	0%	8%	0%
250 <= d < 500 cm	85%	45%	51%	92%	100%
d < 250 cm	13%	55%	49%	0%	0%
Data availability	Good	Good	Good	Good	Good

MIN BRIDGE CLEARANCE	TOT.	BA	HR	IT	RS
no limit	18%	16%	14%	19%	18%
c > 750 cm	43%	84%	86%	6%	52%
500 <= c < 750 cm	27%	0%	0%	40%	30%
c < 500 cm	12%	0%	0%	36%	0%
Data availability	Good	Good	Good	Good	Good

*Interstate rivers (Sava, Danube) were counted in the analysis of both neighbouring countries

USE OF THE EMTM

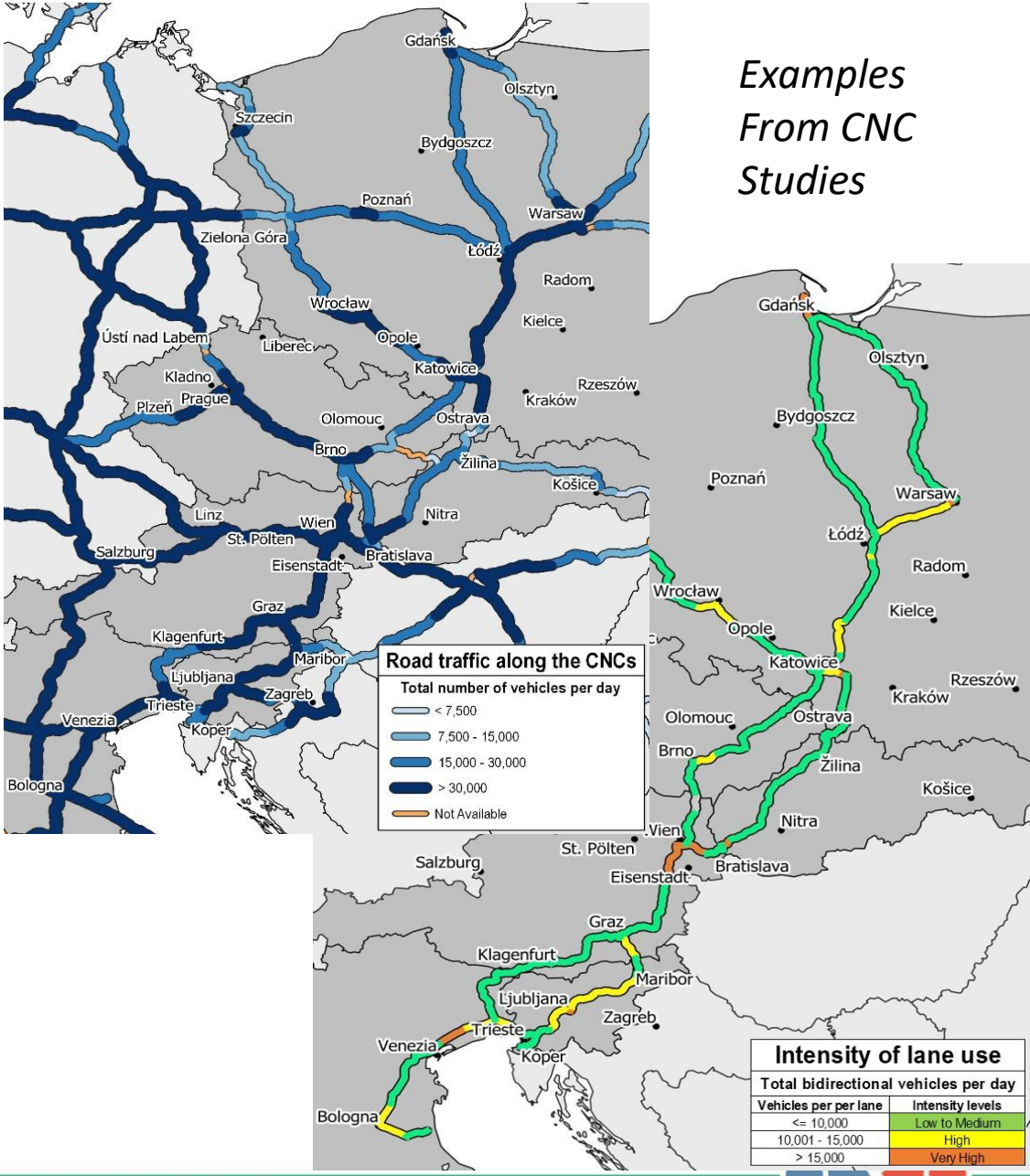
Network Model (Finalised)

- Representation of the characteristics of the infrastructure
- Analysis of the performance of the networks with reference to the characteristics of the network (i.e. Interconnectivity Quality Index and Isochrones, see the previous slides)

Demand Model (Under elaboration)

- Representation of the traffic flows (see maps aside)
- Analysis of the performance of the network with reference to network characteristics (e.g. intensity of lane use, see map aside)

Examples From CNC Studies



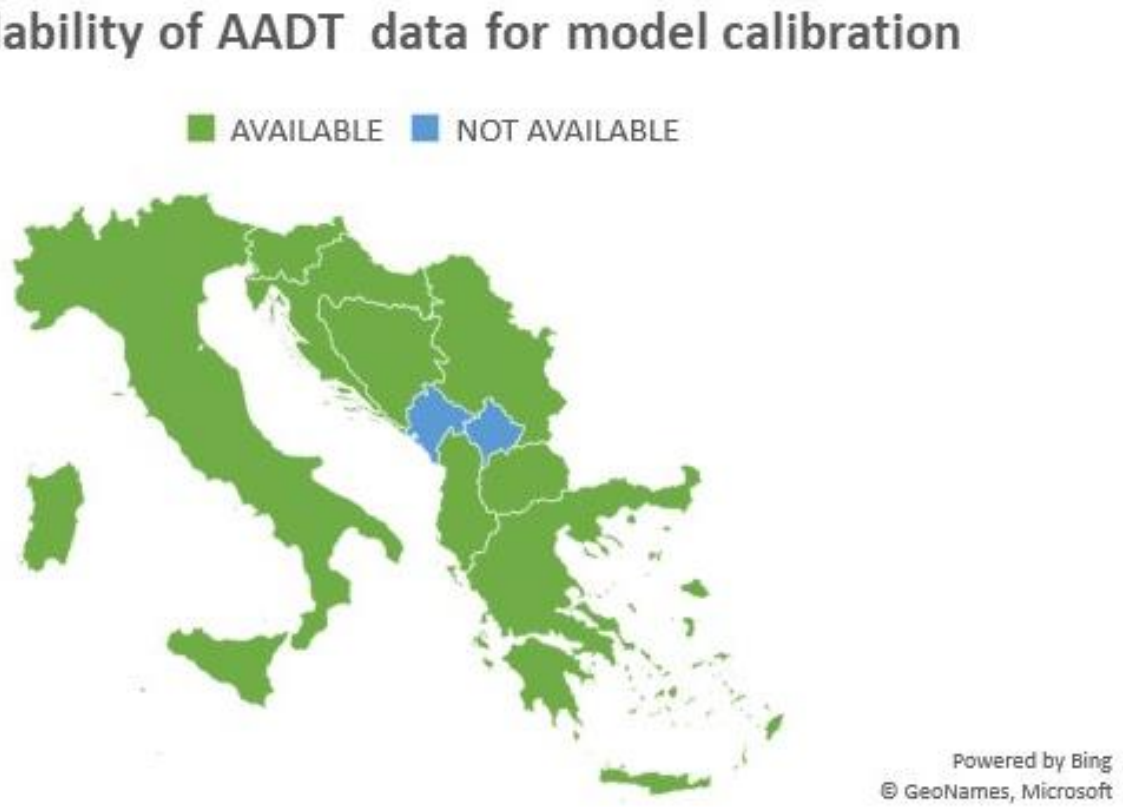
Status of implementation of the EUSAIR Multimodal Transport Model

Transport and traffic (demand) data

TRAFFIC DATA

Sources

- **AL** (Albanian National Transport Plan)
- **BA** (Republic of Srpska Roads JP Ceste Federacije)
- **HR** (Hrvatske Ceste)
- **EL** (Ellenic Ministry of Transport)
- **IT** (ANAS, MTS Emilia-Romagna, Friuli Venezia Giulia, SDI Provincia Autonoma di Trento)
- **MK** (Public Enterprise for State Roads of North Macedonia)
- **RS** (Public Enterprise Roads of Serbia)
- **SI** (Slovenian Infrastructure Ministry)



TRANSPORT DATA

Notes

- National data includes information from national/regional statistical offices, national transport plans, data from Ministries and Infrastructure Managers
- For Italy national statistics will be used for maritime transport
- For some countries clarifications on availability of certain data may still be required

Presentation prepared by Tplan Consulting S.r.l. and FIT Consulting S.r.l.

www.tplan.consulting

www.fitconsulting.it

www.adriatic-ionian.eu

eusair.point.svrk@gov.si

Eusair Facility Point

@EusairPoint

EUSAIR Facility Point