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International Seminar on Transport Planning

What are the challenges for freight transport in the North Adriatic area ?

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Università Iuav
di Venezia



Transport

logistique, mobilités
et aménagement

Master TRANSPORTS, TERRITOIRES, ENVIRONNEMENT 2024/2025 - CY Cergy Paris University

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Outline

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Strategic assets of the Adriatic ports and geopolitical competition

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A brake on the flow of freights ?

P22

Fragmented management and disparities between the Adriatic
countries : Complex coordination...

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Areas of improvement : Projects' proposals

Why Riviera ?

- Dual observation :
 - Thyrennian (Ligurian) and Adriatic seas
 - Both regions have similar territorial configuration allowing relevant comparing
- Both regions also face similar dynamics and issues : land-use/territorial and transport related
- Interconnexion between different scales will allow better understanding of stakes



Adriatic study area





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Strategic assets of the Adriatic ports and geopolitical competition

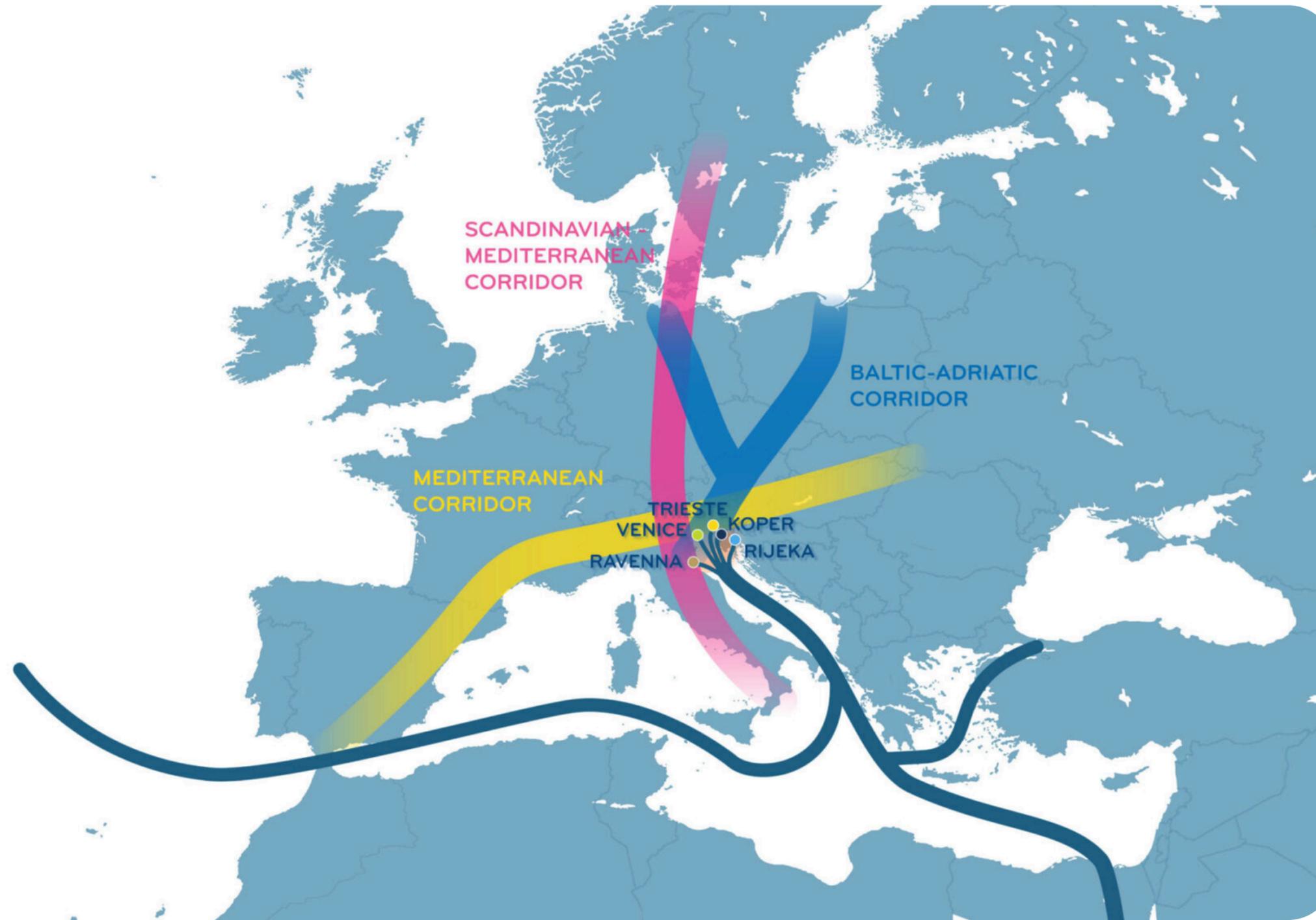
Strategic assets of the Adriatic ports and geopolitical competition



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A. The competition with northern European ports



- In the dead end of Adriatic, the geography of Northern Adriatic Ports benefits from a strategic location
- Variety of logistic services and extensive traffic network
- Efficient multimodal gateway to the key European markets -> near large industrial cities such as Milan, Munich and Vienna

Strategic assets of the Adriatic ports and geopolitical competition



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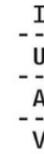
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A. The competition with northern European ports



- Adriatic ports are closer from Suez canal, and so Asia, comparing to North Sea ports
- North Adriatic ports are close to the center of Europe
- “the fastest route from the Far East to Munich is via Koper”
(*Stamatović et al. 2018*)

Strategic assets of the Adriatic ports and geopolitical competition



B. North Adriatic Ports: competition or cooperation?

- North Adriatic Ports Association acts in:
 - promotion of the ports activities
 - gathering EU fundings to lead some project
 - coordination and lobbying for transport infrastructures development
- Cooperation between the port authorities but no commercial cooperation for private actors
- Differences between governance and administration of the actors complexify the cross border cooperation

Source: Stamatović et al. 2018



Strategic assets of the Adriatic ports and geopolitical competition



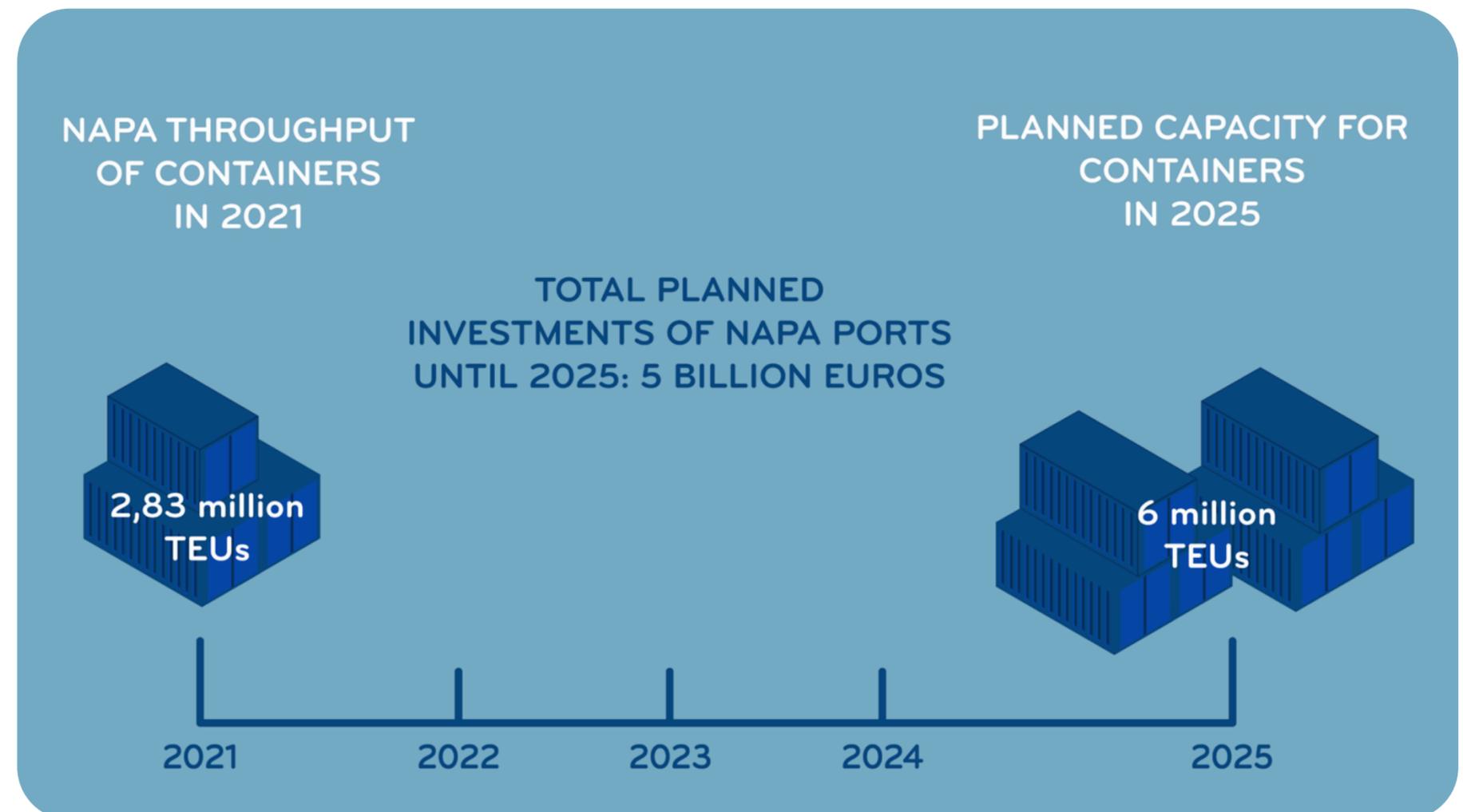
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B. North Adriatic Ports: competition or cooperation?

- North Adriatic Ports Association rather cooperate...
 - ... because it avoids a potentially risky specialization
 - ... because sharing the containers market is worthier, as long as the traffic increases

Source: Stamatović et al. 2018



Source: NAPA

Strategic assets of the Adriatic ports and geopolitical competition

C. The concept of European Core Network Corridors

9 core network corridors introduced by the EU to facilitate circulations and have many objectives:

- **Decrease the bottlenecks** across the corridor
- **build or enhance its missing parts**, especially on the cross-border sections
- **promoting interoperability** and modal integration

2 Core network corridors in the Adriatic :

- **Mediterranean corridor** (Consists of rail and roads. Key railway projects along this corridor are the links Lyon – Turin and the section Venice – Ljubljana)
- **Baltic-Adriatic corridor** (important railway projects such as Semmering tunnel and Koralm railway in Austria and cross-border sections between PL, CZ and SK)



Port typologies

Venezia



Major goods

- Steelworks
- Agrifood
- Oil

11,5m max draught depth

Rail modal share from port



10 %

Trieste

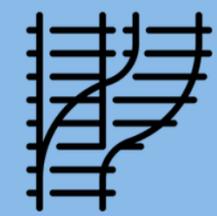


Major goods

- Liquid Bulk
- RoRo

18m max draught depth

Rail modal share from port



50 %

Rijeka

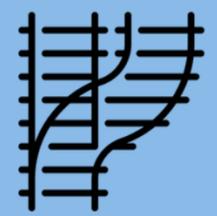


Major goods

- Containers

18m draught depth

Rail modal share from port



50 %

Koper

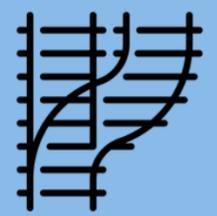


Major goods

- Containers
- Solid Bulk

18m draught depth

Rail modal share from port



58 %

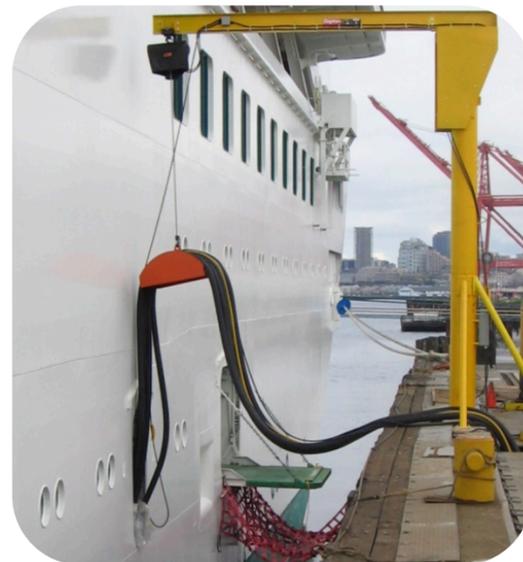
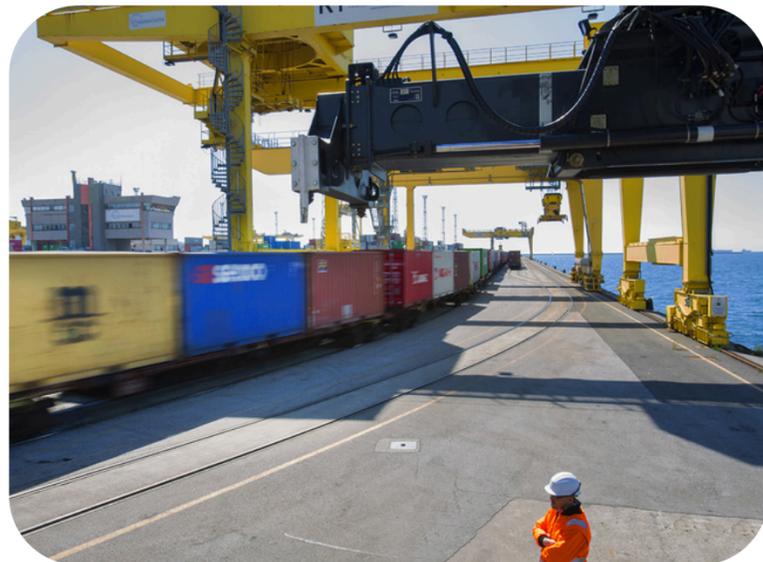
Port typologies

Rail link to ports, allowing multimodality

&

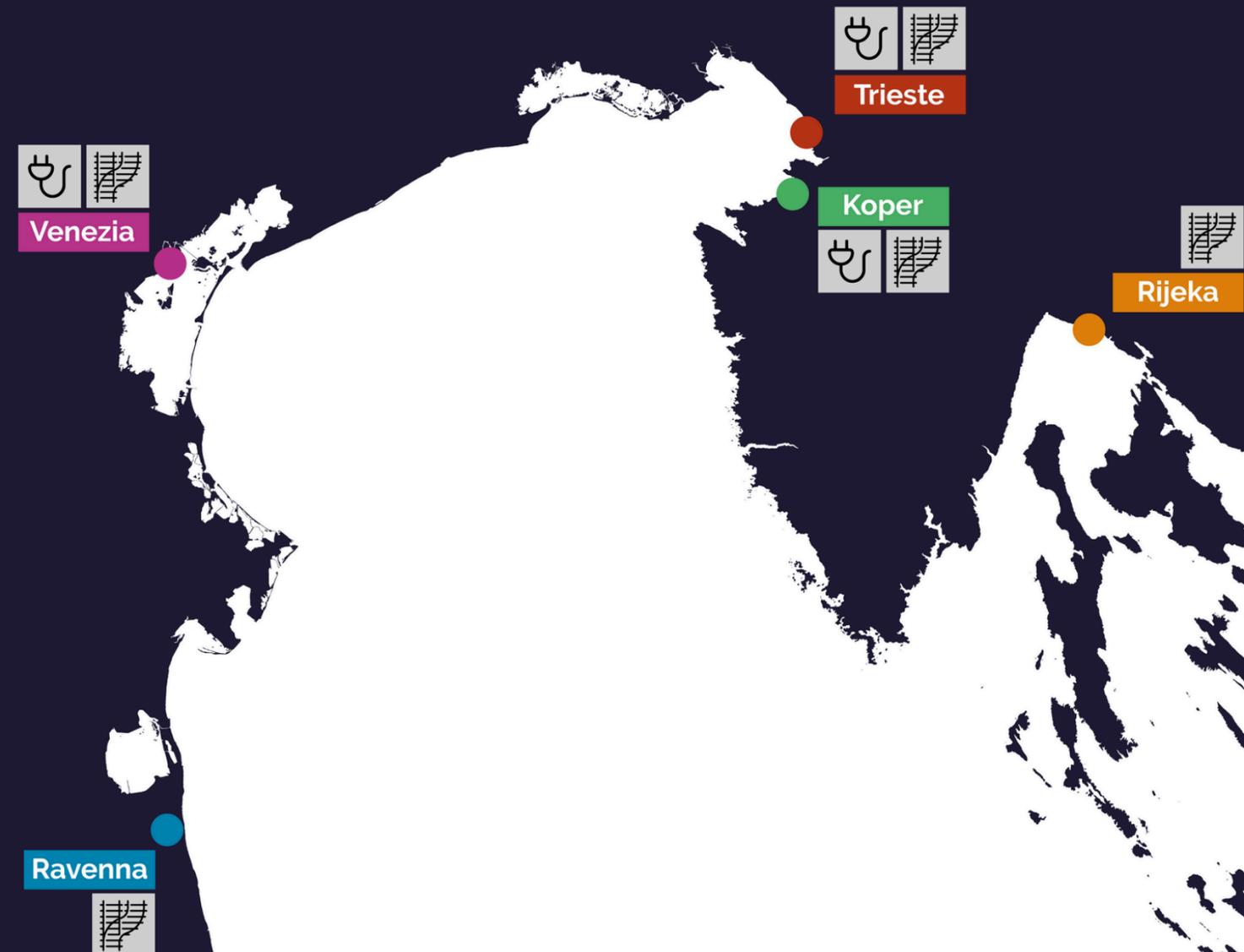
Cold ironing, electric outlet in port berths, to prevent engines running in ports, urban centers

are considered to be the efficient ways of decarbonizing the maritime logistics sector

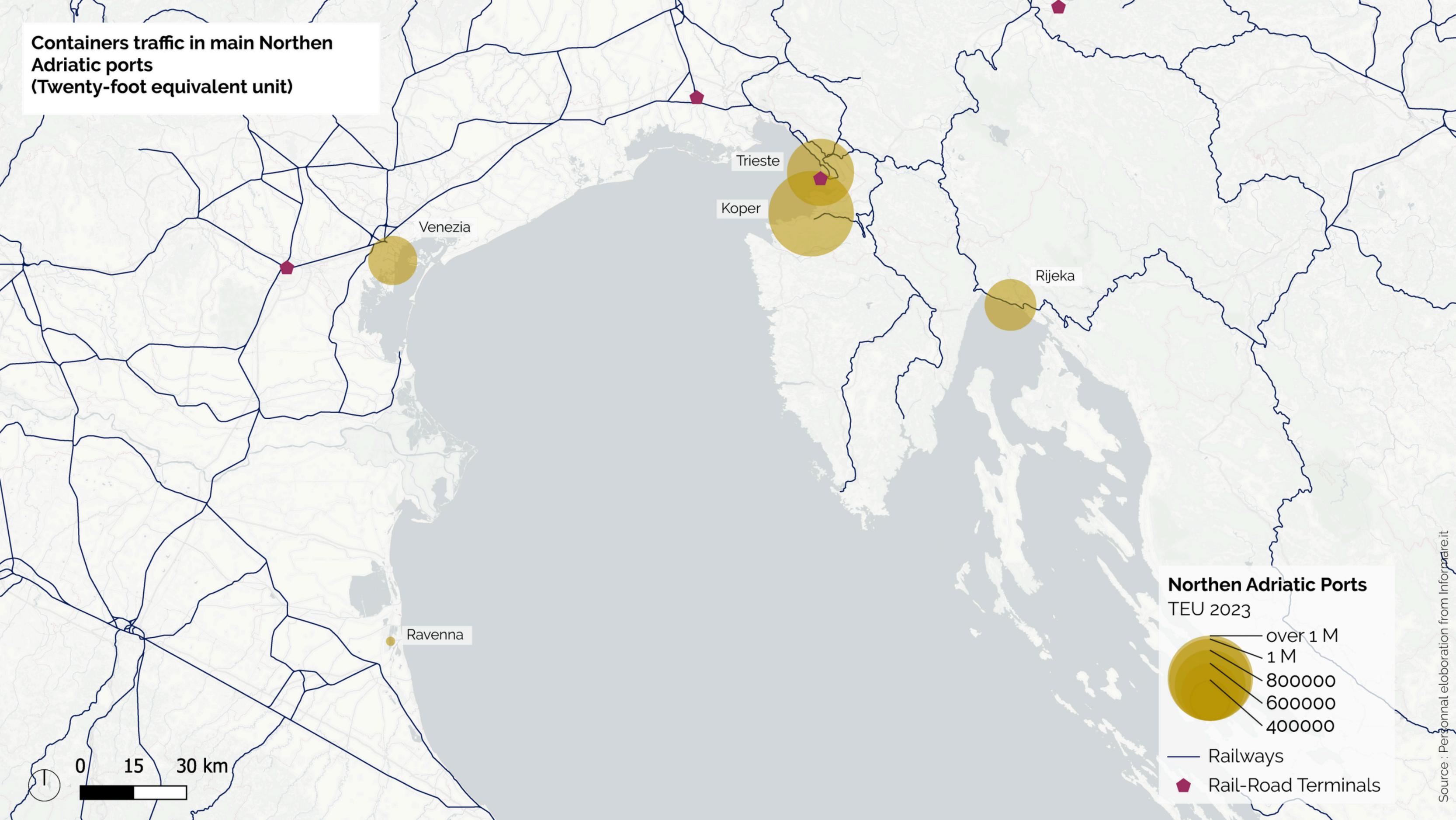


Main infrastructures facilities in Northern Adriatic ports

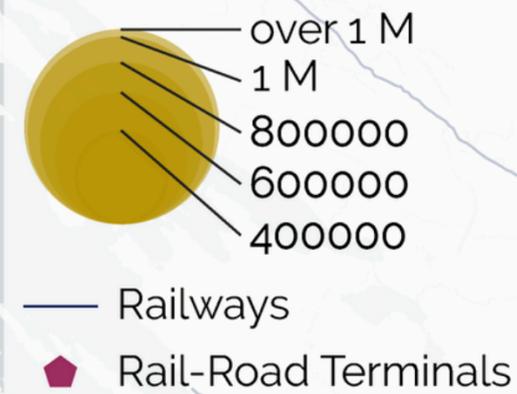
-  Cold ironing
-  Rail link to port



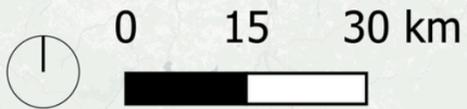
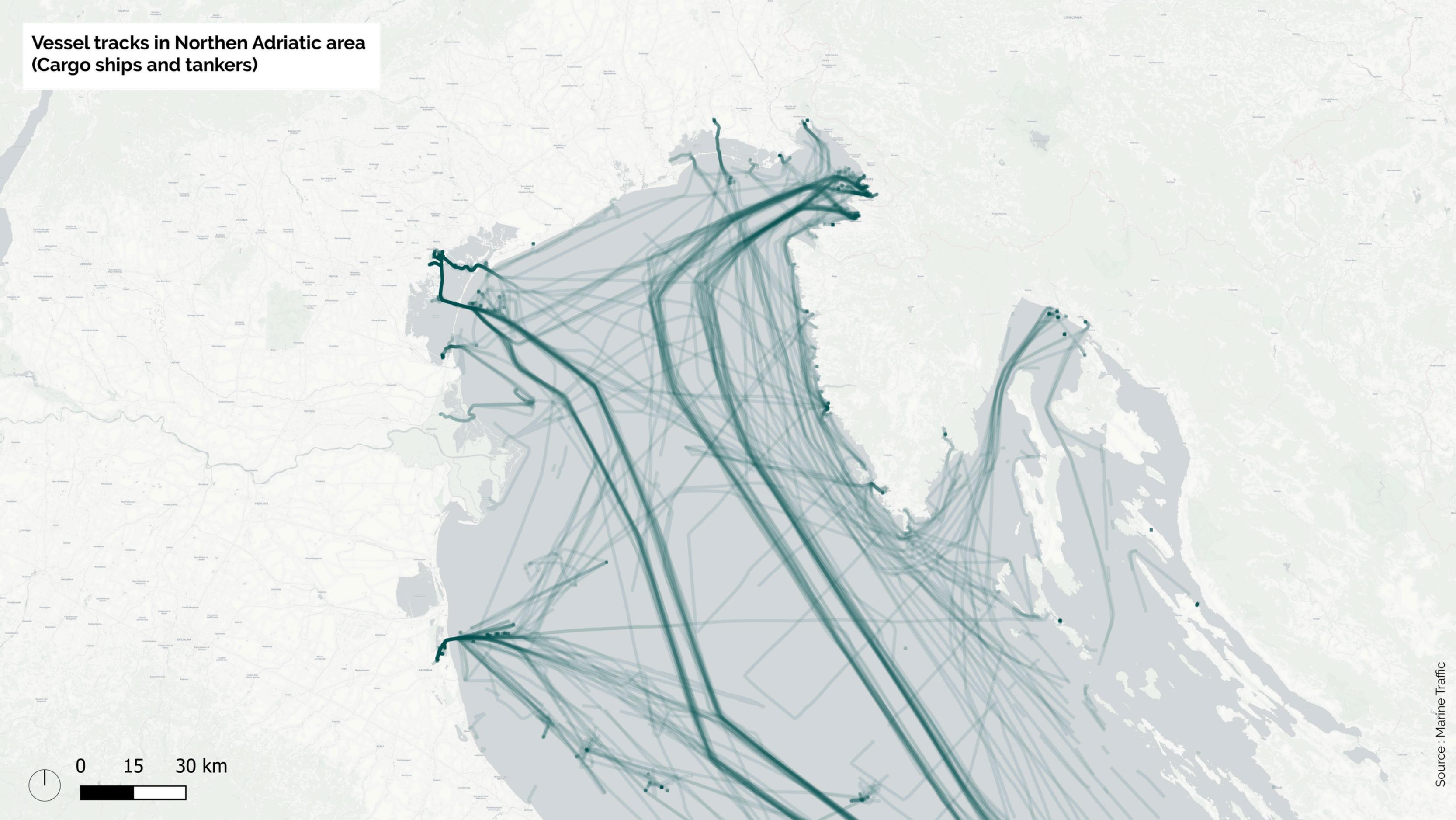
**Containers traffic in main Northern Adriatic ports
(Twenty-foot equivalent unit)**



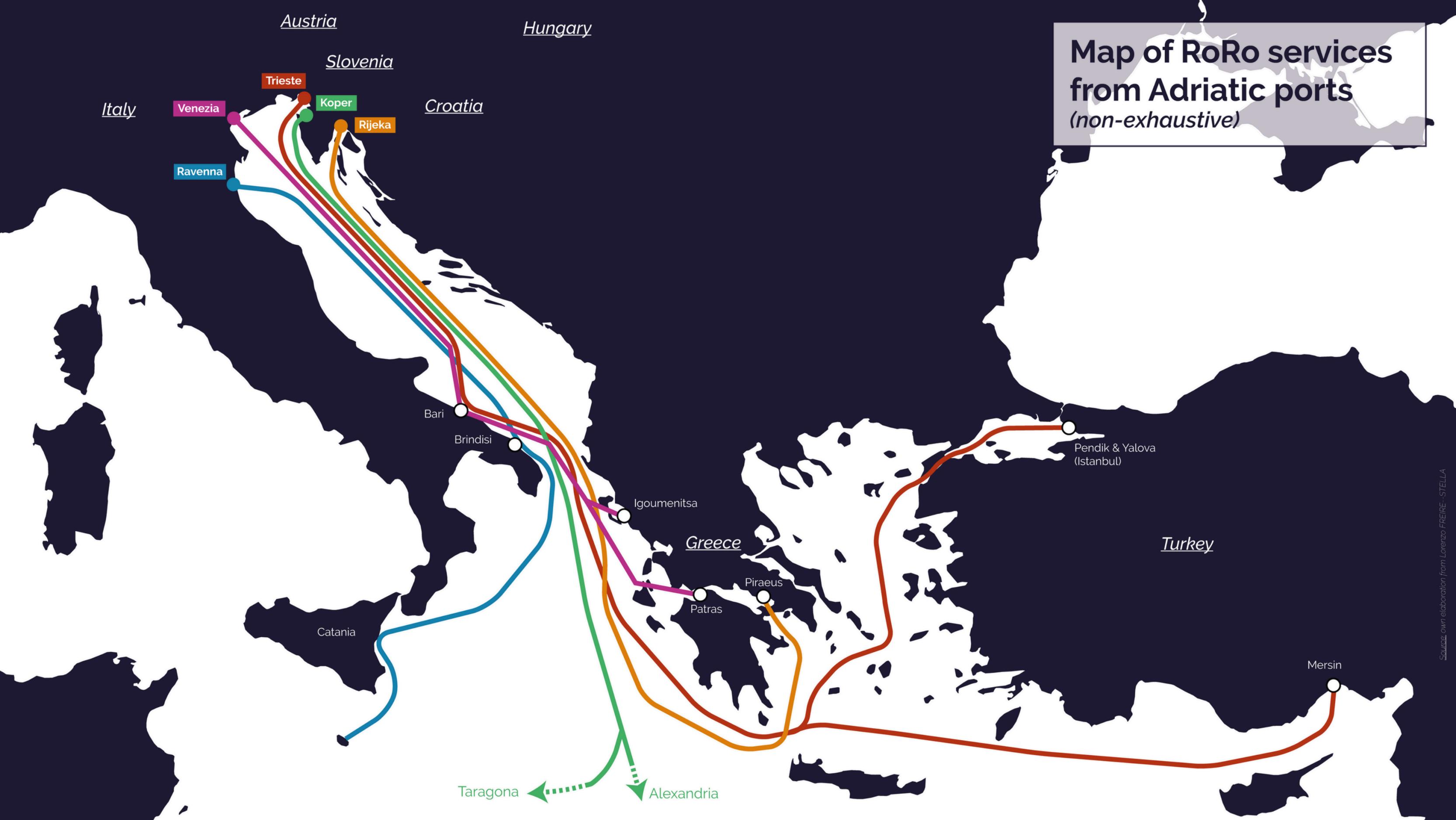
**Northern Adriatic Ports
TEU 2023**



Vessel tracks in Northern Adriatic area (Cargo ships and tankers)



Map of RoRo services from Adriatic ports (non-exhaustive)



Strategic assets of the Adriatic ports and geopolitical competition



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The free port of Trieste : an undeniable advantage

- The Austrian kingdom port since 1719
- From 2017, amplified powers to the port authority

- **Import Cargo**

Import goods can be immediately discharged, no matter the nature of goods, the origin, or the destination. Discharge or transshipment operations do not need any specific authorization.

Store of goods without time limits and to retain their origin even if non-EU

- **Export cargo**

Goods coming from EU Countries entering into the Free Port Zone are considered “exported” from the European Community



- In 2022, the Port of Trieste handled **57.6 million** Tons of goods (4% more than 2021) :
 - Liquid bulk traffic : **37.9 million** Tons
 - Dry bulk: **650 thousand** Tons
 - Major RoRo traffic with Turkey thanks due to taxes' incentives

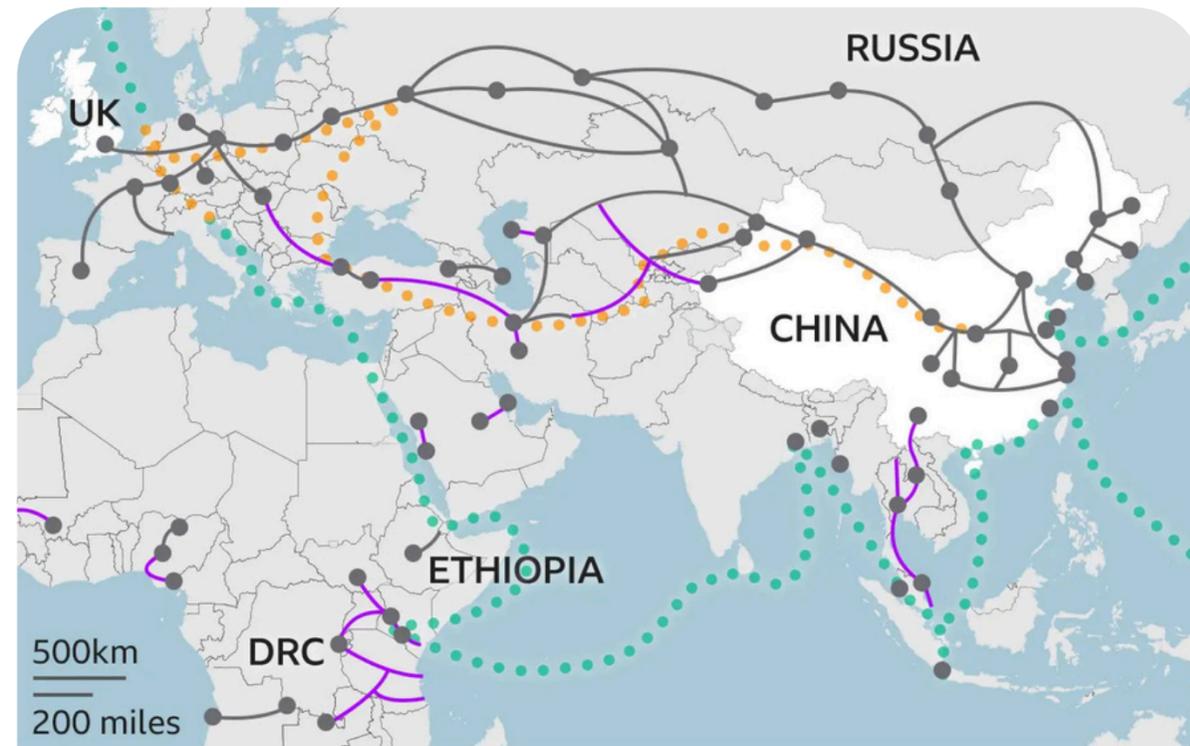
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C. Impact of the New Silk Roads - the Belt and Road initiative



- Existing railways — Planned/under construction railways
- Key stations ● Maritime road ● Economic belt

Top 5 of Global Leaders in Container Shipping

4 out of 5 are European-based.

Europe's Challenges

- Struggles with financing transport infrastructure.
- Competing with China's aggressive global expansion.
- Remaining powerful is this strategic crossroads which links Atlantic, Black Sea, and Indian Ocean

China in Adriatic

- Italy's withdraw from the BRI in 2024 due to intense debt creation
- Rijeka port concession cancelled to Chinese corp.



Port of Trieste Case :

- Outcome : Chinese dominance blocked under EU and transatlantic pressure.
- Result : German company Hamburg Hafen und Logistik AG acquired 50.1% of the port.

Strategic assets of the Adriatic ports and geopolitical competition



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EU-Ukraine solidarity lanes

Since May 2022 strategy of European Commission to protect Ukraine exports to Europe

- Shipping through black sea made impossible due to Russian aggression
- The need for alternatives routes on land

Adriatic ports at the core of solidarity lanes strategy

- Extension of the TEN-T network to Ukraine and Moldova
- Infrastructure projects for corridors along the solidarity lanes
- Road and Rail transport to adriatic ports to diffuse further away

New road transport agreements between the EU, Ukraine and Moldova

- allows additional transport by road
- hauliers can transit without the need for permits



Main takeaways

- The North Adriatic Ports are competing with North Sea Ports...
- The ports also try to cooperate with each other in
- Adriatic ports are resisting Chinese dominance to keep their strategic port governance



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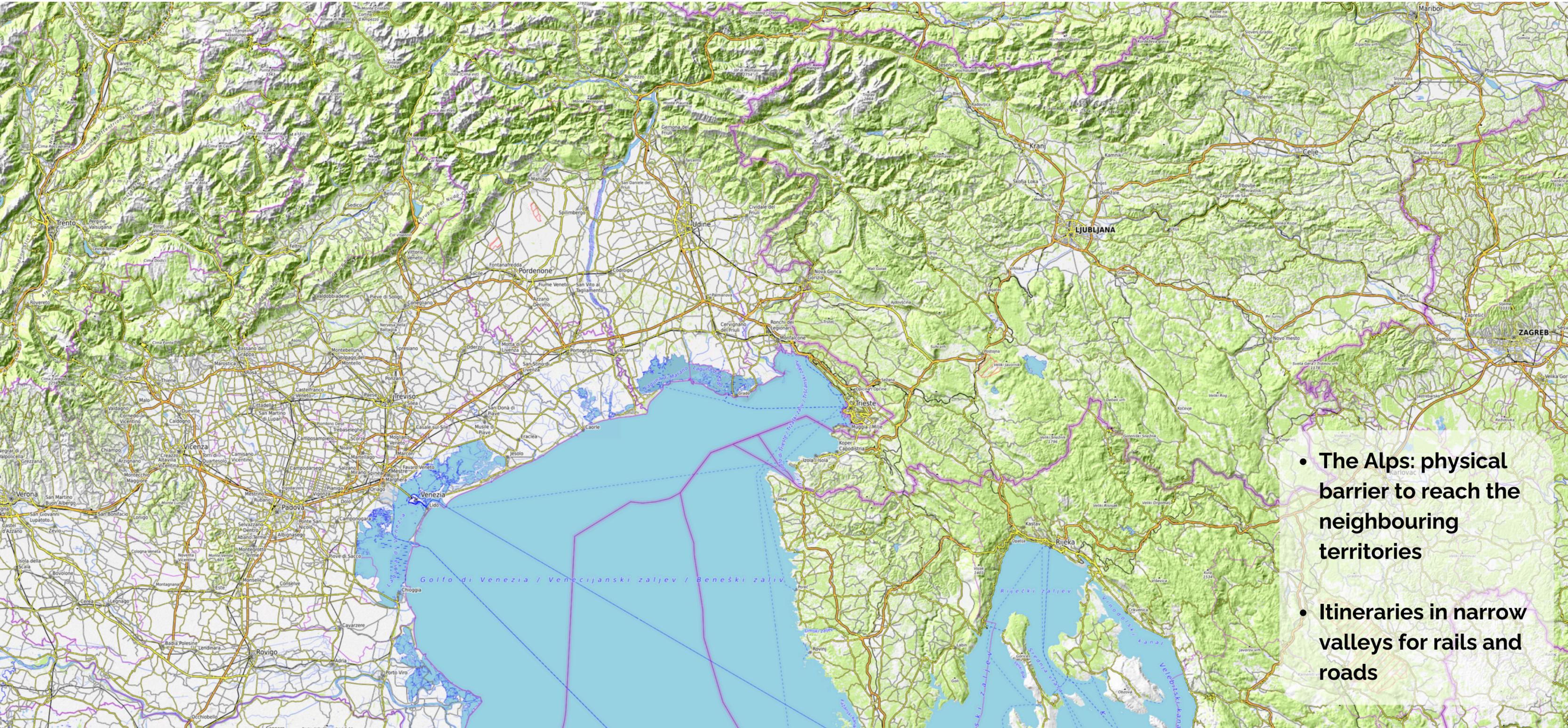
**Geographical and
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A brake on the flow of
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Geographical and typological constraints of the territory: A brake on the flow of freights ?

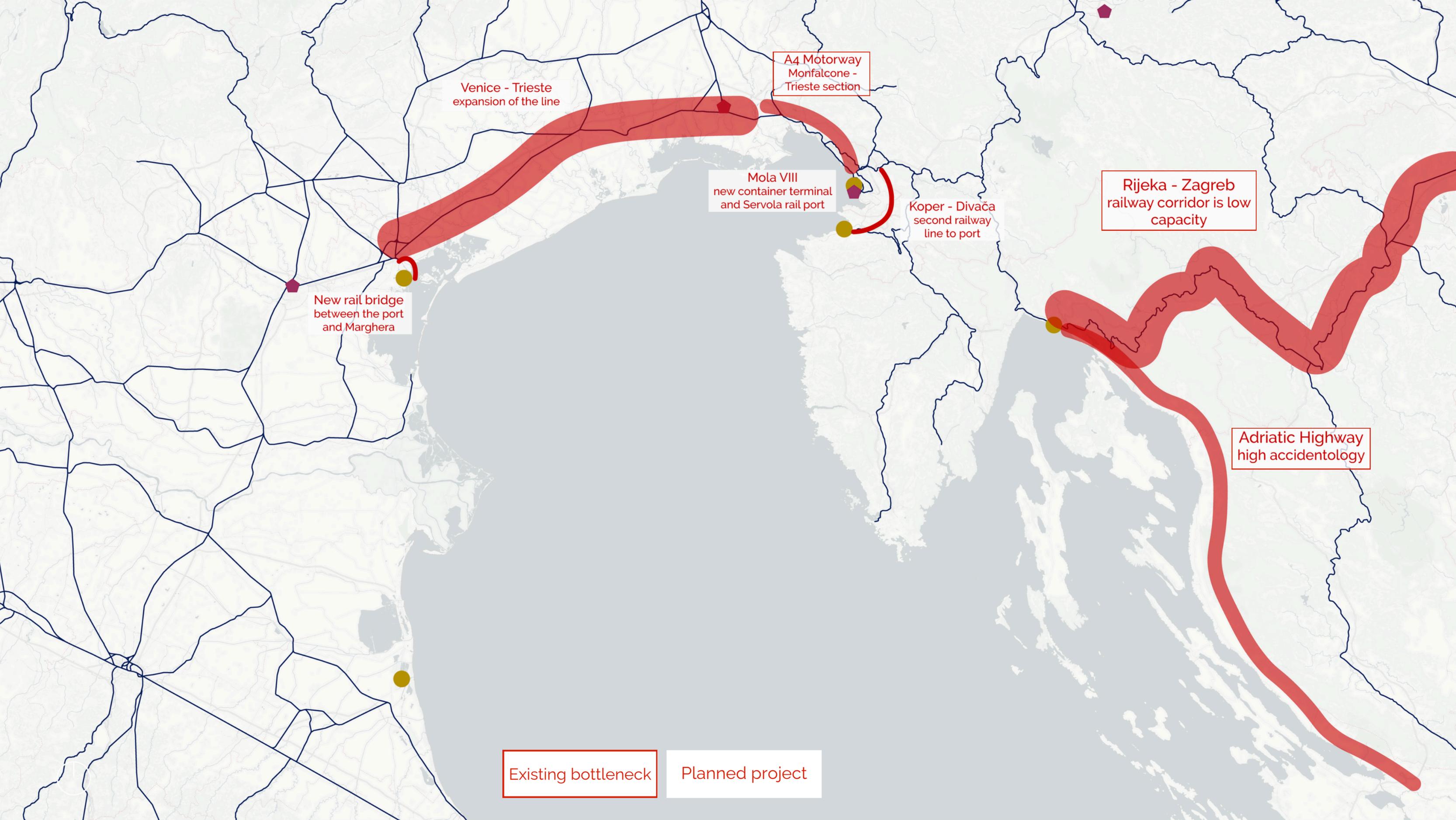


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- The Alps: physical barrier to reach the neighbouring territories
- Itineraries in narrow valleys for rails and roads



Venice - Trieste
expansion of the line

A4 Motorway
Monfalcone -
Trieste section

Mola VIII
new container terminal
and Servola rail port

Koper - Divača
second railway
line to port

Rijeka - Zagreb
railway corridor is low
capacity

New rail bridge
between the port
and Marghera

Adriatic Highway
high accidentology

Existing bottleneck

Planned project

Geographical and typological constraints of the territory: A brake on the flow of freights ?



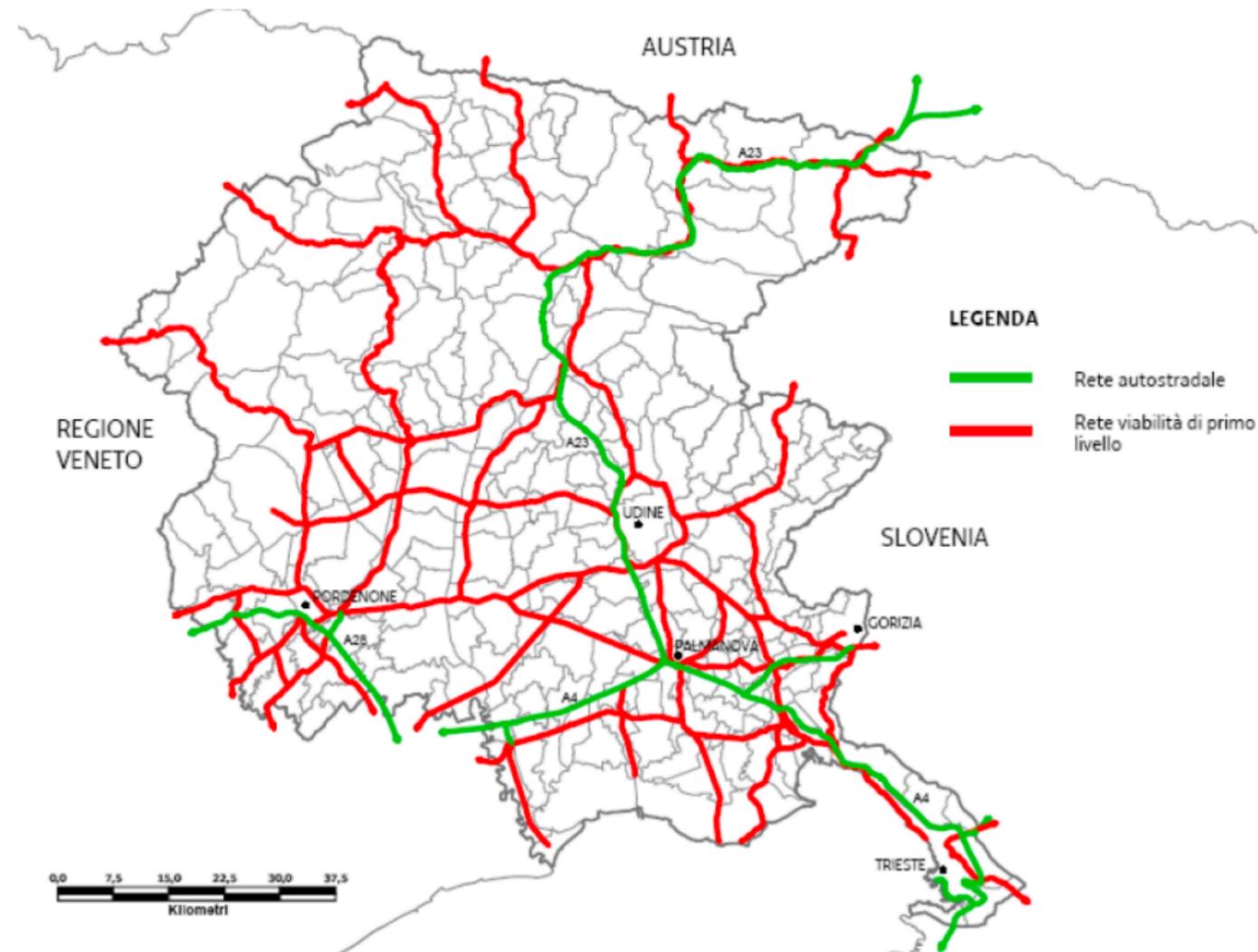
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B. Some bottlenecks but some solutions to overcome them

Figura 1 – Rete viaria nel territorio della regione Friuli Venezia-Giulia

(Fonte: Piano regionale delle infrastrutture di trasporto, della mobilità delle merci e della logistica, Relazione illustrativa)



- Italian motor way A4 The region of Friuli-Venezia Giulia. Traffic can be slow around Monfalcone and the Ferneti border crossing
 - 832 millions of kilometers for trucks in 2019 (Venice-Trieste)
 - 21 dead people on the A4 in 2019
 - Huge trafic jam around Italian, Slovenian, and Croatian crossroads
 - Investment for the completion of the third lane on the A4 Venice-Trieste section

Main takeaways

- Several bottlenecks have already been identified in every transport mode
- Political's will acknowledge the importance of increasing freight traffic in the next years

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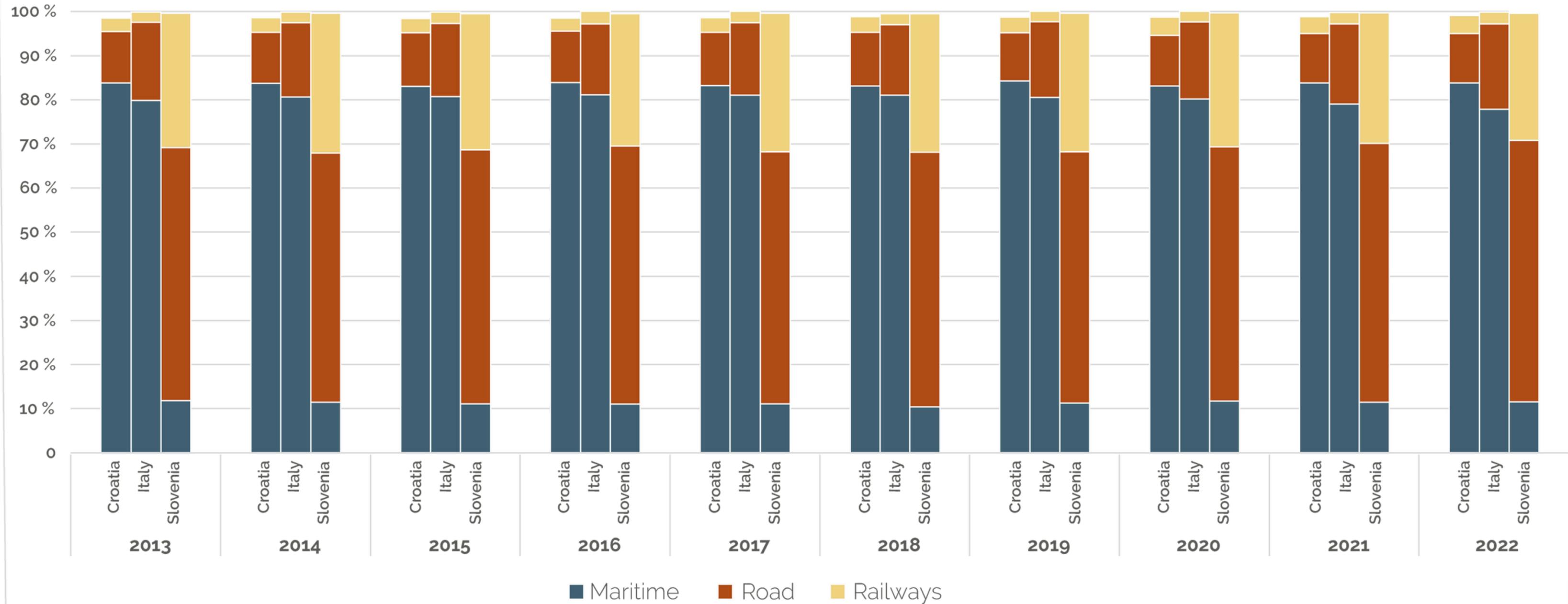


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**Fragmented
management and
disparities between
the Adriatic countries :
Complex coordination**

Modal shares of freight transport in selected countries

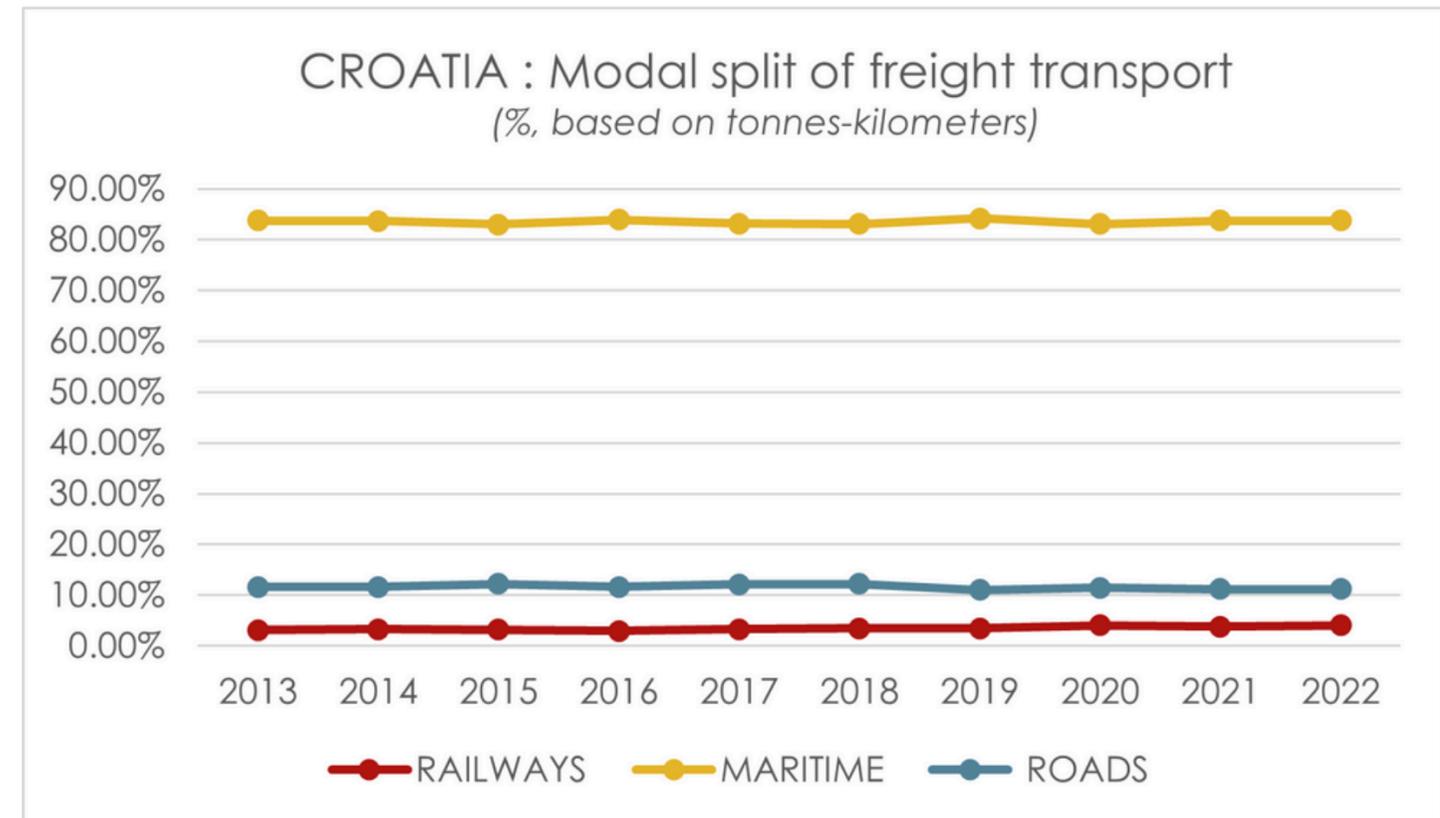
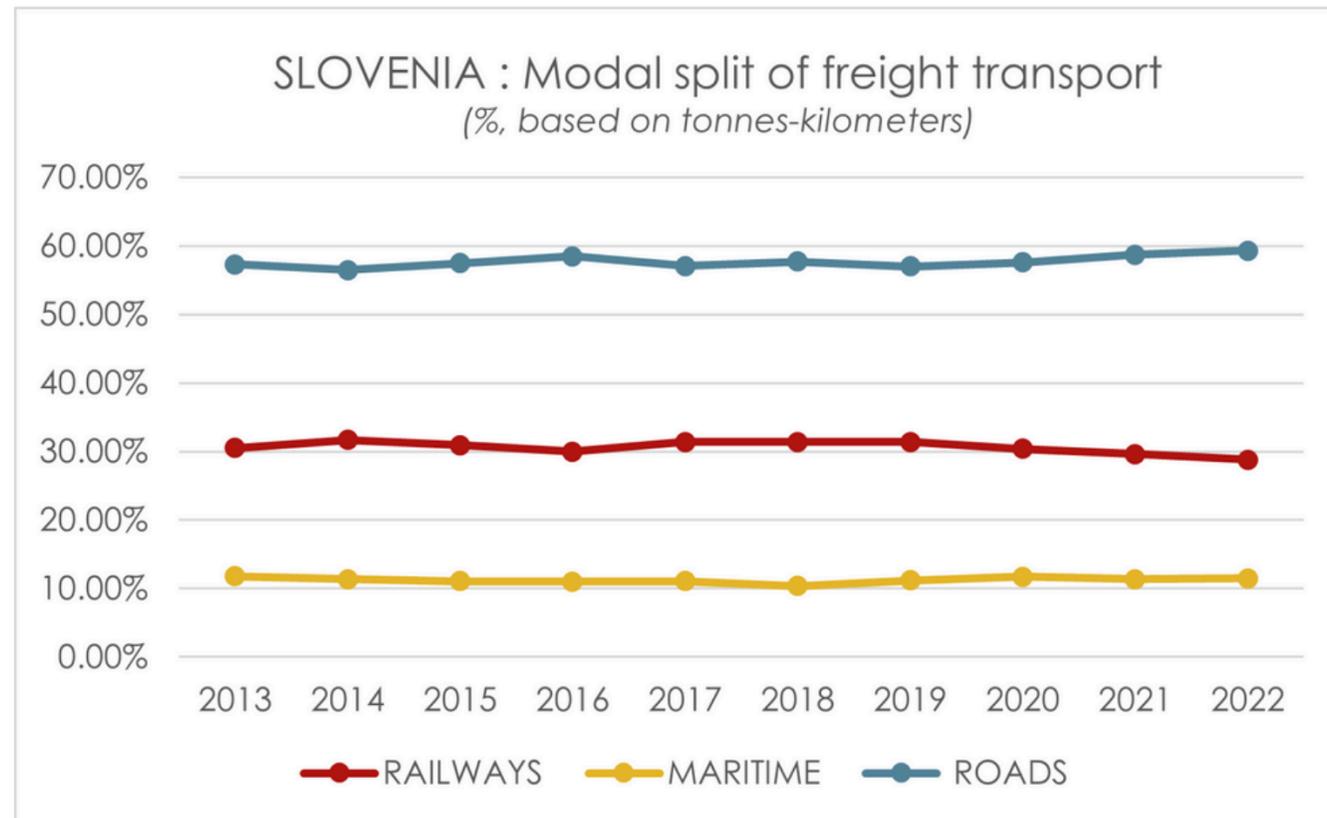
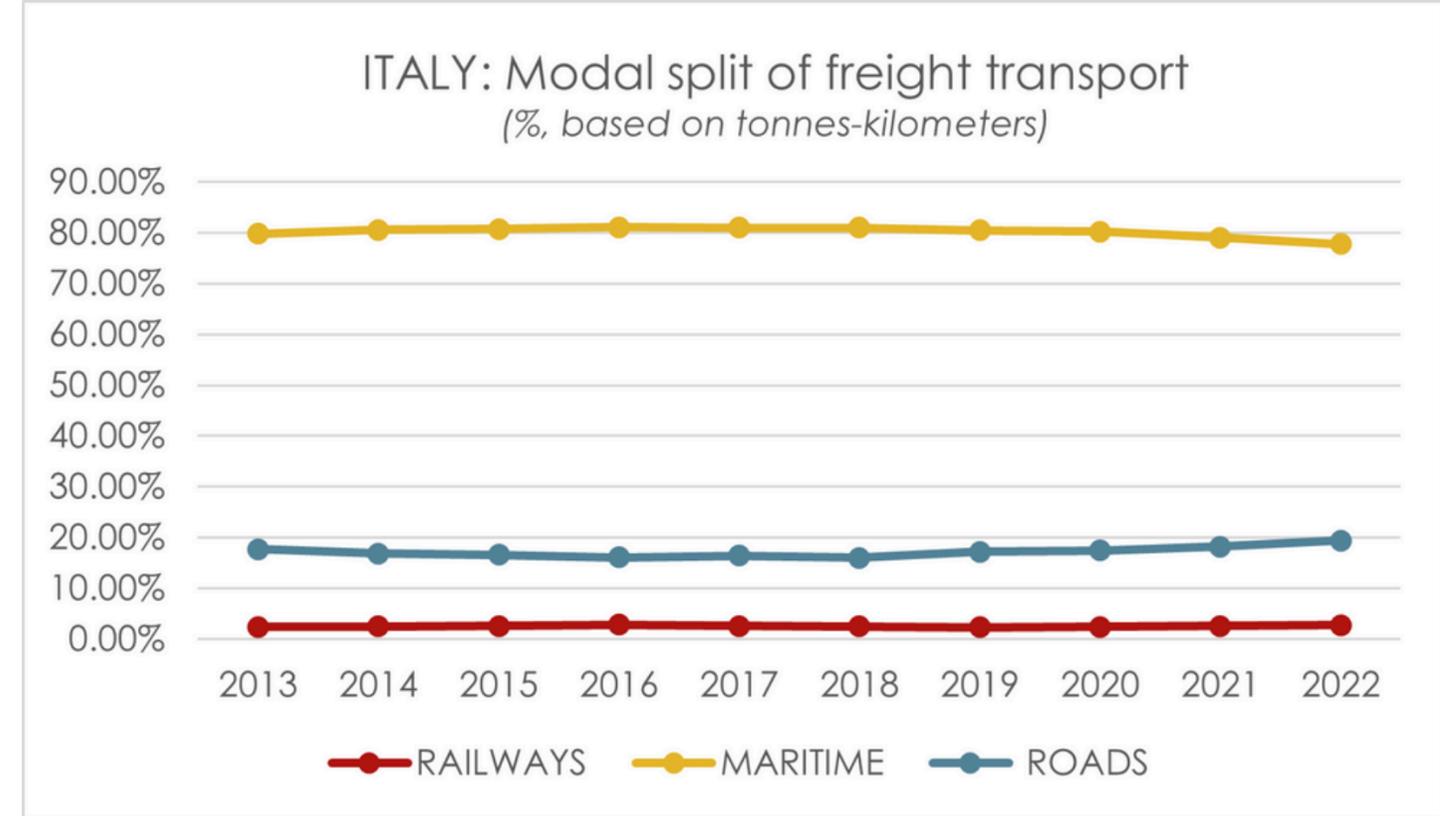


Source : Eurostat (modal share between our 3 studied countries between 2013 and 2022).

NB : Croatia entered the EU in 2013

Heterogenous national contexts

- Italy and Croatia share a **similar distribution** of the modal share
- Croatia has a **massive use of maritime** due to its inefficient rail and road national network
- Italy has a **vast maritime space** with many commercial ports, while **Slovenia has only 1 entry** to sea : the port of Koper



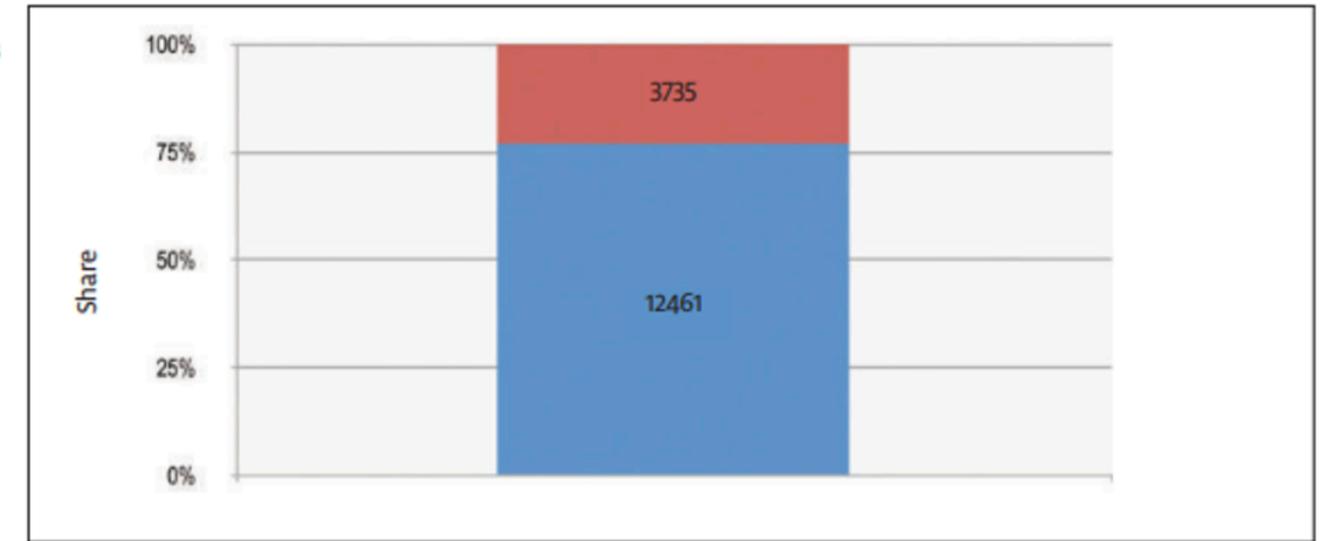
Source : Eurostat (modal share between our 3 studied countries between 2013 and 2022) - Croatia entered the EU in 2013

Fragmented management and disparities between the Adriatic countries : Complex coordination

A. A significant difference in modal shares between countries

- Slovenia has a real difference with its Adriatic neighbors...
 - Higher rate of rail use for freight
 - **No use of inland waterways** > transit goes by road/trains and connects the Port of Koper

Figure 14. Share of a type of goods transport in the area of Slovenia, 2011



Source : Ministry of Transport, Environment and Equipement of Slovenia (2011)

2019	Road	Rail	Inland Waterways
EU	77,40%	22,60%	5,60%
Slovenia	64,50%	35,50%	0%

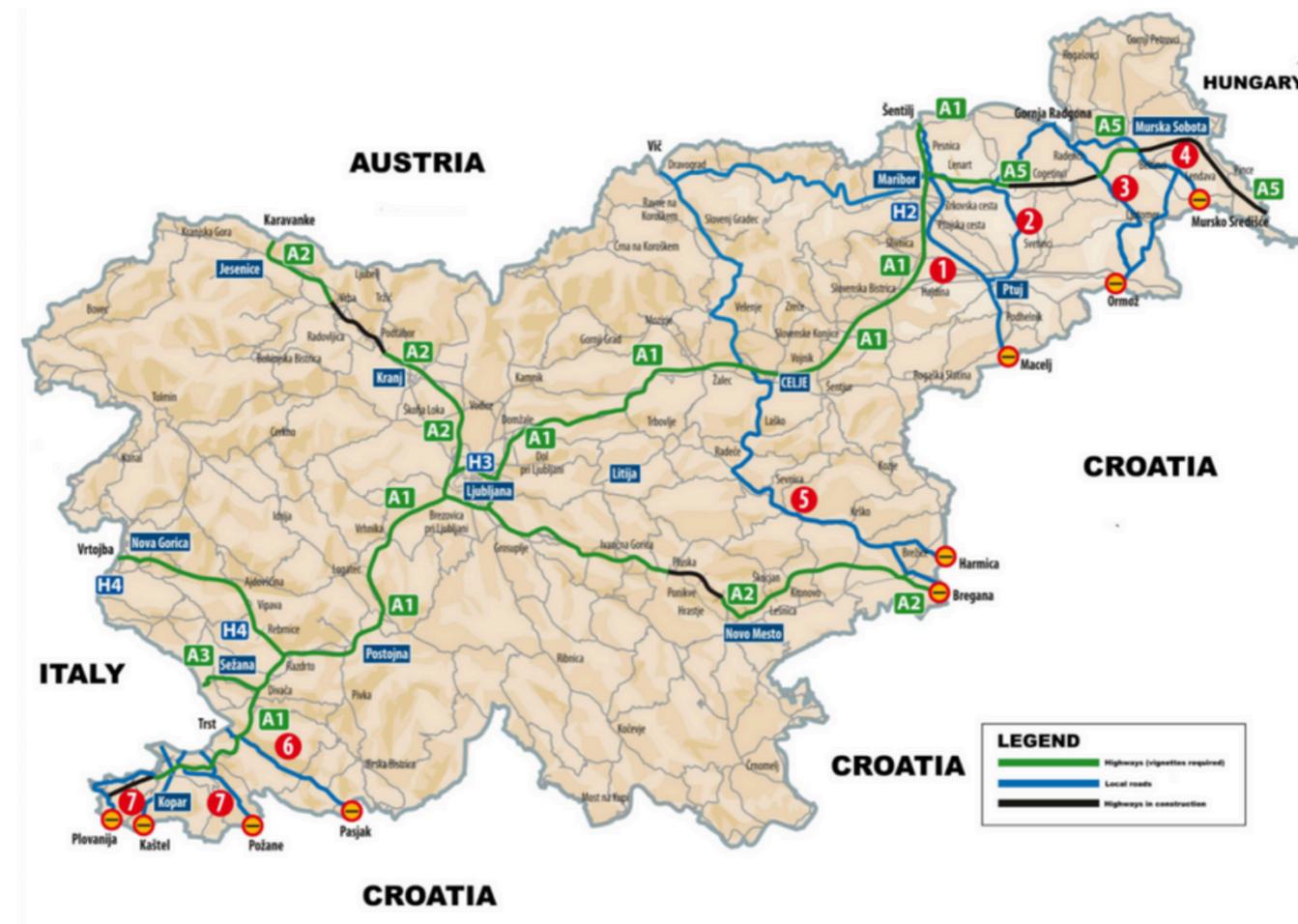
Source : Eurostat (modal share comparison EU vs Slovenia (year 2019))

- ...but also with the rest of the EU
 - Slovenia **doesn't have any river** that can support a real trafic of cargos ships.
 - The situation is evolving between 2011 and 2019 : -10% of the modal share for the use of road.

Fragmented management and disparities between the Adriatic countries : Complex coordination

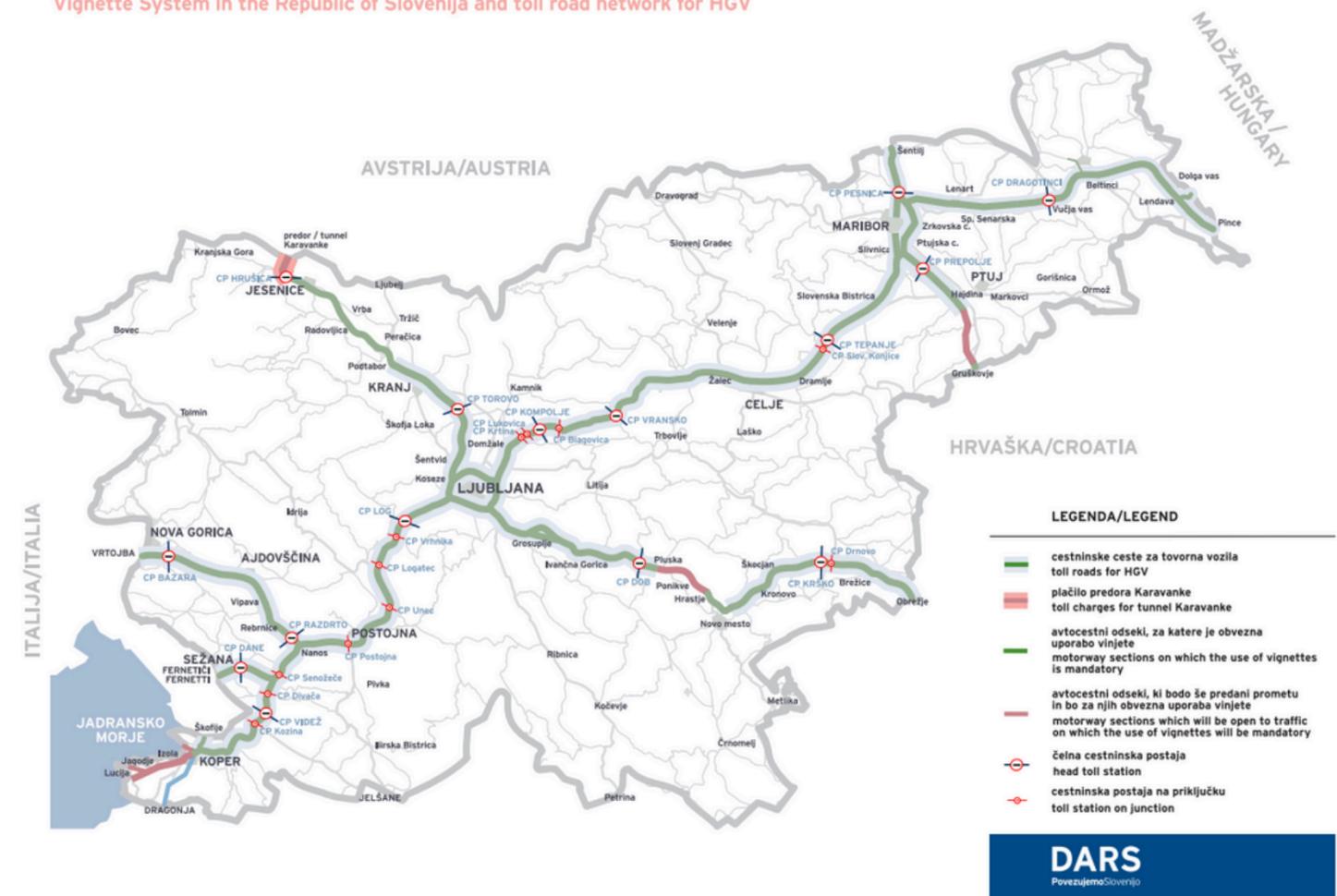
A. A significant difference in modal shares between countries

- o 5-level of a vignette system + toll system that applies the price based on the interest of the road -> the port of Koper is subject to **multiple level of taxes** which makes **road less competitive**



Source : Ministry of Transport, Environment and Equipement of Slovenia ((2011)

Vinjetni sistem v Republiki Sloveniji in cestninjenje tovornih vozil
Vignette System in the Republic of Slovenia and toll road network for HGV



Source : Družba za avtoceste v Republiki Sloveniji (Motorway Company in the Republic of Slovenia) (2011)

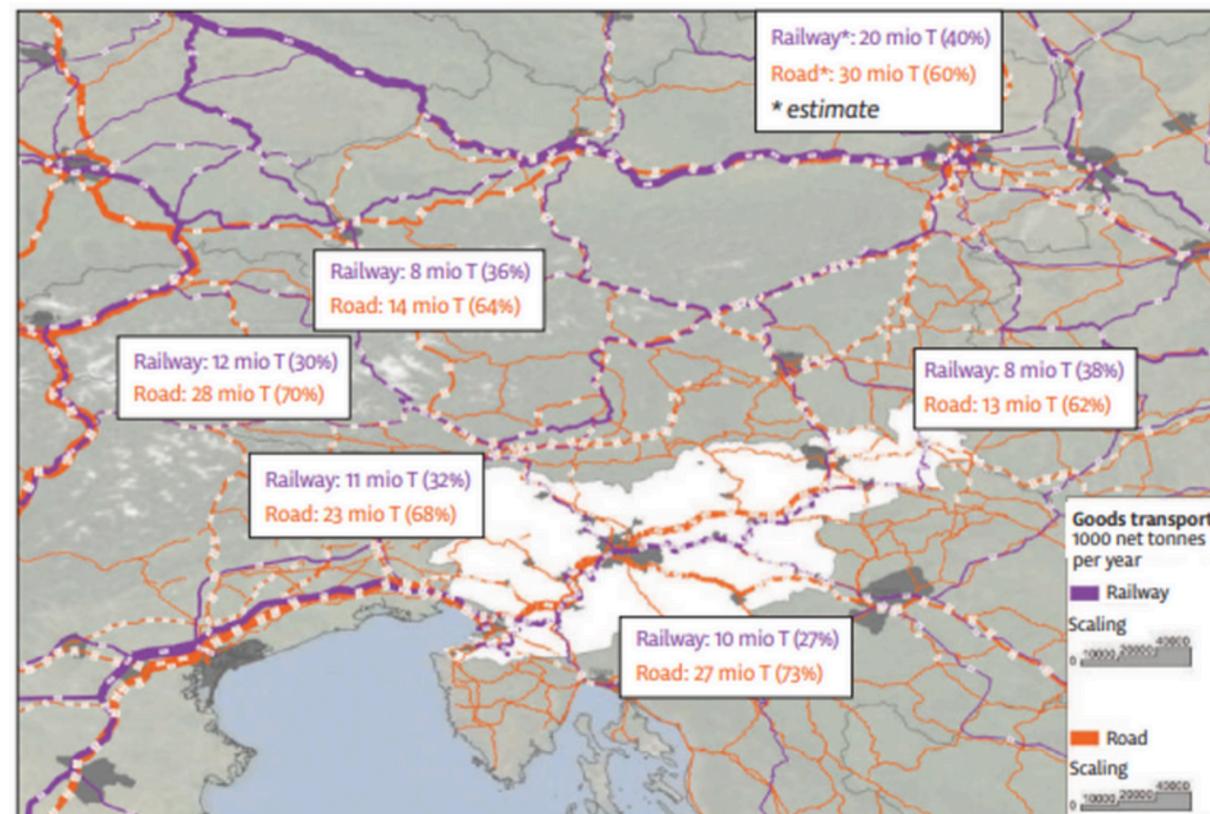
Fragmented management and disparities between the Adriatic countries : Complex coordination

A. A significant difference in modal shares between countries

- **Slovenia has a 3-way taxing process :**

- Corporate Tax (CIT) : Non-Slovenian companies pay by activities carried out within the country (19% of the AP)
- Value added tax (VAT) : The standard VAT rate in Slovenia is 22% and it applies to the majority of goods and services.
- Mandatory annual motor vehicles tax : Heavy goods vehicles are the main payer = 22.86€/tonne for heavy goods vehicles over 4T)

Figure 24.
Loads carried by rail and road haulage (net tonnes/year), 2011, wider area



Source : Ministry of Transport, Environment and Equipement of Slovenia (2011)

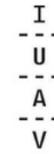
- Policies against road reduced by the international traffic with Italy and Croatia -> **majority by road inside the region**

Structure of the Slovenian RFT sector in 2019

2019	Goods transported	Tonne-kilometers achieved		Average distance	Vehicle.kilometres achieved
	thousand tonnes	million t.km	%	km	million of vehicle.km
TOTAL	91,775	24,011	100.0%	262	1,509
Domestic transport	54,439	2,303	9.6%	42	208
International tranport	37,336	21,706	90.4%	581	1,301
<i>International transport of goods loaded in Slovenia</i>	11,199	5,618	23.4%	502	356
<i>International transport of goods unloaded in Slovenia</i>	8,237	4,261	17.7%	517	263
<i>Cross-trade</i>	13,305	10,563	44.0%	794	606
<i>Cabotage</i>	4,595	1,263	5.3%	275	76

Source : Eurostat

Fragmented management and disparities between the Adriatic countries : Complex coordination



B. Unequal maintenance between countries

Even if the infrastructure is financed mainly by the European Union, the maintenance is part of the responsibility of the country where the road pass, funded through:

- National public budgets.
- Revenues from tolls or user fees.



Country Facing the Most Challenges : Croatia :

- Outdated railway network with limited modernization efforts.
- Fragile economy restricting co-financing capacity.
- Complex geography (islands, rugged terrain) making maintenance expensive.
- Focus on tourism infrastructure at the expense of other transport sectors.

Fragmented management and disparities between the Adriatic countries : Complex coordination



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C. Temporary reintroduction of Border Control

"The Schengen Borders Code (SBC) provides Member States with the capability of temporarily reintroducing border control at the internal borders in the event of a serious threat to public policy or internal security"



Borders between Slovenia and Croatia (2018)

- Italy and Slovenia have implemented reinforced border controls for a known period (end in the mid-2025).
- Third-country nationals can cross the border at 14 checkpoints, compared to 18 for EU citizens
- In Slovenia, waiting times at borders can sometimes reach up to one hour, potentially slowing down the flow of goods.
- Croatia had integrated the Schengen area since the 1st January of 2024.

These controls represent a limitation to the Schengen Area and highlight the individual governance powers countries can exercise for specific reasons, such as national security concerns (to prevent terrorism and crime).

Main takeaways

- Heterogenous national contexts and specific policies lead to a gap between Slovenia and the 2 other countries
- Reducing road traffic ambitions overbalanced by the one-way access to the sea, and weak alternatives
- Lack of political coordination in favor of rail and maritime
- Unequal infrastructure maintenance across neighboring countries
- A free movement area (Schengen), but potentially limited by state border sovereignty



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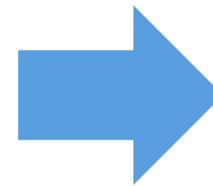
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Areas of improvement: Projects' proposals

A. Creation of a Federation

Transformation from NAPA towards North Adriatic Seaports Federation (NASF)

- Members: Port of Koper, Port of Rijeka, Port of Trieste, Port of Venice, Port of Ravenna.
- Shared Challenges: Poor railway connectivity with hinterland (bottlenecks in Trieste, railway crossing city in Rijeka, lack of second track in Koper).
- No direct competition: Different freight flows targeting distinct goods.
- Common Goal : Support regional development to compete with Northern European ports.

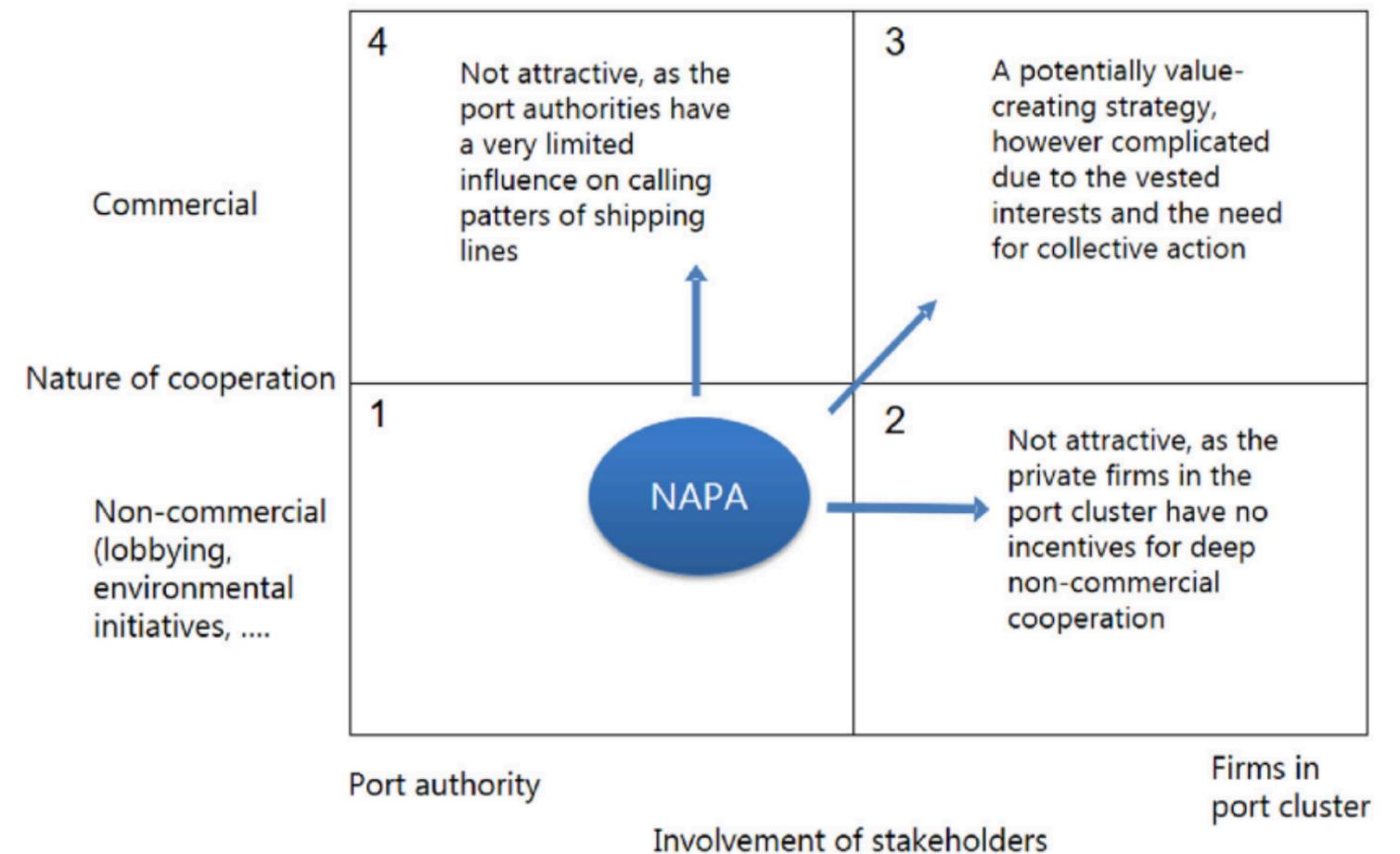


Benefits of Federation

- The creation of trans-national port authority
- Stronger representation with governments and international bodies.
- Resource pooling for joint projects and increased influence.
- More effective commercial collaboration
- Coordinated lobbying efforts for greater impact.
- Unified voice for collective interests.

A. Creation of a Federation

- A full cooperation requires **stronger governance** on both commercial and ports administration



Port cooperation matrix: future prospects of the NAPA.

(Source: Stamatović et al. 2018)

B. Coupling of freight and night trains

Synergies between the two

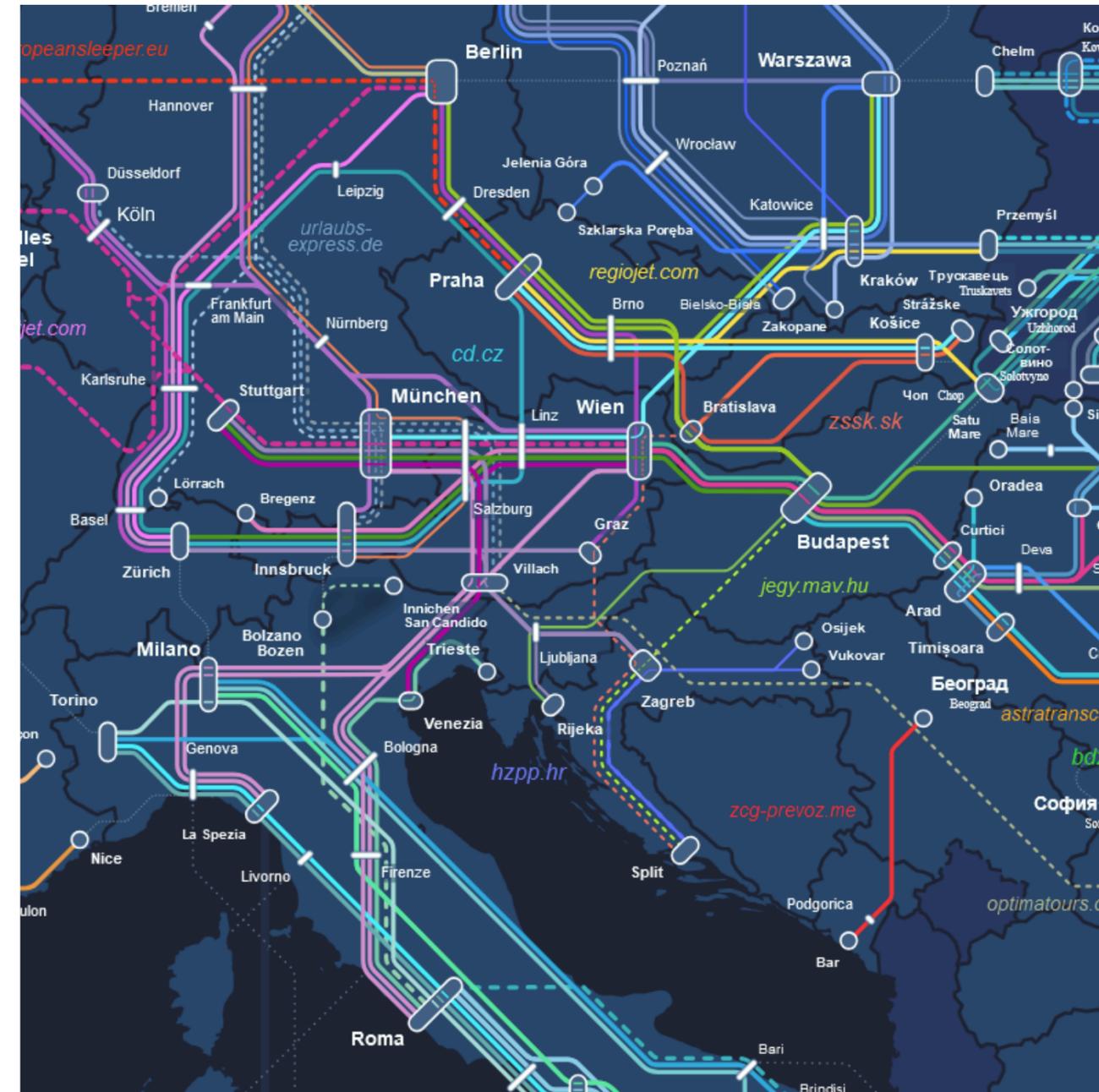
- Night trains are a less time-sensitive product such as freight trains
- Freight trains travel over long international distance -> suitable for night passenger journeys

Technical and legislative complexity

- Freight trains are often already long -> max length of 750m on European network capacities of infrastructure to welcome longer trains
- Regulation does not (yet) allow to mix goods and passengers aboard a same train.

Line experimentation : **Trieste - Amsterdam**

- around 15h travel overnight eg. 20pm -> 11am
- allows coupling in major port cities at both ends
- manoeuvre can be carried after passengers' pick up



(Source: Back on Track UE)

Thank you for listening !

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North Adriatic Port Association NAPA

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UNCTAD - UN Trade statistics office

Rete Autostrade Mediterranee - RAM Italian

Slovenian, Italian and Croatian Ministry of Infrastructure, Transport

The European Maritime Spatial Planning Platform

Trieste Marine Terminal

Samer Seaports

Mediterranean Rail Freight Corridor RFC 9

Baltic-Adriatic Corridor RFC 5

Amber Rail Freight Corridor

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