Impact of Atlantic ports' development on international rail freight traffic

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SUMMARY NOTE

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SUMMARY NOTE

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1. INTRODUCTION

The implementation of the rail freight corridor comes from the European policy to foster efficiency and competition in the transport market of Europe. It begun in 1996 when the European Commission published the main orientation for the development of the trans-European transport network. Later in 2004, the Rail Net Europe was founded to optimize rail path allocation, quickly followed in 2005 by the definition of ERTMS corridors to improve interoperability. To put this plan into action, the Ten-T Executive Agency was created in 2006 which decided the ERTMS deployment in 2009. To give a framework and define the competencies of the European Rail Freight Corridor, the EC 913/2010 regulation was published in 2010. The EC 1315/2013 regulation was later published in 2013 concerning the TEN-T network development. In 2014, Transport Ministers of 3 countries (France, Spain and Portugal) declared the implementation of the Atlantic Rail Freight Corridor and signed with their German counterpart the extension to Germany.

Indeed, currently implying both SNCF Réseau for the French network, Adif for the Spanish network and Infraestruturas de Portugal (former Refer) for the Portuguese network, the Atlantic Corridor projects an extension to Germany, connecting to the DB Netz network for the late 2016. The Atlantic Corridor includes the rail network connections from the south of the Iberian peninsula (Lisboa – Sines – Setúbal – Aveiro – Leixões – Algeciras) to north from Madrid until the German border through the Paris rail node (Madrid – Bilbao – Bordeaux – Paris – Le Havre – Metz). Another extension to connect the ports of La Rochelle port and Nantes-St-Nazaire is under consideration.

In this context, the aim of this study is to understand and identify the constraints and levers to develop rail pre/post haulage to the 14 ports connected to the Atlantic Corridor. For this purpose:

The **Task 1** presents an overview of these ports activity as well as their positioning and specificities. An analysis of main volumes of their hinterland is proposed, followed by a description of maritime traffics split in terms of transshipment, local traffics, hinterland and by mode of pre or post haulage.

The **Task 2** presents a more detailed overview of pre-post haulage markets via an analysis of ports rail services and related volumes, a description of current railway facilities and constraints and a study of the road pre post haulages by class of distance and type of cargo so as to identify potential modal shifts to rail.

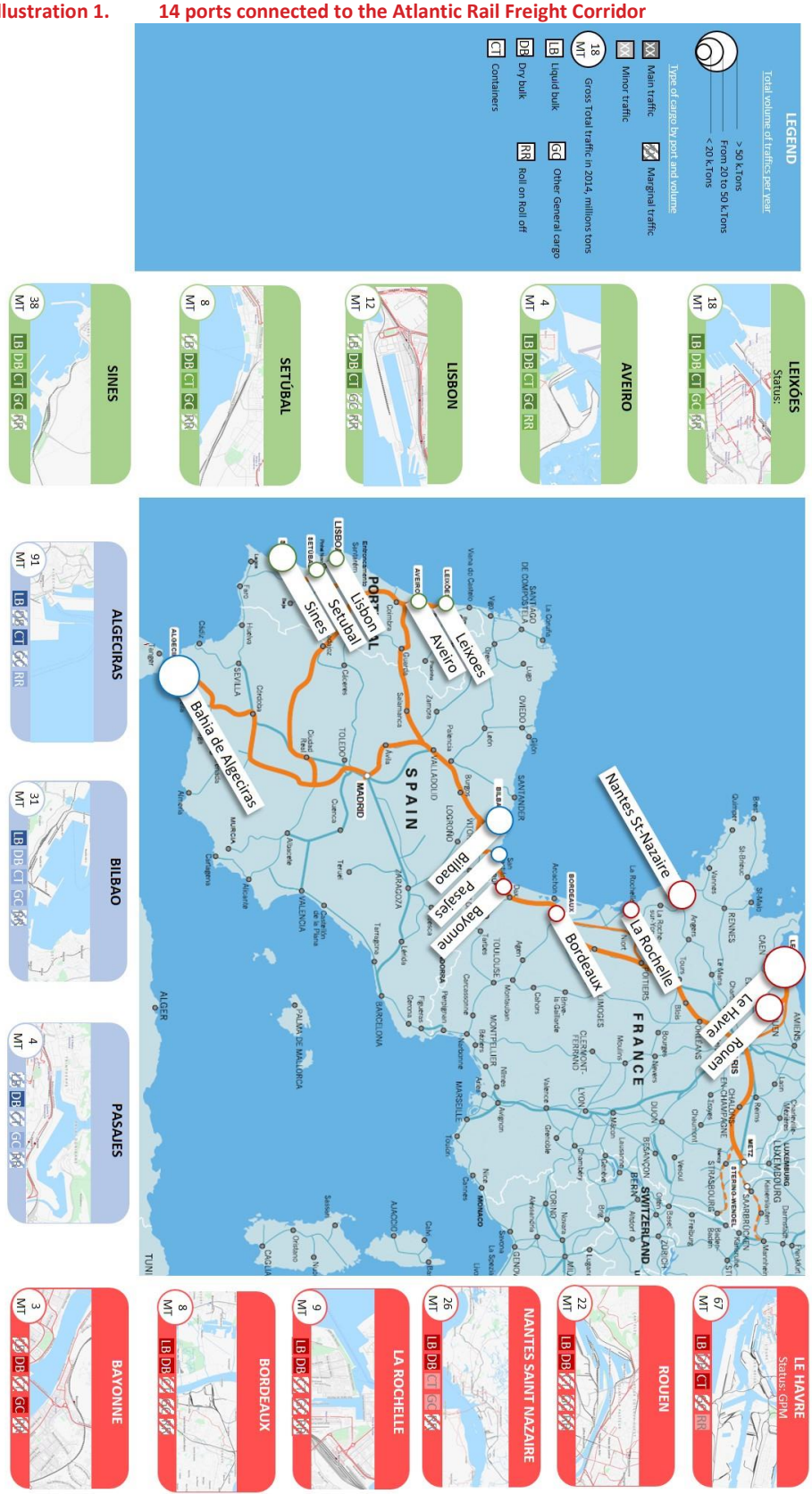
The **Task 3** concerns an estimation and comparison of transport costs to locate the competitiveness areas of rail services against road haulage from and to the Atlantic ports and to understand how far cost parameters are determinant for the modal split and competition.

The **Task 4** provides an analysis from seaport side via Port Authorities and Shipping companies surveys to have a better insight in the decision-maker criteria, their constraints and orientations.

The **Task 5** envisages various possibilities of modification of the EC 913/2010 Regulation to foster the development of the Atlantic Corridor towards the ports. A case study is detailed to present some limits of the current regulation or some conflict with the non-discriminatory principles of the Community railway market.

The **Task 6** summarizes the market analysis, gives an outlook of maritime and railway traffics as foreseen by Port Authorities and detail the development potentials by type of cargo.

Illustration 1. 14 ports connected to the Atlantic Rail Freight Corridor



Source: Consultant according to the Port authorities, ESPO and the Atlantic Rail Freight Corridor

2. TASK 1: ANALYSIS OF MARITIME TRANSPORT OF THE ATLANTIC PORTS

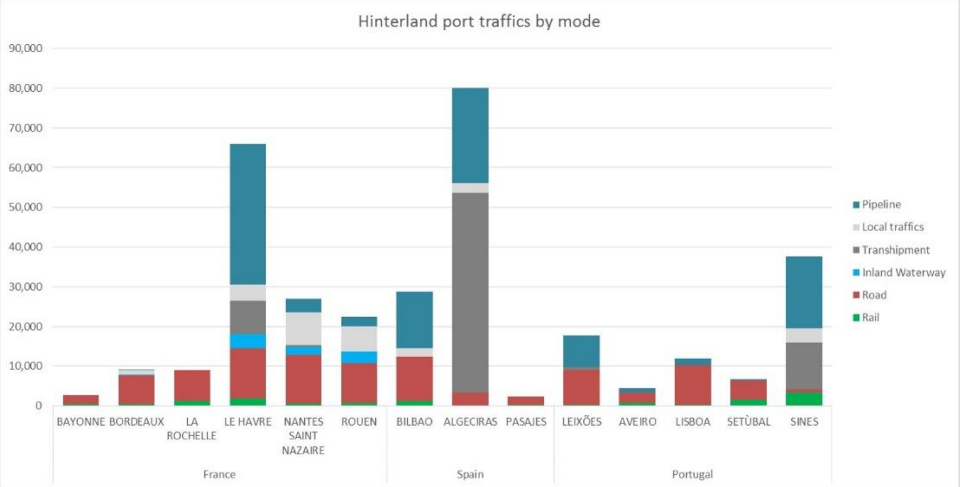
The Atlantic Rail Freight Corridor connects 14 ports of the Atlantic face of which 6 in France (Bayonne, Bordeaux, La Rochelle, Nantes Saint Nazaire, Rouen and Le Havre), 3 in Spain (Bilbao, Algeciras and Pasajes) and 5 in Portugal (Leixões, Aveiro, Lisboa, Setùbal and Sines). Port infrastructures which capture the main share of traffic reach to combine maritime attractiveness (berths length, draught, handling facilities and storage area) and hinterland accessibility (highway connections, rail network sidings and intermodal terminals). Maritime markets are shared as follow:

- **Liquid bulk (142 MT)** port terminals are linked to local refineries by pipeline (Le Havre 38 MT, Nantes St Nazaire 17 MT, Algeciras 25 MT and Leixões 8 MT) or serve close petrochemical industries (Rouen 9 MT, Bilbao 16 MT and Sines 18 MT). Other liquid bulks represent little volume in comparison to crude and refined oil ;
- **Dry bulk (54 MT)** maritime traffics concern mainly cereal exports (La Rochelle 4 MT, Nantes St Nazaire 2 MT, Rouen 7 MT, Lisboa 2 MT) and also coal imports for thermal power plants (Nantes St Nazaire 1 MT, Algeciras 1 MT, Sines 5 MT) and steel production (Bilbao 1 MT). The Atlantic ports also include a great variety of specialized terminals owned by industrial companies to handled other dry bulks traffics, including ores or building materials ;
- **Container (117 MT)** traffics in the Atlantic ports are mainly captured by Le Havre, Algeciras and Sines with respectively 26 MT, 54 MT and 15 MT in 2014, thanks either to a dense hinterland (Le Havre) or to transshipment orientations (Algeciras, Sines) ;
- **Roll on Roll off (10 MT)** traffics are mainly linked to the geographic situation of the Dover Straits (Le Havre 1 MT) or the Gibraltar Straits (Algeciras 6 MT). However, some other ports try to address alternative markets like new cars (Bilbao 1 MT) or Short Sea Shipping Services (Nantes St Nazaire 1 MT) ;
- **Other General Cargo (14 MT)** traffics may be essential for some ports, including wood exports (Bayonne 1 MT, La Rochelle 1 MT), building materials and steel products (Bilbao 3 MT, Pasajes 1 MT) or others (Setubal 3 MT, Leixões 1 MT, Aveiro 1 MT)

Excluding transshipment, local traffics and pipeline traffics, the remaining hinterland volumes are shared between road, rail and inland waterway pre post haulage. The analysis of past maritime and hinterland market shows that their evolutions are not strictly correlated as transhippement may vary independently of hinterland volumes. Furthermore, the closure of local industries may be followed either by a redirection of port developments, a conversion of former industrial activities or the need to capture new hinterland traffics outside the port area,

For instance, in Algeciras, the recent growth of maritime traffics in the last 5 years (+8%/year) has been followed by a slower growth of hinterland market (+5%/year) due to the variation of container transshipment rate. In La Rochelle (+4%/year for maritime traffics and +5%/year for hinterland traffics).

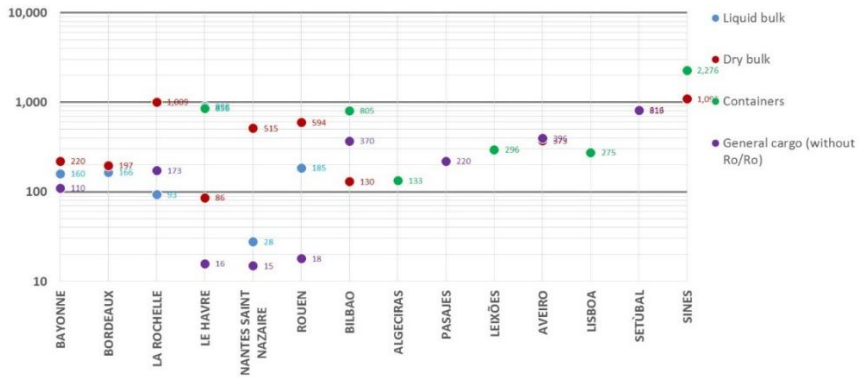
Illustration 2. Atlantic Maritime traffics split by market



Rail traffics represent a hinterland market share of 12% (13 MT) with the highest share observed in Portugal (19%) and weakest in Spain (10%) and France (8%). On the whole Atlantic Corridor, rail pre post haulages concern mainly dry bulk and container traffics (5 MT each of them) which covers the two thirds of its market. General cargo and liquid bulk are both secondary markets with traffics between 1 and 2 MT for each of them.

- Main container rail services are operated in Sines (2 MT) where the handled volumes permit economies of scale and intermodal services development despite the high transshipment rate. Le Havre and Bilbao reach nearly 1 MT and at a lower extent, Algeciras, Leixões and Lisboa dispatch 0.5 MT on rail intermodal services.
- Main dry bulk rail markets are located in Sines and La Rochelle (1MT each of them), followed by Nantes St Nazaire and Rouen (0.5 MT each of them).
- Even if representing lower global volume, general cargo rail services are well developed in Setubal with nearly 1 MT and at a lower extent in Aveiro and Bilbao (0.4 MT).
- Liquid bulk rail services transport less than 0.2 MT in every port analysed and are primarily located in Le Havre, Rouen and Bayonne (0.2 MT each of them).

Illustration 3. Rail traffic summary by port and type of cargo



Sources: Consultant according to the Port Authorities, State Departments and Rail Operators

3. TASK 2: ANALYSIS OF THE RAIL AND ROAD FLOWS OF THE ATLANTIC PORTS

Atlantic Ports' pre post haulages are spread on a variety of markets which can be split by type of cargo, mode of transport and destination. These traffic flows have been described on this typology as far as possible via data collected from Port Authorities, Rail Operators and Road Haulers or national surveys and other stakeholders' interviews. For missing information concerning specific destinations, assumptions have been taken such as supposing pre post haulage to have similar structure as inland regional traffic. This approach permits inter alia to give a vision of traffic distribution by class of distance and to estimate which is the road potential deviation to the rail in the long distance.

Regional and national activities are linked with ports pre/post haulages and maritime import/exports. Main origin destinations in the hinterland reveal to have also a major economic weight inside each regional and national economy by sector such as logistics (containers), agriculture (cereals and fertilizer), forestry (general cargo), chemistry (dry and liquid bulk), metallurgy (steel and steel products, steel coal), automotive (vehicles and spare parts), refineries (crude oil and refined oil) and thermal energy (steam coal). The Table 1 summarizes the various relations identified between the Atlantic ports and regional activities, depending on the proximity with each of them.

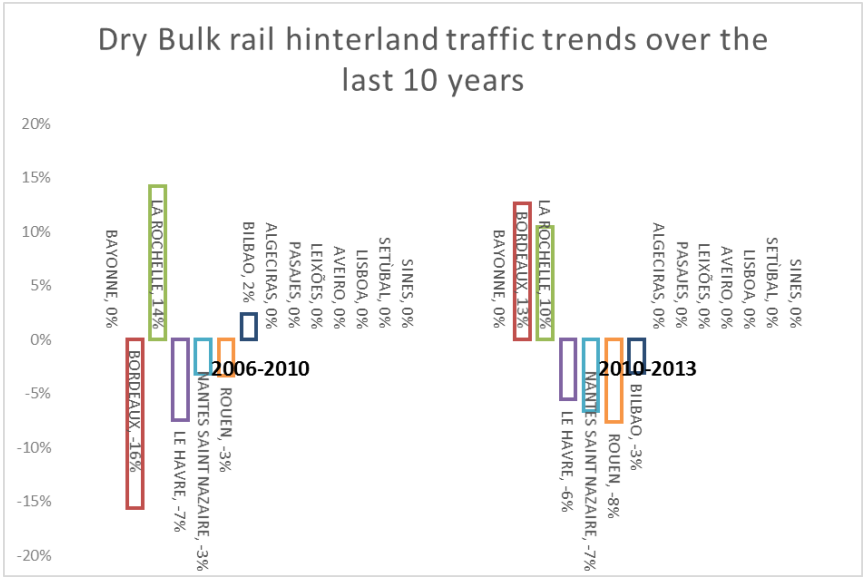
Regional activities import/exports are captured depending on accessibility, port terminal facilities and historical positioning. To access the ports, traffic flows are split between road, rail or even inland waterway (only for Le Havre, Rouen and Nantes St Nazaire). Rail modal share vary regarding the distance range of traffics, the possibility of goods' grouping and the logistic schemes of each freight client / freight operator. Ports' rail facilities and operational conditions often affect the productivity of the operators and their competitiveness: among various difficulties encountered to maintain or develop rail traffics, the availability of railway sidings at the terminals seem one of the most prominent criteria to avoid multiple reloadings or modal transfer. The global accessibility of ports facilities by rail also reveals to be a repeating topic, with the question of freight and passenger traffic priority, and the lack of alternative routing. The limited length of marshalling yards or terminal tracks may also act as bottleneck, implying multiple manoeuvres before entering the national rail network.

The idea of a current better competitiveness of rail services on the long distance is confirmed by the highest modal shares over 400 km in the Atlantic ports' hinterland traffic description. Anyway many services remain dedicated to regional traffic dispatch and national/international long distance rail traffics seem to be concentrated on ports being leader in their sector, for instance Containers (Le Havre, Bilbao or Sines), Cereals (Rouen) and other dry bulk goods (Algeciras, Sines). Even ports with a more regional hinterland reach to develop rail pre post haulage on the short distance but they adress specific markets such as steel products (Leixões, Setubal, Bilbao), building materials (Aveiro), cereals (Rochelle) or automotive (Pasajes).

As a consequence, road mode captures a large market share on regional market and longer haulages where the rail mode does not meet competitiveness objectives such as from/to Lisbon or Leixões. For all ports, the main origin-destinations in volume are captured by the road mode, for cost reasons, flexibility and ability to adapt more quickly to the demand of freight clients. The deviation potential remains significant for mid or long distance destinations where the rail is even already positioned (cereals in Rouen, La Rochelle, Nantes-St-Nazaire for instance) or could benefit from multi-client intermodal services for containers and trailers (Algeciras, Le Havre). This long distance (over 400km) potential market amounts as a whole to 10.6 MT of which 17% from/to French Ports, 26% from/to Spanish Ports and 56% from/to Portuguese ports. On this market, rail currently captures 53% of French ports tonnages, 32% of Spanish ports and only 23% of Portuguese ports.

For all ports, a set of development measures and infrastructure investments are planned in each strategic projects: if organization or infrastructure enhancements may reveal to be successful, the central topic of all rail-supporting action remains competitiveness against road transport in terms of cost which will be analysed in task 3 report.

Illustration 4. Dry bulk and container rail hinterland traffic trend (Compound annual growth rate)



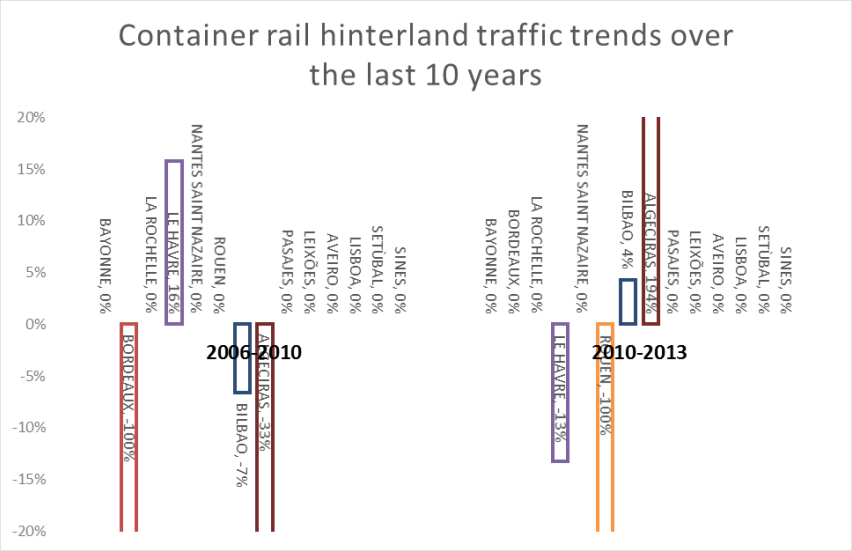

Container rail hinterland traffic trends over the last 10 years
20%
15%
10%
5%
0%
-5%
-10%
-15%
-20%
BAYONNE, 0%
BORDEAUX, -100%
LA ROCHELLE, 0%
LE HAVRE, 16%
NANTES SAINT NAZAIRE, 0%
ROUEN, 0%
BILBAO, -7%
ALGECIRAS, -33%
PASAJES, 0%
LEIXÕES, 0%
AVEIRO, 0%
LISBOA, 0%
SETÚBAL, 0%
SINES, 0%
2006-2010
BAYONNE, 0%
BORDEAUX, 0%
LA ROCHELLE, 0%
LE HAVRE, -13%
NANTES SAINT NAZAIRE, 0%
ROUEN, -100%
BILBAO, 4%
ALGECIRAS, 194%
PASAJES, 0%
LEIXÕES, 0%
AVEIRO, 0%
LISBOA, 0%
SETÚBAL, 0%
SINES, 0%
2010-2013

Table 1. Links between ports and regional activities by sector

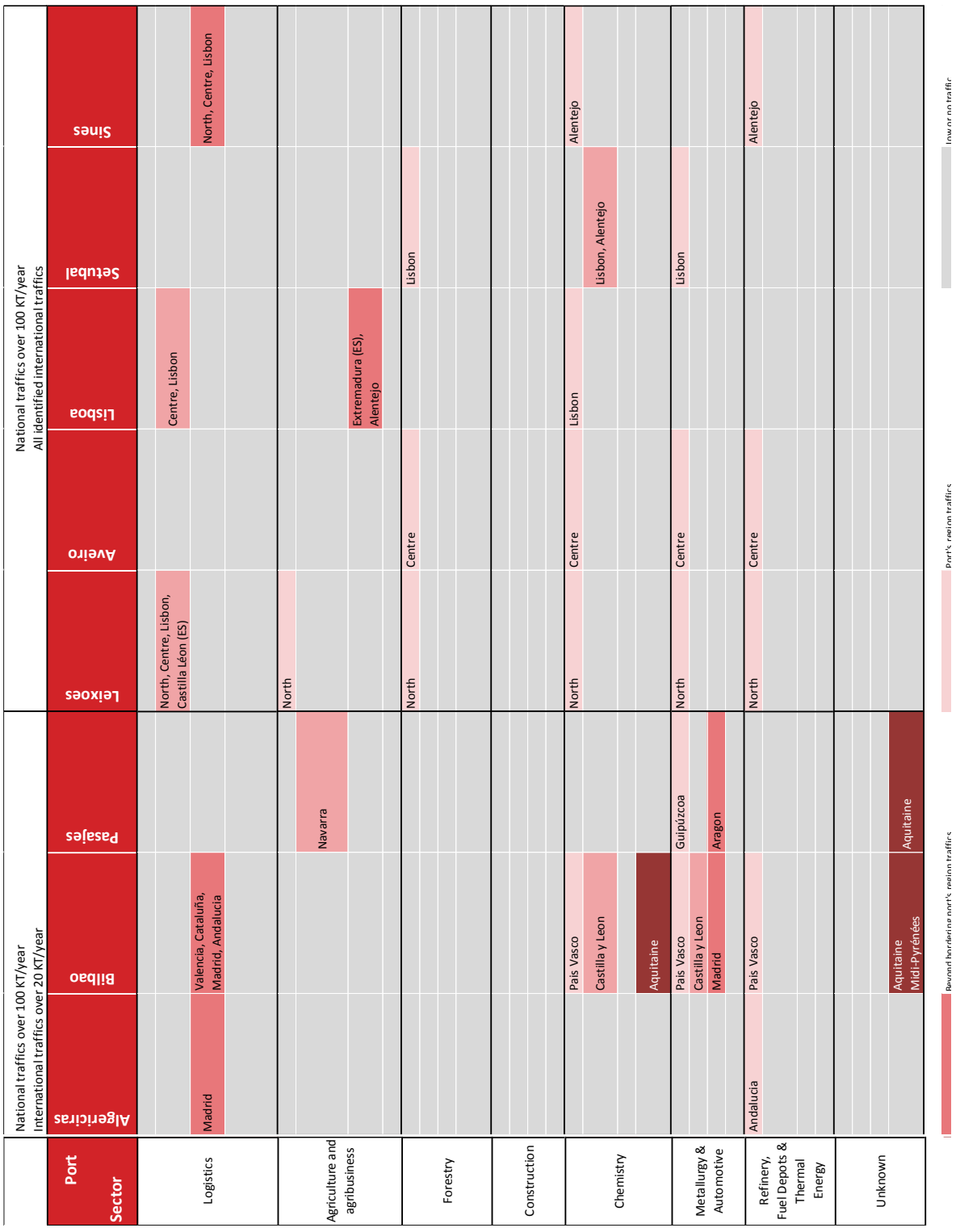
National traffics over 100 KT/year and over 5% of port traffic by type of cargo
International traffics over 5KT

Sector	Le Havre	Rouen	Nantes StN	La Rochelle	Bordeaux	Bayonne
Logistics	Haute Normandie	Haute Normandie	Pays de la Loire		Aquitaine	
	Ile de France, Centre	Ile de France, NPDC	Bretagne, Poitou Charentes			
	Pays de la Loire, Bretagne					
	Piemonte (IT), Rheinhessen-Pfalz (DE), Veneto (IT), Murcia (ES)					
Agriculture and agribusiness		Haute Normandie	Pays de la Loire	Poitou-Charentes	Aquitaine	Aquitaine
		Basse Normandie, Picardie, Ile de France, Centre	Centre,Poitou-Charentes, Bretagne	Centre, Pays-de-la-Loire	Poitou- Charentes, Midi-Pyrénées	Centre
					País Vasco (ES)	País Vasco (ES)
Forestry				Poitou-Charentes	Aquitaine	Aquitaine
				Aquitaine		
						País Vasco (ES), Navarra (ES)
Construction		Haute Normandie	Pays de la Loire	Poitou-Charentes		Aquitaine
Chemistry	Haute Normandie	Haute Normandie			Aquitaine	Aquitaine
	Ile de France, Basse-Normandie	Picardie		Pays de la Loire		
	Lorraine, Auvergne		País Vasco (ES)		País Vasco (ES)	Rhône-Alpes, Centre
						País Vasco (ES), Navarra (ES), Castilla y León (ES)
Metallurgy & Automotive			Pays de la Loire			Aquitaine
	Ile-de-France			Pays de la Loire		
						País Vasco (ES)
Refinery, Fuel Depots & Thermal Energy	Haute Normandie	Haute Normandie	Pays de la Loire	Poitou-Charentes	Aquitaine	Aquitaine
	Picardie, Nord Pas de Calais	Ile de France	Bretagne, Poitou-Charentes	Pays-de-la-Loire, Limousin	Limousin, Midi-Pyrénées	
Unknown						

International traffics

Bordering port's region traffics

Sources: Consultant according to Port Authorities, EUROSTAT, State Departments, Rail Operators and TRANSIT road survey



Sources: Consultant according to Port Authorities, EUROSTAT, State Departments, Rail Operators and TRANSIT road survey

4. TASK 3: COSTS ANALYSIS FOR INTERNATIONAL GOODS TRANSPORT

Based on distances and journey times from ETISPLUS, the cost model provides estimations per ton for rail and road, between the ports included in the Atlantic corridor and all the main European regions reachable via rail. The cost model parameters come from national frameworks (Comité National Routier, SNCF Réseau, road and rail Spanish observatories). When necessary, a number of calculation assumptions were made in order to fully recreate the logistic chain cost (adding dispatch costs around intermodal terminal, or handling and manoeuver durations for instance). Due to the absence of data in Portugal, these costs were estimated based on the Spanish model with some adjustments thanks to macro-economic indicators. The cost models validate the idea that the longer the journey, the more competitive rail is, in terms of unit cost per ton.

Container traffics from Le Havre to Île-de-France are equivalent on a cost basis by road or rail. A similar case is observed for Brittany, despite the distance being longer, due to the logistic stop at Valenton which provokes a major lengthening of rail distance compared to road for this destination. On average, rail costs are inferior to road costs for long distance container traffics (above 300 km by road), which is especially true for the relation Le Havre-Aquitaine, being a major traffic relation from this port.

Container rail transport costs to/from the Port of Bilbao and Algeciras are also theoretically about 30% lower than road transport costs on main relations, as well as the relation Le Havre to Pays-de-la-Loire and Centre (this theoretical approach is however dependent on the intermodal terminals availability and tariffs).

Regarding dry bulk, in France, rail is economically performing from Centre to the Ports of La Rochelle / Rouen / Nantes for cereals exports. A significant cost gap between modes is noticeable for ores and chemicals from Bayonne to Rhône-Alpes. As for Spain, rail and road costs are very similar for dry bulk traffics to/from the Port of Pasajes.

Regarding vehicle traffics in Spain, rail transport profitability depends on the distance: the relation between Aragon and the Port of Pasajes is the only one where rail costs are below road costs.

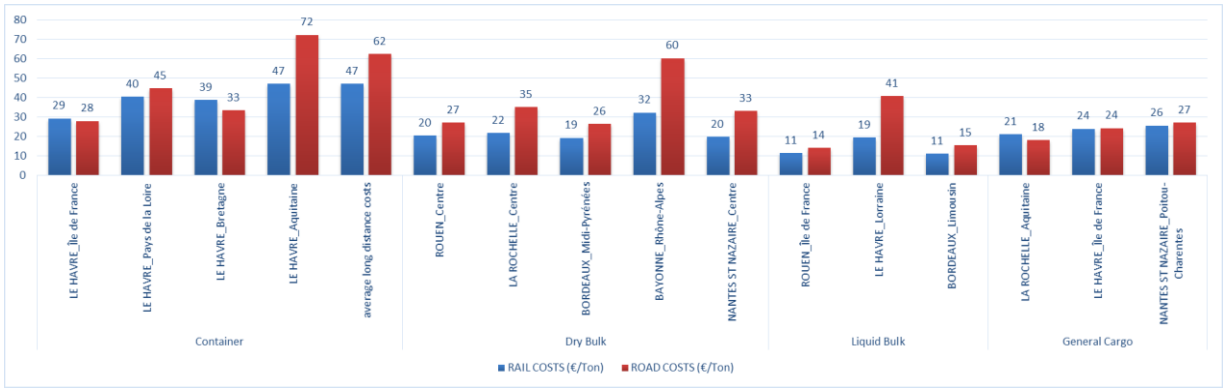
In France, liquid bulk is easily performing due to the use of heavy trains, however general cargo is less economical by rail due mostly to the short distance trips realized: the model gives equivalent costs for vehicle handling from Le Havre to Ile-de-France due to the low average charge per train, and a low competitiveness of rail for forestry export from Aquitaine on short distance.

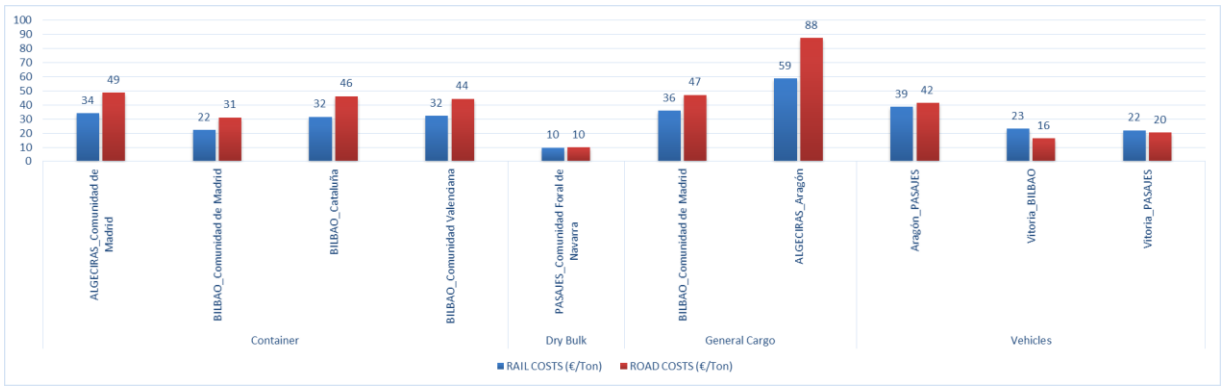
In Spain the journeys for general cargo are longer and rail transport costs to/from the Port of Bilbao and Algeciras are theoretically about 20-30% lower than road transport costs in long distance relations. However this value is an average between a large variety of goods (iron & steel products, paper products, swap bodies, etc.) with various constraints.

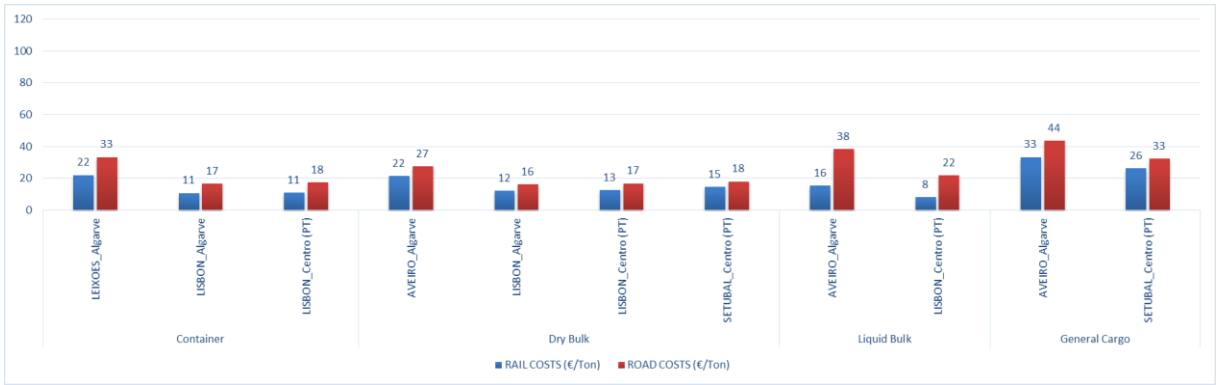
The cost analysis historical approach highlights that due to the economic crisis and the major shipping costs decrease, hinterland costs have been an increasing weight in the global transport chain. As a result both freight and shipping companies are looking into reducing them, which could lead to some

modal shift in a near future. The joint analysis of rail and road costs and hinterland traffic shows nevertheless that no direct correlation can be totally inferred from the cost comparison and evolution. As a matter of fact freight modal split is the result of a combination of factors, including prices, but also stability of traffic flows and shipment size, as well as flexibility, punctuality and regularity offered by rail and road.

Illustration 5. Atlantic French ports pre post haulages cost comparison on main flows







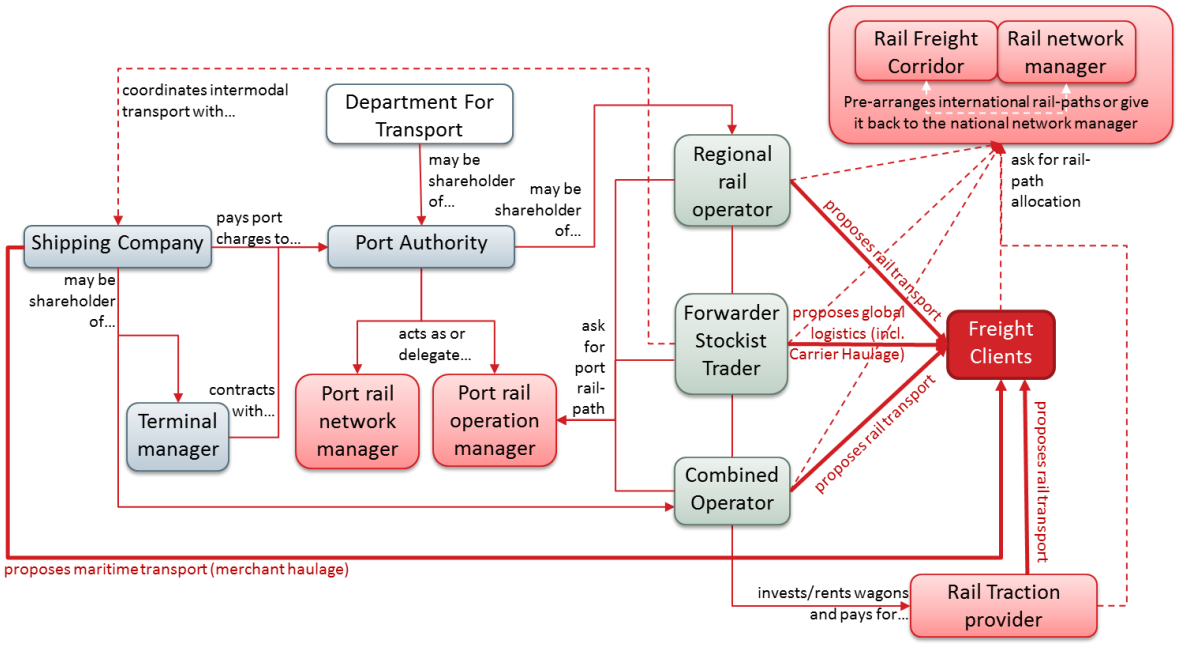
Sources: CNR, SNCF Réseau economic framework, Acotram, OECD and self-assumptions

5. TASK 4: SHIPPING COMPANIES AND PORT AUTHORITIES SURVEYS

Port authority, as the entity managing the vessel calls and welcoming rail traffic, collects variable level of statistics linking both transport modes. The development of rail pre post haulages is highly dependent on the port history and the type of cargo accommodated in the port. For example, ports with high volumes of dry bulk cargoes are usually the ones with the highest rate of heavy transport modes. Surprisingly, ports lack detailed data on their rail traffic; mainly, because in most of the cases they don't collect rail charges by opposition with port charges collected for vessel transit. Moreover, stakeholder relations are often complicated, either with storage facilities managers or rail operators. However, when analysing their strategic plans, they have high objectives for rail pre/post haulage through investing in port rail infrastructure or in specific rail management structure (regional rail operators, port infrastructure delegated manager etc.): their levers of actions often remain below their ambition and meeting their objectives rely on the challenge to coordinate various agents with divergent interests and views.

Shipping companies have a significant influence on pre post haulage decisions (even if this statement is not true for all kind of cargo) through organization of carrier haulage and sometimes shareholdings in railway companies. The carrier haulage is the movement of the container from Point A to Point B under the control of the shipping line using a haulage contractor nominated by the shipping line. The interest for shipping companies could be summarized in 4 main points: diversifying their services, optimizing road shipments, improving container flow management and fostering their knowledge of cargo flows (real origin/destination…).

Illustration 6. Schematics of "who does what" in port rail pre post haulages



The interview process permitted to identify the various topics to tackle if the Atlantic Corridor wants to develop port rail pre post haulages according to the Port Authorities and the Shipping Companies.

Additionally, railway operators has been met to have a better insight in the operational constraints and the development projects already planned.

Rail development constraints mentioned by the stakeholders can be categorized in 3 main themes and sub-categorized in 17 sub-themes as follow: for each sub-theme, we have listed some examples to illustrate the topics discussed.

Table 2. Main rail development constraints mentioned in the interviews

		France						Spain			Portugal				
		LEH	ROE	NSN	LRO	BDX	BAY	PAS	BIL	ALG	LEIX	AVE	LIS	SET	SIN
INFRASTRUCTURES	Concerns about rail access sustainability		X		X	X			X	X			X		
	Inadequate or missing intermodal terminal	X		X				X			X		X		
	Inadequate rail paths offer or definition process				X						X		X		
	Insufficient technical characteristics of rail network			X	X	X				X					
	Lack of capacity in railway terminal (load/unload)														X
	Possibilities of longer maximum train length	X						X	X	X					
OPERATIONS	Concurrency of passenger and freight traffic			X	X				X				X		
	Concurrency with rail network maintenance		X		X	X									
	Inefficient management of the support marshalling yards		X					X	X						
	Lack of traffic regularity		X					X		X					
	Restriction for specific traffics (dangerous, gauge…)			X											
	Restrictive speed of rail path				X										
	Restrictive infrastructure access timetables							X							
STRATEGY	Difficulty to know the hinterland flows	X	X												
	Industrial activity relocation		X												
	Unsuitable rail operator strategy	X			X		X			X					
	Unsuitable shipping companies strategy			X											

Sources: Consultant according to Port Authorities, Rail Operators and Shipping Companies interviewed

6. TASK 5: POSSIBLE EVOLUTION OF THE REGULATION EU 913/2010

The Rail Freight Corridor functions are defined in the Regulation EC 913/2010, which fits into the TEN-T corridors described in the Regulation 1315/2013 and 1316/2013. Its main goal is to coordinate and ensure good conditions and easy crossings from one national network to another so as to optimize the use of the railway infrastructure. It goes through the implementation of a One-Stop-Shop that defines the pre-arranged rail path offer according to market studies, and allocates the rail paths to applicants with a priority over national rail paths and a transparent schedule.

The Atlantic Rail Freight Corridor is connected to 14 ports whose hinterland traffics reveal to be rather exclusively limited to a national level: the RFC is thus currently unable to provide them with an offer for these traffics which are out of its scope. Moreover, a case study of the import / export traffics of Ile-de-France, Lorraine and Nord-Pas-de-Calais shows that rail undertakings operating to the ports of Belgium and Netherland could (or do) benefit from pre-arranged rail-path, when Le Havre could not despite being connected to the Atlantic Corridor. Similar cases are observed for the ports of Trieste (Italia) and Koper (Slovenia) for the north-eastern market of Italia, or for the ports of Marseille (France) and Barcelona (Spain) for the Rhône Valley market.

Considering these constraints to the development of the Atlantic Corridor and the divergence between its connection to the ports and its inability to propose adequate services for these traffics, an analysis of the regulations has been performed.

Two main modifications are possible in order to adapt the Regulation to capture ports traffics and extend the authorization to national level relations:

- Rely on the concept of "international freight service" rather than on the concept of "international train path" or "international freight train";
- Rely on Custom Declaration of goods or waybill to sort international goods haulage from national ones;

Even if the second proposal enables to easily identify the extra-community traffics from intra-community, it seems that the current regulation does not exclude any international traffic from its scope, allowing to connect third countries rail networks in order to provide efficient rail services. The second proposal has nonetheless two major constraints which concern:

- The compatibility between the schedule of Custom Declaration or Bill of Lading availability and rail path application;
- The confirmation that the Custom Declaration will be actually lodged by the rail path applicants;

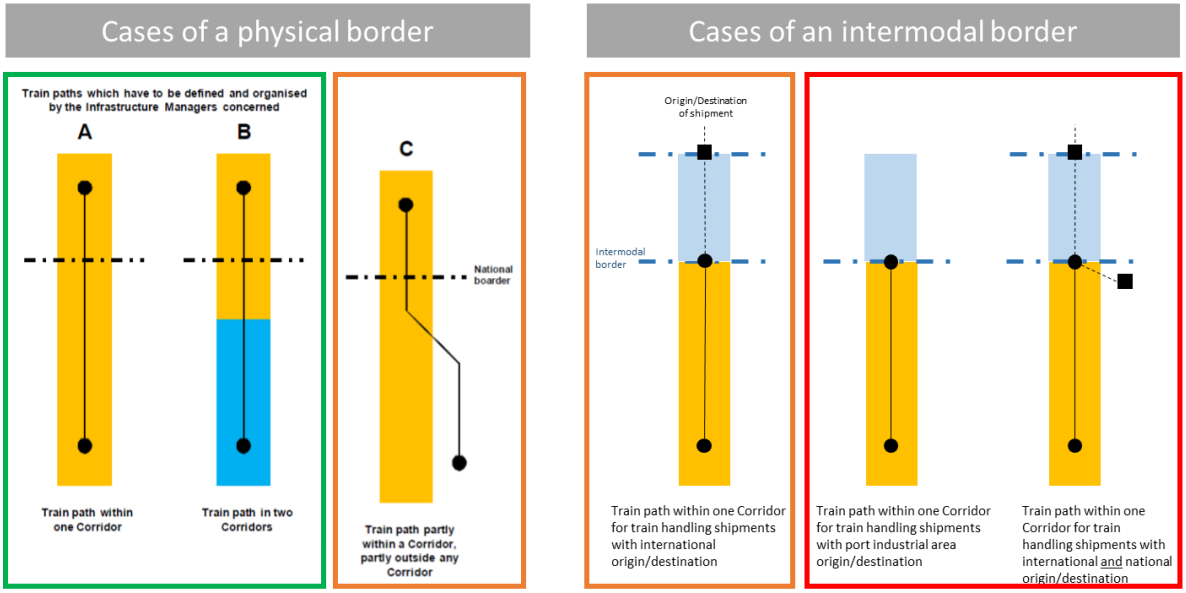
Our recommendation would thus follow the first proposal, based on the Directive 2012/34/EU which define freight services not only with the train border-crossing concept but also with the destination of its wagons in the case of a marshalling operation: for that purpose, the waybill or in other words the transport contract supposedly available upstream of the goods haulage could be used to justify the international nature of the goods, possibly with a delayed schedule of control.

Similarly and relying on the definitions given by the Regulation EC1305 definition of "shipment" covering a single wagon, a set of wagons or an intermodal unit, we could thus enrich the EC913/2010 Regulation via the eligibility of train joined and/or split and the different sections, provided that all shipment is subject to a waybill with international origin or destination.

In the case where a total removal of any reference to border crossing would be rejected, an alternative option is proposed. It would consist in allowing the allocation of national path only in case of under-utilisation of the corridor and to the sole benefit of port intermodal services (i.e. train + maritime).

Furthermore, the process of the Regulation modification request could be helped by referring to the TEN-T Atlantic Corridor coordinator even if its work plan concerns more railway works than European Regulations.

Illustration 7. Cases of train path definition request under the competence of RFC



7. TASK 6: COMBINED MARITIME/RAIL SOLUTIONS

An Atlantic ports market outlook is proposed first to better understand the trends of development of maritime and rail traffic and then to contextualize the Port Authorities traffic forecast.

The main determinants of maritime traffics development have been identified via the calculation of correlation coefficients between traffics (by type of cargo) and macroeconomic indicators. This approach mainly confirms the expectations as container and Ro-Ro traffics of Le Havre, Algeciras, Leixões and Sines are strongly linked with the economic activities leading to Gross Domestic Product evolution:

- A slow recovery is foreseen by the European Commission until 2020 after the difficult path of the 2008 financial crisis.
- Cereal export traffic appears to be fostered by the cereal price increase while fertilizer imports decrease in case of a price rise.
- Cereal prices are supposed to grow slowly by 1% up to 2020 while fertilizer prices should remain steady according to the World Bank.
- Other trends applying on lower and more volatile markets are more difficult to explain (political and climate issues for instance) .

Port Authorities traffic forecasts have been collected and analysed in terms of maritime and railway traffics development expectations.

- A global moderate growth of 2%/year is expected, assuming a stagnation of liquid bulk traffics and a rise of container, dry bulk, and a marginal share of general cargo traffics.
- This trend is even more contrasted concerning rail traffic development as container rail services of the Atlantic ports should grow as a whole by 10%/year until 2020, dry bulk services by 5%/year, general cargo by 4%/year and liquid bulk would remain stable.

These traffic forecasts have been cross-controlled with the railway undertakings and shipping companies, and detailed in terms of main potential origin-destinations of development. Based on the average load per train observed in 2014 and some complementary assumptions, the number of trains roundtrips have been estimated as follow:

- **From French ports**: 110 optimized weekly intermodal services distributed either on existing relations or to Poitou-Charentes, Pays-de-la-Loire, Brittany and west Germany are expected in 2020. Meanwhile, the Port of Bordeaux would commission its railway intermodal shuttle up to 15 weekly services between Le Verdon terminal and the agglomeration of Bordeaux; 57 dry bulk services are expected, mainly due to the strengthening of existing cereal haulages from the Centre to the Ports of Rouen, La Rochelle and Nantes-St-Nazaire but also via a new service from Rhône-Alpes to Rouen and a consolidation of fertilizer and ores rail services with the Port of

Bayonne; 12 general cargo services are foreseen with few evolution except for chemicals between the Port of Bayonne and Lacq industrial area;

- **From Spanish ports**: 54 weekly intermodal services are expected mainly strengthening the relations with Madrid, Barcelona, Valencia and Guadalajara with the Ports of Bilbao and Algeciras; 3 dry bulk services are intended from the Port of Bilbao to Burgos with a single new service in 2020; 37 general cargo services would be awaited with developments from the Port of Bilbao to Burgos/Sagunto (iron & steel) and Zaragoza/Madrid (Paper) and from the Port of Pasajes to Zaragoza (Iron and Steel). A new service of swap bodies from the Port of Algeciras to Madrid / Zaragoza is planned up to 6 roundtrips per week;
- **From Portuguese ports**: 77 weekly intermodal services are expected basing on the strengthening of the shuttle between the ports of Setubal and Sines and their related logistics platforms but also to Bobadela, Leixões and Entroncamento; 22 dry bulk services are envisaged taking into account a development from the Port of Setubal to Minas Neves Corvo and Ourique (Ores) but also from the Port of Sines to Ramal EDP – Pego (Coal); 18 general cargo services are intended with various evolution of which cement haulages from the Port of Aveiro to Cacia and Souselas, Steel Products from the Port of Leixões to Ermesinde and Cement/Wood/Steel Products haulage consolidation on the existing relations of the Port of Setubal;

To achieve these developments, the Atlantic ports have a set of investment projects either on maritime infrastructure or on access and port rail network infrastructure which are described and funded via National, Regional and own plans:

- **Terminal extension, refurbishment or equipment renewal** concerns container terminals of the Ports of Algeciras Bay (Isla Verde Exterior terminal), Pasajes, Nantes St Nazaire (Montoir terminal) and Bordeaux (le Verdon terminal) but has been postponed in the Port of Le Havre (Port 2000). RoRo terminals development is provisioned in the port of Nantes-St-Nazaire and Setubal. Other berths or access channel works are identified in Rouen, Bordeaux (Grattequina terminal), La Rochelle (La Repentie embankment, St Marc terminal, Chef de Baie terminal); and Bayonne (Blancpignon terminal);

- **Port rail infrastructure upgrade and securing** is expected in the Port of Leixões (rail terminal - Polo 2), Sines (Terminal XXI), La Rochelle (boucle des usines, Jeumont gateway, D Class axle load), Bordeaux (D Class axle load) and Nantes-St-Nazaire (Montoir-Priory connection);

- **Port rail accesses bettering** are also planned for the Port of Algeciras (automatic block system on Bobadilla – Algeciras section), Bordeaux (Bec d'Ambès line), Rouen (cut-and-cover section), Bilbao (new freight rail track through the Serantes), Setubal (connection to Termitrena and Praias do Sado terminals) and Évora-Caia section upgrade which would benefit to the Ports of Lisboa, Setubal and Sines (

- **Logistic platforms or multimodal terminals** are mentioned in the development plans of the Port of Algeciras (Logistics Area of El Freno and San Roque), Bilbao (Pancorbo logistic terminal), Le Havre (Multimodal terminal), Nantes St Nazaire (Multimodal terminal), Leixões (logistic platform – Polo 1) and Aveiro (de/consolidation terminal)

8. CONCLUSION

In addition to the port market study and the Regulation modification proposals presented above, a set of recommendations to the Atlantic Rail Freight Corridors is presented bellow to address better the port markets via two main types of actions which are **providing information** on Corridor and better coordination and **helping to overcome constraints** of interface and project funding

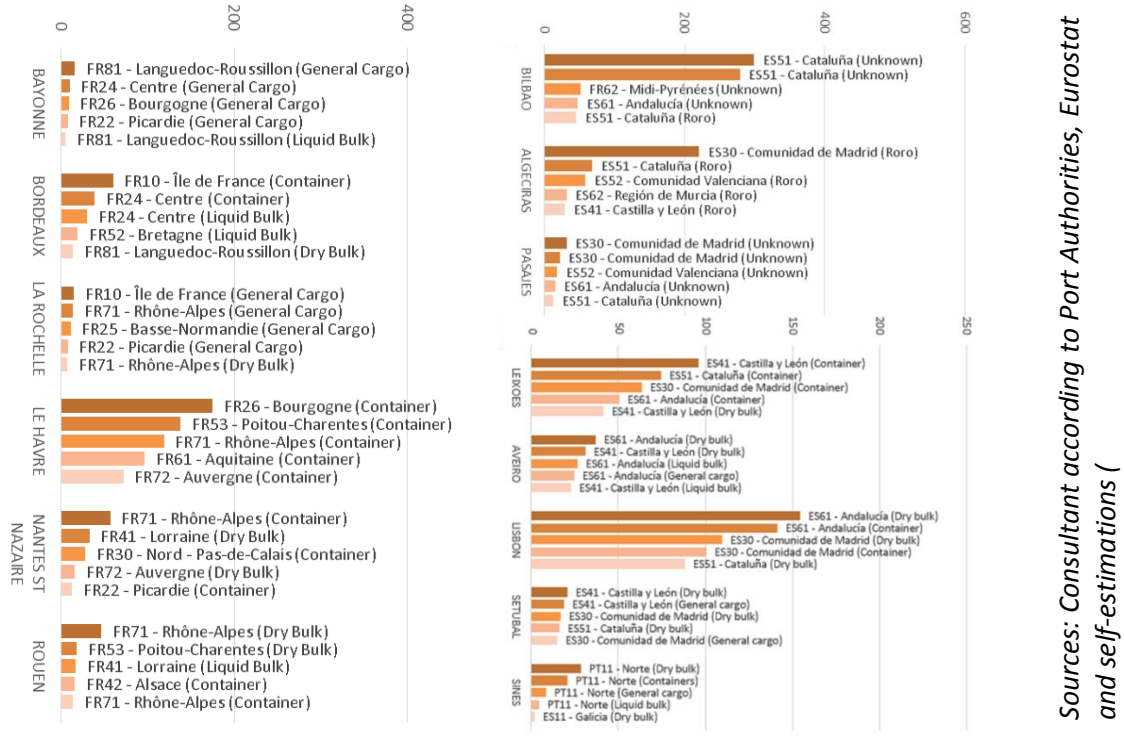
The provision of information on Corridor offer and better coordination could be held via:

- The publication of case studies comparing the use of national and corridor rail paths and the benefits of these latter ;
- The organization of Terminal Advisory Group (TAG) meeting according to the Regulation 913/2010 getting involved the Ports Authorities to adapt the corridor offer;
- The provision of information on the ability of the Corridor to provide stable offer on the medium or long term;
- The proposal of common Railway Undertaking Advisory Group (RAG) meetings with other connected corridors (mainly RFC2 North-Sea Mediterranean and RFC6 Mediterranean)

The support to overcome constraints of interface and project funding could consist in:

- The assistance to the Terminal Managers for European funding requests;
- The provision of information to the Terminal Managers about existing tools concerning both the capacity allocation (RNE Path Coordination System) and the traffic management (RNE Train Information System) and their possible interface with the existing Port Community System tools;

Illustration 8. Main port road haulage deviation potentials to rail over 400km (KTons, 2013)

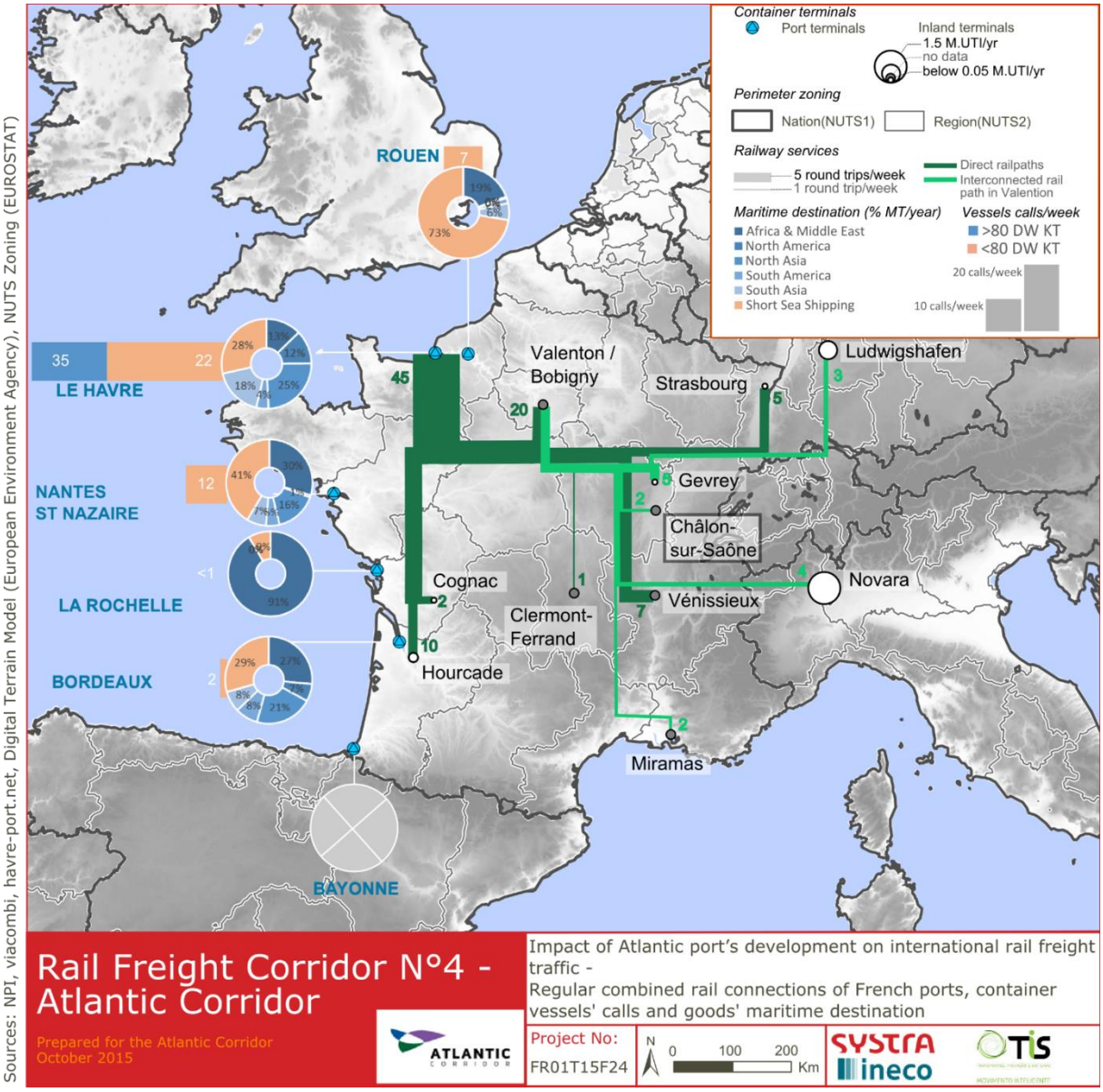


Sources: Consultant according to Port Authorities, Eurostat and self-estimations (

9. APPENDIX

Illustration 9. Rail intermodal services of French Atlantics Ports in 2013/2014

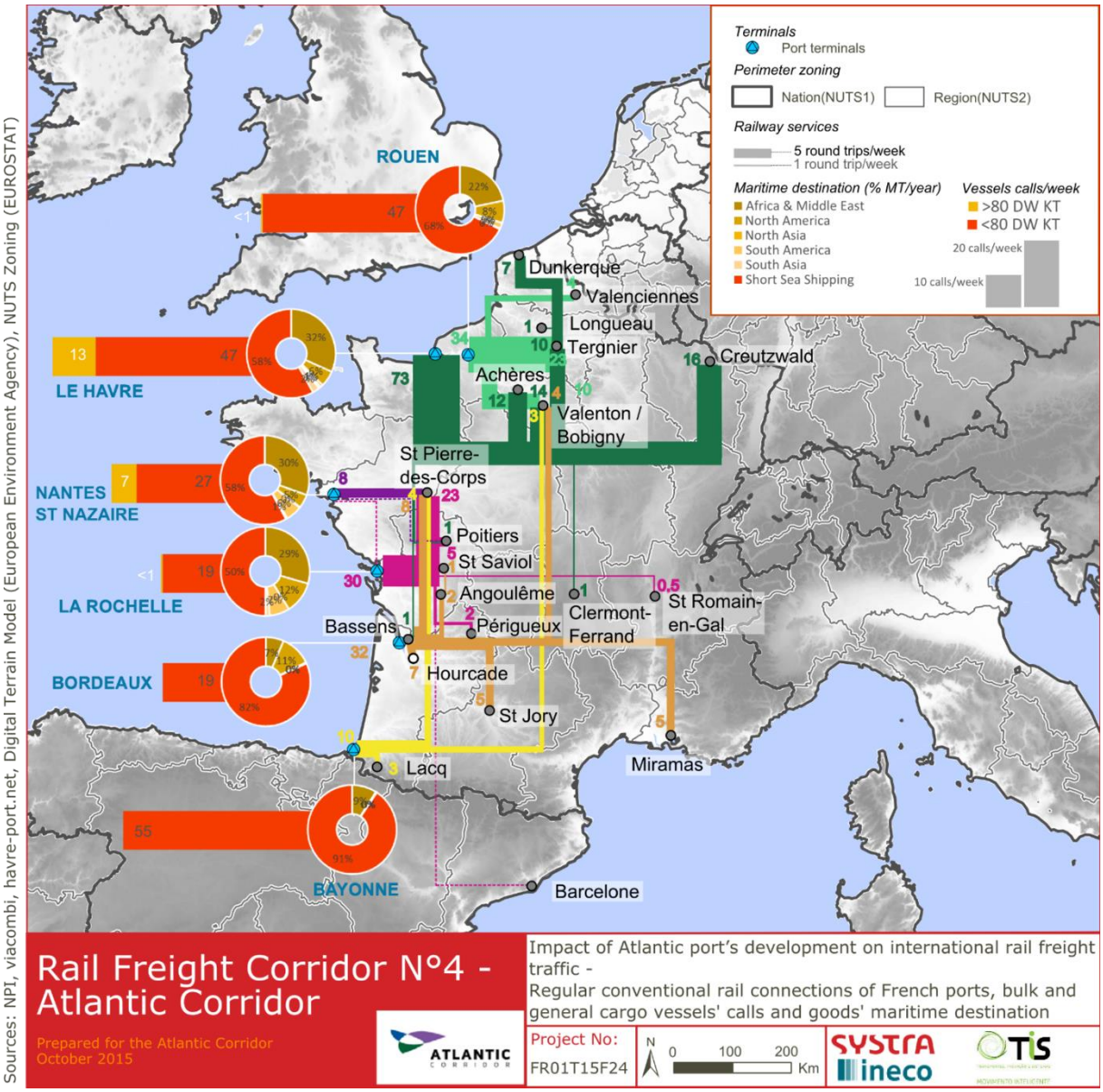
CONTAINER TRAFFICS



Sources: Consultant according to Port Authorities, EUROSTAT, State Departments and Rail Operators

Illustration 10. Rail conventionnal services of French Atlantics Ports in 2013/2014

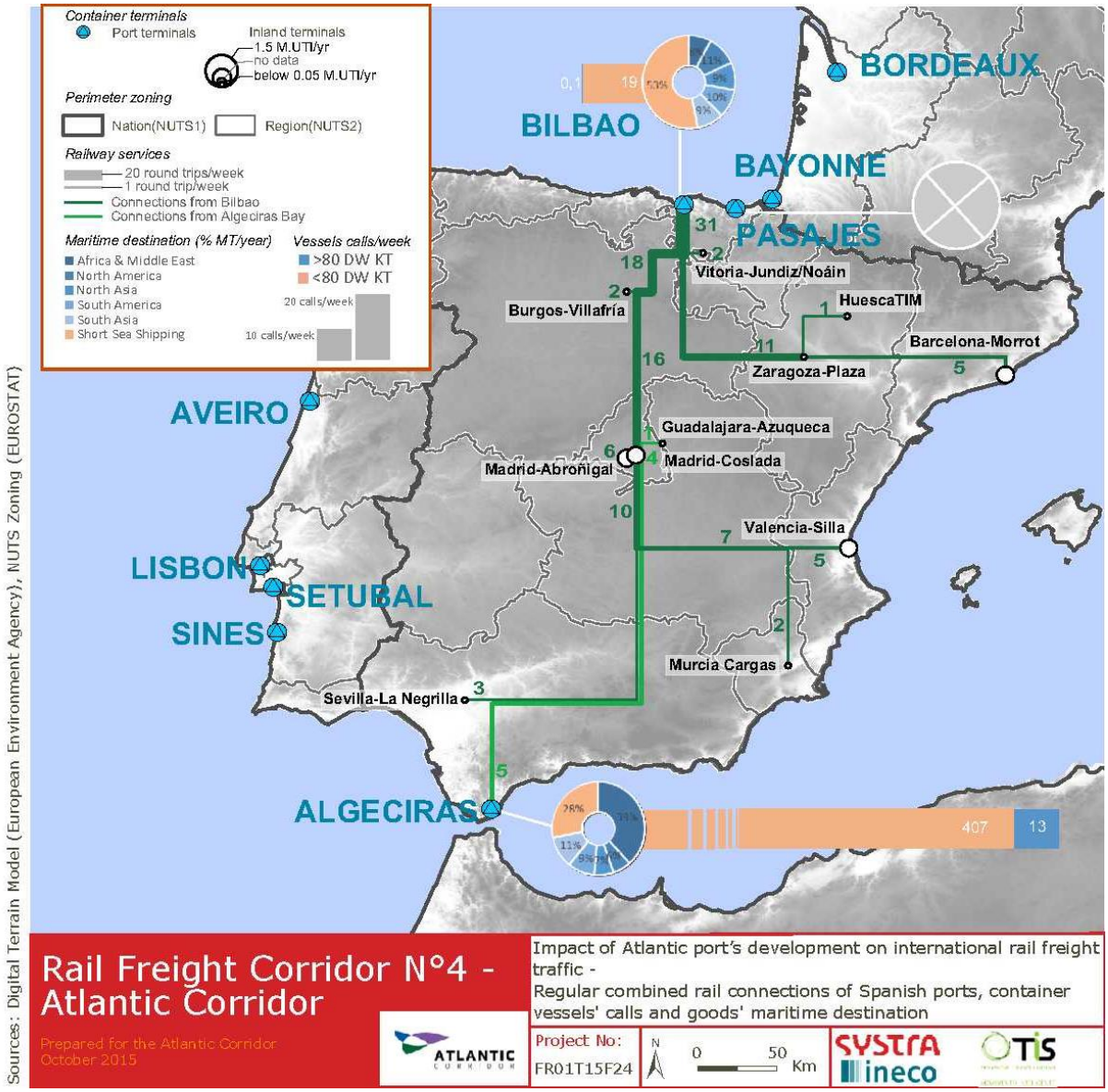
BULK AND GENERAL CARGO TRAFFICS (EXCEPT CONTAINERS)



Sources: Consultant according to Port Authorities, EUROSTAT, State Departments and Rail Operators

Illustration 11. Rail intermodal services of Spanish Atlantics Ports in 2013/2014

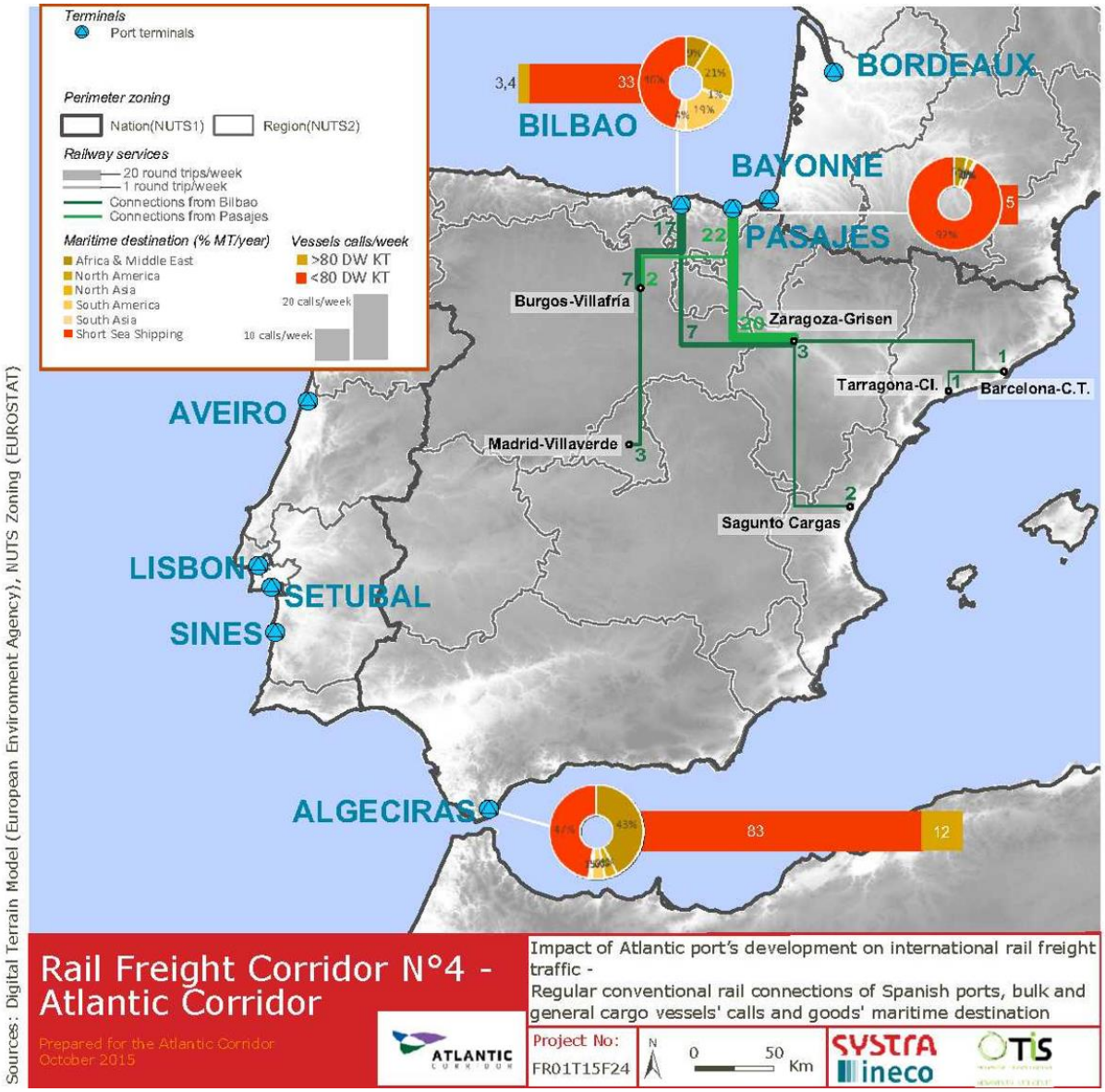
CONTAINER TRAFFICS



Sources: Consultant according to Port Authorities, EUROSTAT, State Departments and Rail Operators

Illustration 12. Rail conventionnal services of Spanish Atlantics Ports in 2013/2014

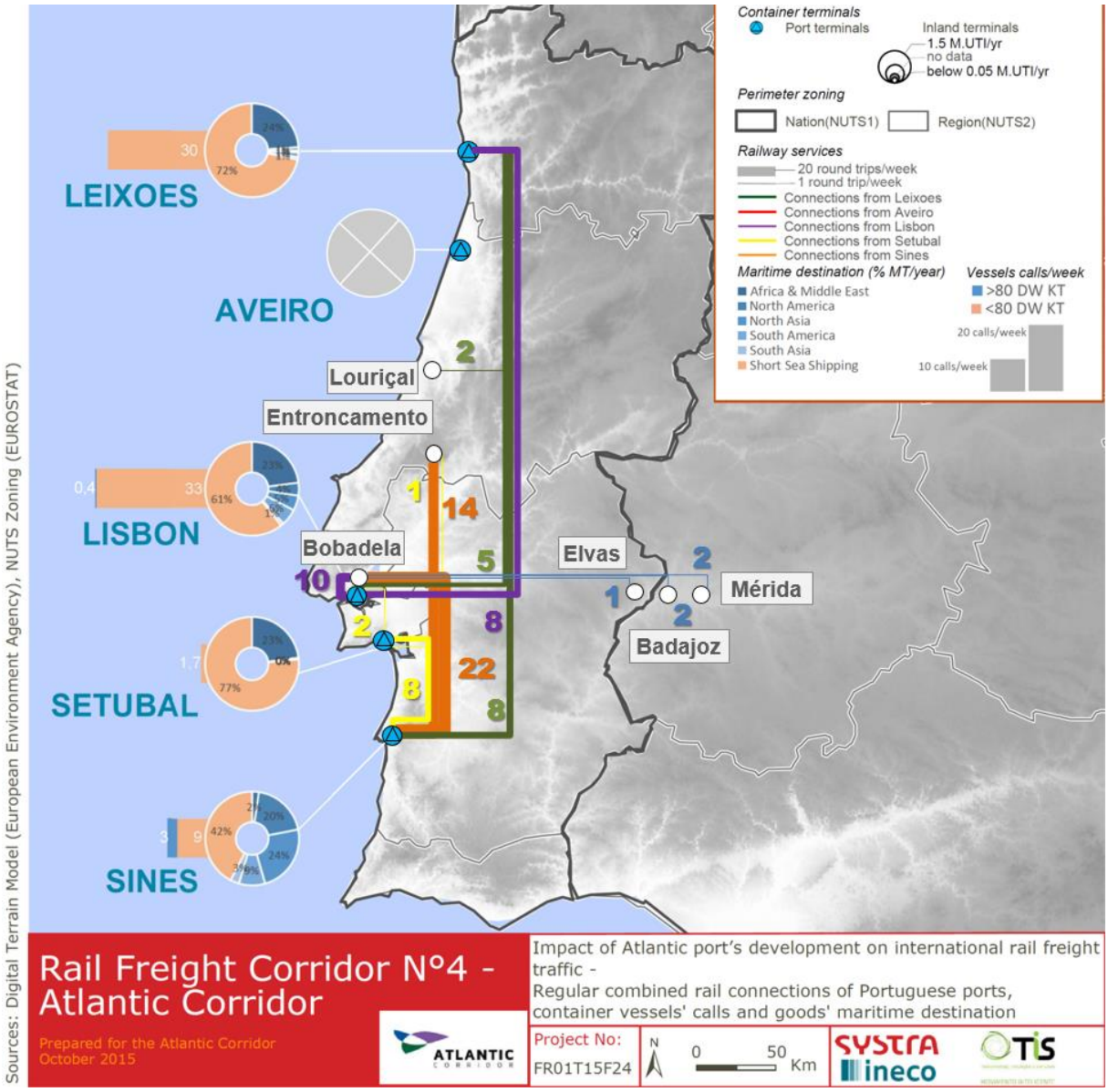
BULK AND GENERAL CARGO TRAFFICS (EXCEPT CONTAINERS)



Sources: Consultant according to Port Authorities, EUROSTAT, State Departments and Rail Operators

Illustration 13. Rail intermodal services of Portuguese Atlantics Ports in 2013/2014

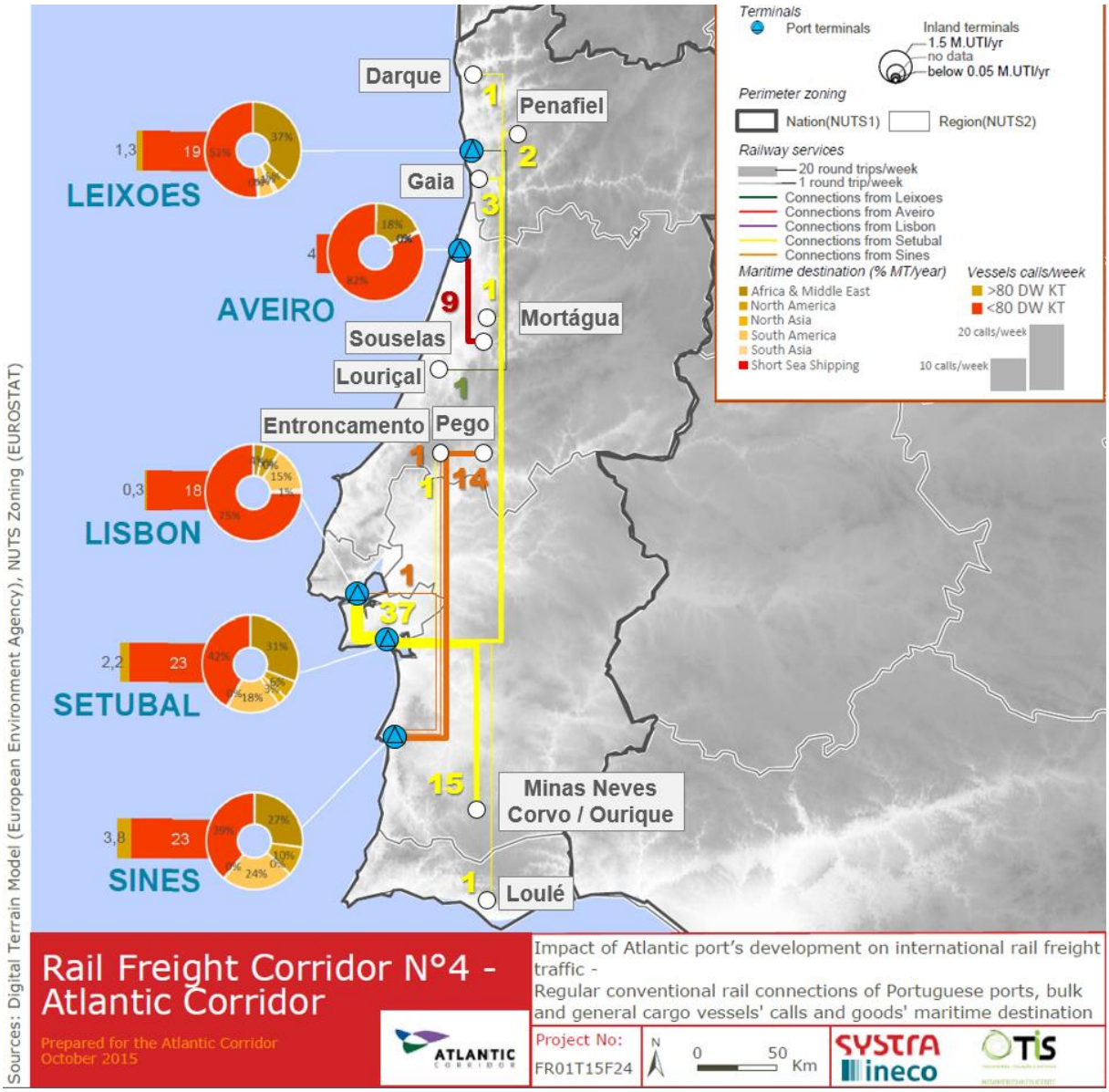
CONTAINER TRAFFICS



Sources: Consultant according to Port Authorities, EUROSTAT, State Departments and Rail Operators

Illustration 14. Rail conventionnal services of Portuguese Atlantics Ports in 2013/2014

BULK AND GENERAL CARGO TRAFFICS (EXCEPT CONTAINERS)



Sources: Consultant according to Port Authorities, EUROSTAT, State Departments and Rail Operators