



LESSONS LEARNED FOR REPLICATION TO CE TERRITORY

D.T3.4.2

ITL FOUNDATION (PP8)

Work paper

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1. Introduction

1.1 Rail freight transport at the center of EU priorities

The importance of the issue of **environmental sustainability** has grown over the years, thus pivoting the European public debate in many fields. Among these, the **transport sector** has been at the forefront, representing *almost a quarter of Europe's greenhouse gas emissions*¹.

This renewed attention to climate and environment has culminated in the **European Green Deal**, an ambitious action plan approved by the Commission in 2019 which sets the **target of a 90% cut in emissions by 2050**. Among the key areas of action identified is transport, and especially freight transport.

As a matter of fact, current forecasts predict a **significant increase in freight volume by 2030**, with a subsequent **growth in road traffic** that will raise problems related to several issues, including:

- i. the **highly polluting nature** of road transport in terms of CO₂ emissions;
- ii. the **increasing scarcity of truck drivers** and the **lack of adequate infrastructures and facilities** to ensure fair working conditions and rest periods (e.g. safe and secure truck parking);
- iii. the **high cost of fuel** compared to other means of transport that are more cost-effective;
- iv. the **saturation and congestion of road infrastructures**, also used by citizens, with a negative effect on road safety levels.

Railways represent a valid alternative for an efficient and greener transport of goods. As a matter of fact, rail connects people and businesses across the European Union and beyond, supporting the achievement of objective established under the Green Deal to become a climate-neutral continent by 2050 through a new era of smart mobility. Not by chance, these are among the reasons that led the EU to declare **2021 as the *European Year of Rail***².

However, all across Central Europe the **total volume of cargo moved by rail has decreased significantly over the past few decades**, mainly due among others to:

¹ https://ec.europa.eu/clima/eu-action/transport-emissions_en

² https://europa.eu/year-of-rail/index_it



- i. the lack of adequate infrastructures to reach the last mile;
- ii. the scarcity of intermodal hubs allowing to stock high quantities of goods;
- iii. the lack of appropriate governance structures reuniting all the relevant stakeholders in the framework of industries and transport.

The Project REIF aims at reversing this negative trend by increasing the modal share of rail freight transport in Central Europe through the development of coordinated strategies, concepts and management tools.

1.2 The REIF project in a nutshell

The optimization of regional transport infrastructures and their combinations through intermodal hubs, as well as the provision of efficient and coordinated services linking all actors of the transport and infrastructure chain have been at the basis of the **REIF Project**, which gathers **10 project partners** and 10 associated partners distributed across 6 countries of Central Europe, namely Austria, Croatia, Germany, Italy, Poland and Slovenia.

Figure 1. The REIF partnership





The main focus of the project involved **rail freight infrastructure and services**, which have been **further analysed in seven specific areas**, on which the project's efforts and actions have concentrated.

The following table presents the **REIF areas**, which are either regions (identified by the NUTS2 category) or whole countries, including the project partners that are associated to each of these territories.

Table 1. The seven REIF areas

Area	Country	Project partners associated
Croatia	HR	PP06 - Intermodal Transport Cluster
Emilia-Romagna	IT	PP08 - Institute for Transport and Logistics Foundation
		PP10 - Emilia-Romagna Region
Friuli Venezia Giulia (Port of Trieste)	IT	PP05 - Port Network Authority of the Eastern Adriatic Sea
Slovenia	SI	PP04 - Institute for Traffic and Transport Ljubljana
		PP09 - Luka Koper, port and logistic system, public limited company
Styria	AT	PP03 - Office of the Regional Government of Styria
Thuringia	DE	LP - Thuringian Ministry for Infrastructure and Agriculture
		PP02 - University of Applied Science Erfurt
Westpomerania	PL	PP07 - Central European Transport Corridor Limited Liability (EGTC)

For each of these areas, **REIF has tackled relevant challenges related to lacking connectivity** through the analysis of regional potentials for rail freight transport, identifying infrastructural bottlenecks, and effective measures for either preserving vulnerable connections or even redeveloping closed tracks. In this purpose, pilot actions have tested novel approaches to overcome different discontinuities of the regional rail network in the participating areas.



Furthermore, the different conditions triggering the activation of new rail services, ranging from organizational aspects to the need of ensuring a “critical mass” of traffic demand, have been investigated, resulting in **several deliverables defining priorities and potential policy measures to be integrated into regional policy instruments.**

Moreover, a total of 21 *regional capacity building workshops* and 14 *annual regional advisory board meetings* have been organized with the aim of **training a pool of regional administrations and stakeholders** to sustain knowledge about the opportunities offered by rail freight transport and to get their input on priority actions and policy measures to be implemented to revitalize regional railway networks.

This multifaceted effort is meant to **concretely change the current situation by establishing regional policy instruments and permanent coordination mechanisms among public and private market players.** REIF’s innovative approach has leveraged on enhanced coordination and governance within and between regional contexts, in order to also address the transnational dimension of rail freight transport.

The results of the analyses and stakeholders’ consultations carried out throughout the project have been summarized into **seven final roadmaps** titled “*New Rail Infrastructure/Services 2030*” (D.T3.2.7), whose aim is to present the main actions to be prioritized and policy instruments to be addressed for each of the seven REIF areas.

The final Transferability Plan (D.T3.4.3) will aim at **collecting the main outcomes and best practice** developed throughout the project in order to generalize lessons learned and **ensure further replicability** of the novel governance approach brought in by REIF in the whole Central Europe.

1.3 Aim of the document

In the framework of REIF activities, this deliverable (*Lessons Learned for replication to CE territory* - D.T3.4.2) aims at **collecting the main outcomes and lessons learned from the project activities**, whose transferability and potential for replicability will be assessed in the final Transferability Plan (D.T3.4.3).

More specifically, starting from the **analysis of several deliverables** realized throughout the project, the **second chapter** underlines the **main highlights and lessons learned by project partners** in the fields of actions to be prioritized, stakeholder engagement and possible measures to increase the modal share of rail freight transport.



The **third chapter**, then, focuses on the **relation between REIF and the TEN-T network**, with the aim of assessing the impact of proposed actions for REIF areas - contained in the seven final roadmaps - on the development of TEN-T and trans-European Corridors passing through the countries and regions involved in the REIF project, including a rough estimate of the contribution of foreseen investments for proposed actions for each of the Corridors.

Both chapters will provide insights on which are the **main challenges in the field of rail freight transport** as well as on the **priorities to be addressed at the local and regional level** and the whole Central Europe, in order to reverse the negative trend and improve the modal share of rail, implementing an intermodal and more sustainable transport system to move goods all around Europe.



2. REIF areas' achievements and lessons learned

Different deliverables and activities were planned and implemented in the framework of REIF to establish a multi-faceted picture of the territories involved, highlighting the **main issues still hampering the full exploitation of railways and intermodal hubs** as the main solution for the flows of goods, with clear benefits in terms of sustainability, road safety and congestion.

As a result, the **achievements of the REIF partnership throughout the project lifetime were of various nature**, from obtaining a consolidated and clear-cut vision of REIF areas' railway and intermodal network as well as economic situation and main industrial clusters, throughout the implementation of concrete pilot actions, until the successful involvement of stakeholders and institutions through a detailed plan of meetings and governance structures.

Taking stock of a detailed analysis of a selection of deliverables drafted throughout the REIF Project - whose outcome is attached to this document as **Annex I** - the following table presents **basic information related to modal share and railway facilities** for each REIF area, as well as the **main issues and weaknesses related to the infrastructural network**. Moreover, an overview of the **logic behind actions proposed** for each area by REIF partners in their final roadmaps (D.T3.2.7) have been reported.

Table 2. Main information, issues and actions proposed by REIF areas

AREA	MODAL SHARE		RAILWAY NETWORK	MAIN ISSUES	ACTIONS PROPOSED
CROATIA	2017	Road: 73,6% Rail: 20,1% Waterway: 6,3%	2.617 km	Old rolling stock and railway infrastructure causing limitations in operation; Insufficient capacity of single-track railway lines; Administrative obstacles at border crossings.	→ Improvement of national network capacity through the reconstruction and modernisation of selected segments of important railway lines, connecting Croatia to TEN-T and neighbouring countries
EMILIA ROMAGNA	2016	Road: 89% Rail: 11%	2.119 km	Insufficient capacity of railway lines; Low competitiveness of intermodality and rail transport, which is strictly dependent on public incentives; Poor access to intermodal hubs and the Ravenna port.	→ Improvement and upgrade of selected infrastructures for a better accessibility of regional intermodal hubs → Drafting of the regional law on incentive for regional rail transport → Support and training activities for ERIC's members → Establishment of Simplified Logistic Zone (ZLS)



FRIULI VENEZIA-GIULIA	2019	Road: 56,1% Rail: 28,8% Waterway: 15,1% (Port of Trieste)	670 km (70 km Port of Trieste)	Insufficient capacity of port, intermodal terminals and railways; Need of technological improvement of port of Trieste IT system; High costs for last mile connections among nodes; Administrative obstacles at border crossings .	→ Reactivation and enhancement of existing railway lines/industrial sidings around the industrial area close to the Port of Trieste → Enhancement of IT system for the management of port of Trieste through innovative gates
SLOVENIA	2018	Road: 80% Rail: 20%	1.208 km	Infrastructural bottlenecks on specific railway segments and stations (Ljubljana station, Koper-Divača line); Old and non-modernized railway network and rolling stock ; Insufficient capacity of storage facilities and railway lines; Administrative obstacles at border crossings .	→ Improvement of intermodal network capacity with a new railway hub in Ljubljana, industrial sidings and rolling stock replacement → Enhancement of IT system and data management between Port of Koper and its undertakings → Resolution of administrative obstacles at borders
STYRIA	2018	Road: 72% Rail: 28%	1.000 km	Insufficient capacity of single-track railway lines; Infrastructural bottleneck represented by the steep ramps of the Bosruck tunnel; Lack of storage capacity of intermodal terminals.	→ Resolution of specific infrastructural bottlenecks hampering the connection of specific areas (Bosruck tunnel) → Improvement of stock capacity of the main regional RRT, the Cargo Centre Graz-Werndorf (CCG) Terminal
THURINGIA	2017	Road: 96,2% Rail: 3,8%	1.521 km	Insufficient share of electrified tracks ; Insufficient capacity of terminals; Missing railway connections due to closed lines; Low competitiveness of rail freight transport (only profitable on routes with rail passenger transport).	→ Improvement of stock capacity of regional RRT through the reactivation and expansion of intermodal hubs (Erfurt-Vieselbach container terminal, railport Nordhausen, Sonneberg) → Maintenance and expansion of state subsidies → Reactivation of several dismissed railway lines and loading points
WESTPOMERANIA	2018	Road: 88,6% Rail: 11,4%	1.173 km	Need for improvement of infrastructure facilities and railroad terminals on local lines; Poor technical condition of railway lines , not reaching EU parameters; Insufficient capacity of railway station nodes and of cargo intermodal terminals.	→ Resolution of infrastructural bottlenecks and missing links around the node of Szczecin → Enhancement of railway network capacity through improvement of technical parameters (electrification, second track) → Improvement of network capacity through the construction or revamping of railway lines and of new loading points/stations → Drafting additional feasibility studies to define and lead the future development of railway regional infrastructure

From this analysis, it is possible to state that clear **several similarities between the weaknesses hampering the full development of rail transport for all the seven REIF areas**, which, in turn, provide an overview of the conditions of the whole Central Europe.



The most recurring problem declared by REIF partners and stakeholders involved is definitely the **inadequacy of the infrastructure compared to the potential demand**. This has to do with the poor condition of rolling stock and railway lines (which often are marked as not reaching EU and international technical standards, still being single-track and non-electrified) but also with the whole network of cargo intermodal hubs, whose capacity is not sufficient to meet the demand and scale up rail freight operations.

In addition, due to the gradual dismissal of minor railway lines and industrial sidings connecting productive clusters to the local, regional and national routes, the railway network is still not developed and widespread enough. On the contrary, it often presents missing links and infrastructural bottlenecks that results in the **failure to link industrial areas to major railway lines (including the TEN-T and Corridors) and to operate the last mile connection**, which stands as an essential factor for rail to be truly considered as a viable transport option by smaller operators and SME that basically represent the backbone of European economy.

These infrastructural deficiencies are often accompanied by the **persistence of administrative and legislative bottlenecks**, especially encountered at cross-border level where - as an example - it is not rare for operators to be subject to a compulsory change of locomotive to comply with different national regulations.

These results are then complemented by the **clear need for the rail option to be supported by national and regional policies** that should be able to allocate subsidies **equalizing the difference in average costs** incurred by operators, especially if compared to road transport, whose rates generally fail to take into account environmental externalities.

The burden caused by infrastructural obstacles clearly emerges from this picture and it is also at the basis of the choices taken by REIF partners, who highlighted **transport infrastructure as the main focus with 39 actions proposed**, which is well over the 90% of all interventions outlined in the seven final roadmap.

Table 3. Number and estimated costs of proposed actions divided by priority areas

PRIORITY AREAS	N. OF ACTIONS	ESTIMATED COSTS	%
Administration	3	15.950.000 €	0,2%
Legislation	3	10.000.000 €	0,2%
Rolling stock/Machinery	1	180.000.000 €	2,8%
Service/Operation	5	11.290.000 €	0,2%
Transport Infrastructure	39	6.215.616.000 €	96,6%
TOTAL	51	6.432.856.000 €	100%



More specifically, having consulted relevant authorities and stakeholders of the intermodal sector, most of the partners assigned the **highest priority to the resolution of specific infrastructural bottlenecks and missing links** hampering the connection of relevant local areas and industrial clusters to the main railway lines and, ultimately, to the TEN-T and its Corridors. Not by chance, as stated by Table 5, the great majority of interventions focused on a railway line (i.e. **category “LINE”**), with an estimated investment of € 5,3 billions. While this typology of intervention was present in all REIF areas, the second priority (i.e. **category “NODE”**) represented the **improvement of intermodal nodes**, gathering the 15% of foreseen investments with more than € 900 millions.

The focus of proposed actions included railway stations, ports and rail-road terminals with the aim of **increasing the capacity of local and regional networks to handle a larger volume of goods**. In some cases, this was also pursued through a **digitalization and improvement of IT systems and ICT tools** used for the daily management of nodes, as in the case of the port of Trieste proposing the installation of IT gates, as well as for data management and acquisition and a smoother communication with external operators, on which the port of Koper focused with one of proposed actions for Slovenia.

Table 4. Estimated costs of proposed actions divided by REIF areas and category

REIF AREAS	AREA	LINE	NODE
CROATIA	- €	1.157.500.000 €	- €
EMILIA ROMAGNA	10.150.000 €	10.000.000 €	294.700.000 €
FRIULI VENEZIA-GIULIA	- €	16.700.000 €	149.500.000 €
SLOVENIA	188.000.000 €	- €	200.160.000 €
STYRIA	- €	2.350.000.000 €	97.000.000 €
THURINGIA	- €	305.216.000 €	8.130.000 €
WESTPOMERANIA	- €	1.425.800.000 €	220.000.000 €
TOTAL	198.150.000 €	5.265.216.000 €	969.490.000 €
	3,1%	81,8%	15,1%

Last but not least, the **“AREA” category** gathers all the interventions that did not fall into either of the previous typologies. This includes actions connected to **administration and legislation**, which often responded to two main issues. From one hand, interventions aimed at **solving administrative bottlenecks at the borders** through the harmonization of different national rules and operational requirements, in order to ensure a smooth execution of railway services across countries.



On the other hand, actions in this category also tackled the **low competitiveness of the rail transport option with the establishment of regional and local supporting policies**, such as a regional law for public subsidies or the creation of a Simplified Logistic Zone (ZLS). This kind of interventions was less prioritized by REIF partners, except for Thuringia, aiming to expand state subsidies, and Emilia Romagna, whose regional administrations and stakeholders - already benefitting from an established governance structure, the ERIC cluster, organizing regular meetings - demonstrated a clear sensitivity to the topic with four actions out of nine falling into this category.

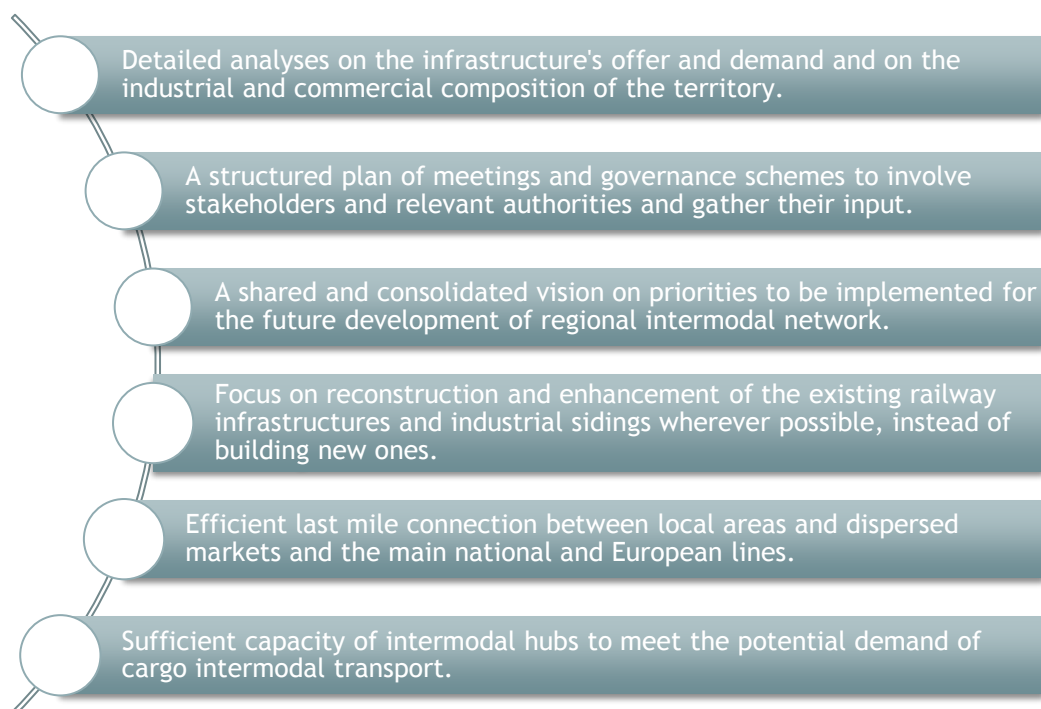
As a matter of fact, the main logic behind REIF final roadmaps was to **solve infrastructural bottlenecks and missing links and increase capacity of regional and local intermodal networks**. The resolution of such obstacles seems to be the first step to be addressed when dealing with the attempt to shift the modal share in favour of rail transport. The completion of the railway infrastructure, which shall be able to cover the last mile and be equipped with the necessary capacity to respond to the potential traffic demand, represents a prerequisite for the rail transport to be a viable option, thus potentially fostering the modal shift.

In the second place, the focus would shift to the **improvement of rail transport competitiveness through administrative and policy measures** aimed at levelling the costs of intermodal options, that are higher when environmental externalities are not addressed. This category of actions, which is equally important, became a consistent priority only for those areas where the regional and local railway infrastructures are already consolidated.

This **order of priority reflects the needs expressed by the seven specific territories** of Central Europe as outlined by their main authorities and territorial stakeholders that have been involved in the drafting of the roadmaps through multiple meetings. At the same time it ultimately provides an **overview of the whole area of Central Europe**, which can benefit from the **lessons learned by REIF partners** throughout the project lifetime.

These concern different topics, from the process of stakeholders involvement to the importance of specific phases for the analysis of territorial needs and the prioritization method highlighted in the figure below and potentially useful in order to be replicated in other areas.

Figure 2. Overview of the main topics highlighted in the documentation analysed



A major element of success is represented by a preliminary phase of **detailed analyses of infrastructural needs and territorial distribution of industrial and commercial clusters**, to be carried out as the first step. As a matter of fact, it is essential to understand which are the major poles of production and which among these present a higher suitability - by type of goods and position - to be connected as a priority to the regional and national railway network, so that rail transport is also able to cover the last mile, offering the possibility to convey the flows of goods directly into the intermodal network without resorting to the use of trucks. In this purpose, it is important to highlight that one of the issues underlined by stakeholders is the low density of industrial sidings, and thus the lack of connection of local economies with the regional rail infrastructure.

In addition, accurate baseline studies also serve the need of having a **wider overview of the current railway infrastructures at regional and local level**, including those that had been inactive for a long time. Whenever possible, **old railway sidings should be recovered and enhanced**, instead of constructing new ones, also with reference to a sustainability and land consumption perspective.

Another lesson learned by REIF partners concerns the adoption of a **bottom-up approach when dealing with territorial needs**, thus resulting in a **structured plan for the involvement of the**



main authorities and territorial stakeholders, including operators of port and railway terminals, freight forwarders and railway carriers. In this purpose, two main governance structures³ were set up in the framework of REIF, namely:

- a. *Regional capacity building group* (3 workshops organized for each REIF area);
- b. *Regional advisory board* (2 annual meetings organized for each REIF area).

As a matter of fact, it is essential that the **policy measures selected are perceived as priorities by regional stakeholders**, sharing a common understanding for the future development of the regional intermodal system. At the same time, it is not an easy task to **assess and harmonize both collective and individual/private necessities**, raised by different categories of stakeholders operating in this field. Nonetheless, the interest of all parties (especially of decision makers) has to be considered in order to avoid later delays and ensure the support of stakeholders at different levels.

A **shared prioritization method** based on different criteria is also useful. This should take into account the available funds as well as both the immediate and future effects of the action in question. At the same time, it is also important that the projects can be effectively financed: hence the importance of an effective method of prioritization, given the availability of limited funding, in order to achieve the greatest possible impact with the available resources.

To this end, the **costs of interventions could be mitigated through the implementation of the transport of both passengers and goods**, thus distributing the management costs as well as the cost disadvantages of rail transport compared to road. But again, a balance should be found in order to avoid a negative impact on frequency and quality of the railway public transport offer.

Furthermore, **additional resources shall also be gathered at the European level**, given the importance of the investments proposed for the connection of local and regional infrastructures to the TEN-T and trans-European Corridors. In this purpose, opportunities offered by European funds are often not exploited to the fullest by administrators at all levels. This point is further addressed by the next chapter, which matches the impact of REIF proposed investments with the development of the TEN-T network.

³ The details and process behind the ideation and function of each governance structure are specified in the deliverable D.T3.1.1 (*Joint curriculum for regional capacity building workshops*) and D.T3.2.2 (*Establishment of regional advisory board*).

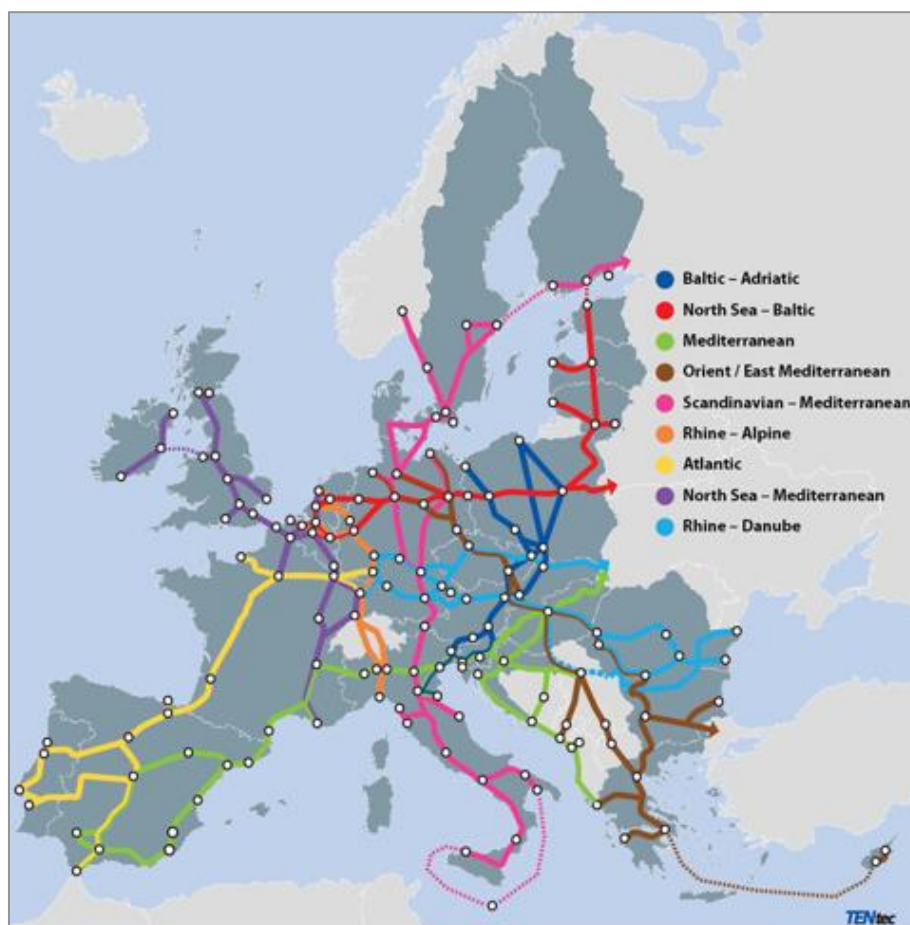
3. Matching REIF actions with TEN-T development

When looking at transport and mobility in the EU, the Trans-European Network (TEN-T)⁴ plays a crucial role, as it represents the **highest level of infrastructure planning at the supranational level**, with the aim of fostering a seamless, sustainable and effective transport across EU member states with the main aim of strengthening social, economic and territorial cohesion.

The TEN-T network encompasses two layers, which are:

- i. the *Core Network*, which includes the most important connections and nodes, and is set to be completed by 2030;
- ii. the *Comprehensive Network*, which covers all European regions and is set to be completed by 2050.

Figure 3. The 9 European Core Network Corridors (CNCs)



⁴ The TEN-T legal framework is set out in Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU, OJ L 348, 20.12.2013, p. 1.



These two layers are complemented by **nine trans-European Corridors⁵** whose aim is to support an integrated implementation of the core network by focusing on multimodal integration, interoperability and the coordinated development of cross-border infrastructures, including last mile connections.

Given the importance of the TEN-T network, this chapter provides an overview of the **foreseen impact of proposed investments** outlined in the final roadmap **on the development and implementation of the TEN-T network**. To this end, the position of each action with respect to the TEN-T has been assessed and analyzed through the following simple questions:

- i. Is the action located on the TEN-T network (core or comprehensive networks)?
- ii. If so, is the action located on one of the 9 TEN-T core network corridors?
- iii. If not, in which of the 9 TEN-T core network corridors' area of influence⁶ is the action located?

To follow up on these questions, the 51 actions proposed by REIF partners have been organized in an Excel database (attached to the present document, **Annex II**), where several information have been gathered for each of them.

An overview of this database is presented below.

⁵ CNCs are multimodal corridors that must cross at least two borders and include at least three methods of transport including, where applicable, motorways of the sea.

⁶ Where "Area of influence" represents the nearest surrounding area allowing to reach one of the Corridors.



Figure 4. Excel database gathering the 51 actions proposed in the Roadmaps

D.T3.4.2 - LESSONS LEARNED FOR REPLICATION TO CE TERRITORY											
N.	AREA	SPHERE OF ACTION	ACTION NAME	ESTIMATED COSTS	TIME HORIZON	CATEGORY	CATEGORY	Name	Type of network	CORRIDOR	Close to (Catchment Area)
1	CROATIA	Transport Infrastructure	Reconstruction and renewal of the railway line on the section Dugo Selo - Novska	572.500.000 €	2027	Line	Railways	Dugo Selo - Novska	Core	NA	Mediterranean
2	CROATIA	Transport Infrastructure	Reconstruction of the existing and construction of the second track on the section Hrvatski Leskovac - Karlovac on the railway line M202 Zagreb GK - Rijeka	315.000.000 €	2025	Line	Railways	Horvati - Karlovac	Core	Mediterranean	NA
3	CROATIA	Transport Infrastructure	Modernization of the railway line M202 Zagreb GK - Rijeka, on the part Oštarije - Škriljevo	270.000.000 €	2030	Line	Railways	Oštarije - Rijeka	Core	Mediterranean	NA
4	EMILIA ROMAGNA	Transport Infrastructure	Upgrading of the left shunting track of Ravenna Port	21.000.000 €	2025	Node	Port	Port of Ravenna	Core	Baltic Adriatic Mediterranean	NA
5	EMILIA ROMAGNA	Transport Infrastructure	Upgrade of the right shunting track of Ravenna Port	26.700.000 €	2025	Node	Port	Port of Ravenna	Core	Baltic Adriatic Mediterranean	NA
6	EMILIA ROMAGNA	Transport Infrastructure	Doubling of railway line between Parma and Vicofer tile stations and upgrading of Parma station	247.000.000 €	2032	Node	Railways	Fornovo - Parma	Comprehensive	NA	Scandinavian Mediterranean Mediterranean
7	EMILIA ROMAGNA	Transport Infrastructure	Upgrade of Reggio Emilia - Sassuolo railway line	10.000.000 €	2025	Line	Railways	Reggio Emilia - Sassuolo	NA	NA	Scandinavian Mediterranean Mediterranean
8	EMILIA ROMAGNA	Transport Infrastructure	Construction of the new freight railway line between Dinazzano and Marzaglia freight station	TBD	2032	Line	Railways	Dinazzano - Marzaglia RRT	NA	NA	Scandinavian Mediterranean Mediterranean
9	EMILIA ROMAGNA	Legislation	Regional law on incentive for regional rail transport	3.000.000 €	2025	Area	NA	NA	NA	NA	Baltic Adriatic Scandinavian-Mediterranean Mediterranean
10	EMILIA ROMAGNA	Legislation	Establishment of Simplified Logistic Zone (ZLS)	7.000.000 €	2029	Area	NA	NA	NA	NA	Baltic Adriatic Scandinavian-Mediterranean Mediterranean
11	EMILIA ROMAGNA	Administration	Financing training activities	20.000 €	2025	Area	NA	NA	NA	NA	Baltic Adriatic Scandinavian-Mediterranean Mediterranean
12	EMILIA ROMAGNA	Administration	Financing support activities to ERIC's members	130.000 €	2025	Area	NA	NA	NA	NA	Baltic Adriatic Scandinavian-Mediterranean Mediterranean
13	FRIULI VENEZIA-GIULIA	Transport Infrastructure	New layout of the Campo Marzio Station	77.000.000 €	2025	Node	Railways	Campo Marzio Railway station	NA	NA	Baltic Adriatic Mediterranean
14	FRIULI VENEZIA-GIULIA	Transport Infrastructure	Upgrade of the Aquilinia - Wartsila railway line	5.000.000 €	2022	Line	Railways	Aquilinia - Wartsila	NA	NA	Mediterranean
15	FRIULI VENEZIA-GIULIA	Transport Infrastructure	Upgrade of the Aquilinia-ex- Aquila railway line	2.700.000 €	2023	Line	Railways	Aquilinia - Ex-Aquila	NA	NA	Mediterranean
16	FRIULI VENEZIA-GIULIA	Transport Infrastructure	Reactivation of the Aquilinia- Muggia railway line	9.000.000 €	2025	Line	Railways	Aquilinia- Muggia	NA	NA	Mediterranean
17	FRIULI VENEZIA-GIULIA	Transport Infrastructure	Installation of new IT railway gates and pre-gates of the Port of Trieste	3.500.000 €	2025	Node	Port	Port of Trieste	Core	Baltic Adriatic Mediterranean	NA
18	FRIULI VENEZIA-GIULIA	Transport Infrastructure	Construction of the new Servola railway station	69.000.000 €	2026	Node	Railways	Servola Railway station	NA	NA	Baltic Adriatic Mediterranean



19	SLOVENIA	Transport Infrastructure	Construction of railway hub Ljubljana	200.000.000,0 €	2030	Node	Railways	Ljubljana Railway station	Core	Baltic Adriatic Mediterranean	NA
20	SLOVENIA	Transport Infrastructure	Rail industrial sidings	5.000.000,0 €	2027	Area	Railways	NA	NA	NA	Baltic Adriatic Mediterranean
21	SLOVENIA	Rolling stock/Machinery	Rolling stock replacement of the national rail carrier in Slovenia	180.000.000 €	2025	Area	NA	NA	NA	NA	Baltic Adriatic Mediterranean
22	SLOVENIA	Service/Operation	Modernization of IT connections / interface between stakeholders in railway transport (port of Koper and Koper railway station)	160.000 €	2023	Node	Port	Port of Koper	Core	Baltic Adriatic Mediterranean	NA
23	SLOVENIA	Service/Operation	Stopping (dwell) times at border crossings	3.000.000 €	2025	Area	NA	NA	NA	NA	Baltic Adriatic Mediterranean
24	STYRIA	Transport Infrastructure	Construction of the new Bosruck tunnel	1.500.000.000 €	2040	Line	Railways	Traun - Selzthal	Comprehensive	NA	Baltic Adriatic Rhine-Danube
25	STYRIA	Transport Infrastructure	Upgrading of the Railway Line Bruck/Mur-Graz- Spielfeld - Maribor	TBD	2040	Line	Railways	Bruck/Mur - Graz Graz - Wernsdorf Spielfeld - Wernsdorf Spielfeld - Maribor	Core	Baltic Adriatic	NA
26	STYRIA	Transport Infrastructure	Expansion of the Cargo Centre Graz-Wernsdorf (CCG) Terminal	97.000.000 €	2030	Node	Rail-Road Terminals	Cargo Centre Graz- Wernsdorf	Core	Baltic Adriatic	NA
27	STYRIA	Transport Infrastructure	New railway line connecting the future Koralm Railway line and the Steinische Ostbahn	850.000.000 €	2040	Line	Railways	NA	NA	NA	Baltic Adriatic Mediterranean
28	THURINGIA	Transport Infrastructure	Reactivation of the Ohratal Railway for rail freight transport	216.000 €	2023	Line	Railways	NA	NA	NA	Scandinavian-Mediterranean
29	THURINGIA	Transport Infrastructure	Werra Railway - Closing the gap between Coburg (Bavaria) and southern Thuringia	30.000.000 €	2030	Line	Railways	NA	NA	NA	Scandinavian-Mediterranean
30	THURINGIA	Transport Infrastructure	Reactivation of Höllental Railway	25.000.000 €	2030	Line	Railways	NA	NA	NA	Scandinavian-Mediterranean
31	THURINGIA	Transport Infrastructure	Reactivation of the »Werratal Railways« line - Bad Salzungen - Philippsthal	250.000.000 €	2030	Line	Railways	NA	NA	NA	Scandinavian-Mediterranean
32	THURINGIA	Legislation	Maintenance and expansion of state subsidies	TBD	2022	Area	NA	NA	NA	NA	Scandinavian-Mediterranean
33	THURINGIA	Service/Operation	Expansion of the Erfurt-Vieselbach container terminal	5.000.000 €	2025	Node	Rail-Road Terminals	Erfurt-Vieselbach container terminal	Core	Scandinavian- Mediterranean	NA
34	THURINGIA	Service/Operation	Construction of a new loading point / railport in Sonneberg	3.000.000 €	2023	Node	Rail-Road Terminals	NA	NA	NA	Scandinavian-Mediterranean
35	THURINGIA	Service/Operation	Reactivation, modernization and expansion of the railport Nordhausen	130.000 €	2025	Node	Rail-Road Terminals	Nordhausen railport	Comprehensive	NA	Scandinavian-Mediterranean
36	WESTPOMERANIA	Transport Infrastructure	Construction of railway link Szczecin Podjuchy Most - Dziwówkicz	15.000.000 €	2027	Line	Railways	Szczecin Podjuchy - Rosowko	Core	North-Sea Baltic	NA
37	WESTPOMERANIA	Transport Infrastructure	Reconstruction of railway line no. 411 (Stargard - Pyrzyce)	90.000.000 €	2027	Line	Railways	Stargard - Pyrzyce	NA	NA	Baltic Adriatic
38	WESTPOMERANIA	Transport Infrastructure	Reconstruction of railway line no. 422 (Pyrzyce - Głazów) and 410 (Baranówko - Myślibórz - Głazów)	110.000.000 €	2027	Line	Railways	Pyrzyce - Głazów Baranówko - Myślibórz - Głazów	NA	NA	Baltic Adriatic
39	WESTPOMERANIA	Transport Infrastructure	Reconstruction of railway line no. 410 (Głazów - Baranówko - Pelczyno - Choszczno), alternatively Głazów - Baranówko - Pelczyno - Krzęcin - Rębusz	220.000.000 €	2027	Line	Railways	Głazów - Baranówko - Pelczyno - Choszczno	NA	NA	Baltic Adriatic
40	WESTPOMERANIA	Transport Infrastructure	Construction of the western rail bypass of Szczecin, section Stobno Szczecińskie - Dołuje - Police Chemia with the construction of new linkages Dołuje - Kościno (429/408) and Stobno Szczecińskie - Warzyńskie (408/409). Full electrification.	300.000.000 €	2030	Line	Railways	Stobno Szczecińskie - Dołuje - Police Chemia	NA	NA	North-Sea Baltic Baltic Adriatic



41	WESTPOMERANIA	Transport Infrastructure	Construction of the second track on line 273, section Szczecin Podjuchy - Szczecin Port Centralny SPA, including the widening of the bridge over the Regalica River	50.000.000 €	2027	Line	2%	Szczecin Podjuchy - Szczecin Port Centralny	Core	Baltic Adriatic	NA
42	WESTPOMERANIA	Transport Infrastructure	Construction of second track on line 428 (Szczecin Podjuchy - Szczecin Zdroje)	15.000.000 €	2027	Line	Railways	Szczecin Podjuchy - Szczecin Zdroje	NA	NA	North-Sea Baltic Baltic Adriatic
43	WESTPOMERANIA	Transport Infrastructure	Construction of the second track on line 406, section Szczecin Turzyn - Police	180.000.000 €	2027	Line	Railways	Szczecin Turzyn - Police	NA	NA	North-Sea Baltic Baltic Adriatic
44	WESTPOMERANIA	Transport Infrastructure	Electrification of line 408 on section Szczecin Gumieńce - PL/DE border and line 409 on section Szczecin Gumieńce - PL/DE border	20.000.000 €	2027	Line	Railways	NA	NA	NA	North-Sea Baltic Baltic Adriatic
45	WESTPOMERANIA	Transport Infrastructure	Electrification of railway lines 210 (Runowo Pomorskie - Szczecinek - Chojnice) and 402 (Goleniów - Kołobrzeg)	100.000.000 €	2030	Line	Railways	NA	NA	NA	North-Sea Baltic Baltic Adriatic
46	WESTPOMERANIA	Transport Infrastructure	Improvement of operational parameters to the D3 standard (221 kN, min. 600m) on lines: 202, 210, 402, 403, 404, 405, 406, 407, 408, 409, 418, 430, 431	250.000.000 €	2030	Line	Railways	NA	NA	NA	North-Sea Baltic Baltic Adriatic
47	WESTPOMERANIA	Transport Infrastructure	Construction or reconstruction of loading tracks (OIU) within 30 stations	40.000.000 €	2030	Line	Railways	NA	NA	NA	North-Sea Baltic Baltic Adriatic
48	WESTPOMERANIA	Transport Infrastructure	Improvement of the operational parameters of the remaining OIU "Loading tracks" in accordance with the class of adjacent lines (D3 - 221 kN)	20.000.000 €	2030	Line	Railways	NA	NA	NA	North-Sea Baltic Baltic Adriatic
49	WESTPOMERANIA	Transport Infrastructure	Construction of new stations on lines 351 and 401 enabling the crossing and overtaking of trains (at least two additional main tracks): Szczecin Zdunowo, Szczecin Załom, Łożnica, Mokrzyca	220.000.000 €	2030	Node	Railways	NA	Core	Baltic Adriatic	NA
50	WESTPOMERANIA	Administration	Program for the elimination of local speed limits on lines managed by PKP PLK	15.000.000 €	2030	Line	Railways	NA	NA	NA	North-Sea Baltic Baltic Adriatic
51	WESTPOMERANIA	Transport Infrastructure	Feasibility study for the extension of the Szczecin Railway Junction	800.000 €	2030	Line	Railways	Szczecin Railway Junction	Core	Baltic Adriatic	NA

These data were then processed in order to match the foreseen investments with their contribution to the development and strengthening of the TEN-T network and its Corridors and, more in general, the intermodal transport infrastructure of the seven REIF areas, with a focus on the regional railway network.




The results of this analysis are presented below, starting from the geographical representation of REIF areas' territories and trans-European Corridors passing through them.

3.1 Geographical representation of REIF proposed actions

To better visualize the location of proposed interventions and understand their impact on TEN-T development and the connection of the regional railway network to the Corridors, the 51 actions have been reported on an easy-to-use visual tool (i.e. Google Earth).







First of all, a different method of representation has been used according to the **nature of each intervention** and whether it concerned a railway line, a specific node (e.g. a port, a rail-road terminal) or a whole area, as specified in the table below.

Table 5. Method of representation of proposed actions' categories

CATEGORY	N. OF ACTIONS	METHOD OF REPRESENTATION	
Line	30	A line	
Node	13	A location marker	
Area	8	A line tracing the perimeter of the area	

Besides the actions' category, also their **estimated costs** have been represented through different colours, one for each of the six cost categories in which the interventions have been divided, including one gathering actions for which an expected cost has not been provided.

Table 6. Method of representation of proposed actions' estimated costs

FROM	TO	N. OF ACTIONS	COLOUR OF LINE/LOCATION MARKER
- €	5.000.000 €	11	
5.000.000 €	25.000.000 €	12	
25.000.000 €	150.000.000 €	11	
150.000.000 €	300.000.000 €	9	
300.000.000 €	1.500.000.000 €	5	
TBD		3	



Considering these methodological parameters, all 51 actions have been represented on Google Earth. Below is an overview of all seven REIF areas, while the following paragraph provides a zoom of the same area in parallel with the map of the trans-European Corridors and related TEN-T railway network passing through that specific portion of Central Europe.

Figure 5. Geographical representation of proposed actions of all REIF areas

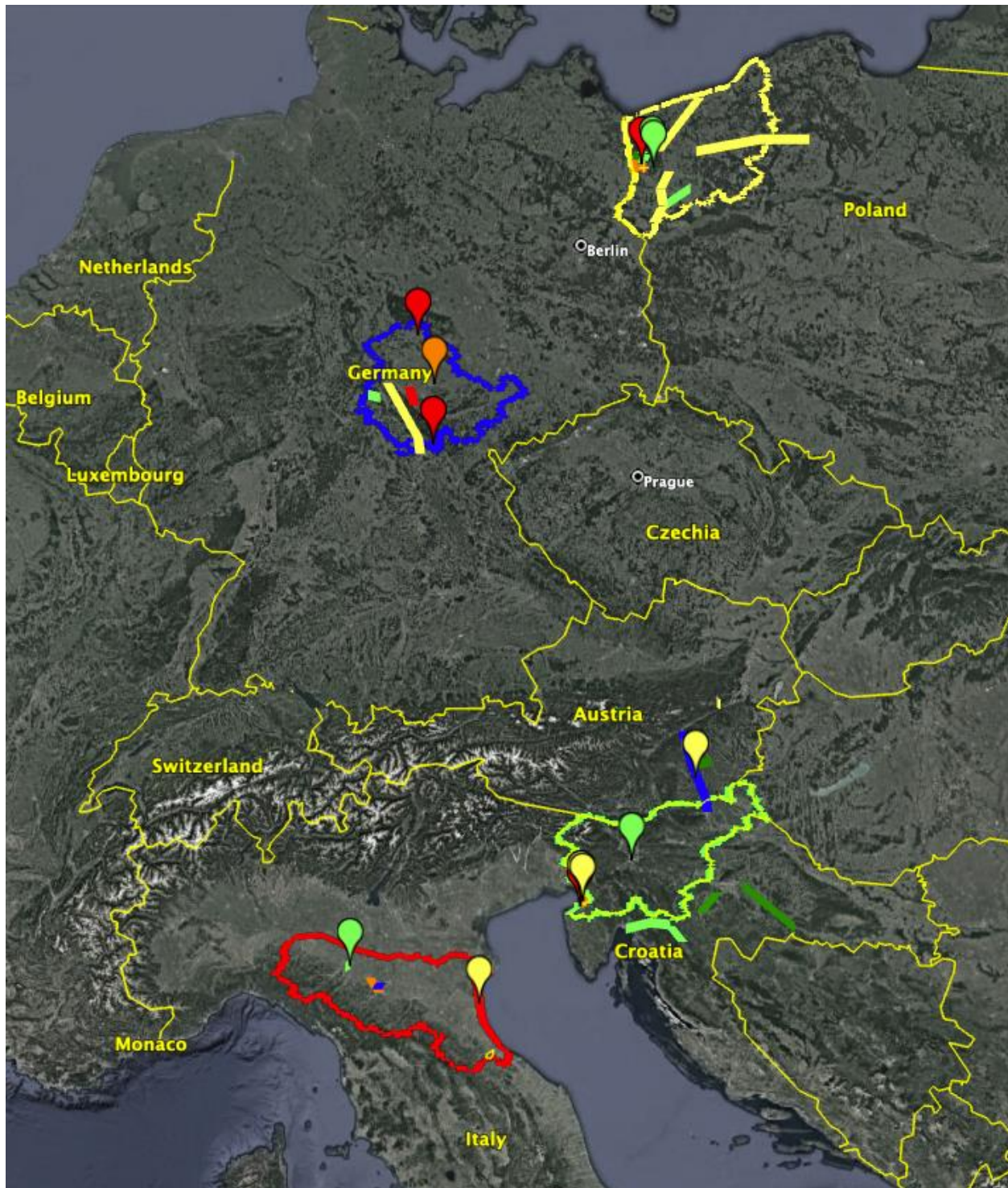




Figure 6. Overview of Corridors passing through the areas involved in the REIF project



LEGEND
Baltic Adriatic
North Sea-Baltic
Mediterranean
Orient/East-Med
Scandinavian-Mediterranean
Rhine-Danube

In the next section, a similar representation of both actions and Corridors is provided for each of the seven REIF areas.

3.1.1 Croatia

The territory of Croatia is crossed by the Mediterranean Corridor, along which the three actions proposed in the final roadmap for Croatia are clearly located.

Figure 7. Geographical representation of proposed actions for Croatia

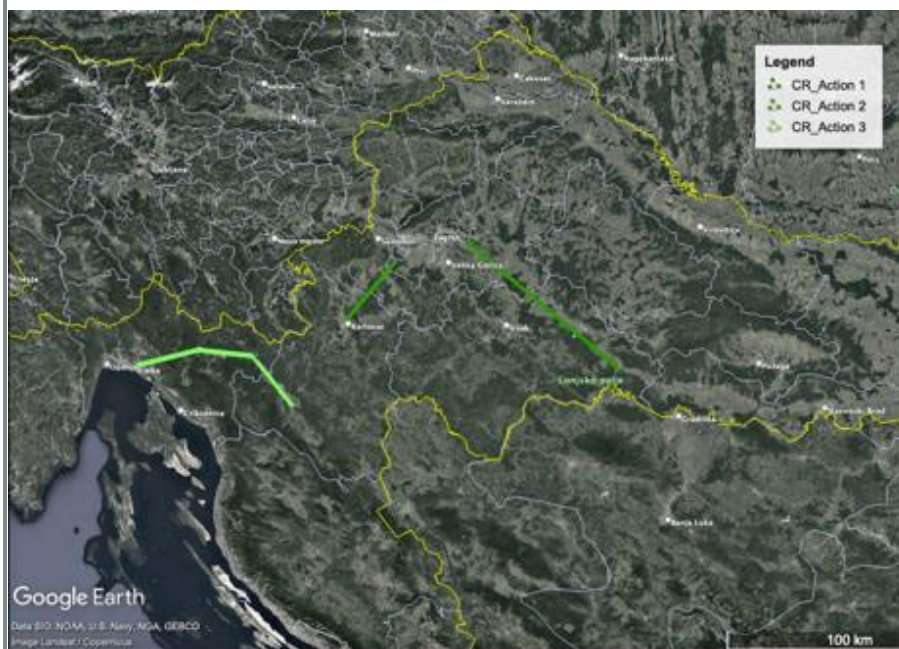


Figure 8. Overview of Corridors passing through Croatia



Looking at the Commission proposal for the revision of the TEN-T Regulation of 14 December 2021 (COM(2021)812), a new Corridor, the Western Balkans, is set to cross the Croatian territory through the city of Zagreb, along the railway line Dugo Selo - Novska, which is the recipient of one of the actions proposed within the REIF Project.

3.1.2 Emilia Romagna

Emilia-Romagna is crossed by three of the four Corridors whose layout include part of the Italian territory. These are the Baltic Adriatic, Scandinavian-Mediterranean and Mediterranean Corridors.

Figure 9. Geographical representation of proposed actions for Emilia-Romagna

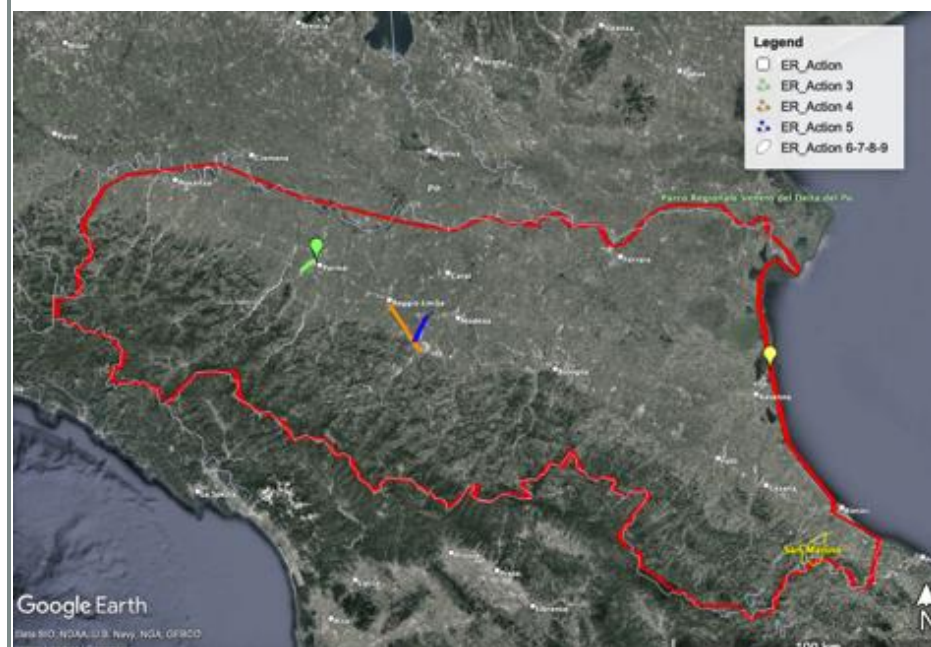


Figure 10. Overview of Corridors passing through Emilia-Romagna



More specifically, while most proposed actions are located within the area of influence of Parma-Bologna railway line, which is part of the core network, two interventions concern the port of Ravenna, which is a core node of both the Baltic Adriatic and Mediterranean Corridors.



The remaining actions, instead, are of interest of the whole regional railway network, thus being signalled by the perimeter of the regional territory.

3.1.3 Friuli Venezia Giulia

In the case of Friuli Venezia Giulia, the whole regional area is part of both the Baltic Adriatic and Mediterranean Corridors' routes. However, the actions proposed in the framework of REIF mainly involve the city of Trieste and its surroundings (mainly industrial areas), which are solely crossed by the Mediterranean Corridor.

Figure 11. Geographical representation of proposed actions for Friuli Venezia Giulia

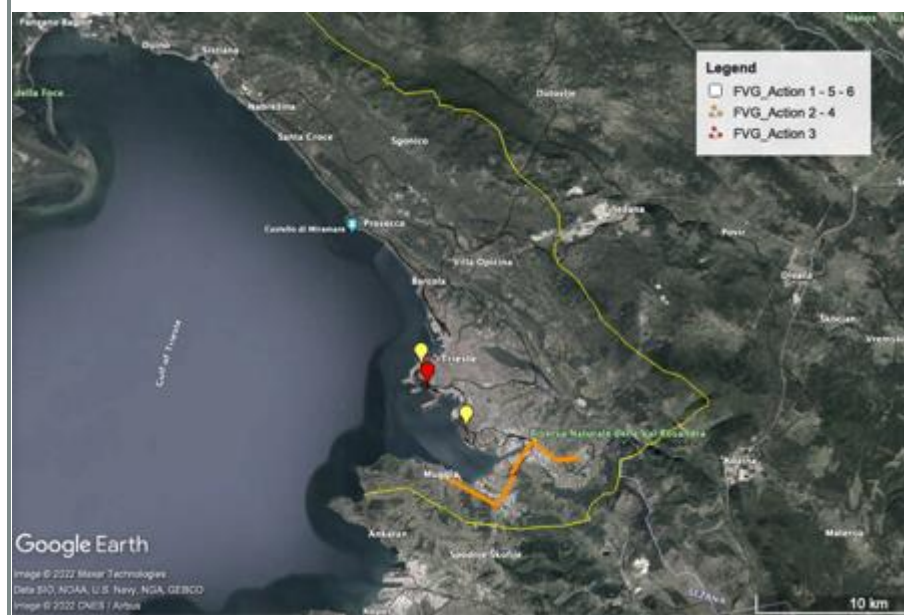


Figure 12. Overview of Corridors passing through Friuli Venezia Giulia



More specifically, the railway lines of interest for proposed interventions (e.g. Aquilinia-Muggia, Aquilinia-Wartsila) are not part of the TEN-T network but are still located within the immediate proximity of the Mediterranean Corridor, thus being categorized as in its area of influence. At the same time, the port of Trieste is a core node of both the Baltic Adriatic and the Mediterranean Corridors.

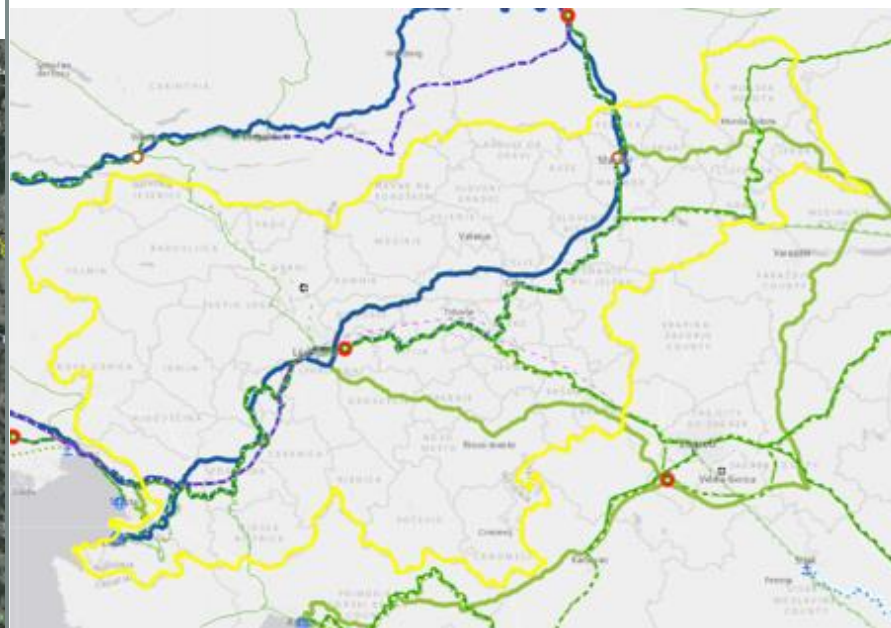
3.1.4 Slovenia

As in the case of Friuli Venezia Giulia, the Slovenian territory is part of both Baltic Adriatic and Mediterranean Corridors' routes.

Figure 13. Geographical representation of proposed actions for Slovenia



Figure 14. Overview of Corridors passing through Slovenia



Two of the proposed actions are focused on two core nodes of both Corridors, namely the port of Koper and the Ljubljana railway station, while the rest of interventions tackle the whole area of Slovenia with rolling stock replacement, construction of rail industrial sidings and the reduction of stopping dwell times at border crossing. Moreover, according to the the Commission proposal for the revision of the



TEN-T Regulation, the Ljubljana railway station is set to become a core node of the Western Balkans corridor, which is supposed to cross the Slovenian territory following the path of the existing Mediterranean Corridor.

3.1.5 Styria

The territory of Styria is crossed in its lower part by only one of the trans-European Corridors, which is the Baltic Adriatic Corridor.

Figure 15. Geographical representation of proposed actions for Styria

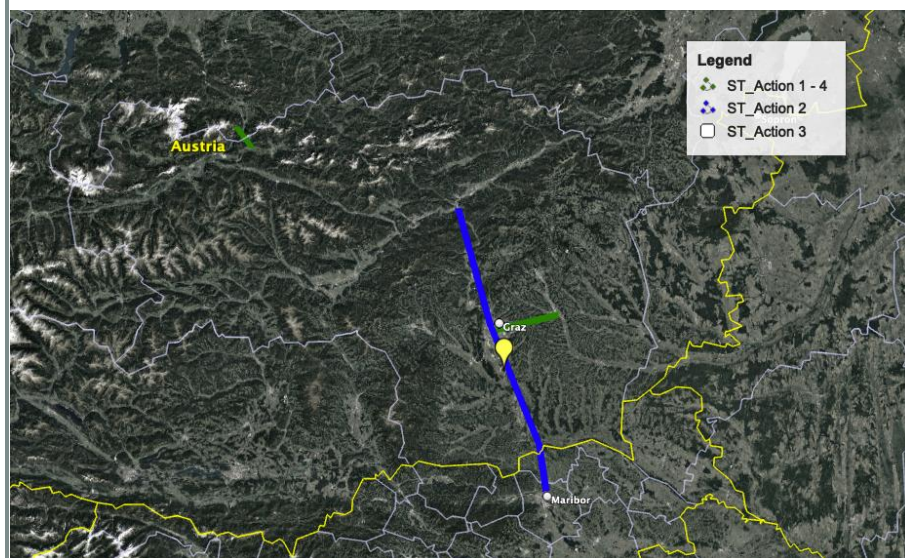


Figure 16. Overview of Corridors passing through Styria



Looking at the proposed actions, only one is not located on the TEN-T network. Two of the remaining interventions are part of the Baltic Adriatic Corridor, being respectively the Graz-Maribor railway line and the Cargo Centre Graz-Werndorf (a rail-rode termina part of the core network). The last proposed action, which is the one registering the highest estimated cost of all 51 interventions, concerns the construction of the Bosruck tunnel on the Traun - Selzthal railway line, which is part of the comprehensive network.

3.1.6 Thuringia

The Scandinavian Mediterranean Corridor crosses the Thuringian territory in its South-Eastern part.

Figure 17. Geographical representation of proposed actions for Thuringia

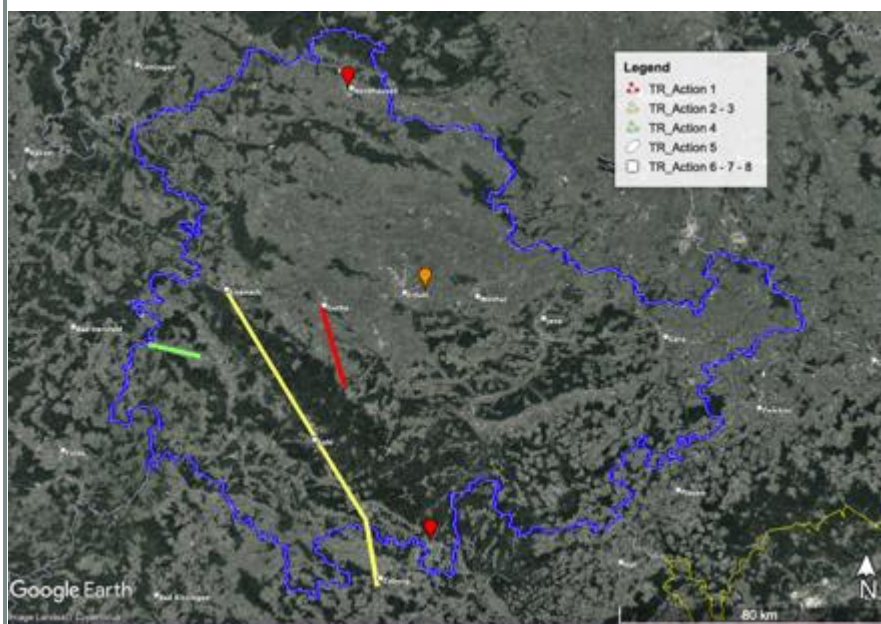


Figure 18. Overview of Corridors passing through Thuringia



As for the proposed actions, four of them are focused on the railways, and more specifically on the reactivation of dismissed railway lines. While one intervention tackles the issue of state subsidies for freight railway transport, and is thus extended to the whole regional territory, the remaining three aims at the opening of two new rail-road terminals and the expansion of the Erfurt-Vieselbach container terminal, which is a core node of the Scandinavian-Mediterranean Corridor.

3.1.7 Westpomerania

The territory of Westpomerania is crossed by the Baltic-Adriatic and the North Sea-Baltic Corridors.

Figure 19. Geographical representation of proposed actions for Westpomerania



Figure 20. Overview of Corridors passing through Westpomerania



Most of the 16 interventions proposed for the area of Westpomerania are located around the city of Szczecin, a node of the TEN-T located on the core network and adjacent to both the North Sea-Baltic and Baltic Adriatic Corridors. More specifically, while only 4 of these actions are directly on the core network, the remaining interventions are in close proximity to the Corridors crossing the Westpomeranian territory.

3.2 Impact of REIF actions on TEN-T network and trans-European Corridors

As previously explained, the 51 actions proposed by REIF partners have been further analysed in order to assess the contribution of the project activities and expected results towards the development of the TEN-T, with a special attention to the railway component.

Looking at the **estimated costs of proposed actions divided by their position in relation to the TEN-T network**, 45% are not directly located on it, which is equal to € 2.8 billions, while the remaining 55% of investments foreseen in the roadmaps are placed directly on the trans-European network, for a total of € 3,5 billions. Furthermore, these appears to be equally divided between the comprehensive network and core network, for which each REIF area has at least one proposed action.

Table 7. Estimated costs of proposed actions of REIF areas divided by their position in relation to TEN-T

REIF AREAS	COMPREHENSIVE NETWORK	CORE NETWORK	NOT DIRECTLY ON TEN-T NETWORK ⁷
CROATIA	- €	1.157.500.000 €	- €
EMILIA ROMAGNA	247.000.000 €	47.700.000 €	20.150.000 €
FRIULI VENEZIA-GIULIA	- €	3.500.000 €	162.700.000 €
SLOVENIA	- €	200.160.000 €	188.000.000 €
STYRIA	1.500.000.000 €	97.000.000 €	850.000.000 €
THURINGIA	130.000 €	5.000.000 €	308.216.000 €
WESTPOMERANIA	- €	285.800.000 €	1.360.000.000 €
TOTAL	1.747.130.000 €	1.796.660.000 €	2.889.066.000 €
	27,2%	27,9%	44,9%

These data are **in line with the nature of actions prioritized by REIF partners**, which often included interventions on segments of railways that are not included in the TEN-T (e.g. revitalization of old and/or dismissed industrial railway lines) but that are of vital importance for the effectiveness and functionality of rail transport at the local and regional level.

⁷ This category automatically includes all the proposed actions that involved a whole area, rather than a node or a railway line.

As anticipated in the previous chapter, a second step consisted in the categorization of all proposed actions either as located on a TEN-T Corridor(s), if this was the case, or placed within the area of influence of the closest Corridor(s).

According to the table below, **19% of all estimated investments can be localized on the specific path of one or more trans-European Corridor**, with a total of € 1,2 billions. Furthermore, the **Baltic Adriatic and Mediterranean Corridors**, as well as the shared segments of their paths, turned out to be the Corridors on which investments are mostly concentrated, gathering the 98,4% of all estimated investments located on one or more Corridors.

Table 8. Estimated investments of proposed actions divided by their position in relation to Corridors

TEN-T CORRIDORS	ESTIMATED INVESTMENTS	% OF TOTAL INVESTMENTS	% OF TOTAL INVESTMENTS	
Baltic Adriatic	367.800.000 €	5,7%	1.224.160.000 €	19,0%
Baltic Adriatic - Mediterranean	251.360.000 €	3,9%		
Mediterranean	585.000.000 €	9,1%		
North Sea-Baltic	15.000.000 €	0,2%		
Scandinavian-Mediterranean	5.000.000 €	0,1%	5.208.696.000 €	81,0%
<i>Investments not located directly on a TEN-T Corridor (Table 11)</i>	5.208.696.000 €	81,0%		
TOTAL	6.432.856.000 €	100%	6.432.856.000 €	100%

To have a clearer overview of REIF impact on each trans-European Corridor, an aggregated version of the same table has been prepared, where the investments of categories involving more than one Corridor (i.e. in this case Baltic Adriatic - Mediterranean) have been multiplied and added to the existing total of each Corridor considered individually.

According to the **aggregated version**, the **Mediterranean Corridor is the one obtaining the biggest contribution from the actions foreseen by REIF**, with € 836 millions equal to the 12,5% of total investments. This is followed by the Baltic Adriatic Corridor, with € 619 millions, which is notably far from the low amounts of investments foreseen for the North Sea-Baltic and Scandinavian-Mediterranean Corridors.

This might be due to different reasons, such as the limited presence of REIF areas in these Corridors' routes, which is especially true for the North Sea-Baltic Corridor, only involving Westpomerania out of the seven REIF areas. Another reason might be the better conditions of infrastructures for some of the Corridors, especially in relation to technical parameters to be respected by the railway network (e.g. number of tracks, loading gauge and so on).

Table 9. Estimated investments of proposed actions divided by their position in relation to Corridors, aggregated version

TEN-T CORRIDORS	ESTIMATED INVESTMENTS	% OF TOTAL INVESTMENTS
Baltic Adriatic	619.160.000 €	9,3%
Mediterranean	836.360.000 €	12,5%
North Sea-Baltic	15.000.000 €	0,2%
Scandinavian-Mediterranean	5.000.000 €	0,1%
<i>Investments not located directly on a TEN-T Corridor (Table 11)</i>	5.208.696.000 €	77,9%
TOTAL	6.684.216.000 €	100%

On the other hand, the proposed actions not directly located on a TEN-T Corridor amount to the 81%, for a total of € 5.2 billions, thus further underlining the importance of these areas from the point of view of REIF partners. Each of these has been categorized within the area of influence of the closest trans-European Corridor(s), as shown in the table below.

Table 10. Estimated investments of proposed actions divided by their position in relation to Corridors' area of influence

TEN-T CORRIDORS (AREA OF INFLUENCE)	ESTIMATED INVESTMENTS	% OF TOTAL INVESTMENTS	% OF TOTAL INVESTMENTS	
Baltic Adriatic	2.770.000.000 €	43,1%	5.208.696.000 €	81,0%
Baltic Adriatic - Mediterranean	334.000.000 €	5,2%		
Baltic Adriatic - Mediterranean - Scandinavian-Mediterranean	10.150.000 €	0,2%		
Mediterranean	589.200.000 €	9,2%		
North-Sea Baltic - Baltic Adriatic	940.000.000 €	14,6%		
Scandinavian-Mediterranean - Mediterranean	257.000.000 €	4,0%		
Scandinavian-Mediterranean	308.346.000 €	4,8%		
<i>Investments located directly on a TEN-T Corridor (Table 9)</i>	1.224.160.000 €	19,0%	1.224.160.000 €	19,0%
TOTAL	6.432.856.000 €	100%	6.432.856.000 €	100%

In this case, the highest share of investments is located within the area of influence of the Baltic Adriatic Corridor, where 53,2% of all actions not directly located on a trans-European Corridor are concentrated, equal to € 2,7 billions. This is followed by the combination North Sea-Baltic and Baltic Adriatic Corridors, with the 18%, and the Mediterranean Corridor with the 11,3%, while the remaining categories obtained a share of investments between 6,4% (Baltic Adriatic -

Mediterranean Corridors) and 0,2% (Baltic Adriatic - Mediterranean - Scandinavian-Mediterranean Corridors).

Looking at the **aggregated version** of the same table, the **Baltic Adriatic** is clearly the **predominant Corridor**, whose area of influence gathered a total of € 4 billions of estimated investments, which is equal to the 50,8% of all 51 actions proposed by REIF partners. This is followed by the Mediterranean Corridor, with the 14,9% and € 1,1 billions of foreseen investments, and by the North Sea-Baltic Corridor, obtaining 11,8% equal to € 940 millions.

The **Corridor gathering the lowest shares of foreseen investments is the Scandinavian-Mediterranean**, with 7,2% equal to € 575 millions. This, again, might be due to the route of the Corridor involving only two of the seven REIF areas, namely Thuringia and Emilia-Romagna, while the Baltic Adriatic Corridor goes through the territories of all REIF areas with the exception of Thuringia and Croatia.

Table 11. Estimated investments of proposed actions divided by their position in relation to Corridors' area of influence, aggregated version

TEN-T CORRIDORS (AREA OF INFLUENCE)	ESTIMATED INVESTMENTS	% OF TOTAL INVESTMENTS
Baltic Adriatic	4.054.150.000 €	50,8%
Mediterranean	1.190.350.000 €	14,9%
North Sea-Baltic	940.000.000 €	11,8%
Scandinavian-Mediterranean	575.496.000 €	7,2%
<i>Investments located directly on a TEN-T Corridor (Table 9)</i>	1.224.160.000 €	15,3%
TOTAL	7.984.156.000 €	100%

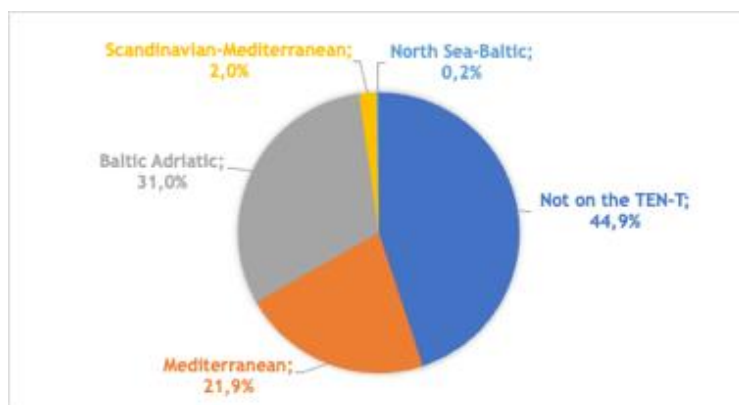
Data has shown that half of the actions proposed by REIF partners are directly located on the TEN-T network, while the other half is not exactly placed on the trans-European network and have resulted from both preliminary studies and analyses carried out in the project and the direct engagement of stakeholders, who have been involved through the organization of two annual meetings of regional advisory board and three regional capacity building workshops. As a result, this process ensured the absolute importance of these interventions to support rail freight transport and strengthen the efficiency of regional and local railway networks of REIF areas.

As a matter of fact, it is essential for industrial clusters and small and medium-sized enterprises of these areas to dispose of a convenient access to the railway network, thus benefitting from a rail freight transport that is able to cover even the last mile and be truly accessible.

Therefore, as shown in the figure below, while half of the interventions are located directly on the TEN-T network, it can be assumed that the other half are strictly functional to it, since they connect the local and regional industrial and commercial poles to the major axes of the transport infrastructure, represented by the trans-European Corridors, with new or renewed railway segments that satisfy European and international technical parameters.

This result, in turn, will benefit not only the specific Corridor reached by the single intervention proposed, but rather the whole TEN-T network, as it ensures a more efficient and faster connection for rail freight transport and trade between EU countries.

Figure 21. Proposed actions divided by location in relation to TEN-T network and Corridors (directly on paths and within area of influence)



In conclusion, the biggest impact of REIF activities and foreseen actions will fall on the **Baltic Adriatic and Mediterranean Corridors**. Among other factors, it might be due to the widespread presence of these two Corridors within the REIF areas, respectively crossing the territory of five and four of the seven regions involved in the Project.

4. Conclusions

The ever-greater interconnection between countries has led to a **constant increase in the volumes of flows of goods** that are transported worldwide on a daily basis, with **trucks** being often the prevalent method of transport with evident effects on pollution, congestion and road safety. This is **not in line with the most recent objectives set by the European Commission** in terms of transport and sustainability, expecting *a 90% cut in emissions by 2050, delivered by a smart, competitive, safe, accessible and affordable transport system*⁸. Among the key areas of actions identified within the *Sustainable and Mobility Strategy*⁹ is freight transport: the target, in this case, is to double rail freight traffic by 2050.

With this aim, the REIF project had the main objective of **supporting the increase in the share of rail freight transport within the seven participating regions/areas** and namely: Croatia , Emilia-Romagna (IT), Friuli Venezia Giulia (IT), Slovenia, Styria (AT), Thuringia (DE) and Westpomerania (PL). Starting from a detailed baseline analysis outlining areas' main economic structure, infrastructures and bottlenecks, different technical WPs have dealt with pilot actions implementation and stakeholders involvement, with the final aim of developing a roadmap for "*New Rail Infrastructure/Services 2030*" (D.T3.2.7), which is an operational plan outlining how to implement the interventions included in the priority list (D.T1.4.2) and the potential policy measures (D.T1.4.3) identified in the studies of WP.T1.

The seven roadmaps elaborated by REIF partners proposed a total of **51 actions** to optimise the regional modal share of rail freight transport which have been classified and further evaluated. When looking at such classification, the main element to be underlined is the fact that the majority of interventions fall into the priority area of infrastructure. In fact, these were **aimed at the resolution of specific infrastructural bottlenecks and missing links** hampering the connection of local areas and industrial clusters to national and European main railway network, as well as at the **expansion of the capacity of stations and intermodal hubs**. In this purpose, baseline analyses have been crucial to understand the infrastructural needs of the territory and the opportunity to revitalize dismissed railways lines and industrial sidings, in order to provide an efficient last mile connection to SME and industrial areas/districts.

An **element of strength** to be replicated is the drafting of a **detailed plan for the involvement of stakeholders** and relevant authorities, which have been fundamental to provide an insight on the sector directly from its main players, thus contributing to identifying the priorities to be

⁸ https://transport.ec.europa.eu/transport-themes/mobility-strategy_en

⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0789>

tackled. In this purpose, two governance structures were set up, the *Regional capacity building group* and the *Regional advisory board*, whose configuration and functions have been described as very useful by stakeholders themselves, wishing to keep this enriching exchange active even beyond project's conclusion. In fact, in this way, a shared and consolidated vision on priorities to be implemented for the future development of each regional intermodal network have been achieved.

However, it should be mentioned that such involvement has been mostly tailor-made on the basis of specific infrastructural needs highlighted at regional/local level, while a **wider planning perspective should be usually ensured** when shaping territorial needs.

Financial resources have also been identified as a **constraining issue**: not all interventions can be implemented in the short-term, thus making the elaboration of a shared prioritization method of fundamental importance to optimize the use of available funding.

At the same time, another interesting issue to be highlighted is a **limited reference to the European macro-strategies**. This might be due either to the lack of knowledge on such topic by operators and the intermodal industry (and this, basically, also a relevant issue), or to their minor impact in the field investments on mobility, transport and logistics, which are usually calling for heavy investment costs.

Nonetheless, proposed actions still contribute to the European level as far as they represent a concrete support for the completion of the trans-European transport network, especially from a local and regional perspective. As a matter of fact, **proposed interventions are functional to the TEN-T network**, despite being often located outside of the major axes represented by the trans-European Corridors: in fact, analysed investments are **insisting more on regional infrastructural needs**, mainly with the aim of covering the last mile and connecting local areas to the major national and European railway lines.

When looking at the wider perspective of EU Corridors, major benefits are foreseen for the **Baltic Adriatic and Mediterranean Corridors**, gathering the 53% of proposed investments on railway lines and areas located on either on the two corridors' paths or within their area of influence. This is also due to the specific position of the seven REIF areas, whose territories are crossed mainly by these two Corridors.

At the same time, looking at rail freight transport in general terms, a **greater commitment of relevant authorities and stakeholders is needed to support railways**: in fact, a higher number of baseline studies and specific analyses should be carried out on this sector, thus allowing to fully exploit their great potential. This is especially true for the accomplishment of large

investments on infrastructures, which require specific feasibility studies and accurate cost estimates.

Moreover, a **limited reference to the importance of data and ICT tools** to be used to enrich the overview and comprehension of the current status in terms of accessibility of these territories has emerged from the analysis carried out: these have a fundamental role and should be prioritized as relevant fields of action, since information is not always available due to out-of-date IT management systems of the main intermodal nodes.

At the same time, the wide topic of **competences development and training** in relation to the need of skilled personnel, competent in the fields of intermodality and logistics, was **not properly faced** within the roadmaps analysed, thus underlining a minor interest in addressing the equally relevant issue of non-infrastructural bottlenecks to be solved to support rail freight transport.

As a matter of fact, a strong **need to boost intermodality through an integrated policy approach** arose from the studies analysed: this should involve infrastructure, market conditions and a proper phase of planning. In this purpose, it is necessary to involve key stakeholders and institutions of the territory through a **more efficient and integrated governance**, especially at the regional level. Moreover, all actors shall be aligned with the needs and priorities of the area, in order to avoid any obstacle or delay in subsequent phases. In this sense, Corridors themselves could represent a useful structure of transnational governance, able to connect stakeholders and territorial institutions of different levels and countries, with beneficial effects also on the resolution of bottlenecks and administrative obstacles that often arise at cross-border level.

Furthermore, **legislative instruments and supporting policies shall be pushed** by administrations to facilitate the conditions of rail transport, for instance through subsidies, incentives and the establishment of simplified logistic zones, thus facilitating freight transport. In fact, these should help including **external (socio-environmental) costs as a crucial topic to be included in the overall evaluation of market conditions**, thus resulting in a lower average rate for road transport seen as more convenient. In this regard, policies to support operators in the rail freight transport sector are fundamental to increase the modal share of rail.

Last but not least, a greater effort by administrations at all levels is needed to **gather resources** not only from their respective budgets, but also to better exploit the opportunities **offered by European Programmes** co-financing the completion of infrastructural works to better connect the local and regional context to the major axes traced by the trans-Europe Corridors, thus providing a sustainable - but also efficient and convenient - alternative for freight transport.

ANNEXES

ANNEX I - REIF deliverables analysis

ANNEX II - REIF Excel database