



Integrated and Sustainable Transport in Efficient Network - ISTEN

DT2.2.3 – Local Action Plan for Calabria Region
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Document information

Abstract

The deliverable reports the Local Action Plan (LAP) developed for the Calabria Region. The LAP defines the local measures and conditions to make the regional ports of Gioia Tauro, Vibo Valentia, Crotona and Corigliano Calabro and their reference hinterland an efficient and integrated HUB. Specifically, the LAP promotes actions, investments and regulation, aimed at overcoming the bottlenecks identified in the analysis of the local context. The LAP was developed in collaboration with the local stockholders (LWG) who provided indications about the actions to be developed, guaranteeing an improvement and consolidation of the cooperation and interactions between the various stakeholders of the local logistics.

Keywords

Local Action Plan, Actions, Infrastructures, Market, Cooperation, Intermodality

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List of abbreviations and definitions

ALI – Integrated Logistics Area

ANAS - National Autonomous Roads Corporation

ASIREG – Consortium for industrial development in the province of Reggio Calabria

BRI – Belt and Road Initiative

CORAP - Regional consortium for the development of production activities

COSCO - China Ocean Shipping Company

EU – European union

H&S – Hub and Spoke network configuration

LAP – Local Action Plan

MIT – Italian Transportation and Infrastructures Ministry

P2P – Point to Point network configuration

PON – National operational plan

POT - Three-year operational plan

RFC – Rail Freight Corridor

RFI – Italian rail network

Ro-Pax – Passengers Ro-Ro vessel

Ro-Ro - Roll on-Roll off

SSS – Short Sea Shipping

TEN T – Trans European Transport Network

UNCTAD - United Nations Conference on Trade and Development

1 INTRODUCTION

The action plan is a planning document which contains a detailed description of a series of individual actions aimed at a general common objective, the "framework objective". The Local Action Plan (LAP) must be subject to an evaluation, to understand the effectiveness of the actions implemented and to define its impact on the current situation. To make this possible, every action must be adequately analyzed and described, according to a series of principles and must be adequately assessed.

For this reasons, the LAP was drawn up following a CANVAS model. The Canvas approach is an simplified way to describe actions and activities that need to be implemented. The Model Canvas is a strategic design tool that uses visual language to represent the main characteristics of the envisaged actions. Through a single table it is possible to view the stakeholders involved, the key actions, the possible problems and risks, the implementation times and the possible sources of financing.

UNIMED has developed a LAP for the Calabrian port system, which includes the ports of Gioia Tauro, Vibo Valentia, Crotone and Corigliano Calabro, taking into account the local context analysis carried out in the first phase of the project and in close collaboration with the Local Working Group (LWG) composed of public and private stakeholders operating locally in the field of logistics and intermodal transport and who showed interest in the ISTEN project.

The LWG was born with the aim of promoting dialogue and cooperation among the various policy makers on freight transport at different levels: coordinating horizontally the freight planning policies; vertically, between authorities and companies, to integrate the present and future needs of the supply chain into the process of defining freight transport policies.

The LWG provided a specific contribution in identifying bottlenecks (context analysis phase) and in identifying possible strategies and actions aimed at overcoming these bottlenecks (local action plan).

Although in the local context analysis phase, critical issues were recognized on the system of connections between Calabrian ports and their hinterlands on all identified clusters (Market, Infrastructure, Innovation, Institution, Operational), the first two areas of action (Market Cluster and Infrastructure Cluster) were identified as priorities in the design of the LAP. And for each of them two priority actions have been selected; in particular:

- for the Market Cluster:
 - Action 1: Calabria Region as competitive European terminal port for the Silk Maritime Road;
 - Action 2: Hub and Spoke System in Euro-Mediterranean Area for Ro-Ro traffic with hub in Calabria Region;
- for the Infrastructure Cluster:
 - Action 1: Integration and connection to the ADRIAN networks - Regional Level;
 - Action 2: Integration and connection to the ADRIAN networks - Local Level - Last mile links.

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The individual actions are illustrated into the same order of contents, expressed in 7 paragraphs: stakeholders involved, key actions, aims, problems faced during the implementation, timescale implementation, risk analysis, funding source.

Annex 1 shows the CANVAS tables relating to the four envisaged actions.

2 MARKET CLUSTER

The main market bottlenecks emerged during the context analysis phase and during the discussion with local stakeholders can be summarized in the following points:

- specialization in a single market sector of the Calabrian regional system ports;
- lack of commercial relations with the eastern (Balkan countries) and southern (North African and Arab countries) of the Mediterranean basin.

To overcome these bottlenecks, a series of actions are required aimed at:

- improvement of the existing operations thanks to new commercial agreements and strategies by the commercial stakeholders involved in the maritime and hinterland logistics chain;
- development of logistics areas in the back-ports for the introduction/expansion of value added logistics services and operations;
- extension of the port system catchment area to the whole South of Italy, in relation to both the commercial flows, related to agri-food and industrial manufacturing production, and the automotive.

For this reasons, two key actions are proposed:

- Action 1: Calabria Region as competitive European terminal port for the Silk Maritime Road;
- Action 2: Hub and Spoke System in Euro-Mediterranean Area for Ro-Ro traffic with hub in Calabria Region.

In the following paragraphs the proposed actions are analysed in detail, reporting the stakeholders involved, the key actions, the aims, the problems faced during the implementation, the timescale implementation, the risk analysis and the funding source. Instead, the related CANVAS tables are shown in Annex 1.

2.1 Action 1: Calabria Region as competitive European terminal port for the Silk Maritime Road

2.1.1 Introduction

The distribution of commercial traffic on the planet is changing very rapidly. The economic development of some important areas in Asia, India, Africa and South America has generated significant levels of consumer goods demand and a further boost to the growth of transport supply in terms of infrastructures and services. Logistics chains are being modified and commit many States to sustain substantial investments. Some large infrastructural works have been completed, others are nearing completion, and others are still at the planning stage. Just think of the Suez and Panama canals, the development of transcontinental rail networks, the rapid growth of some big ports in the Far East, the intense revival of air traffic. Feasibility studies and hypotheses of new transport routes, such as the Silk Road or the Arctic Road, are on the international scene with increasing insistence. Europe and Asia, especially China and India, are characterized by increasing volumes of freight exchange; growing maritime traffics result in possible phenomena of saturation for some ports or in the need of larger and better organised

ones (OECD, 2012; Ordabayev, 2015; UNCTAD 2019). China is strongly committed to the construction of two commercial corridors, one maritime and the other by rail (Silk Roads; BRI – Belt and Road Initiative) in order to reach the freight at lower costs on the Europe (Figure 1). To achieve this great project, the Chinese government has planned significant investments; the construction and management of a new commercial port in North Adriatic Region capable of hosting large container ships (18-24.000 TEUs), with a commitment of the order of 2 billion euros, is envisaged. The railway route starts from Xian through rural China, touches Teheran in Iran, arrives in Turkey, passing through Bosphorus Straits (Istanbul), and has the city of Duisburg in Germany the terminal in Europe. However, the railway arm of the new Silk Road is already a reality: some European freight forwarders already offer the opportunity to move freight along this route or others passing over the Black Sea.



Figure 1: Silk Maritime and Railway Roads

The design of Maritime Silk Road seems to pass through Adriatic Sea, ending in Venice or Trieste, where the freights should be moved on trains towards Central Europe. But this road solution maybe underestimates a series of issues; so an alternative solution, more profitable and feasible, is proposed and described: the European continental terminal could be Calabria Region (with an interesting port system, based on one big terminal container as Gioia Tauro); with a possible integrated expansion of the port system towards Puglia along the ionian corridor (Crotona, Corigliano, Taranto ports) and towards Sicily (Messina, Augusta and Catania ports). The advantages should be seen from a comparative perspective: greater Euro-Mediterranean geographical centrality, less maritime distances, ports of considerable capacity already operational. This solution brings to lower and reasonable investments, addressed to improve slightly the rail transport; it permits to avoid heavy impacts resulting from the construction of a new great port in the Venetian lagoon on the environment and the existent tourism industry and to hook, from the South, the whole and attractive Italian region.

2.1.2 Stakeholders involved

The stakeholders who could be involved in the design and implementation of this action are listed below:

- national, regional government authorities;
- authorities of Reggio Calabria Metropolitan City;
- Gioia Tauro Port Authority;

- private stakeholders as category representatives of the business and production field.

2.1.3 Key actions

The key actions that should be implemented in order to make Calabria the European terminal for the new silk road can be summarized in the following points:

- institutional commitment to promote the terminal of the silk road in Calabria and useful actions to give continuity to the intermodal route through Calabria, also with specific funding;
- adjustment of integrated logistics services supply to make Calabria the real gravity center of freight flows between Asia and Europe, realizing the competitive advantage deriving from the position;
- territorial marketing activities aimed to include the Calabrian ports into national and international circuits and to attract transport and logistic demand;
- measures related to infrastructures, nodes and services to adapt regional transport systems to the needs of an intermodal intercontinental corridor;
- definition of an industrial and macro-regional development plan with a medium-term horizon that includes economic and financial actions with international agreements relating to commercial exchanges and collaborative projects in the scientific and industrial fields.

2.1.4 Aims

The Mediterranean remains one of the main world trade routes, involving around one-third of the World's commercial exchanges: incoming from the Suez Canal and the Straits of Gibraltar, and outgoing to the Atlantic Indian Oceans.

It evolved from an "inland sea", where exchanges were held among coastal Countries, to a major intercontinental area of trade. Spain, France and Italy hold the 11th, 12th and 14th positions in the UNCTAD index of the top 20 world economies according to their maritime connectivity.

As the crossroads of the European, Asian and African continents, the Med and its ports are destined to carry on a strategic role on the commercial flows between the main production and consumption hubs. The Mediterranean Sea represents the western arrival point of the New Silk Road and through the upgrading works in the Suez Canal has already recorded a 20% growth in the number of container ships in the last 5 years.

The Chinese expansion strategy is under way in the Mediterranean basin and special attention is addressed to Southern Europe. In Greece, the port of Piraeus in 2016 was mostly privatized and sold to the giant Chinese COSCO maritime operator. The agreement provides for the strengthening of the operational capacity of the port and a new railway line that will connect the Greek port to the German market, through the Balkans (in this strategy ranks the building of the new Belgrade-Budapest railway). Before the entrance of the COSCO, the Athenian port moved about 500 thousand containers/year; today the threshold of 3.1 million has been exceeded, and prospects of doubling are assumed in few years. Recently also the port of Thessaloniki, following the privatization rationale, has passed under the control of a Chinese-

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German Consortium. Chinese banks have also allocated large loans to Greek ship-owners to produce their new ships in China. Other collaborations encourage naval research and development programs between the two countries.

The strategy of the Chinese government seems to aim at the conquest of Europe and the Mediterranean basin, with important investments in maritime and logistic works. Major investments are under way in Turkey (Mersin), Israel (Haifa), Italy (Vado Ligure), Algeria and Spain.

Italy could play a strategic role, as it represents the final destination of the Silk sea route; it could therefore assume the role of primary gateway to Europe from the South. The hypothesis of a sea-land interchange node in the Northern Adriatic has pushed the ports of Venice, Trieste, Ravenna, Rijeka and Koper, to tighten an alliance (North Adriatic Ports Association) to intercept the new potential cargo ship trades and has outlined the hypothesis of an offshore port for large container ships.

In reality, all Italian peninsula, with its main ports, starting from the large southern container hubs, and with its primary railway corridors, could play an important and competitive role. However, an extraordinary planning and programming effort is required, as well as a commitment also in terms of Italian-Chinese relations, to prevent Italy and its companies from being cut off from the Silk Road and from new interesting commercial opportunities.

In a national strategic vision, considering the large volumes of expected traffic, it might be appropriate a choral participation of the Adriatic-Ionian ports to the challenge, starting from the important hub container port of Gioia Tauro.

In reality, not only Gioia Tauro, but the whole Calabrian port system could play the role of an European continental terminal on the Silk Maritime route; with a possible integrated expansion of the port system along the Ionian corridor (Crotone, Corigliano) towards Puglia (Taranto).

2.1.5 Problems faced during the implementation

The problems that could arise during the implementation of this action can be summarized in the following points:

- institutional problems relating to the relationships among the public stakeholders involved (national government, regional government, port authority, etc.); in fact the implementation is closely linked to the planning on a national scale;
- problems relating to the establishment of international partnership with non-national government bodies;
- problems relating to the rapid construction of the infrastructures and services necessary to make intermodality operational on a national scale and in particular on the Ionian-Adriatic corridor;
- synchronization with the actions foreseen in the infrastructure cluster and aimed at improving the regional transport network and the last mile links near the ports.

2.1.6 Timescale implementation

The duration of the activities planned for the design and implementation of this action is estimated at 3 years. Such a period is deemed necessary in order to elaborate and complete the institutional path as well as to activate appropriate agreements among the interested parties. Of course, the implementation of the action, which pertains to the market cluster, depends heavily on the construction of infrastructures necessary to get strong the intermodal transport system both local and national level. Furthermore, the action is strictly connected to the improvement of the operation of the regional port system which should take place through the activation of highly advanced logistics services.

2.1.7 Risk analysis

The risk factors that could compromise the implementation of the action are to be identified in:

- missing agreements at EU and national level;
- establishment of alternative solutions and insufficient competitiveness of the proposal.

2.1.8 Funding source

For the implementation of the action, the need of 25 Million € is approximately estimated (excluding measures related to infrastructures, considered in other specific Action). Possible sources of funding could be:

- EU grants/subsidies;
- national and regional government subsidies;
- private investments.

2.1.9 Impacts on bottlenecks

The main limit of the port of Gioia Tauro is represented by the fact that it is a port exclusively linked to transshipment and therefore vulnerable to the decision-making system of the major international ocean carriers and the competition of other Mediterranean ports. The mono-functionality of the port did not allow to extend to the surrounding territory the benefits of an economic nature, which remained limited to the narrow port area. Large container ships arrive in the port, unload their containers, which are loaded on feeder ships that leave for local distribution. A complex of activities that takes place within the port area without any connection with the economic and social activities of the Hinterland.

The inclusion of the Gioia Tauro node within the New Silk Road as well as allowing significant savings in terms of money and time for the distribution of goods to the north and central Europe, would guarantee the port greater prospects for development and expansion of its catchment area and therefore of its hinterland.

2.2 Action 2: Hub and Spoke System in Euro-Mediterranean Area for Ro-Ro traffic with hub in Calabria Region

2.2.1 Introduction

The concept of Short Sea Shipping (SSS) is specified in the communication n. 317 of 1999, in which the European Commission defines SSS as “the movement of goods and passengers by sea between ports located in geographical Europe or between these ports and ports located in countries outside Europe with a sea coast closed to the borders Europe”.

The motorways of the sea represent a specific type of SSS. They are freight transport services by sea, scheduled, high frequency, reliable, integrated in door to door logistic chain through intermodal transports. These services are realized using Ro-Ro (Roll on – Roll off) ships, that are loaded and unloaded with horizontal operations and haul specific load unit: trailers (unaccompanied transport) and trucks (accompanied transport).

The motorways of the sea could be focused on specific relationships, since a Ro-Ro line requires large volumes of traffic. It is necessary to use fast, high-speed ships capable of guaranteeing high frequencies in order to make Ro-Ro services competitive (in terms of costs and delivery times) with road and rail transport. All this would lead to a concentrated development on some routes and few ports. The importance of the SSS, and in particular of Ro-Ro transport services, in the development of efficient and sustainable transport networks, is evident from the attention given to this sector both by the European Community (DG TREN Project, 2009; European Commission – DG mobility and transport, 2015) and by academic scholars. In the sector literature, several studies have been carried out in order to analyse the potential of maritime transport with reference to the efficiency of the Ro-Ro terminals (de Langen et alii, 2016; Özkan et alii, 2016; Michaelides et alii, 2019) but also to the environmental sustainability of this kind of transport (Christodoulou and Woxenius, 2019; Raza et alii, 2019).

The Mediterranean ports equipped for Ro-Ro services are about 60, and a dense network of routes (88 lines), which are being integrated with the territory, spreads throughout the basin. Currently, the services of SSS in the Western Mediterranean are all attested on couples of ports, and mostly on direct connections, without intermediate stopovers. On the Eastern side, the Ro-Ro maritime transport network is less dense, developed mainly within the Adriatic Sea with connections between the Balkan area and the Italian peninsula; however, there are also connections among Turkey, Eastern Europe and Italy.

The absence of some maritime relationships (for example among the states of the northern Mediterranean shores of the and Arab countries such as Egypt, Israel and Syria) is partly explained by the poor coherence of transport demand, in part by the lower competitiveness of direct maritime relations of Ro-Ro with regard to maritime container transport and road transport. However, the high transit times that characterize container transport and the high cost of road transport do not facilitate the growth of trade and therefore of the respective markets. If the exchanges between the Italian and Arab countries are taken as an example, it is possible to observe that the full container maritime services offer boarding from the Adriatic and Tyrrhenian ports on a weekly and/or fortnightly basis, but due to the intermediate stops port to port, travel times vary from 7 to 13 days. Meanwhile, truck services have a much higher

cost than maritime services and are therefore hardly sustainable for the transport of consumer goods.

In this regard, a study (Galati et al, 2015) relating to the competitiveness of SSS corridors and road transport, by comparing the costs of moving food products (olive oil) from Spain to several Italian ports, shows that the transportation cost for the road alternative is about 35% higher than the SSS.

It should also be noted that most of the Mediterranean Ro-Ro and Ro-Pax (freight and passengers) routes (both on the western and eastern sides) climb Italy, consolidating the gaps in the TEN-T (Trans European Transport Network) corridors; this applies to the west-east corridor, along the bridge-Balkans Barcelona–Italy; to the double Adriatic corridor that connects Italy with Greece (Trieste, Venice, Ancona, Bari, and Brindisi all have a historical link with Igoumenitsa–Patras) and Turkey and fall within the countries of the Middle East; to the Tyrrhenian connections with the North African countries; and to the connections between Italy, Malta, Corsica and Albania (the Bari-Durres line is historical).

In the last 20 years, the traffic of Ro-Ro ships in the Mediterranean has exceeded 4 million units, with a growth of 255%, which has led to freight transported by ferry reaching the same level as freight moved with containers. In 2017, 70,000 Ro-Ro vessel positions in the Mediterranean were detected, with an increase of 7.4% compared to 2012. According to some recent studies in the Euro-Med area, Ro-Ro traffic moves over 84 million tons of goods, of which around 30 million is SSS. In 2015, approximately 14.9 million tons of goods were exchanged between Italian ports in the Adriatic and ports in the Balkans and the eastern Mediterranean using Ro-Ro maritime transport, and about 15 million tons of goods were exchanged between the Tyrrhenian Italian ports and Maghreb and Western Mediterranean ports (Appetecchia – ISFORT report 2015).

At the geo-economic level, the Mediterranean interfaces the Atlantic and North European markets on the one hand and the Asian and African markets on the other. For this reason, the centrality of the basin in an international context is a strong factor of attractiveness for public and private investments in the transport and logistics fields, which continue to grow despite some critical social and political situations. The Mediterranean is a privileged transit route for containerized traffic, but it is also a very significant area for short-distance Ro-Ro traffic, particularly in the North-South direction. This situation determines new market needs that require, not only transport services, but also integrated logistics services that presuppose the existence and functionality of an intermodal network system capable of projecting the Mediterranean basin regions at the center of Europe. In particular, the market requires integrated services that also include processes of freight handling and transformation, to generate added value and minimizing monetary costs and logistic times.

Hence the hypothesis of a hub and spoke network structure to realize an integration between the TEN-T networks and the Ro-Ro sea routes coming from the southern and eastern shores of the Mediterranean in order to produce significant economies both for transport operators and users.

2.2.2 Stakeholders involved

The stakeholders who could be involved in the design and implementation of this action are listed below:

- national, regional government authorities;
- authorities of Reggio Calabria Metropolitan City;
- local municipalities;
- port authority;
- private stakeholders as category representatives of the business and production field.

2.2.3 Key actions

The key actions for the realization of a Hub & Spoke system for Ro-Ro traffic within the Mediterranean basin with Hub identified in the Calabria Region, can be summarized in the following points:

- institutional commitment to promote the realization of Ro-Ro maritime transport hub in the Calabria Region;
- joint venture among maritime transport operators in the Mediterranean basin aimed at changing the configuration of the network (transition from a point to point network to a hub & spoke network) through the synergic use of resources;
- planning, design and activation of integrated logistics services for groupage/degroupage activities of Ro-Ro loads;
- regulatory policies, guidelines and support for Ro-Ro maritime transport;
- activation of new Ro-Ro lines for the connection between the Balkan peninsula and Calabria and the latter and the west coast of the Mediterranean (Spain).

Regarding the last point, below is an example of a Ro-Ro navigation line that could be activated during the project. The line provides an East-West cross connection crossing Calabria region.

In particular, it is possible to plan and activate an annual regular shipping line with Ro-Pax ship to connect the Greek town of Igoumenitsa and the Calabrian port of Corigliano Calabro for a continuation by road to Gioia Tauro and boarding for Valencia (Figure 2). This new route may be required as a "short bridge".

The name comes from the existing "Long Bridge" line operated by Grimaldi Lines and connecting Patras-Igoumenitsa-Brindisi-Civitavecchia-Barcelona. The line connects the Balkan area to Spain by sea with a road link between Brindisi and Civitavecchia. The two Long Bridge and Short Bridge paths are compared in the figure 3.

The new line would have a significant economic impact at local level creating jobs and increasing the local nautical technical services. An increase in services involves a series of social activities to be increased in the Ionian area. The strengthening of the port of Corigliano Calabro with the described line would involve the regional ports with a new Ro-Ro traffic to both from Greece and even more to the Balkans.



Figure 2: "Short Bridge" East-West Ro-Ro Line



Figure 3: Comparison between Long Bridge e Short Bridge

2.2.4 Aims

The H&S model is proposed, with appropriate specifications, for the modelling of Euro-Mediterranean freight transport networks where an equipped logistics system in a central region of the Mediterranean is assumed as the hub. The proposed model is oriented to obtain economies related to the configuration of an intermodal sea-rail network with a hub in Calabria on which the connections, coming from the southern shore of the Mediterranean and/or from Eastern Europe, stand and spokes services (rail or sea) allow the connection with Central and Western Europe (Figure 4). The figure shows, through chromatism, the decomposition and re-composition of the goods loads by destination.

Calabria, in the heart of the Mediterranean basin, is a region equipped with ports of great and medium capacity (Gioia Tauro, Vibo Valentia, Crotone, Corigliano) that are able to assume the role of an integrated European logistics platform projected on both the Adriatic-Ionian corridor and the Tyrrhenian corridor. The ongoing upgrade of the Italian rail transport network along the Ionian-Adriatic route, with the Southern terminal in the port of Gioia Tauro (railway C line with transit capacity for 750 m trains), with services structured to link in sequence the four ports, prefigures a reliable, efficient, and effective option of spokes towards Central Europe that could be very advantageous compared to direct transport by sea in terms of costs and travel times.

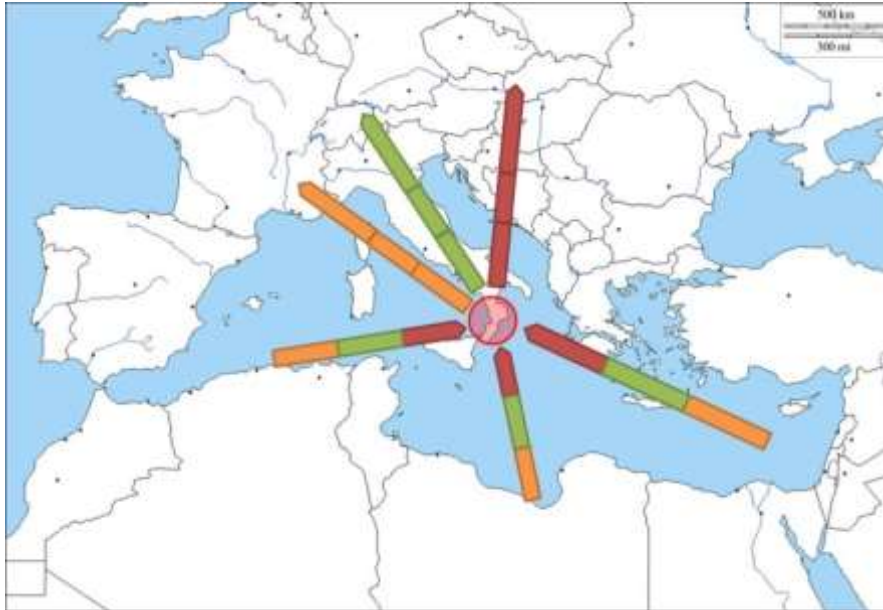


Figure 4: H&S system for Mediterranean area.

The configuration of the H&S network improves the cost/service ratio and allows the reduction of efficiency losses related to P2P transport due to poor reliability, high costs and times, low frequency, restricted space penetration, unbalanced traffic by direction, and low utilization of the maritime Ro-Ro lines. A system with hub nodes (logistic/intermodal terminals) and feeder connections (by road, by rail, and by sea) offered in terms of unique contractual/transport tariffs can determine a higher average utilization coefficient of the network, a higher frequency of services, a greater spatial extension through the increase in the number of achievable destinations, and a more efficient use of transport units and loading units.

2.2.5 Problems faced during the implementation

The problems that could arise during the implementation of this action can be summarized in the following points:

- institutional problems relating to the relationships among the public stakeholders involved (national government, regional government, port authority, etc.); the implementation is closely linked to the planning on a national context;
- problems relating to the establishment of international partnerships with non-national government bodies;

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- problems relating to the rapid construction of the infrastructures and services necessary to make intermodality operational on a national scale and in particular on the Ionian-Adriatic corridor;
- synchronization with the actions foreseen in the infrastructure cluster and aimed at improving the regional transport network and the last mile links near the ports.

2.2.6 Timescale implementation

The action will be implemented over a three-year period during which the institutional pathway and the necessary agreements among the involved domestic and foreign stakeholders will be activated, as well as an adaptation of port infrastructures and the definition and activation of a set of logistics services necessary to guarantee the success of the proposed Hub & Spoke network configuration.

The following table illustrates the expected calendar implementation.

Activity/Year	1	2	3
Institutional path			
Agreements among domestic and foreign stakeholders			
Port infrastructures adaptation			
Definition and activation of logistic services			

2.2.7 Risk analysis

The risk factors that could compromise the implementation of the action are to be identified in the two following points:

- missing agreement at EU and national level;
- lack of initiative by private operators and insufficient competitiveness of the proposed path.

2.2.8 Funding source

For the implementation of the action, the need of 25 Million € is approximately estimated (excluding measures related to infrastructures, considered in other specific Action). Possible sources of funding could be: EU grants/subsidies; national and regional government subsidies (Sea Bonus); private investments.

2.2.9 Impacts on bottlenecks

The main problem related to the markets in the minor ports of Calabria Region (Crotona e Corigliano Calabro) is the lack of commercial connections with the prospective Balkan countries, with the Eastern Mediterranean countries and with the southern Mediterranean shore.

Moreover, goods traffic characterized only by imports (at the port of Crotona only ships arrive for the supply of raw materials from the companies located in the port hinterland). Added to this is an insufficient marketing activity to attract maritime traffic flows of goods, in particular from the eastern and southern Mediterranean.

The reorganization of Ro-Ro traffic in the Mediterranean basin, with the transition from a P2P network configuration to a Hub & Spoke and with the activation of new Ro-Ro navigation lines, would allow the revitalization of the Calabrian ports, making them assume a central role in the short distance sea freight.

3 INFRASTRUCTURE CLUSTER

The context analysis detected numerous infrastructure bottlenecks both at the regional network level (inadequacy of the regional rail network) and at the local level (inadequacy and lack of road/rail last mile connections).

For this reason, the measures planned within the infrastructure cluster concern two different territorial levels: the regional and the local one. At regional level, a reorganization of the railway network is proposed with adaptation to European standards in order to insert the Calabrian Ionian corridor in the TEN-T COMPREHENSIVE network. At local level, some interventions are proposed on the rail and road networks in order to improve (or, where absent, to build) the last mile connections for better accessibility to / from the port and an effective integration of ports system to the territory and to its hinterland.

In the following paragraphs the proposed actions are analysed in detail, reporting the stakeholders involved, the key actions, the aims, the problems faced during the implementation, the timescale implementation, the risk analysis and the funding source. Instead, the related CANVAS tables are shown in Annex 1.

3.1 Action 1: Integration and connection to the ADRIAN networks – Regional Level

3.1.1 Introduction

Railway connections should be a distinctive feature of the port infrastructure system as they allow sustainable connections with the hinterland giving effective integration with the territorial and economic fabric.

The key variables for the railway network, in addition to the availability of the connection itself, are the maximum length of trains that can be operated, the layout of the tracks (which affects their performance), the methods of carrying out the manoeuvres (often a factor of low competitiveness of the rail transport compared to road transport). The connected rail tracks have sometimes an insufficient length, with the need for a greater number of manoeuvres for train formation and routing on the national network. Furthermore, the management of traffic peaks in correspondence with ship arrivals requires a high availability of tracks and a very efficient management capacity of the train, also in order to create frequent connections with the hinterland. Coordination with the railway standards adopted on the TEN-T corridors is another factor influencing the development of the supply: competition with other ports is played above all on the efficiency of the land connections and the railway costs are strongly decreasing with the size of the trains. Today the Calabrian network does not allow trains with a length exceeding 500 m. In addition, the restrictions on the admissible structure gauge along the Calabrian Ionian corridor limit the transit of trains with High Cube containers (whose use today is equal to 15% of container traffic and it is growing rapidly) and semi-trailers. In recent years (starting from 2017), RFI (Italian railway company) has promoted infrastructure investment programs in the medium term, to enhance the railways, for the transit of trains with 650 - 750 m modules in the Center-South area; works are programmed on the structure

gauge, for a wide coverage of the national railway network with shapes PC45 (constraint for the High Cube transit) and PC80 (constraint for the transit of semi-trailers and heavy trucks).

For the railway network of the Calabria Region, a strengthening of the Ionian corridor is proposed together with the connection line between Lamezia Terme and Catanzaro Lido in order to link the Gioia Tauro port to the Ionian-Adriatic corridor (Figure 5). The choice of linking the Gioia Tauro port to the Ionian corridor through the Lamezia Terme-Catanzaro Lido derives from two fundamental needs. The first is linked to transport safety since the Paola-Sibari line is subject to a very weak element of circulation represented by a tunnel section of about 16 km (from Paola to Castiglione Cosentino), single-barreled, with a strong presence of passenger trains and with restrictive limits concerning safety standards. The second is related to the opportunity to enhance two significant commercial ports of the Region located on the Ionian coast (Crotone and Corigliano).

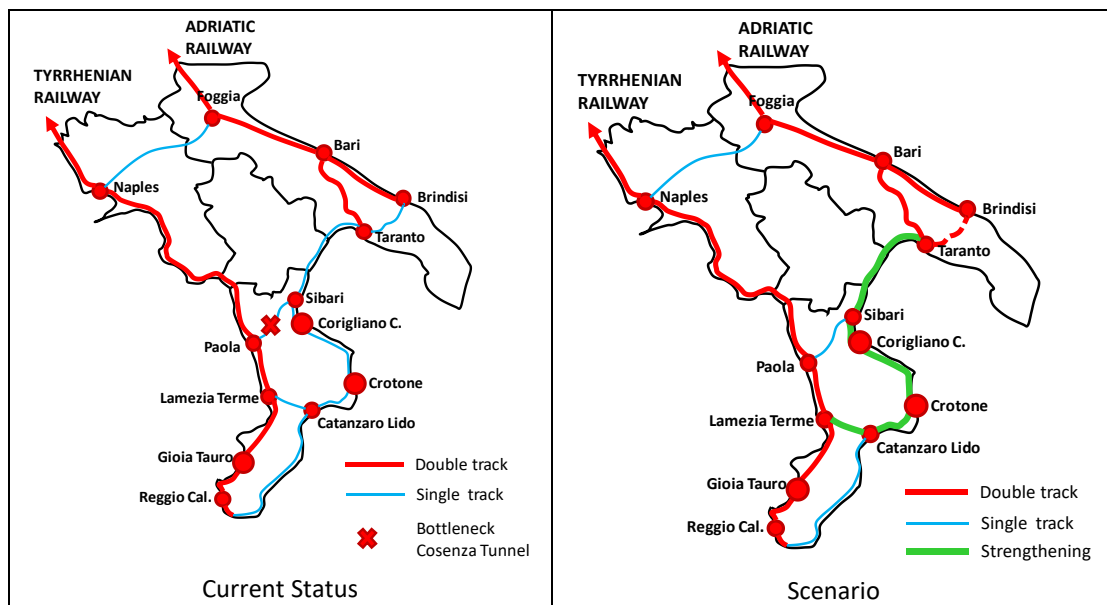


Figure 5: Actions on the regional railway network

In agreement with the RTP (Regional Transport Plan of Calabria Region, 2017), Local Action Plan proposes the inclusion of the Ionian railway in the TEN-T COMPREHENSIVE NETWORK (European Corridor No. 5) as figure 6 shows.

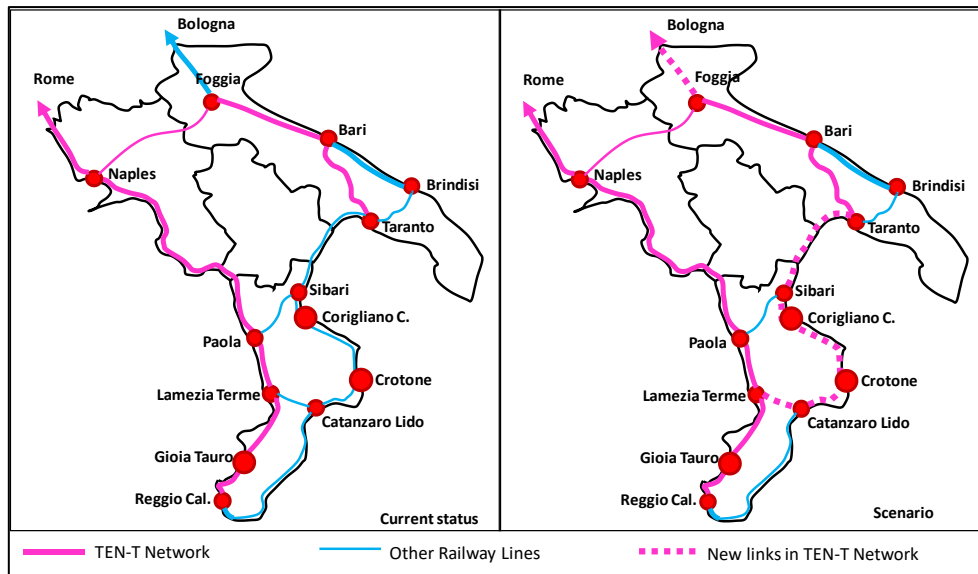


Figure 6: Inclusion of the Ionian railway in the TEN-T COMPREHENSIVE NETWORK

3.1.2 Stakeholders involved

The stakeholders who could be involved in the design and implementation of this action are listed below:

- Infrastructure and Transport Ministry;
- National Railway Company (RFI);
- Calabria Region;
- business associations as industrial and commercial bodies.

3.1.3 Key actions

The modernization and strengthening of the Ionian corridor in the Calabria region requires a series of infrastructural works that can be summarized in the following points

1. Adjustment of axial mass to D4 category (22,5 tons per axis and 8,0 tons per metre) for Lamezia Terme -CZ Lido-Crotone-Sibari railway (Figure 7); the interventions envisaged by RFI in the period 2017-2026 include only the adjustment to category D4 of the San Lucido-Sibari-Metaponto line.
2. Adjustment of gauge to PC45 class for Catanzaro Lido-Crotone-Sibari railway (Figure 8), the PC45 gauge allows to convey along railway line the High Cube containers; currently only swap bodies and trailers can be routed along this line (PC32 gauge); the RFI intervention plan (2017-2026) proposes the adaptation to the PC45 gauge only for the San Lucido-Sibari-Metaponto line.
3. Adjustment of railway module to 750 m for the itinerary from Gioia Tauro to Catanzaro Lido and Ionian railway (Figure 9); the RFI intervention plan (2017-2026) proposes the adaptation of the module to 750 m only for the San Lucido-Sibari-Metaponto line.

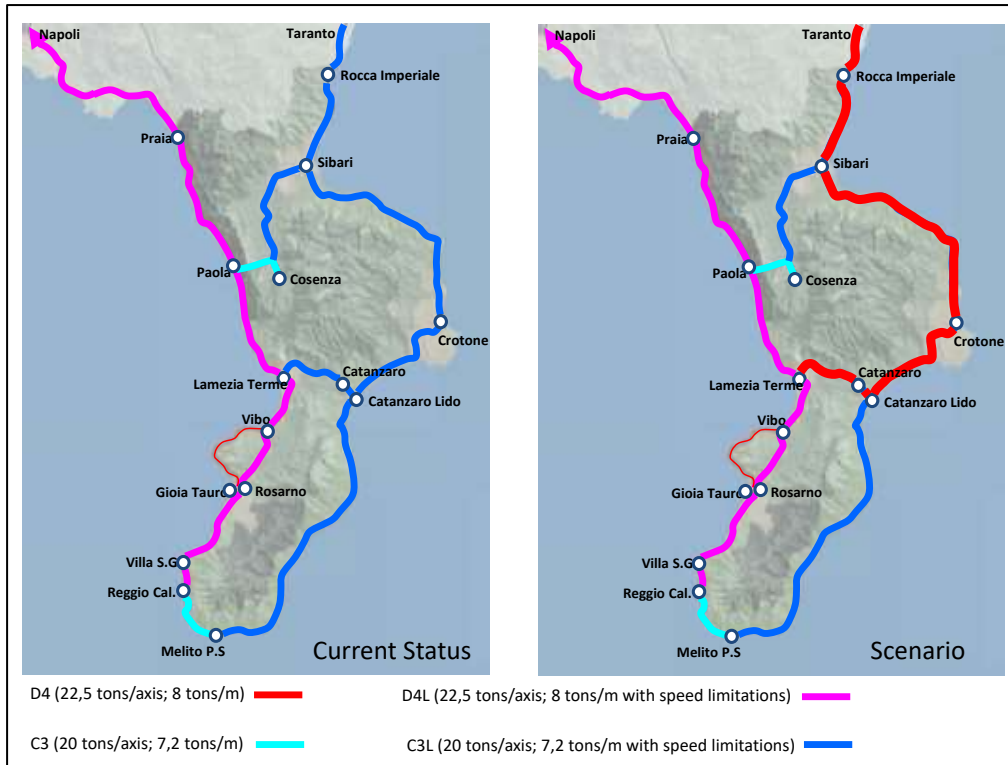


Figure 7: Adjustment of axial mass

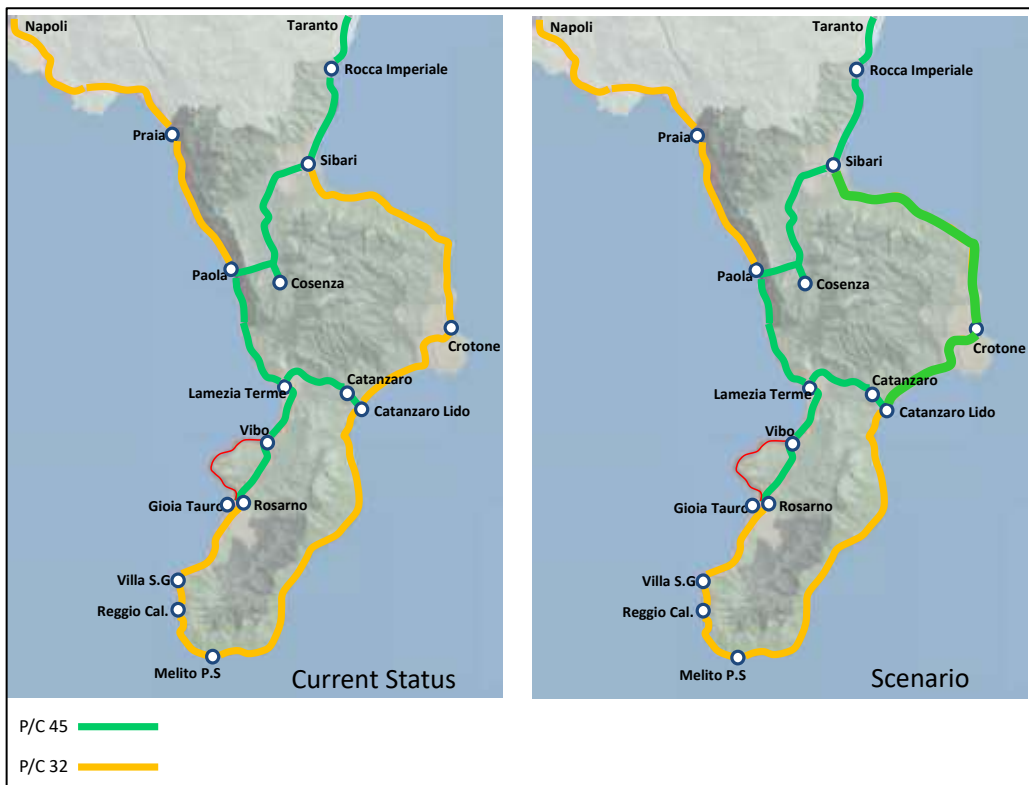


Figure 8: Adjustment of structure gauge

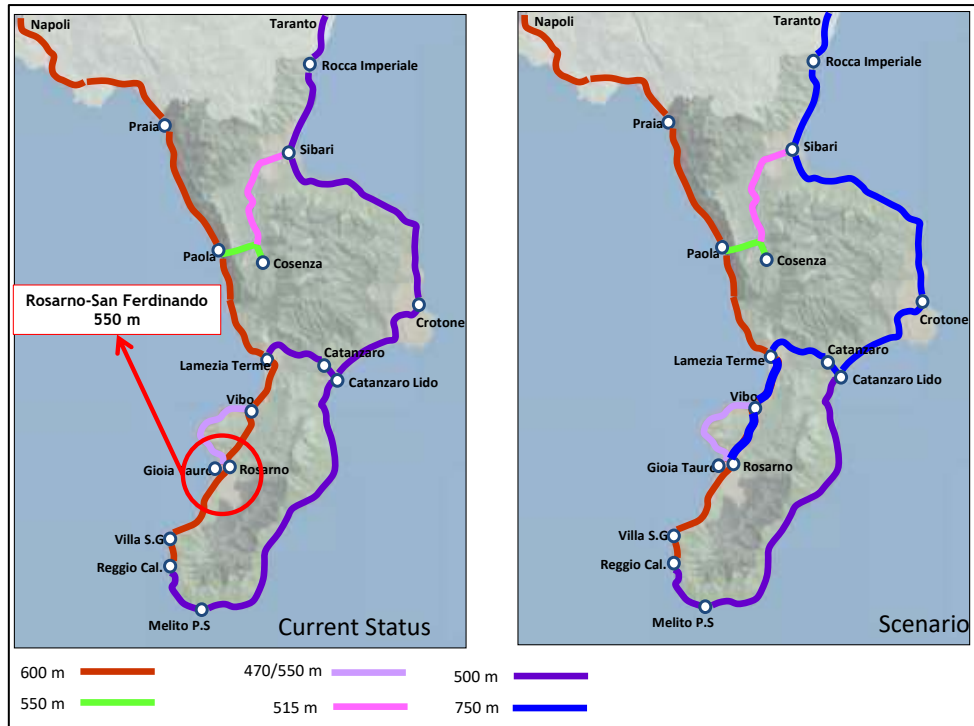


Figure 9: Adjustment of railway module

3.1.4 Aims

Calabria is currently crossed by the European freight corridor number 3 (RFC3 – Rail Freight Corridor 3). The Scandinavian Mediterranean Corridor stretches more than 7.000 km through the following countries: Norway, Sweden, Denmark, Germany, Austria and Italy connecting the cities of Stockholm, Malmo, Copenhagen, Hamburg, Innsbruck, Verona and Palermo (Figure 10, Figure 11).

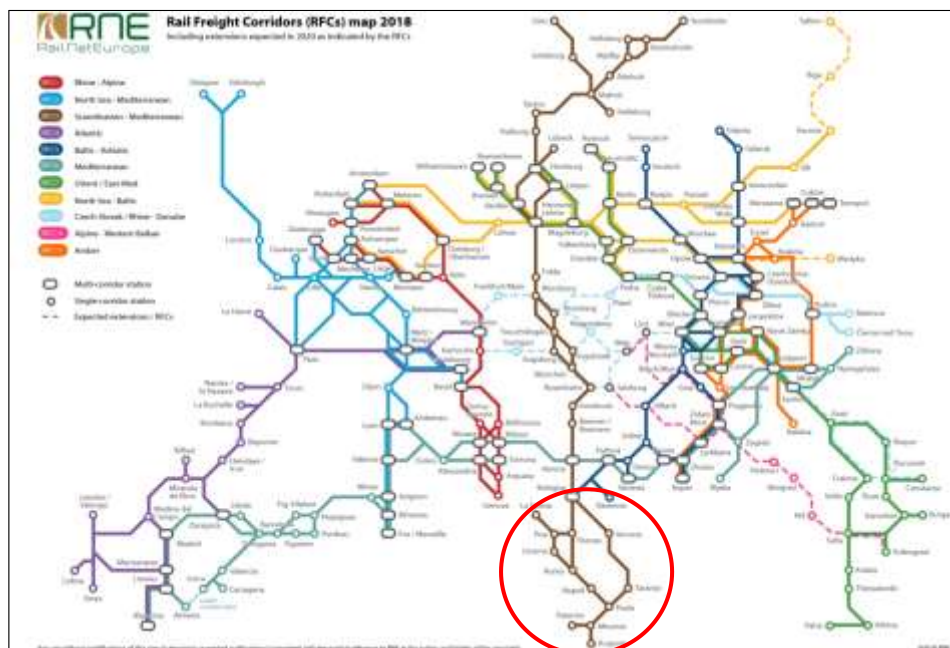


Figure 10: Map of RFC (2018)

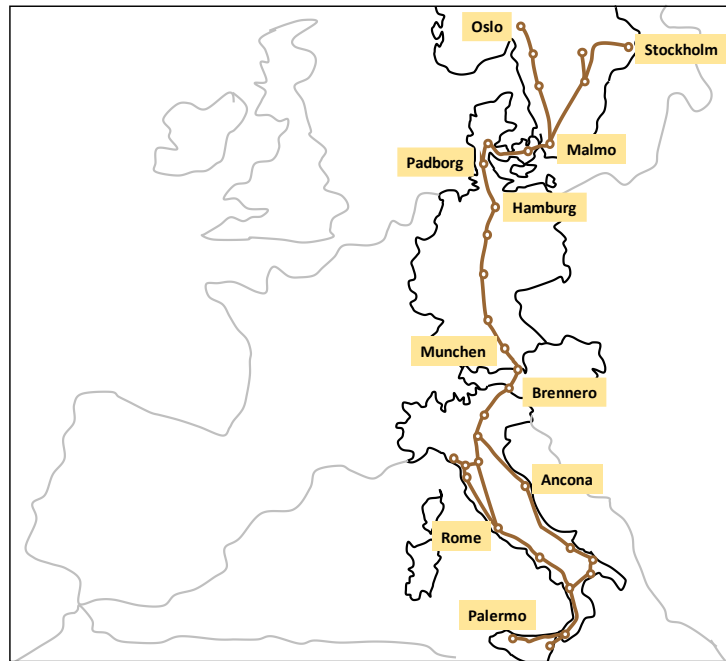


Figure 11: RFC 3: Scandinavian - Mediterranean

This corridor, in Calabria, includes the Tyrrhenian railway line to which only the port of Gioia Tauro is connected (still inadequately). The commercial ports of Crotona and Corigliano Calabro on the Ionian coast of the Region are bypassed by the corridor RFC3. Furthermore, High Cube containers cannot be transported along the Calabrian Tyrrhenian railway due to limits related to the shape (old tunnels in specific way) and the length of the trains can reach at most 600 meters.

For this reason, the main objective of the proposed action is to adapt the Ionian railway to European high standards so as to include it within RFC3. Specifically, it is proposed to insert the Lamezia Terme-Catanzaro Lido-Crotone-Corigliano Calabro-Sibari railway inside the RFC3 corridor, to connect the main commercial ports of the Calabria region with the Italian Adriatic railway (Figure 12).

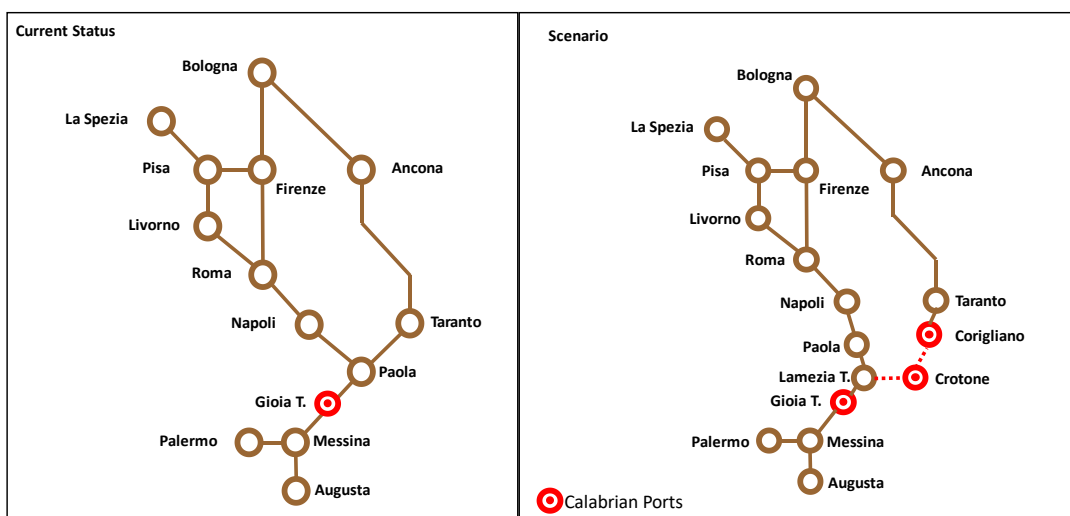


Figure 12: New proposal for the RFC3 corridor

3.1.5 Problems faced during the implementation

The problems that could arise during the implementation of this action can be summarized in the following points:

- approval of the plan by institutional bodies;
- planning and project of works by RFI;
- funding acquisition;
- implementation of each key action;
- monitoring of the implementation phase with the involvement of business associations.

3.1.6 Timescale implementation

The estimated time period for the implementation of this action is 7 years. In this period, it will be necessary to proceed with the start-up and finalization of the institutional path (1-4 years), with the planning (3-4 years), with the financing of the infrastructural works (3-4 years) and finally with the realization of the proposed key actions (5-7 years). An approximate Gantt chart is proposed below.

Activity/Year	1	2	3	4	5	6	7
Institutional path							
Design							
Financing							
Realization							

3.1.7 Risk analysis

The risk factors that could compromise the implementation of the action are to be identified in the two following points:

- missing agreement at EU and national level;
- non-alignment among the programming of the different public authorities and RFI;
- extension of works beyond the scheduled time.

3.1.8 Funding source

For the implementation of the action, the need of 500 Million € is approximately estimated. It is useful to consider that a specific program has already been adopted and financed by National and Calabrian governments in order to enhance the Ionian railway; the works are not still ended and just a part of funds have been expended. Possible sources to cover the difference of funding could be:

- EU grants / subsidies;
- national and regional government subsidies.

3.1.9 Impacts on bottlenecks

One of the main infrastructural bottlenecks is represented by the limits of the regional railway network which is not suitable for the movement of high cube containers, to accommodate freight trains of standard length (750 m), and presents significant criticalities in terms of route

(tunnels, viaducts, etc.). Currently, the transfer times of the goods and the management costs of the service are high and not competitive. The critical issues related to connections with other transport networks severely penalize intermodality and sea-land integration.

The proposed actions aim at an adaptation of the regional railway network in order to guarantee the feasibility of intermodal transport and the connection by rail between the Calabrian ports and among them and its hinterland in order to create a regional port system integrated with the hinterland and capable to offer competitive and sustainable transport services.

3.2 Action 2: Integration and connection to the ADRION networks – Local Level – Last mile links

3.2.1 Introduction

The port is considered as a pivot of a more or less wide and diffused logistics system which, through the land infrastructures and the organization and governance of processes, can interact efficiently and effectively with its local production system. The complete integration of a port with all the infrastructures of the territory allows to amplify both the hinterland and competitiveness.

So the inefficiency of the goods management and handling systems is an element that constitutes a constraint to future growth, but it is also a factor of competitive setback.

Today the "last mile" costs (monetary and temporal) represent a serious problem for port systems and heavily affect logistical functions. Therefore, for the connection of ports to backport areas and consequently to the hinterland, it is necessary to improve the road and rail infrastructures of the last mile (local area) which allow direct connection to national and/or transnational networks.

For the Calabrian port system, a series of key actions have been identified which are considered of fundamental importance for the integration of ports into road and rail networks. In particular, attention is paid to the ports of Gioia Tauro, Crotona and Corigliano, but some significant connections to the industrial areas of Vibo Valentia and Lamezia Terme, linked to the Ionian-Adriatic project itinerary, are also identified.

3.2.2 Stakeholders involved

The stakeholders to involve in the design and implementation of this action are listed below:

- Infrastructure and Transport Ministry;
- National Railway Company (RFI);
- Calabria Region;
- business associations;
- Municipalities of Gioia Tauro, Lamezia Terme, Vibo Valentia, Crotona and Corigliano-Rossano;
- ANAS - National Autonomous Roads Corporation;
- CORAP - Regional consortium for the development of production activities.

3.2.3 Key actions

The key interventions envisaged can be summarized in the following 6 points:

- a) road connection of Gioia Tauro port with south junction Motorway A2;
- b) adjustment of the Gioia Tauro Port - Rosarno Station railway link;
- c) road connection Lamezia Terme industrial area;
- d) rearrangement of road system near the port of Crotona and Truck Terminal;
- e) road and railway connection at Corigliano port;
- f) recovery of railway connection to the Vibo industrial area (Vibo Valentia port).

a) Road connection of Gioia Tauro port with south junction Motorway A2

For a complete connection of the port to the regional road network, the construction of a new by-pass road, already foreseen in the Port Master Plan and in the Structural Urban Plan of the Gioia Tauro Municipality, is necessary. This by-pass road is fundamental as it would allow the direct connection of the port to the Gioia Tauro junction of the A2 motorway, ensuring easy access to the port on the South side by overcoming bottlenecks of ordinary urban roads and the separation of freight traffic that currently it crosses the city of Gioia Tauro.

The East by-pass road starting from the port (facing the evolution basin, Gioia Tauro-San Ferdinando provincial road) should cross the Tyrrhenian railway (overpassing it), the SS 18 and, crossing the Torrente Budello, the provincial road for Rizziconi, reaching the Gioia Tauro junction of the A2 motorway (Figure 13).

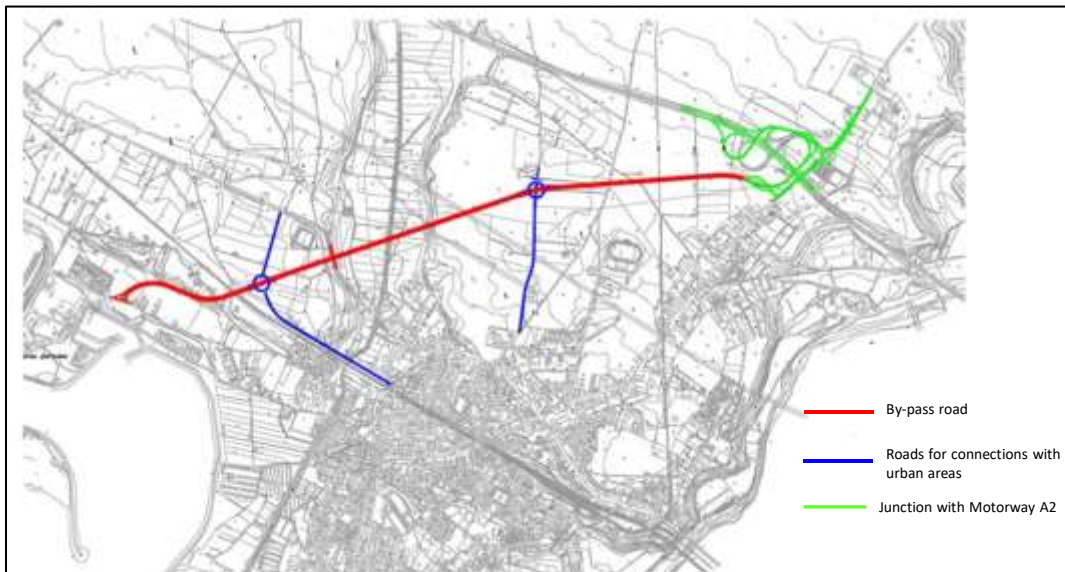


Figure 13: East by-pass road for Gioia Tauro port

b) Adjustment of the Gioia Tauro Port - Rosarno Station railway link

The Gioia Tauro port is connected to the national railway network through the San Ferdinando station linked to the Rosarno station by a simple track line, electrified of about 5 km. There is a second track currently out of operation (Figure 14 and 15).

It was built in 2006 by ASIREG (Consortium for industrial development of the province of Reggio Calabria) which also owns the railway infrastructure.

The S. Ferdinando station (Figure 16) is equipped with 7 electrified tracks. The modulus varies between 549 m (tracks I to IV) and 565 m (tracks V to VII). There are the secondary tracks of the «Support bundle» and «Sectioning bundle» served by the track "EAST Ridge" for parking rolling stock. These tracks, not electrified and not centralized, have a variable module between 250 m to 350 m.



Figure 14: Railway connection between Gioia Tauro port and Rosarno station (yellow line)

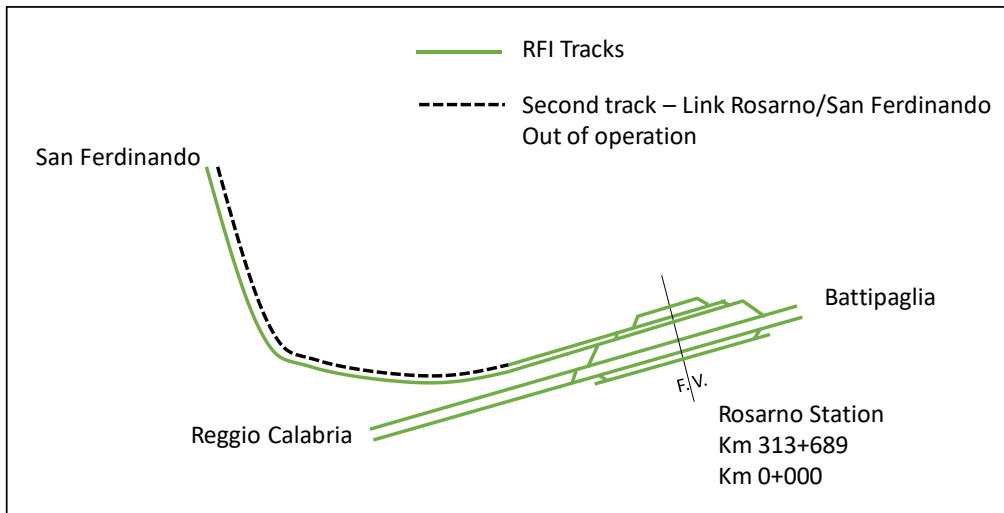


Figure 15: Railway line San Ferdinando-Rosarno
Source: Gioia Tauro Port Authority – POT 2016-2018

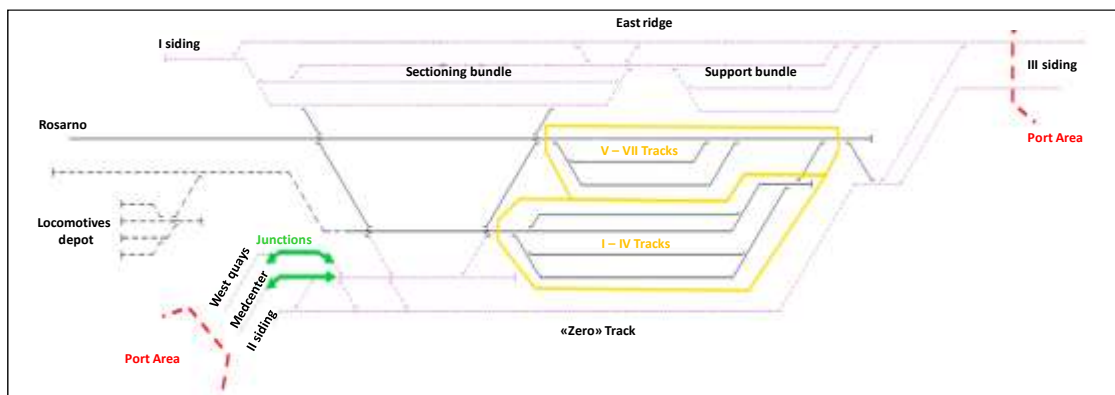


Figure 16: Railway tracks in San Ferdinando station
Source: Gioia Tauro Port Authority – POT 2016-2018

The interventions to be carried out include:

- the enhancement of the north multimodal connection to the TEN-T networks, with the electrification of the second track and adjustment of the module to the target 750 m; these works contribute to increase the railway capacity and to enhance the standard level of connection to the TEN-T networks of the nodes linked to logistics in the port area;
- the adaptation of the San Ferdinando rail tracks to the standard of 750 meters;
- the adaptation of railway links in the port area, and in particular of the railway connection between the Control Centre of San Ferdinando and the container terminal bundle of tracks (gateway), and of the railway junction which allows to reach the rail bundle of the car terminal.

These actions have already been proposed in the POT 2016-2018, ALI Calabria Gioia Tauro (Draft 2017) and PON 2014-2020 / MIT and included in the Calabrian Regional Transport Plan. These documents also envisage the construction of railway auctions linked to the San Ferdinando Control Centre serving the ex-ASIREG first industrial area and the redevelopment of the railway track serving the cold stores in the ex-ASIREG second area, for the connection by cold storage railway.

c) Road connection Lamezia Terme industrial area

The Lamezia Terme area is increasingly taking a leading role in the system of regional traffics, for its geographical centrality, but also in relation to a great economic dynamism. Significant elements appear:

- the airport which, in recent years, has increasingly assumed the role of an international airport, with an increasing traffic trend (over 2.9 million passengers in 2019);
- the railway station, primary link between the Ionian and the Tyrrhenian, between the regional and inter-regional networks;
- the industrial area, which is now configured as an emerging logistics and production area.

These three strategic poles, arranged in line, along the territorial belt between the Tyrrhenian coast and the A2 motorway axis, can certainly contribute to a further development of the regional transport and logistics system, provided that they are part of an organic design of strategies and planning. The industrial area, in particular, could take on the characteristics of a logistics district, with an orderly industrial area and a lorry terminal for the exchange of goods by road in close connection with the port of Gioia Tauro which is about 67 km away. Currently the industrial area is not directly connected to the A2 motorway, therefore it seems more appropriate than ever to make the proposal to create an intermediate junction between those of Lamezia and Vibo for a direct link between the industrial area and the highway itself.

The junction would have several positive effects; among others:

- facilitating access to the industrial area;
- the enhancement of a freight exchange structure that could gradually take on the characteristics of a "truck terminal" in connection with the port area of Gioia Tauro;
- the lightening, in terms of heavy vehicles, of the existing interchanges;

- the reduction of congestion, pollution and traffic unsafety phenomena associated with the presence of trucks both on the A2, but especially on the highway 18.

The position deemed appropriate for the new junction is indicated in figure 17; it is in fact the only site where the motorway and railway tracks diverge near the S.Pietro Lametino village. This makes it possible to insert the connecting ramps to the motorway. The site appears convenient because it can be directly connected to the industrial area, with a road axis located on the East-West route.



Figure 17: New junction between Lamezia Terme industrial area and motorway

A series of interventions are also aimed at restoring the railway link between EX SIR area and San Pietro Lametino railway station for the use of the freight railway line in connection with the Port of Gioia Tauro.

d) Rearrangement of road system near the port of Crotona and Truck Terminal

The road links serving the port of Crotona are inadequate and do not guarantee a quick, efficient and safe connection to the nearby industrial area or to the regional and national road network.

An overall reorganization of the local road network, also with the construction of new roads and new junctions, in order to:

- ensure the efficient connection among the different nodes (Truck Terminal, Port, railway station, industrial area);
- separate commercial traffic from ordinary vehicular traffic, essentially based on a new by-pass road (about 5 km of highway).

Figure 18 shows a possible reorganization of local roads.



Figure 18: Reorganization of local road viability

A new Truck Terminal is also proposed. The identified area is located close to the railway station and to the industrial area and very close to the port area (Figure 19). The construction of a Truck Terminal in this area would guarantee a sea-rail-road modal interchange. The area has a surface of about 3.5 hectares and is already connected to the industrial zone via the E90 road, but is not directly connected to the port and to the railway station.



Figure 19: Truck terminal area

e) Road and railway connection at Corigliano port

Corigliano port and the industrial area are connected by SS106 Bis. The freights arriving at the port and directed to the nearby industrial area must pass through an artery which has high traffic and which could therefore go into congestion with the takeover of new ones.

A study of the territory and infrastructure has made it possible to identify a dedicated route for the freights (Figure 20). The port is internally equipped with a double lane road that runs alongside the Port Authority buildings to end at the evolution basin. This road finds its natural continuation with the road located east of the industrial area. The connection would take

place with the construction of 1 km of double lane road; the low-cost intervention would reduce the incidence of heavy traffic on the SS106.



Figure 20: Road connection between Corigliano port and Industrial Area

Concerning the railway connection, it should be emphasized that the port of Corigliano Calabro is currently not connected to the regional railway network; of course this limits the possibility of integration with the hinterland and with the other ports of the Calabrian port system. Therefore, in coherence with the indications of the POT, a project idea is proposed, for the connection of the port to the railway network (Figure 21).

The project plans to connect a new port station to the Thurio station in Ionian railway by a 3.2 km long rail section. The overall scenario envisages the construction of some tracks on the port quay to allow the loading and unloading freights.

With this scenario, a connection with the port of Gioia Tauro would be operational, having an electrified line. A further aspect is that the port of Corigliano would be connected directly to the Adriatic railway, potentially attractive for traffic not treated by nearby ports, for example ro-ro traffic unaccompanied, which could be routed from here, via the railway network, to Northern Italy and Western Europe through the use of few wagons, and with a view to sustainable intermodality being accompanied by a tractor only in the final stretch (door).



Figure 21: New railway link to connect Corigliano port

f) Railway connections to the Vibo Valentia industrial area

Currently the port and the industrial area in Vibo Valentia are not connected to the railway network, despite the presence of the tracks inside it. Some works to adapt infrastructures, plants and services are necessary in order to connect the industrial area (and consequently the port) to the local and regional railway network.

The connection to the railway network must take place through a junction between the industrial area (including the important General Electric Company area) and the Trainiti station (Figure 22) in order to guarantee at the local companies the opportunity of the rail transport mode (economic, safe and sustainable) for the procurement of raw materials and the distribution of products.



Figure 22: Railway connections to Vibo Valentia industrial area

Furthermore, the connection can be used to transport freights arriving/going to the port and which are brought to the industrial area by ordinary roads.

3.2.4 Aims

The direct connection of ports with rail and road networks is an element of fundamental importance for the development of market. The existence and quality of last mile connections should be distinctive traits of the quality of the port supply. It is therefore essential that ports are efficiently connected to rail and road networks.

The problems in terms of accessibility of the port from/to the hinterland derive mainly from the inadequacy or even the lack of last mile connections. The improvement of the road and railway accessibility of the ports is fundamental to facilitate their market penetration in the reference hinterlands.

The aim of the planned actions is to create adequate connections between the port nodes and the local transport networks in terms of economic sustainability (competitive travel times and costs), social (safety) and environmental sustainability.

The action involves a series of coordinated interventions to achieve competitive, effective and efficient conditions for the land forwarding of goods, primarily by rail. The goal is to allow a smooth passage of freights from sea to land and vice versa.

3.2.5 Problems faced during the implementation

The problems that could arise during the implementation of this action can be summarized in the following points:

- approval of the plan by institutional authorities;
- planning and design of works;
- funding acquisition;
- implementation of each key action;
- monitoring of the implementation phase with the involvement of business associations;
- coordination among the different projects and actions on regional scale.

3.2.6 Timescale implementation

The estimated time period for the implementation of this action is 5 years. In this period it will be necessary to proceed with the start-up and finalization of the institutional path (1-2 years), with the planning and design (2-3 years), with the financing of the infrastructural works (2-4 years) and finally with the realization of the proposed key actions (3-5 years). An approximate Gantt chart is proposed below.

Activity/Year	1	2	3	4	5
Institutional path					
Design					
Financing					
Realization					

3.2.7 Risk analysis

The risk factors that could compromise the implementation of the action are to be identified in the two following points:

DT2.2.3 Local Action Plan for Calabria Region

- missing agreement at regional and national level;
- non-alignment the programming among the different governing authorities;
- non-alignment the programming and design among the different key actions;
- extension of works beyond the scheduled time.

3.2.8 Funding source

For the implementation of the action, an investment of approximately 150 million € is estimated. Possible sources of funding could be:

- EU grants / subsidies;
- national and regional government subsidies;
- private investments and project financing.

3.2.9 Impacts on bottlenecks

Many of the infrastructural bottlenecks of the Calabrian port system concern the last mile connections often inadequate or even absent. The proposed actions are essential to ensure the connection of the regional port system to the hinterland and national networks.

4 CONCLUSION

The local action plan aimed to create an integrated and efficient system for the port hinterland economically, socially and environmentally sustainable.

The process of LAP design was supported by a continuous interface with local stakeholders, who are an expression of the difficulties and needs of making the logistics chain more efficient, effective and sustainable within the hinterland port system.

The proposed actions were defined on the basis of the local context analysis results. In line with the indications of the local stockholders, attention was focused on two main areas of intervention: market and infrastructures.

Overall, the actions envisaged amount to around 1050 million euros, of which 95% concerns the infrastructure cluster.

The cost of the actions may seem significant and high, but really it is lower than the cost that would be necessary to adapt the railway infrastructure along the Tyrrhenian corridor, characterized by long links in tunnel and overpass and they have limited transit capacity.

The expected impacts of envisaged actions consist in the improvement of the Calabria port system and in its integration and full operation in the Adriatic-Ionian region.

The actions aim to strength the role of the Italian Adriatic corridor both nationally and transnationally level, considering its less congestion than the Tyrrhenian corridor currently most used.

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ANNEX 1 – CANVAS TABLES

Cluster: Market				
Action: Calabria Region as competitive European terminal port for the Silk Maritime Road				
Stakeholders involved	Key Actions	Aims	Problem faced	Timescale implementation
<ul style="list-style-type: none"> National and regional government authorities Authorities of Reggio Calabria metropolitan city Gioia Tauro port authority Private stakeholders as category representatives of the business and production field 	<ul style="list-style-type: none"> Institutional commitment to promote the terminal of the silk road in Calabria Interventions to give continuity to the intermodal route through Calabria, also with specific funding Adjustment of integrated logistics services supply in Calabria Region Territorial marketing activities Activation of a project related to infrastructures, nodes and services in order to adapt regional transport systems to the needs of an intermodal intercontinental corridor Definition of an industrial and macro-regional development plan with a long-term horizon 	<p>Making the Calabrian port system the European continental terminal on the route of the Maritime Silk; with a possible integrated expansion of the port system along the Ionian corridor (Crotone, Corigliano) towards Puglia (Taranto).</p>	<ul style="list-style-type: none"> Institutional problems relating to the relationships among the public stakeholders involved Problems relating to the establishment of international relations with non-national government bodies Problems relating to the rapid construction of the infrastructures and services necessary Synchronization with the actions foreseen in the infrastructure cluster 	<p>3 years necessary to instruct and complete the institutional path as well as to activate appropriate agreements among the interested parties</p>
Founding Source		Risk Analysis		
<ul style="list-style-type: none"> EU grants/subsidies national and regional government subsidies private investments 		<ul style="list-style-type: none"> Missing agreement at EU and national level Affirmation of alternative paths and insufficient competitiveness of the proposed path 		

Cluster: Market				
Action: Hub and Spoke System in Euro-Mediterranean Area for Ro-Ro traffic with hub in Calabria Region				
Stakeholders involved	Key Actions	Aims	Problem faced	Timescale implementation
<ul style="list-style-type: none"> National and regional government authorities Authorities of Reggio Calabria metropolitan city Gioia Tauro port authority Private stakeholders as category representatives of the business and production field 	<ul style="list-style-type: none"> Institutional commitment to promote the realization of Ro-Ro maritime transport hub in the Calabria Region Joint venture between maritime transport operators in the Mediterranean basin Planning, design and activation of integrated logistics services for groupage/degroupage activities Regulatory policies, guidelines and support for Ro-Ro maritime transport New Ro-Ro lines for the connection between the Balkan peninsula and Calabria and the latter and the west coast of the Mediterranean (Spain) New Ro-Ro lines for the connection between the southern Mediterranean shore and Calabria 	<p>Realization of a configuration of an H&S system for Ro-Ro navigation lines, with Hub in Calabria equipped with large and medium capacity ports (Gioia Tauro, Vibo Valentia, Crotona, Corigliano) capable of taking on the connotations of a logistics platform integrated European connected both the Adriatic-Ionian corridor and the Tyrrhenian corridor</p>	<ul style="list-style-type: none"> Institutional problems relating to the relationships among the public stakeholders involved Problems relating to the establishment of international relations with non-national government bodies problems relating to the rapid construction of the infrastructures and services necessary synchronization with the actions foreseen in the infrastructure cluster 	<p>3 years:</p> <ul style="list-style-type: none"> 1-2: Institutional path 1-2: Agreements among domestic and foreign stakeholders 2-3: Port infrastructures adaptation 2-3: Definition and activation of logistic services
Founding Source		Risk Analysis		
<ul style="list-style-type: none"> EU grants/subsidies; National and regional government subsidies (Sea Bonus); Private investments 		<ul style="list-style-type: none"> Missing agreement at EU and national level; Lack of initiative by private operators and insufficient competitiveness of the proposed path 		

Cluster: Infrastructure				
Action: Integration and connection to the ADRIAN networks				
Stakeholders involved	Key Actions	Aims	Problem faced	Timescale implementation
<ul style="list-style-type: none"> • Infrastructure and Transport Ministry • National Railway Company (RFI) • Calabria Region • Business Association 	<ul style="list-style-type: none"> • Adjustment of axial mass to D4 category for Lamezia Terme -CZ Lido-Crotone-Sibari railway • Adjustment of Structure gauge to PC45 encoding for Lamezia Terme-CZ Lido-Crotone-Sibari railway section • Adjustment of railway module to 750 m for itinerary from Gioia Tauro to Catanzaro L. and Ionian railway 	<p>Inclusion of the Ionian railway in the TEN-T COMPREHENSIVE NETWORK (European Corridor No. 5)</p>	<ul style="list-style-type: none"> • Approval of the plan by institutional bodies • Planning and Design of works by RFI • Funding acquisition • Implementation of the interventions • Monitoring of the implementation phase with the involvement of business associations 	<p>7 years:</p> <ul style="list-style-type: none"> • 1-4: Institutional path • 3-4: Design • 3-4: Financing • 5-7: Realization
Founding Source		Risk Analysis		
<ul style="list-style-type: none"> • EU grants / subsidies • National and regional government subsidies 		<ul style="list-style-type: none"> • Missing agreement at EU and national level • Non-alignment between the programming of the various governing bodies and RFI • Extension of work beyond the scheduled time 		

Cluster: Infrastructure				
Action: Last mile links				
Stakeholders involved	Key Actions	Aims	Problem faced	Timescale implementation
<ul style="list-style-type: none"> • Infrastructure and Transport Ministry • National Railway Company (RFI) • Calabria Region • Business Associations • ANAS • Municipalities of Gioia Tauro, Lamezia Terme, Vibo Valentia, Crotona and Corigliano-Rossano • CORAP 	<ul style="list-style-type: none"> • Road connection of Gioia Tauro port with south junction Motorway A2 • Adjustment of the Gioia Tauro Port - Rosarno Station railway link • Road connection Lamezia Terme industrial area • Rearrangement of road system near the port of Crotona and Truck Terminal • Road and railway connection at Corigliano port • Recovery of railway connection to the Vibo industrial area (Vibo Valentia port) 	<ul style="list-style-type: none"> • Create adequate connections between the ports and the local transport networks in terms of economic (competitive travel times and costs), social (safety) and environmental sustainability • The action involves a series of coordinated interventions to achieve competitive, effective and efficient conditions for the land forwarding of goods, primarily by rail • The goal is to allow a real fluidization of transport from sea to land and vice versa 	<ul style="list-style-type: none"> • Approval of the plan by institutional bodies • Planning and design of works by RFI • Funding acquisition • Implementation of each key action • Monitoring of the implementation phase with the involvement of business associations • Coordination among the different projects and actions on regional scale 	<p>5 years:</p> <ul style="list-style-type: none"> • 1-2: Institutional path • 2-3: Design • 2-4: Financing • 3-5: Realization
Founding Source		Risk Analysis		
<ul style="list-style-type: none"> • EU grants / subsidies • National and regional government subsidies • Private investments and project financing 		<ul style="list-style-type: none"> • Missing agreement at regional and national level • Non-alignment the programming among the various governing bodies • Non-alignment the programming and design among the different key actions • Extension of works beyond the scheduled time. 		

