

D.3.2.3-4 Analysis of the physical and non-physical bottlenecks in Italy and Croatia

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INTRODUCTION

On the basis of Deliverable 3.2.3 prepared by WP Leader, aims to analyze the territorial aspects of physical and no physical bottlenecks of the Port of Bari towards the neighboring retroport exchange areas.

DEFINING THE SCOPE OF STUDY

This part is necessary in correct understanding of what exactly should be researched. So, in this step scope of study will be defined and characterized in order to help us reach next step of research process. The scope of study, covers what, how, when and where the study was done including what data's were taken as inputs, what criteria were used for comparing the data, what was the outcome of the comparison. In this case, main objective of the document investigates traffic flows and bottlenecks in intermodal transportation.

Deliverable 3.2.3 will briefly illustrate the main characteristics of the Port of Bari, focusing in particular on:

- Territory description in the Programme Area, focusing on most significant nodes and hubs.
- Multimodal transport, supply and demand analysis. Examining main EU corridors for freight transport and multimodal hubs in the programme area. Analyzing main infrastructures and existing data of freight transport flows, including modal share.
- Tools and measures supporting multimodal transport. Reporting on tools and measures fostering multimodality (policies, plans, etc.). Defining current regulatory framework, as well as

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relevant policies and measures linked to freight transport. Highlighting strategic plans and actions. Listing and discussing projects to improve multimodality.

– Future Scenarios. Description of measures that are either planned for the future or already being implemented. Implications and forecasts for future scenarios and the impact of above mentioned measures will be briefly discussed, taking in account also the impact of future infrastructures. In addition to future scenarios and measures that are specific to the Ports of Bari, Brindisi, Manfredonia, Barletta and Monopoli.

DEFINING THE AREA UNDER STUDY AND CHARACTERIZING RESPECTIVE AREA

Apulia is a region in Southern Italy bordering the Adriatic Sea to the east, the Ionian Sea to the southeast, and the Strait of Otranto and Gulf of Taranto to the south. The region comprises 19,345 square kilometers (7,469 sq mi), and its population is about four million. Puglia is the easternmost region of Italy and one of those with the greatest coastal development with an extension of the coasts of about 865 km. Its territory is flat for 53%, hilly for 45% and mountainous only for 2%, which makes it the least mountainous region of Italy, and has a typically Mediterranean climate.

This naturalistic context is also linked to the production and enhancement of agri-food products, including 39 DOP and 13 IGP (cheeses, oils, wines, fruit and vegetables and bakery products). A added value is represent to the presence of numerous presidium Slow Food and the presence of the "Plain of centennial olive trees", inscribed on the National Register of Historic Rural Landscapes of the National Rural Network.

The last ten years have seen a transformation of the shipping world and of the port SYSTEM absolutely not comparable with that which occurred in previous years, this certainly following the "frenzy" due to the evolution of technology and the speed with which changes have occurred to global level, both in political and economic and infrastructural terms. It was thus possible to witness the phenomenon that is called "dimensional, material and immaterial stopover".

As indicated in the PNSLP, “the different speed of growth of the geographic areas of the world has created new traffic opportunities, in fact well defined in terms of directions but by not simple quantification as well as not easy “capture ” by Italian ports.

There is also an overlap of macroeconomic effects at different speeds of impact; for example, the trend of exchange ratios between currencies - which can trigger phenomena of export growth in fairly narrow time intervals - overlaps with substantial structural changes in the country's industrial fabric, with important closures and weakening of factories and production facilities, with more than long-term effects on traffic. In addition, the effects of industrial policy actions and support for internationalization, which can have positive effects on the flow of goods, must also be remembered.

At the infrastructural level the element that has most affected and is affecting traffic is the doubling of the Suez Canal and the Panama Canal with the consequence of the modification, in numerical terms, of the ships and the speeding up of the passage itself; this has meant that the Mediterranean Sea assumes even more its role of centrality in the exchange and global maritime traffic.

The second phenomenon that has strongly affected the mutation of the scenario is to be found in the so-called "Naval gigantism" which saw the setting up and entry of 18 / 20,000 TEUs with an increase in cargo hold of about 25-30% compared to previous-generation container carriers.

The Southern Italy, favors maritime traffic which is 60% of the entire transport chain, with a value significantly higher than the national average. The overall movement of solid (46%) and liquid (47%) bulk represents on average 43% of the entire national movement, with a positive impact on the presence of maritime enterprises equal to 33% of the national figure.

The productive system of Puglia and its positioning in the Italian economy.

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The production equipment of Puglia have for many years taken on particular importance not only for the economy of southern Italy, but for the entire country. The overall dimensions of the total added value of economic and industrial activities in the region in 2015 were the following:

- Total economic activities (€ million) 64,665.3
- Value added industry (€ million) 11,253.3

The existence of a massive infrastructure system serving the movement of goods and passengers in the region - six major ports in Puglia (Bari, Brindisi, Manfredonia, Barletta, Monopoli, Taranto), four citizen airports in Bari, Brindisi, Grottaglie, Foggia and three military airports operating in Gioia del Colle (BA), Amendola (FG) and Galatina (LE), the Interporto of Bari, logistic platforms, railway networks of FS and Railways under concession, highways and state roads). This system needs completions, technological improvements, functional connections, 'last mile' interventions, but it is already endowed with a significant consistency, thanks to massive investments made over the last thirty years, underway for some time or just started, in ports and on roads, airports and railways - and of intermodal articulations of increasing use. Most of the movement of goods produced in Basilicata, moreover, gravitates on port and railway nodes of Puglia, while a smaller part - but no less significant for some goods, such as cars built in S. Nicola di Melfi and destined for export to the United States - gravitates towards the ports of Civitavecchia, Naples and Salerno.

The Southern Adriatic Sea Port Authority gathers together the Ports of Bari, Brindisi, Manfredonia, Barletta and Monopoli all along the west Adriatic coast of Italy. The five-port infrastructure includes 57 quays of approximately 10km of total quay length, all connected to the rail and road network and served by two major international airports.

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The newly formed Southern Adriatic Sea Port Authority is a public body having as its primary task to direct, plan, coordinate, promote and control port operations and commercial and industrial activities in the port. Located in the Puglia region, the Authority's geographical scope comprises several ports: Bari, Brindisi, Manfredonia, Barletta, and Monopoli.



The carriers calling these ports ensure, among other things:

- Feeder, ro-ro and ro-ro pax connections for regional and extra-regional export imports;
- Transportation of cars and passengers to and from countries on the other Adriatic shore;
- Transit and embarkation of foreign tourists on cruise ships;
- Loading and unloading of raw materials and energy sources, as well as of various materials.

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The Port of Bari

It is traditionally considered Europe's door to the Balkan Peninsula and the Middle East, and is a multipurpose port able to meet all operational requirements.

The port of Bari is located in the city center, covers about 260 thousand square meters, and is between the historic city center and the San Cataldo area. Historical port and rich in historical and cultural relevance including the Bourbon dock.



The main features of the port of Bari are the following:

- 285 hectares of basin.

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- Docks equipped for all types of commercial traffic (dry and liquid bulks, containers, goods in packages, steel products, etc.)
- Docks serving ro-ro and ro-pax ferry boats (Albania, Greece, Croatia and Montenegro)
- Docks serving cargo (from/to Mediterranean Sea and Black Sea)
- Docks serving cruise ships and related accommodation
- Port Core along the Helsinki-Valletta corridor
- Services of mooring, pilotage, security, and other services related to passengers
- Port Community System (GAIA)
- PMIS - Port Management Information System
- Collection and disposal service for ship-generated waste and cargo residues

Infrastructural analysis

The port of Bari is located north-west of the old city and its boundaries are included to the west by the dock San Cataldo and to the east from the new Foraneo dock. Due to its location, in the south-east of Italy, it is traditionally considered the gateway to Europe to the Balkan Peninsula and the Middle East.

The current configuration of the Port of Bari is the result of a series of interventions that have followed over time as new needs arose or particular trends emerged in the sector maritime transport.

The port area extends for about 285 hectares with a total development of operational docks of approximately 3,800 ml, affected by different and heterogeneous types of traffic in transit, which have the exchange both of goods (conventional, black and white bulk, Ro-Ro and cars and steel products), both of

passengers (cruises and ferries), increased in recent years thanks to the new Terminal structure Cruises, and ferry traffic with Croatia, Montenegro, Albania and Greece.

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The port area is separated from the rest of the city by a perimeter fence, which delimits the basin.

The stretch of water of the Port of Bari of approximately 209 hectares is artificially protected by the Molo Foraneo dam (breakwater), which opposes the actions generated by the marine weather climate of the neighborhood, and in particular by the waves coming from the main wind. In the Port of Bari the following docks are identified in Darsena di Levante, Darsena di Ponente, Darsena Interna and Darsena Vecchia.

It is possible to make a brief description of the port area starting from the Internal Dock with the " Molo S. Vito " which allows the mooring of ferries for extra-Schengen destinations and the " Vecchio Molo Foraneo " used for the mooring of nautical vessels, tug boats, moorers and firefighters (docks 1 to 9). Next is the Darsena di Ponente used for mooring ferries with Schengen destination and cruise ships (docks 10 and 11). Continuing in the Darsena di Levante, the docks "Deposito Franco" and "Molo di Ridosso" are used for the mooring of cruise ships and ferries to Schengen, while on the Mezzogiorno quay there are grain silos (docks 12 to 15). Also in the Darsena di Levante, close to the I and II arm of the new outer dock, there is an area divided into two areas, the first of which is rectangular in shape and the second towards the east in the shape of a "crescent" which houses the large part of the port's commercial activities (docks 16 to 23). Proceeding counter clockwise there is the third arm of the new breakwater which is used to stop no operational ships (docks from 24 to 31a) and the IV and V arm of the new breakwater which currently have the exclusive function of defending the port. The Marisabella area follows, where the fill provided by the Port Master Plan. partially built, it is currently used for parking vehicles awaiting boarding on ferries while work is in progress to complete the aprons of the entire Pizzoli-Marisabella area.

The Port of Bari is not connected to the national railway network, so its modal share is represented by 100% of road transport

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Yet, the Port of Bari is located close to the RRT of Apulia (Interporto Regionale della Puglia), which is situated less than 5 km from the nearest highway exit, the port of Bari and the international airport of Bari Palese.

To encourage rail transport, the Interporto Regionale della Puglia offers to logistics companies and freight forwarders the opportunity to use its intermodal terminal. This comprises of 4 tracks used to organize trains to transport all types of containers, swap bodies and semi-trailers on national and international routes. The terminal also offers a storage area for containers and other facilities (groupage, maintenance, etc.).

The Interporto is directly accessible from the Bari highway ring road (exit n°5 Bari San Paolo/ Interporto) and is connected to the central railway station through the subway line Bari-San Paolo.

LISTING OF ALL BOTTLENECKS AND UNDESIRABLE EFFECTS

infrastructural bottle necks	road	safety	Is the connection between the terminal and highway network at a satisfactory safety level?	YES	MEDIUM
			Is there a regular maintenance of the terminal roads and connection between the terminal and highway network?	YES	MEDIUM
			Are there clearly marked routes for accessing the terminal and leaving the terminal in order to reach the highway network?	YES	MEDIUM
			Is there adequate (satisfactory) lighting on the terminal roads and connection between the terminal and highway network?	YES	MEDIUM
			Are there clearly marked routes to get to the terminal and to the highway network?	YES	MEDIUM
	flow capacity		Is there a direct access to the highway network?	NO	HIGH REASON FOR

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					BOTTLENECK
			Is the current capacity of the road infrastructure sufficient?	NO	HIGH REASON FOR BOTTLENECK
			Is there a sufficient number of lanes on terminal roads and connection between the terminal and highway network?	NO	HIGH REASON FOR BOTTLENECK
			Is the width of the lanes on the terminal roads and connection between the terminal and highway network appropriate (satisfactory)?	YES	MEDIUM
			Is the connection between the terminal and highway network passing through the urban and inhabited area?	YES	HIGH REASON FOR BOTTLENECK
inland waterways	safety		Is the safety level of the port access satisfactory?	YES	HIGH
	flow capacity		Is the area of the port basin sufficient?	NO	HIGH
			Is the capacity of the access to the terminal sufficient so the barges shouldn't be separated?	NO	HIGH
			Is there a RO-RO ramp on the terminal?	YES	MEDIUM
terminal	capacity		Are the parking spaces adequately signposted for identification?	YES	MEDIUM
			Is the capacity of a parking lot sufficient?	YES	MEDIUM

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			Is parking space able to accommodate all dimensions of the vehicles / units?	YES	MEDIUM
			Are the roads at the terminal separated from waiting areas for the loading / unloading cargo?	YES	MEDIUM
			Is the number of berths for mooring ships sufficient?	YES	MEDIUM
			Are the lengths of berths sufficient for mooring the largest vessels?	YES	MEDIUM
			Are the sea depth/draft berths enough for the biggest ships?	YES	MEDIUM
			Is the sea depth in the driveway shore/terminal satisfactory for the biggest ships?	YES	MEDIUM
			Is there a storage space near the berth?	YES	MEDIUM
			Does the space for storage of goods have sufficient capacity?	YES	MEDIUM
		safety	Does the terminal (individual bindings) have conditions of secure mooring?	YES	HIGH
			Is the sea access to the terminal sufficient (maritime safety requirements)?	YES	HIGH
		weather	How much time a year is the terminal out of function for bad weather?	3 DAYS/ YEAR	DEPENDENT
a supply chain bottlenecks		work shifts	Is it guaranteed cargo handling 24 hours a day every day of the year?	YES	MEDIUM
			Is there a guaranteed flexibility in the composition of stevedoring crews and handling equipment to absorb demand peaks in loading / unloading services?	YES	MEDIUM

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	information exchange	Is there a system which allows the electronic exchange of documents and communications between the driver unit and the terminal?	YES	MEDIUM
	time response	PILOTS - Is it the time required from the request to reaction at a satisfactory level?	YES	MEDIUM
		TUGS - Is it the time required from the request to reaction at a satisfactory level?	YES	MEDIUM
	cooperation	Is the cooperation between the terminal and the agent at a satisfactory level?	YES	MEDIUM
		Is the administrative co-operation of the terminal and Ship at a satisfactory level?	YES	MEDIUM
	technology	Is the cargo handling capacity of the terminal sufficient?	YES	MEDIUM
		Does the shore cranes terminal have sufficient performance /capacity?	YES	MEDIUM
		Does the mobile cranes terminal have sufficient performance /capacity?	YES	MEDIUM
		Is there in the function the VTMS system?	YES	MEDIUM
regulatory bottlenecks	customs	Is the cooperation between the Customs Authority and Ships at a satisfactory level?	YES	MEDIUM
	inspections	Is the time required for inspection (veterinary, phytosanitary, etc.) at a satisfactory level?	YES	MEDIUM
	cabotage restrictions	Are there any cabotage restrictions?	NO	DEPENDING

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			Is there an exemption obligations pilots for ships in service, which regularly touch the port?	NO	MEDIUM
		other	Is there an exemption obligations tugs for ships in service, which regularly touch the port?	YES	DEPENDING

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ANALYSING OF LISTED BOTTLENECKS AND THEIR CAUSATIVE RELATIONS

The first weakness is difficult to overcome, even if an efficient "last mile" connection with the nearby interport that should include the Ferruccio airport could mitigate this criticality.

As for the second aspect, the focus on the port of Bari shown below identifies the possible and partial solution to the problem in a fill outside the outer pier. In any case, the impossibility of finding adequate spaces that guarantee high standards of safety and working efficiency, makes it necessary to find important retroport areas that allow the development of the port.

As already mentioned, the port of Bari has sufficiently adequate loading / unloading and storage facilities, even if the mooring dock is too short for the ships currently in operation.

On the other hand, while proceeding with a better optimization of the use of silos, the airport does not allow to significantly increase traffic in this sector. Among other things, we must reflect, with the current configuration of the port, on the possible conflict between the grain traffic and the necessary adaptation of the structures intended for cruises and on the lack of a real agri-food center, capable of allowing the movement of perishable goods

From an infrastructural point of view, the main weakness of the port of Bari is made up of more than modest spaces both for loading and unloading operations and for customs controls. This slows down the boarding / disembarking operations considerably. Furthermore, the lack of dedicated and fast connections with the road / railway network creates many conflicts with city traffic and makes access to the port extremely slow. In contrast, the port has adequate reception facilities for passengers.

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In the context of the detailed analysis of the individual ports, the POT, especially with reference to the priorities to be given to the infrastructure investment policy, has been able to grasp some specificities / critical issues that are intended to be presented below, albeit in addition.

For Bari:

- Lack of dedicated berths for container ships.
- Insufficient state-owned areas for temporary custody of containers.
- Impossibility of handling containerized dangerous goods.
- Critical issues in the simultaneous management of traffic flows, lengthening of control times on passengers (extra schengen), insufficiency and inadequacy of the pre - boarding areas, insufficient reception facilities for cruise passengers.

Roadway and Railway



Rail transport

The priority objectives of the investments of the fundamental railway structure, contained in the PON Infrastructures and Networks (Priority Axis I, with 1.094 billion Euros by 2023) or in the MIT-RFI Program Contract, contribute directly and primarily to the improvement of the Area Integrated Logistics Puglia Basilicata, as they represent the main corridors of communication of the ALI for exchanges outside the region. The priority investments are for:

1. Strengthening and improvement of the High Speed / High Capacity of the Naples-Bari ridge (TEN-T network and main hub for the Tyrrhenian ridge);
2. Efficiency of the Adriatic backbone aimed at increasing capacity and overcoming the limitations of shape and module for freight transport

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Road transport

Particular attention must be paid to terrestrial integration with the railway network in order to intercept long-distance traffic that currently mainly uses the road system consisting of the Adriatic highway backbone linking Lecce, Brindisi, Bari, Foggia with northern Italy but also that towards Naples, Rome, Florence.

PROPOSING SOLUTIONS OF BOTTLENECKS AND ANALYSING HOW IT WILL AFFECT FUTURE FREIGHT FLOWS

As regards the structural adjustments, AdSP inherited from the former Port Authority numerous projects e contracts in progress which, due to administrative continuity and contractual commitments undertaken, were managed in continuity. From the needs analysis already carried out, possible structural adjustments have already been defined which require the modification of existing regulatory plans.

the final choice of the necessary adjustments and the feasibility and sustainability study of the same will be carried out downstream of the discussion with stakeholders and with local authorities, in order to metabolize and share the choices and development objectives.

- infrastructure adaptation to keep pace with the rapid evolution of the needs of the carriers (dredging of the backdrops, strengthening of the docks, rearrangement of rear - dock spaces, improvement reception of passengers, raising of intermodality.
- integration, development and accessibility of support services through the use of new technologies.
- strategic and operational marketing for the cruise and sea highways sectors.
- joining with energy and environmental planning

The road interventions, in correspondence with the access to the port in the Marisabella area, for the connection to the "Camionale di Bari", a strategic work on infrastructure and transport, in order to connect the port to the retroport areas, to the intermodal logistic nodes as well as to the main road system by facilitating the movement of passengers and vehicles and

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eliminating the critical issues currently existing in some, albeit limited areas of the city, for the transit of heavy vehicles in large quantities.



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CONCLUSION

To sum up, the following conclusions that should be taken into consideration for the future activities:

Ports are among the main elements of territorial competitiveness. This is the reason why we expect to improve the services offered to the users, for increasing security and quality of life to those who daily or occasionally interact with the Port.

Furthermore, we will necessarily try to overcome the challenge of quality and territorial integration with a model of governance based on innovation and institutional cooperation:

- new opportunities for port growth
- expansion of intermodal transport services and solutions for passengers
- develop the sustainable mobility and strengthen the collaboration with all possible stakeholders improve
- extend the pre-existing services to other ports of Southern Adriatic Ports Authority

Therefore necessary to have a clear picture of the convergent objectives

- Development and safety of city-port link infrastructures.
- Improvement of reception and transport services for passengers.
- Realization of an integrated information / enhancement system
- Improvement of the competitiveness of economic activities