



European  
Commission

# North Sea Mediterranean



Work Plan of the  
European Coordinator  
**Péter Balázs**

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This report represents the opinion of the European Coordinator and does not prejudice the official position of the European Commission.

## **1. Towards the *North Sea Mediterranean* corridor work plan**

The year 2014 was the starting point of a challenging but very appealing exercise. Since my appointment as European Coordinator for the North Sea Mediterranean Corridor in March 2014, I have been working closely together with six Member States: The Netherlands, Belgium, France, Ireland, Luxembourg and the United Kingdom, in the Corridor Forum and a consortium of consultancy companies contracted by the European Commission. Members of the consortium are: Panteia as leader, MDS-Transmodal, Egis France, Stratec, BG (Nestear) and PriceWaterhouseCoopers.

I was appointed European Coordinator by the European Commission from 12 March 2014 to 1 March 2018 and my appointment was confirmed by the Council and the European Parliament. My role as European Coordinator was to foster this new framework of intermodality and multimodality as the guiding principle for the corridor by taking soundings throughout the corridor, consulting ministers and senior civil servants. The necessary level of communication and dialogue is being secured, bearing in mind the great impact that the TEN-T development has on the Member States. Listening to the various needs, limitations and national difficulties is imperative for my work as coordinator.

During 2014, we have had four Corridor Forum meetings in Brussels, each including a new set of stakeholders. The first Corridor Forum meeting took place on 1 April 2014 and included the representatives of the Member States. The second Corridor Forum meeting took place on 17 June 2014 and included besides the Member States, rail infrastructure managers, inland waterways and ports. The third Corridor Forum meeting took place on 3 October 2014, adding the regions as well as road and airport managers. Finally, the last Corridor Forum of 2014 took place on 21 November 2014 and gathered all these stakeholders. In connection with the third and fourth Corridor Forum meetings, two Working Group meetings were also organised in Brussels: the first one on 2 October 2014 with the ports and inland waterway infrastructure managers and the second one on 20 November with the regional authorities.

In addition to these Corridor Forum meetings and working group meetings, I attended three European Coordinators' Seminars organised by the European Commission: the first one on 10-11 June 2014 in Liège and Maastricht, the second one on 21 October 2014 in Brussels and the third one on 3-4 December 2014 in Brussels. These seminars enabled European Coordinators to exchange views on a number of common and horizontal issues such as ERTMS and MoS priorities (latest developments), preparation for the Forum meetings and the political background. We have also discussed a wide range of practical aspects such as overlapping sections between different corridors, cross border issues, the Connecting Europe Facility, innovative financial instruments, EIB's financial and technical support activities, the Juncker package, elaboration of the Work Plan, the new Work Programme for the Commission, and the Italian and Latvian Presidencies (how to operationalise the Work Plans and get infrastructure on the European agenda).

On 16-17 September 2014, I also attended the Informal Transport Council meeting in Milan. The main issues discussed were innovative financing instruments, using the core network as the frontrunner of an efficient and sustainable European mobility system, internalising external costs, extending user charging, making the best use of competition policy, enhancing coordination and creating synergies between sectors.

During the course of 2014, I also carried out 22 missions focusing on the direct face-to-face dialogue with ministers, government officials and stakeholders. I have been fortunate enough to travel using all modes of transport and within many different

regions of the Corridor, visiting the Albert Canal and River Scheldt, navigating by ship from the Port of Ghent to Terneuzen, and taking several high speed trains in France and United Kingdom. I had the opportunity to visit some key projects along the Corridor such as the Seine-Escaut waterway, Terneuzen lock, the high speed line Paris-Besançon-Mulhouse, the new container terminal – Maasvlakte 2 at the Port of Rotterdam and I will continue these missions in 2015 where a focus will be made on the major projects along the corridor. This fruitful cooperation clearly shows that Member States have taken full ownership of the process, which is absolutely imperative to get a fully connected Corridor.

The work done with the Consultants and through all the Corridor forum meetings has led to the publication of the comprehensive Corridor study. This Corridor Study and its annexes are an integral part of the work of the Corridor and have contributed widely to the development of my vision of the Corridor. This has led to the drafting of this Work Plan that I am submitting to the Member States for their comments, and approval.

I would like to take this opportunity to thank all those organisations and officials who contributed such valuable time and insights to the development of this corridor.

My work plan constitutes the basis for the development and implementation of the corridor investments which are needed to remove important bottlenecks along the corridor. Several main issues exist on the North Sea - Mediterranean Corridor:

- the establishment of the Seine-Scheldt inland waterway canal and its access routes from Le Havre/ Paris towards the South and from Dunkerque, The Netherlands and Belgium towards the north;
- hinterland connections of ports and major works on several sea ports to increase develop maritime interconnections and maintain efficiency;
- Upgrading of various cross-border rail connections to secure competitiveness with road.
- the development of inland ports in order to promote modal shift, help mitigate urban congestion and optimise urban logistics.

However, the North Sea Mediterranean Corridor goes further than mere transport infrastructure. It creates a new link between Member States and has the potential to generate tangible added value to the infrastructure investments, it secures cross-border and interregional cooperation and thereby aims at coordinated approaches and implementation.

The North-Sea Mediterranean corridor activities of 2014 have enabled us to come to a powerful "Acquis Corridor". With this Acquis Corridor we have established a solid foundation to enable us to realise what has been achieved over the past few years. I believe we still need to work in close cooperate in order to guarantee the successful implementation of this work plan. Indeed the process does not end with the submission of this work plan; it is only the starting point of a long cooperation to create the conditions for growth and prosperity, making Europe more competitive and securing that all EU citizens and businesses can benefit from this modern and sustainable European transport network on the North-Sea – Mediterranean core network corridor by 2030. I count on your continuous support and commitment in the following years.

In the coming years, we will together in the Corridor Forum and with all the stakeholders not only revise the Work Plan in 2016 and 2018 but also focus on key issues that we have not yet been able to address with all the deserved attention. I am here especially thinking about the greening of transport including innovative energies

such as clean fuels, LNG, CNG, hydro energy, and also Intelligent Transport Systems ITS. We will also draw out attention in the direction of Innovative Financial Instruments and the Juncker Plan.

## **2. Characteristics of the *North Sea Mediterranean Corridor***

### **2.1 Corridor alignment**

The North Sea Mediterranean corridor stretches from Glasgow, Edinburgh and Belfast in the north to Cork in the west and to Paris and Lille in the centre, to Marseille in the south, and extending north-east through Luxembourg, Belgium and the The Netherlands towards Amsterdam. It covers six Member States, namely Belgium, Ireland, France, Luxembourg, The Netherlands and the United Kingdom, as well as leading to the Swiss and German borders in Basel.

The North Sea Mediterranean Corridor will establish high capacity and multimodal transport connections in one of the most densely populated areas of Europe, connecting six important Member States. This is an area of extremely intensive economic activities including high density transport activities. The progressive implementation of the many projects listed in the Annex will result in additional growth potential generating new employment opportunities. I strongly believe that if all concerned Member States actively participate in this work and make use of the European added value, this will increase capacity and strengthen the international competitiveness of our ports, road, railways and other connections to internal and external markets.

This North Sea Mediterranean corridor groups together the former Priority Projects 2, 9, 13, 14, 24, 26, 28, 30, ERTMS Corridor C and Rail Freight Corridor 2 now the Rail freight Corridor North-Sea-Mediterranean.

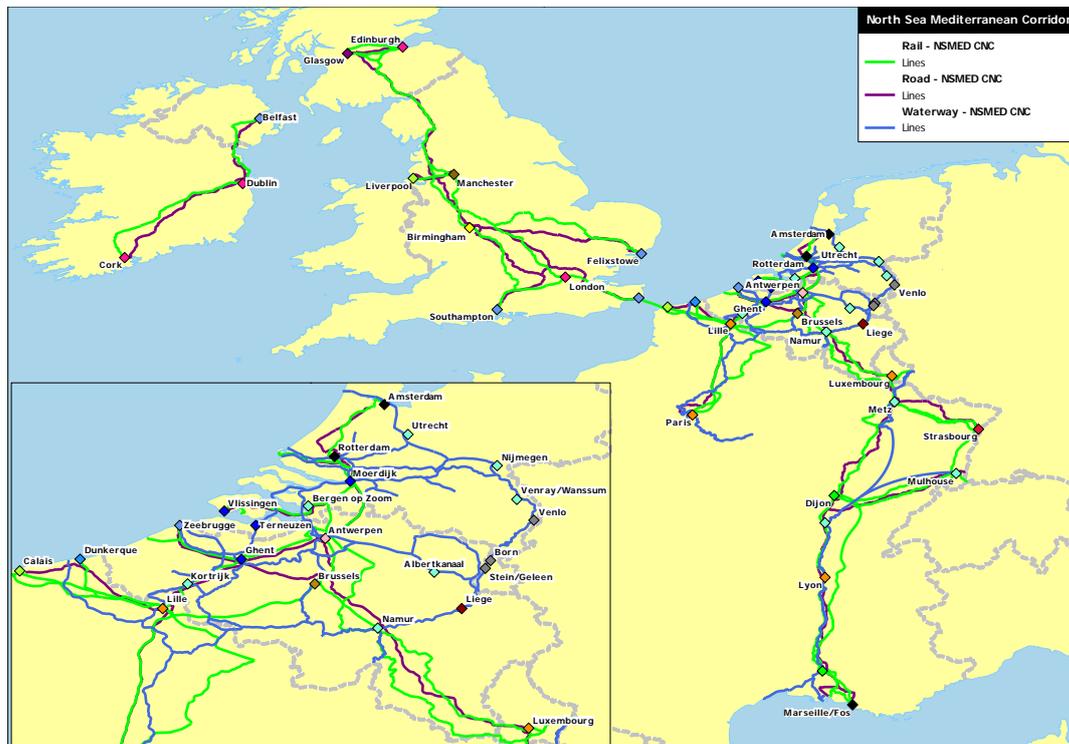
**Figure 1: Corridor Alignment**

All modes of transport are covered within the North-Sea Mediterranean corridor; air, sea, road, rail, inland waterway, and even transport by pipeline. Key infrastructure assets include the Channel Tunnel, three of Europe’s top-five airports and four of Europe’s top-ten seaports. Waterborne transport, inland and maritime, is strongly emphasised in the corridor.

This corridor is defined as a series of interlinked sections, with many short-sea connections between the United Kingdom, Ireland and the mainland Europe. It overlaps with the North Sea Baltic and Rhine-Alpine Corridors in The Netherlands and Belgium, the Atlantic Corridor in Northern France and the Mediterranean Corridor in Southern France, and it is the only core network corridor reaching the United Kingdom and Ireland. It is therefore an extensive and complex corridor containing densely populated regions of long-standing economic importance and with a high degree of urbanisation, along with more peripheral and less densely populated regions in the west and north. It is also characterised by important crossings, interlinkages and mutual capacity effects.

## 2.2 Compliance with the technical infrastructure parameters of the TEN-T guidelines

Regulation 1315/2013 provides, inter alia, technical requirements for the core network infrastructure. These are summarised below.



**Table 1: Technical Parameters<sup>1</sup>**

<p><b>Rail:</b> (non-isolated networks)          Electrification.          ERTMS.          Track Gauge: 1435mm<sup>2</sup>  <i>Freight:</i>          Axle Load: 22.5t          Line speed: Freight: 100kph          Train Length: 740m</p>	<p><b>Inland Waterways:</b>          CEMT IV (1000-1500t Vessel)          Length: 80/85m          Beam: 9.5m          Draught: 2.5m          Height: 5.25/7.00m</p>
<p><b>Road:</b>          Express road or Motorway.          Secure parking areas every 100km.          Availability of clean fuels.          Interoperable tolling where applicable.</p>	<p><b>Ports/maritime:</b>          Rail connection -where possible<sup>3</sup>          Waterway connection – where possible<sup>4</sup>          Availability of clean fuels.          Promoting MoS (short sea connections)</p>
<p><b>Airports:</b>          Availability of clean fuels.          Connection to rail network<sup>5</sup>          Connection to road network<sup>6</sup>.</p>	<p><b>Road/Rail Terminals:</b>          Indication of capacity.</p>
	<p><b>Inland ports</b>          Indication of capacity.          Availability of clean fuels.</p>

Source: DG-Move, working paper, 26-02-2014

## **Rail**

Technical requirements for the railways within TEN-T set precise technical specifications, especially for freight trains. In principle, following adoption of the standards, it will be possible for an ERTMS-equipped 740m electrified freight train to “go anywhere” on the freight route element of the CNC without having to change locomotive or wagons.

**Train Length** – Currently France, The Netherlands and Luxembourg allow 740m freight trains along the North-Sea Mediterranean Corridor. In Belgium, the length of goods trains is limited in principle to 740m inclusive of traction units, but the Infrastructure Manager’s agreement must always be sought for any train longer than 650m. In practice trains are frequently limited to 650m during peak (daytime) hours. In the mainland United Kingdom, 775m freight trains are allowed on parts of the West Coast Main Line between London and the North West, and on HS1 between London and the Channel Tunnel. However, 50% of the United Kingdom corridor sections are below the 740m standard compared to 20% which are above the standard, whilst 30% are not known. In Northern Ireland (United Kingdom) and in the Republic of Ireland

<sup>1</sup> The technical requirements below are subject to the provisos of art.1.4 and 7.2 of Regulation No 1315/2013

<sup>2</sup> Except in cases where the new line is an extension on a network the track gauge of which is different and detached from the main rail lines in the Union.

<sup>3</sup> Article 41.2: by 2030 except where physical constraints prevent such connection.

<sup>4</sup> Article 41.2: by 2030 except where physical constraints prevent such connection.

<sup>5</sup> Article 41.3: by 2015 except where physical constraints prevent such connection.

<sup>6</sup> Article 41.3: by 2015 except where physical constraints prevent such connection.

all sections are below 740m, but as they are classified in TEN-T as 'isolated networks'<sup>7</sup> they are exempt from this requirement.

**Track Gauge** – all corridor sections use standard 1435mm gauge, with the exception of those in the Republic of Ireland and Northern Ireland where 1600mm broad gauge is used; as 'isolated networks' these sections are exempted from the requirement.

**Electrification** – the continental branches of the rail corridor are fully electrified, although interoperability issues still arise owing to the use of different voltages. France uses 25kV mainly in the North, and 1.5kV on most lines in the South. Luxembourg uses 25kV electrification. Belgium uses 3kV on some sections and 25 kV on others such as the high-speed line and the "Athus-Meuse", the southern part of RFC2 connected to France and Luxembourg. In the next years other major parts of the Brussels – Luxembourg axis will also be equipped with 25kV. The Netherlands uses 1.5kV as standard, but most of the high speed line, and the Rotterdam port railway which are the backbone of the North-Sea Mediterranean Corridor in The Netherlands use 25kV. In the United Kingdom, around a third of the corridor network is not electrified, and a further 160km uses third rail electrification rather than an overhead power supply. In the Republic of Ireland and Northern Ireland, the railway network is not electrified, but these sections are exempt from this requirement as they are part of an isolated network.

**Line Speed** – all of the Member States allow line speeds of 100kph or more, for the majority of sections within the corridor. In the United Kingdom (not including Northern Ireland), 68% of the corridor has line speeds over 100kph, and for the remainder, line speeds typically vary from 64 Km/Hour (40 Miles/Hour) to 170 Km/Hour.

**Axle Loads** – France, Belgium, Luxembourg, The Netherlands and the United Kingdom (not including Northern Ireland), with minor exceptions do allow axle loads of 22.5 tonnes. In France, only the 16km link between Paris Nord and Gonesse, for example, does not permit axle loads higher than 20t. In Ireland, the weight limit is 18.8 tonnes. This parameter only applies to links where freight trains are operated.

**Signalling** - The issue which stands out in the majority of countries is the extent to which ERTMS has been implemented on the corridor. (See Commission Decision 2012/88/EU<sup>8</sup>). Luxembourg, The Netherlands and Belgium have either implemented ERTMS in full (Luxembourg) or in part, but the United Kingdom and France have yet to deploy ERTMS on the corridor sections. France is currently drawing up a plan for ERTMS deployment taking into account system obsolescence, and the corridor sections from Longuyon to Basel, will be amongst the first to be upgraded. In Belgium, a program for the full deployment of ETCS on railway lines has been planned for Belgian railways up to 2022. The Netherlands equally have a programme for the deployment of ERTMS. Ireland is exempt from this requirement.

## **Road**

Technical requirements for road refer mainly to safety and sustainability issues, as well as the implementation of interoperable tolling schemes where applicable.

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<sup>7</sup> Regulation 1315/2013, Article 39, paragraph 2.

<sup>8</sup> 2012/88/EU: COMMISSION DECISION of 25 January 2012 on the technical specification for interoperability relating to the control-command and signalling subsystems of the trans-European rail system.

**Road Standard** – Core links are required to be either motorways or express roads. In the North-Sea Mediterranean Corridor, virtually all of the core links comply with this standard, but there are certain last mile connections to seaports, including Zeebrugge and Cork, where current road standards are not adequate for the level of traffic.

**Secure Parking Areas** – The availability of secure parking has been determined from the European Truck Parking Area Label certification system and IRU TransPark map. Parking facilities have been classified according to the facilities they provide. Ireland, the United Kingdom, The Netherlands and France have parking areas at the required distances along the Corridor, some of which have security guards, fencing, flood-lighting and security cameras. However, further work is likely to be required in the United Kingdom and Ireland to enhance provision for safe and secure parking for Heavy Good Vehicles with, for example, security fencing and CCTV. In Belgium there are a large number of parking areas, but only two have been certified by the EU Label Project<sup>9</sup>: one in Wetteren (E40) and one in Minderhout (E19). In Luxembourg, six parking areas are listed, but none have IRU ratings.

**Availability of Clean Fuels** - In Belgium there are two LNG fuelling stations for trucks in Kallo and in Veurne (not in core network). Three more clean fuel stations are planned in Belgium; one in Gierle (E34), one in Kalken (E17) and one in Kruishouten (E17). France, Ireland, The Netherlands and the United Kingdom all have LPG stations. In the United Kingdom there are six stations providing LNG between Glasgow and Dover<sup>10</sup>. These foreseen initiatives will have to comply with the Commissions new policy on e-charging, LNG, CNG, hydro energy as mentioned in Directive on the deployment of alternative fuels infrastructure<sup>11</sup>.

**Use of Tolls** – France is the only corridor country where tolls are paid for the majority of corridor motorway links. Belgium and Luxembourg are also considering introducing a distance based tolling system. In the United Kingdom, the Dartford Crossing on the M25 is also tolled, which is an important link for international traffic bypassing London towards Dover and there are also tolls on some sections of the motorway network in Ireland. Member States should aim to achieve interoperability of tolling systems on the whole corridor. .

## **Ports**

Seaports are required to offer rail connections by 2030<sup>12</sup>, and if relevant, waterway connections. In addition they should offer clean fuels, and promote Motorways of the Sea (MoS).

**Rail Connections** – in Belgium, France, Ireland, and The Netherlands all seaports have direct rail connections. In the United Kingdom, there are two ports, Dover and Belfast without active rail connections. Dover faces physical constraints in bringing a rail connection to the main Eastern Docks and, although there was an active connection to Western Docks related to a train ferry service (now closed) there are likely to be costly enhancements required to railway tunnels to the west of Dover to allow competitive intermodal rail freight services to operate to and from the port; in addition, Dover's existing unit load traffic is almost entirely fast-moving driver accompanied RORO traffic which would not transfer to rail. For through Channel Tunnel intermodal rail freight services, there is, in any case, spare capacity on the

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<sup>9</sup> Annex I of EC Handbook for Labelling – Truck Parking Label – January 2011

<sup>10</sup> <http://www.ngvaeurope.eu/get-directions>

<sup>11</sup> Directive 2014/94/EU of 22 October 2014

<sup>12</sup> Except where physical constraints prevent such connection.

same geographic axis via the Channel Tunnel between Folkestone and Calais. Belfast has a railway line around its perimeter, but given the nature of the port's traffic and the port's inland distribution needs to serve a mainly regional hinterland, is unlikely to need to activate a direct rail link. The United Kingdom is therefore, in effect, also compliant. In Ireland the rail connection to Cork is not currently in use and would require investment to bring it back into use as a working rail freight line. Although Shannon Foynes is not on the Corridor itself, it is a core port and therefore plays an important role in the interconnections with both rail and Motorways of the Sea. There are other ports and regions which are not on the Corridor given their peripheral position but which could still benefit from being linked to the Corridor either directly to the Core Network or via the Comprehensive Network.

**Waterway Connections** – are only required for seaports in Continental countries. The Netherlands and Belgian ports all have waterway connections of CEMT IV or (usually) higher. In France, Dunkerque and Fos-sur-Mer both have waterway connections of CEMT IV or higher. Calais is accessed via the class 1 Calais-St-Omer canal, but given the traffic profile, which is mainly RORO, there is no immediate case for upgrade. Marseille, which is the Eastern part of the Marseille/Fos core node, does not have direct inland waterway access. Although Le Havre is situated on the Atlantic Corridor, its situation matches in many ways the situation of the ports located in the UK and Ireland. Furthermore, Le Havre and the Seine-Escaut are clearly interlinked.

**Clean Fuels** - Several corridor ports in France, Belgium and The Netherlands are developing LNG bunkering facilities<sup>13</sup>. In the corridor ports these are at different stages of development. Bunkering by truck has been available at e.g. Antwerp and Rotterdam since 2011/12. Since 2013, LNG has been used for inland waterway barges at Rotterdam and Amsterdam, and a broader range of LNG bunkering facilities are available for maritime vessels from Rotterdam, Antwerp and Zeebrugge amongst others. Finally, the Port of Dunkerque is also developing LNG bunkering facilities in coordination with the port of Dover.

**Inland Waterways** - The four continental countries within the North-Sea Mediterranean Corridor all contain core inland waterway networks. No core network waterway links are defined in the TEN-T Regulation for either the United Kingdom or Ireland.

In The Netherlands, the through-route waterways related to the North Sea Mediterranean corridor must all be classed as at least CEMT V. National waterways (new waterways and upgrades) are now designed according to the CEMT Vb (e.g. the Meuse) or CEMT IV (e.g. Zuid Willemsvaart) classification and are all in compliance with the TEN-T standard. This height restriction applies to vessels with two layers of containers. National waterways are now designed (new waterways and upgrades) to CEMT Va specification, with 3.5 metres draught and clearance for four containers (9m). On international routes, CEMT Vb, and 7m air draft (three containers) are required<sup>14</sup> as the European standard. For CEMT Vb, the air draft in The Netherlands is 9.1m.

Due to high concentration of transport volumes around the Dutch and Flemish ports, priority should therefore be given to further developing the waterway connections between France and Belgium/the Netherlands: in the east via the Meuse and in the west via the Seine and the Scheldt Canal. To ensure good connections from the south to the ports of Rotterdam/Amsterdam and to the IWW network of the Baltic and

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<sup>13</sup> See: Wang, Notteboom, 2014.

<sup>14</sup> Waterway Guidelines, 2011, Rijkswaterstaat.

Rhine-Alpine corridors, attention must also be paid to the northern part of the corridor.

In addition, freight volumes via Rotterdam and Amsterdam linking up with the IWW network of the North Sea Baltic and Rhine Alpine corridors have grown in recent years and that trend is expected to continue over the years to come. Despite measures already being taken as part of the Better Use programme to optimise the Volkerak, Kreekrak and Krammer locks, it will still be necessary after 2020 to expand the lock systems which will require major investments. With regard to the eastern IWW network, improvements of the navigability of the river Meuse, which connects Namur, Liege, Venlo-Venray and Nijmegen still need to be done. Moreover, Venlo which offers a multimodal connection with the North Sea Baltic and the Rhine Alpine, situated on the rail lines between Rotterdam and Germany/Italy and with IWW connections with ports in Belgium and Germany, will need to see significantly expand its existing rail and barge transfer points.

In Luxembourg the only core network connection is the CEMT V Moselle which connects to the Rhine at Koblenz, and for a short distance towards Metz in France and which is part of the Rhine Alpine Corridor.

In Belgium, there are a few short stretches of waterway in the corridor which limit vessel size below CEMT IV. This applies for example to the Bossuit-Kortrijk Canal, where 25% of the total length does not yet meet the criteria and also to a part of the Bocholt-Herentals Canal. Moreover, in the Upper Sea Scheldt it is difficult to navigate with Class IV ships, due to the tide. The Brussels-Charleroi canal is listed as a Class IV waterway but its current profile is less than optimal for shipping with Class IV ships. National waterways are now designed to Class Vb. The upgrading of the Seine-Scheldt connection to Class Vb will take place along two main axes: (1) Class Vb<sup>15</sup> via the Borderlys and the Lys rivers between the French border and the town of Deinze, the diverting canal of the Lys, the canal from Ghent to Ostend and the Ring Canal around Ghent as far as the canal from Ghent to Terneuzen and (2) Class Vb via the Upper Scheldt from the French border with Wallonia, the connection to the Ring Canal around Ghent and the Upper Sea Scheldt to Antwerp. This implies that some bridges on the axes have to be elevated and that the locks have to be modified. The heavily used Albert Canal also faces gauge, capacity and reliability issues. Bridge heights constrain vessels to load only two layers of containers and the Wijnegem lock compound has insufficient capacity leading to reliability issues. Concerning the Port of Zeebrugge, the lack of connection between the Port and the Seine-Scheldt also has to be established.

In France all currently defined inland waterways within the corridor are either CEMT class IV (8% of the total length) or V (92% of the total length), hence complying with TEN-T standards. However, the three main waterways, the Seine/Oise, the Rhône/Saône, and the Escaut are inter-connected with CEMT II or lower grade links<sup>16</sup> in the comprehensive network. Furthermore, only 64% of the corridor waterways satisfy the criterion for minimum height under bridges. In the Northern part of France, most links do have a 5.25m height under bridges. This is the case for the Dunkerque-Valenciennes canal, the Deûle, the Haut-Escaut. On the Oise, the height under bridges is also limited to 5.25 metres and in Paris, the Seine has a limited height of 5.15 meters. The future Canal Seine-Nord Europe which is the major missing link for the European inland waterway network is expected to match the same standards as the rest of the Seine-Escaut global project. Much of the Saône waterway is limited to 4.40m.

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<sup>15</sup> Infrastructure is accessible to Class Vb vessels, but they can only pass each other in certain dedicated sections.

<sup>16</sup> The interconnecting CEMT II (or lower) links are not part of core network.

Locks are an important limiting factor for inland waterway transport, both in terms of vessel sizes and the ability of the transport system to handle greater throughputs.

### ***Airports***

There are all together 26 core airports along the North Sea Mediterranean Corridor. Out of these 26 core airports, 15 airports (Dublin, Gatwick, Heathrow, Luton, Stansted, Birmingham, Edinburgh, Glasgow, Manchester, Brussels, Amsterdam, Paris CDG and Orly, Lyon and Nice) have to be connected to the rail network, except where physical constraints prevent such a connection according to the Regulation. Out of these 15 airports, 4 are not currently connected to the rail network (Luton, Edinburgh, Glasgow and Dublin).

**Road Connections** – all airports in the corridor have high quality road connections.

**Rail Connections** – According to the TEN-T Regulation<sup>17</sup>, the main airports indicated in the Part 2 of Annex II must be connected with the railway and road transport infrastructure by 2050 except where physical constraints prevent such connection. Airports without rail, tram or metro connections are Liège, Lille, Dublin, Cork, Luxembourg, Rotterdam-The Hague, London-Luton, and Glasgow. London Luton, however, is near a railway station (about 2km), and uses a shuttle bus service to connect the airport to the station. Glasgow is around 1 km away from a suburban railway station (Paisley) with a bus service to connect the airport to that station. There are also shuttle bus services from the airport to Glasgow's main rail stations (8 km.). In Ireland studies are underway to examine the technical and economic feasibility of various options to provide a heavy or light rail or Bus Rapid Transit link between Dublin airport and the city centre.

### ***Road/Rail Terminals***

Inland ports and road/rail terminals are listed in the TEN-T Regulation. Any given core node may contain several freight facilities, offering road to rail, road to waterway, and/or tri-modal accessibility. Some are terminals at seaports for barges or rail services, others are inland multimodal platforms, or logistics hubs containing either industrial or warehousing facilities. They handle a range of traffic types, some being specialised for containers, and others handling conventional cargo. The Albert Canal node refers to a long stretch of waterway, where there are many industrial facilities with their own wharves, rather than a specific inland terminal.

Given the wide range of contexts and operational possibilities, and the lack of criteria for specifying precisely which facilities are included or excluded in the corridor, it is advisable to further study the ways to characterise inland and road/rail terminals.

## **3. Results of the transport market study**

The results of the market study presented in this chapter have been inserted in the Work Plan in order to illustrate the traffic flows, demands and future prospects. These results are available in an integral manner in the study that has been published end of 2014<sup>18</sup>.

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<sup>17</sup> Regulation EU N°1315/2013 on Union Guidelines for the Development of the trans-European transport network

<sup>18</sup>Website: [http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/corridor-studies\\_en.htm](http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/corridor-studies_en.htm)

Obviously, these results will be used and further deepened in the works undertaken in 2015-2016, when analysing the list of projects and elaborating the next generation of the Work Plan.

In overview, the North Sea Mediterranean corridor covers a large number of the most economically active cities and regions in Europe, as well as being the location of many of Europe's largest gateway ports. It has a clearly defined central area (London-Paris-Amsterdam).

Base year data for the corridor shows high levels of activity, with intra-corridor freight flows amounting to 1.029 billion tonnes. These are heavily concentrated within the central part of the corridor, meaning Southeast England, Northeast France, Belgium (especially the Flemish region) and The Netherlands.

Volumes in the corridor represent a disproportionately high share of EU27<sup>19</sup> volumes. For example, total port throughput in corridor countries is 1.629 billion tonnes, more than 40% of the EU27 total. Corridor (core network) ports handle 1.256 billion tonnes of cargo, including both short-sea and deep-sea traffics. They handle 31.468 million TEUs, and 34.1 million passengers. Airports in the corridor handle 56% of EU27 air cargo.

**Table 2: Corridor Traffic Shares of EU27 Volumes**

	2012 Volume	Share of EU27	Basis
Road (bn TKm)	464.0	26% of EU27	6 NSMED MS
Rail (bn TKm)	61.5	16% of EU27	6 NSMED MS
Inland Waterway (bn Tkm)	59.3	40% of EU27	6 NSMED MS
Total <sup>20</sup> Airports (m Tonnes)	7.5	56% of EU27	6 NSMED MS
- Core Airports (m Tonnes)	6.9	52% of EU27	Core Airports
- Core Airports (m Pax)	380	46% of EU27	Core Airports
Total <sup>21</sup> Ports (m Tonnes)	1,629	44% of EU27	6 NSMED MS
- Core Ports (m Tonnes)	1,256	34% of EU27	Core Seaports
- Core Ports Containers (m TEU)	31.4	34% of EU27	Core Seaports
- Core Ports Passengers (m)	34.1	8% of EU27	Core Seaports

Source: Eurostat, and operators' websites.

<sup>19</sup> There are currently no EU28 statistics available.

<sup>20</sup> Total in six corridor countries.

<sup>21</sup> Total in six corridor countries.

The analysis of future flows has focused on examining demand-side issues for both passengers and freight, including available official forecasts that have been produced by or for the Member States.

Market analysis indicates that although headline activity indicators such as population and economic growth are at modest levels for the EU as a whole, there is substantial absolute growth expected within the North Sea - Mediterranean Corridor, linked to the attractiveness of the major cities, and the faster-than-average growth in long-distance traffic, especially inter-continental container traffic with East Asia which naturally feeds directly into the corridor's networks.

Economic and demographic data shows that there is essentially a clustering of economic activity within the centre of the corridor, creating population growth around the major cities, and transport growth, linked also to the establishment of global hubs at the major container ports and airports. Economies of scale associated with the use of large container ships result in maritime internal and external transport costs being much lower (per tonne-km) than inland costs, so shipping lines who face intense competitive pressures therefore focus their activities upon the ports that give them nearby access to these population centres. In this context it means shipping lines are bringing the largest volumes of containers into the range of ports between Le Havre and Hamburg on the continental side and between Southampton and Felixstowe on the United Kingdom side.

The degree to which demographic and economic clustering stimulates transport volume growth creates a high potential risk for the corridor, which is still highly dependent upon road transport for inland transport. However, all of the core continental seaports are actively developing facilities and programmes to develop multimodal hinterland networks, and there is sufficient critical mass of cargo to make this feasible. Such initiatives need to be helped by providing the necessary rail and waterway networks to raise the shares of these inland modes to levels observed, for example in the parallel corridor between the Dutch and Flemish ports and the German Ruhr area.

Forecasts currently published by the corridor ports typically indicate expectations of throughput increasing by 50% or even 100% by 2030, with the container sector growing the fastest. Available national forecasts suggest that corridor port throughput has the potential to increase by an additional billion tonnes, of which around 60% would be distributed inland via the hinterland networks belonging to the corridor. If all ports can achieve waterway shares similar to Rotterdam, Amsterdam and Antwerp, and rail shares similar to Zeebrugge or Hamburg, much of the expected growth can be absorbed 'off-road'. Largely this depends upon solving bottlenecks inland, raising the performance of the inland rail and waterway networks south and west of the Rhine, where non-road modal shares are still low, and developing networks of inland multimodal platforms as logistics hubs.

In the continental part of the corridor, attention must therefore focus on improving rail and waterway transport. For waterways, market shares in the corridor are low overall (around 7% of total transport) and falling. Moreover, volumes are heavily concentrated on sections leading towards the Rhine, so there is a need to develop other parts of the network. Routes on the Maas/Meuse, the Albert Canal, the Escaut/Scheldt including the Canal Seine Nord Europe, and Lys/Leie waterways still require upgrades to remove bottlenecks, and the French waterway basins along the Seine, Oise, Marne, and Saône/Rhône are essentially cut off from the Dutch and Belgian networks.

In the case of rail freight, traffic shares for cross-border are also low inside the corridor, in comparison with either national traffics or on parallel routes e.g. from Germany or between the Alpine countries. There is a particular need to address rail bottlenecks in France e.g. Lyon, Lille, Metz, Strasbourg and Paris and to solve loading gauge problems in order to allow the two main axes (Paris-Amsterdam, and Marseille-Luxembourg-North Sea as well as Rotterdam-Antwerp-Basel) to reach their full potential. Achieving the technically feasible 740m train length in Belgium for a greater number of train paths is also necessary.

In contrast to the situation on the Continent, the market issues in Ireland and regions of the United Kingdom including Northern Ireland focus on peripherality, cohesion and accessibility. In Ireland, the development of the public transport system, particular the DART Underground Programme and its sub-projects will contribute towards alleviating the isolated nature of Ireland's economy. The Interconnector/Dart Underground programme will substantially improve connectivity, linkages and integration between the island of Ireland and other Member States. While there is a risk of Europe's economic centres crowding out development in more peripheral areas, there is a need to support the recovery of economies which have been severely hit by the Eurozone crises. Ireland and Northern Ireland depend to a great extent upon short-sea container services for trade with continental Europe and via hubs to the rest of the world, and upon ferry services for trade with Great Britain and the continent. The combination of depressed demand and the potential impact of higher transport costs arising from the need to cross the SECA area, create the potential for fewer services, lower service frequencies and higher freight rates between the more peripheral areas and the core areas of the corridor. Unlike many regions in the corridor, Ireland and Northern Ireland depend on feeder container services to connect its ports to global container networks, so there is a need to offset this disadvantage. Improving inland (road) and maritime (including Motorways of the Sea) access to core ports is therefore a step towards achieving greater cohesion.

For the mainland United Kingdom, issues of accessibility and cohesion are also important, but to a lesser degree because of the critical mass of economic activity especially around London and the South East. Traffic analysis shows that there has been a strong trend for transport flows with the continent to become concentrated on the North-Sea Mediterranean Corridor links via the Short Straits, strengthened by the construction of the Channel Tunnel. Apart from the notable exception of Eurostar passenger rail services, most of this growth has led to greater numbers of lorries and cars using long distance motorway connections, via the M25 around London and bottlenecks such as the Dartford Crossing, to reach the port of Dover and the Eurotunnel terminal (near Folkestone). Both the Dover-Calais and Dover-Dunkerque route suffer from RORO capacity issues due to the growth of cross-Channel traffic, which also leads to road congestion in France between the A16 motorway and the Dunkerque RORO terminal. In the short term this puts additional pressure on RORO port capacity in Dover, Calais and Dunkerque, but it also signals the need for longer term solutions such as boosting North Sea routes (United Kingdom East Coast to The Netherlands and Belgium), increasing the amount of through-rail freight via the Channel Tunnel, and the consideration of measures to add capacity to the Thames road crossings.

In the United Kingdom container sector, which covers both global and European connections, growth has focused around the two main ports of Felixstowe and Southampton. In addition, a new container port has been developed at London Gateway on the Thames. These factors have tended to draw traffic towards the south-east corner of Great Britain. However, the Port of Liverpool, with a more central location in Great Britain on the west coast, is developing a new container

terminal on the River Mersey with the objective of securing additional traffic via a container port in the north of England.

So, therefore, while the United Kingdom is heavily dependent on North-Sea Mediterranean Corridor sections to maintain the efficiency of its networks, it also has the potential to develop parallel or East-West routes involving longer sea crossings and shorter inland road or rail hauls, as well as long distance rail freight through the Channel Tunnel.

#### **4. Critical issues on the *North Sea Mediterranean Corridor***

Congestion, together with its cumulative effects upon freight and passenger traffic at certain points in the corridor is the basis for a loss of efficiency in the different countries of the corridor, currently leading to reduced journey time reliability for freight in the corridor. Speed limitations, as well as capacity (for example, on the southern sections of the West Coast Main Line in the United Kingdom), train length restrictions (especially in Belgium), and interoperability issues related to signalling, loading gauge and power supply represent a few of the main technical constraints for rail transport.

One of the aims for the corridor is to encourage modal shift by making better use of existing infrastructure, and here there is great potential offered by developing the waterway networks. Today, traffic volumes are heavily concentrated around the Flemish and Dutch seaports and in the waterways leading towards the Rhine corridor, but the network can be extended by adding the connection between the Seine and Scheldt rivers, and improving the navigability of the Meuse/Maas routes in Wallonia and the Southeast of The Netherlands. In this way, waterway transport can be developed as a sustainable alternative to road transport for a wider range of longer-distance routes within the corridor.

Work is also needed to improve capacity in parts of the waterway network where there are currently high volumes of traffic, such as on the Ghent-Terneuzen waterway and in the busy lock systems in-between Antwerp and Rotterdam, for example.

##### **4.1 Cross-border issues**

One of the foremost issues to be solved is the fact that the three main French waterway basins, the Seine/Oise, the Rhône/Saône and the Escaut are not connected with each other via CEMT IV class routes. The foremost missing link, the canal Seine-Nord-Europe, upon completion, would link the Seine Basin with the northern-western waterways of the Benelux countries via Ghent/Terneuzen and Liège and encourage modal shift on the whole corridor.

The major bottlenecks identified for the Corridor call for cross-border projects to optimise interoperability and intermodality of European transport networks. In particular, several waterway projects aim at improving inter-basin connections, in particular between the three basins of the Seine, the Escaut (Scheldt) and the Rhône. The most advanced project is the Seine-Escaut, with its main component, the canal Seine-Nord-Europe.

## Seine-Scheldt Missing Link

Figure 2: Location of Canal Seine-Nord Europe



The map shows how all the seaports in the range between Dunkerque and Amsterdam are connected to a dense network of rivers, canals, and associated inland ports and industrial areas. The Seine-Scheldt project aims to extend this network by completing the link between Paris and Belgium, thus also giving access to the Oise and Seine Rivers, as far as the port of Le Havre, and the Atlantic Corridor. This would offer two new routes; (1) the route Paris-Lille-Ghent-Terneuzen/Antwerp-Rotterdam-Nijmegen, and (2) the route Paris-Namur-Liège-Venlo-Nijmegen either towards the Rhine or towards Utrecht and Amsterdam.

The scheme aims to increase industrial performance with more efficient logistics, stimulate innovation in port logistics with the emergence of waterway/rail combined transport services, contribute to maritime ports' development strategies for high-volume modes of transport on the North Sea–Mediterranean corridor, contribute to a reduction in road congestion in the region, and contribute to the deployment of urban logistics based on inland waterways in large urban areas along the corridor.

Capacity constraints also exist in the Albert Canal: height under bridges, lock capacity at Wijnegem and CEMT class gauge are limited. An improvement of these characteristics at a European scale is important to ensure a sustainable import and export of goods. Specific requirements are mandatory in order to cope with the traffic forecasts increase and to facilitate the modal shift from road to inland waterway from medium and long term distance journeys as well as remove the bottleneck. Moreover, the lack of connection between the Port of Zeebrugge and the Seine-Scheldt also has to be addressed.

### ***Ghent-Terneuzen Canal Bottleneck***

Related to this, there is an important bottleneck at the locks that allow access to the Ghent-Terneuzen Canal, and important cross-border link between Belgium and The Netherlands.

The canal is accessible through a lock complex situated in Terneuzen on Dutch territory, consisting of three locks: one lock large enough for maritime navigation and two inland navigation locks. In 2011, 70 000 vessels passed through the locks in Terneuzen, the majority being inland vessels. Due to the increase of inland navigation traffic at the lock complex, the maritime lock is also used for inland vessels. Currently more than 60% of all vessels using the maritime lock are in fact inland vessels. By replacing one of the smaller locks with a new lock, the existing lock can be used for maritime and inland navigation, thereby increasing capacity for both types of vessel.

In particular for inland vessels, improved capacity at the lock compound in Terneuzen will be increasingly important, as the canal is part of the Seine - Scheldt corridor which is to connect the French inland waterway network with the Belgian, Dutch and German inland waterway networks. Capacity problems for inland navigation, due to existing traffic and expected increase of traffic in the area as a result of the opening of the Seine-Nord canal in France in 2023, are expected if no action is undertaken now.

### ***Brussels-Luxembourg railway axis***

Cross-border issues relating to other modes of transport have also been identified along the North Sea Mediterranean corridor.

The speed limitation on the Brussels-Luxembourg axis is considered as a bottleneck for passenger rail transport. A second issue on this section concerns specifically the passage to a modern 25 kVac electrical power supply system. This passage, which is also a condition for the increase in speed, must be realised in a coordinated way in order to guaranty the interoperability on this axis.

## **4.2 Related short-sea transport issues**

While cross-border inland waterway transport offers great potential for modal shift and increased freight capacity in the central part of the corridor, short sea shipping has great potential to increase accessibility to the centre from the more peripheral regions. Accessibility and connectivity are definitively critical issues within the North-Sea Mediterranean Corridor owing to the way in which the corridor is fragmented both in reaching and crossing the two main island regions. For the regions in questions, especially in Ireland, Northern Ireland, Scotland and Northern England, lack of accessibility is seen as a barrier towards economic development and cohesion. The study has identified certain 'last mile' bottlenecks in a number of core network ports in these regions, which if addressed can improve the efficiency of logistics chains involving short sea transport. Moreover, a clear request has been made by peripheral regions such as the North and West of Ireland, North and East of Scotland and Wales to be connected with the core network notably via Motorways of the Sea and the comprehensive network. The Corridor can therefore enable these regions not to be isolated.

In the North Sea Mediterranean Corridor, there are implied short sea links completing the corridor, and there are also connections across corridors, and in particular with the Atlantic corridor, the Mediterranean corridor and the NS-Baltic corridor. Motorways of the sea (MoS) provide the maritime dimension of the trans-European network, including both comprehensive and core ports, sea transport, and sea-river transport.

The objective is to establish networks of viable, regular and reliable short-sea services integrated into logistics chains.

### **4.3 Port hinterland connections**

Ports play three important roles in the corridor, (1) as international gateways for trade with the rest of the world, (2) as an integral part of the corridor connecting inland to short-sea networks, and (3) as hubs for inland waterway transport. Recent indications are that these roles will be strengthened as traffic levels grow, drawing attention to the efficiency of their hinterland connections, including the 'last mile' issues which affect both maritime and inland ports.

In the continental ports, inland waterway connections are used to a large extent for moving seaborne traffic inland. However, rail connections are less well developed, and there are also serious issues of road congestion for most ports in their immediate catchment areas. For the two major United Kingdom container ports of Felixstowe and Southampton, inland rail links need to be improved by removing bottlenecks on the main hinterland rail routes towards Birmingham, which are not fully electrified, with partly single track and loading gauge restrictions. In Ireland and Northern Ireland, road connections inland are paramount, allowing the heavy goods traffic generated by the ports to bypass the immediate urban areas in order to reach the motorway network.

### **4.4 Interoperability constraints**

In terms of rail transport, the difference of electrification systems between the countries of the corridor, in particular in the Benelux, constitutes a key issue. Belgium uses 3 kV and 25 kV on some lines (HSL, line "Athus-Meuse" - southern part of RFC2 connected to France and Luxembourg). In the next years a large part of the Brussels to Luxembourg axis will be equipped with 25 kV. 25 kV electrification is already in use for the major cross border lines between France, Belgium, Luxembourg and The Netherlands:

- Rail freight corridor line "Athus-Meuse" connecting the south of the Belgian territory to France and Luxembourg;
- High Speed Line Brussels –Lille – Paris;
- High Speed Line Antwerp-Breda-Rotterdam. The harmonisation of the electrical systems has to be considered over a very long term.

The Netherlands uses 1,5kV as a standard. The French network uses two different standards: 1.5kV (mainly in the South) and 25kV (mostly in the north and on new lines).

In the United Kingdom, a significant part of the corridor is still non-electrified, and where it is electrified, different voltages may be used. Between London and the Channel Tunnel for example, the HS1 (high speed, mainly passenger) line uses an overhead 25kV power supply, while the conventional line uses Third Rail 650/750v DC.

Regarding signalling, ERTMS deployment aims to foster interoperability, facilitate increased capacity and to improve safety and security. However, deployment is still at a low level in the countries of the corridor. The pace of ERTMS implementation differs depending on the country, creating possible future ERTMS gaps.

ERTMS is one of the most important and complex tools of interoperability: next to technical problems, often political, operational or project management/implementation related difficulties can hamper the progress. In order to overcome those difficulties, the European ERTMS Coordinator established in cooperation with the railway sector a so called Breakthrough programme for ERTMS that is described with details in his Work Plan. This programme consists of a limited number of objectives to be reached by 2016. One of those objectives is the review of the currently valid European Deployment Plan (EDP).

In addition, deployment along corridors shall start at the cross-border sections that require close cooperation with the neighbouring countries (Ministries, IMs, NSAs). Such cooperation will facilitate the further equipment along the corridors and will contribute to reducing the cost of ERTMS deployment, since technical solutions need to be found only once.

The ERTMS section of the Work Plan for the Corridor will be further developed in cooperation with the European Coordinator for ERTMS in his Work Plan which will serve as a basis for discussions and negotiations with the Member States in the first half of 2015. The detailed planning for the first step will be finalised by the end of 2015. The remaining sections (to be completed between 2020 and 2030) will be subject to discussion and detailed planning in 2016.

Regarding road transport, differences in road haulage regulations between the various countries of the corridor (in terms of the hours when vehicles can use the networks) currently lead to parking areas congestion and saturation at the borders. This is a critical issue for the corridor that will need to be addressed and linked to other related issues such as Intelligent Transport Services and alternative fuels.

For inland waterways, it is important to highlight that the standardisation of infrastructure is also advantageous. This standardisation is needed for locks characteristics as well as at nodes such as inland ports and seaports to reduce investment costs and improve user friendliness.

#### **4.5 Intermodality constraints**

Improved connectivity of seaports, inland ports and airports to European rail and road networks is crucial to fully exploit the potential for multi-modal transport within the corridor. Substantial growth in inland intermodal transport is expected for the future (around the year 2030) as a direct result of growing port volumes, which will require enhanced capacities from container transshipment terminals. Throughout the corridor, there is a need to match the growth in port-related traffic with the available capacities at inland ports and road/rail terminals.

In the United Kingdom Strategic Rail Freight Interchanges (rail-connected distribution parks) are crucial commercial developments supported by the UK Government in its National Networks National Policy statement to allow for the efficient inland movement of freight to and from ports and to provide trading links with neighbouring European countries, but there is a lack of existing SRFI capacity in the London/South East area.

Cross-border rail focuses upon the cross-border routes between The Netherlands, Belgium, Luxembourg and France, creating a corridor from the Randstad region via Brussels to Strasbourg and Basel. Towards this aim, the removal of bottlenecks such as the North-South link in Brussels, and the upgrade of the passenger line to Luxembourg (EuroCap Rail) are necessary.

Between the United Kingdom and France, since only the HS1 route is included on the corridor through Kent from the Channel Tunnel to London, it is most likely that capacity for freight services on the corridor will be limited to night-time services. However, the conventional route through Kent, which has sufficient capacity for freight paths, will be included on RFC North Sea Mediterranean Corridor, so it will therefore be necessary to assess the interoperability issues related to loading gauge, and power supply on this line, in order to achieve the full potential for increased cross-border rail freight between France and the United Kingdom. This important rail link should be considered for inclusion in the core network corridor.

## **5. Objectives of the *North Sea Mediterranean Corridor***

The transformation of the European transport system in a coherent network requires a combination of initiatives at all levels and for each transport mode. As restricting mobility is not considered to be an option, the implementation of this network should increase the competitiveness of transport in Europe, through global reductions of external and internal costs and increasing use of more sustainable transport.

Regulation 1315/2013 contains both high-level strategic objectives for the TEN-T network as a whole, as well as specific infrastructure-related requirements. On the one hand, therefore, the measures need to address functional objectives such as cohesion and sustainability, but on the other hand there are technical requirements for the physical capabilities of the corridor infrastructure, that underpin the goal of achieving greater interoperability in future.

Physical, or operational corridor objectives related to efficiency and sustainability include:

- Removal of infrastructure bottlenecks and filling missing links as detailed under the critical issues above, especially the inland waterways of the corridor. Notably the Seine-Scheldt is paramount as well as bridge clearance for waterway vessels along the canals.
- Efficient use of infrastructure, in particular access routes to the major ports of inland waterways, roads and rail.
- Further strengthening of the capacity of the ports supporting Motorways of the Sea, and the application of the logistics chain concept.
- Upgrading of infrastructure quality level, notably through interoperability deployment of ERTMS and other technical specifications for rail.

A way to broaden the perspective is to regard the corridor in terms of its economic functions, such as promoting trade, development and sustainability through the provision of “better” services and by connecting centres of activity, i.e. territorial cohesion.

Individual corridor branches have entirely different characteristics and associated problems, and as demonstrated in the corridor study, the lists of critical issues are lengthy and diverse, without any dominant, shared problem. There is therefore no single context in which to define a set of common problems or objectives for the whole corridor. This depends on viewpoint and solving any specific bottleneck is unlikely to have more than a partial or indirect impact on the corridor as a whole. So whereas in

more straightforward circumstances, attention can be focused upon a limited range of operational objectives, such as improving a cross-border bottleneck, it is necessary here to broaden the scope and develop a more differentiated approach.

Considering the high-level, strategic objectives of TEN-T, the three main problem areas within the corridor are:

- **Lack of cohesion:** With a prominent clearly defined central area (London-Paris-Amsterdam), there is a variable quality of access from the periphery to the centre, and difficulty for long distance traffic to connect the large urban nodes.
- **Lack of efficiency:** With multiple instances of transport bottlenecks, there is sometimes a need for adding capacity where traffic is growing, bridging infrastructure gaps, and solving interoperability issues. Achieving improved connectivity and better use of existing infrastructure is also highly relevant, especially in terms of the roles to be fulfilled by multimodal platforms, and the increased use of intermodal transport such as unaccompanied combined transport (carriage of a motor vehicle not accompanied by its driver on another mode of transport (e.g. ferry or rail), or carriage of containers and swap bodies by several modes of transport (e.g. road-rail or Rhine ship-rail)). The use of routes such as some longer distance maritime routes to by-pass congested parts of the road network in North West Europe with direct links from Great Britain and Ireland to the continent and the Rhine-Moselle route from the Dutch and Flemish ports to Luxembourg and France also contribute to the better use of available infrastructure.
- **Lack of sustainability:** With road and air transport as the main passenger modes, and road as the main freight mode in many parts of the corridor, there is a need to increase modal shift, as well as to support technological measures to reduce externalities within each mode. It should, however, be recognised that for the northern parts of the United Kingdom and the Republic of Ireland passengers often have no practical alternative but to travel by air.

Combining the operational and strategic elements, a set of corridor objectives developed within the study are to:

**1. Improve level of service for longer distance links** – analysis of European trade patterns shows a steep decay effect in trade with respect to distance. The Netherlands, for example, exports 83 million tonnes to Belgium, 22 million tonnes to France, and only 5.7 million tonnes to Spain. More peripheral parts of the corridor such as the Republic of Ireland, Northern Ireland and Scotland rely on longer distance passenger and freight services to reach the central part of the corridor, but there has been a trend for more traffic between Great Britain and the continental mainland to use the Short Straits ferry crossings rather than longer sea crossings across the North Sea and the Western Channel or long distance intermodal rail services through the Channel Tunnel. On the continent, road congestion within the central area reduces the efficiency of longer distance road freight transport. Greater emphasis on longer distance maritime services, such as Motorways of the Sea that link Ireland and the northern areas of Great Britain to the continent and to the Atlantic coast of Europe can help to reduce congestion on these sections of the road network.

**2. Facilitate last mile access to seaports and airports** – TEN-T investments can support air and sea links through improved last-mile access, allowing inland flows to enter the core network avoiding congested urban areas. Many of the corridor's ports and airports e.g. in Amsterdam, Rotterdam, Antwerp and London feed inland traffic

into parts of the network which are already congested with mainly domestic and local traffic. This can be addressed with improved road connections (e.g. the Dublin Port Tunnel) and by improving access to rail and waterways<sup>22</sup>, such as the Felixstowe-Nuneaton rail link avoiding trains having to pass via North London to access the West Coast Main Line, and the Betuwe line which created a dedicated rail freight link from Rotterdam to the German border.

**3. Adopt TEN-T standards in corridor** – these requirements are designed to combine capacity improvements, especially for rail and waterway transport, with interoperability. Important aspects for the North Sea Mediterranean Corridor are: train lengths to be standardised at 740m, ERTMS signalling to be introduced on the corridor, further expansion of electrification, the raising of bridge heights on waterways to 7m, the upgrade of CEMT IV links in the waterway networks and the implementation of River Information Systems (RIS)<sup>23</sup>.

**4. Integrate cross-border initiatives (RFC North Sea Mediterranean)** – there are important anomalies between TEN-T core network corridor planning and the rail freight corridor planning (RFC). One issue concerns the need to coordinate the North Sea Mediterranean Corridor rail network adequately with the RFC North Sea Mediterranean network, which includes a greater number of parallel connections. The second is to address the full set of technical parameters identified by the related RFC, including electrical systems which are not harmonised, loading gauges (height above the rail), and gradients (which can be higher than the 12.5 per mill level). These need to be considered in a pragmatic way, over the longer term<sup>5</sup>. **Increase use of interoperable telematics technology** – especially ERTMS (ETCS train control system and GSM-R mobile communication system) for rail and RIS (River Information Services) for waterways.

**6. Develop network of inland terminals – logistical hubs** – in order to build inland multimodal networks including reinforcing inland ports as logistics platforms, the capacities of inland hubs (rail-connected, water-connected or both) for handling containers have to be matched to the potential volumes being handled in seaports. Inland hubs (logistical hot-spots) need to be working at a scale to allow frequent connections to be feasible. The RFC study shows the busiest terminals (e.g. in Rotterdam, Antwerp and Paris) have capacities of over 200,000 TEU, meaning more than 50 shuttles per week, but most are operating at around 100,000 TEU per year, with around ten connected cities each. These levels can be compared against seaport throughput of 31 million TEU in the North-Sea - Mediterranean Corridor, with estimates of volumes doubling by 2030.

**7. Develop greater range of combined transport services via rail and waterway** – it is not sufficient to upgrade infrastructure without also considering the role to be played by the market-led development of rail freight and waterborne freight services. Examples such as waterway transport in The Netherlands and rail transport between Germany and Italy show that non-road market shares can be improved by offering a wide range of services that are closer substitutes for road transport. Alpine rail services include conventional wagon-loads, services for container transport, other forms of unaccompanied combined transport such as piggyback and swap-body (road trailers via rail), and accompanied rolling motorway, which only exists through the Channel Tunnel in the North Sea Mediterranean Corridor. Whereas container trains and barges are needed for inland transport from seaports, other forms of intermodal transport, allowing road trailers to be carried, may be more relevant for intra-

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<sup>22</sup> Although it should be noted that there are no inland waterways included on the TEN-T in the United Kingdom.

<sup>23</sup> Subject to economic viability, Member State finances and physical constraints.

European flows. This is most likely to be achieved in the rail freight sector by full liberalisation of the rail freight sector in all Member States, so that market operators will be able to develop such services. In the United Kingdom, the full liberalisation of the rail freight market has been on-going for the last twenty years.

**8. Increase inland modal shares for rail and IWT at seaports, and rail at airports** – as demonstrated in the study, road, sea and air transport dominate the corridor for the cross-border traffics under consideration in the North Sea Mediterranean Corridor core network corridor. Total intra-EC cargo exchanges between corridor and neighbouring countries amount to 1 billion tonnes, and cargo handled within the corridor's core ports amounts to over 1.2 billion tonnes. Cross-border rail freight traffic in the RFC amounts to 21.8 million tonnes, and inland waterway traffic between corridor MS was estimated to be around 87 million tonnes, much of which (60%) were on the sections between Antwerp and Rotterdam. To allow waterway transport to expand significantly, it is necessary to upgrade parts of the waterway network in The Netherlands and in Belgium, and to create a CEMT V link between the Seine, the Lys and the Scheldt rivers in order to broaden the geographical area in which waterway transport is competing. All the corridor ports between Dunkirk and Amsterdam allow waterway connections to be made into this extended waterway corridor, and provide the critical mass of cargo to support services. Rail also offers potential for reducing dependence on road, especially on cross-border routes via France, and on the Brussels-Luxembourg-Metz route towards either Switzerland or towards Lyon. Levels of port-related road market share of below 50% are feasible in this corridor, with the remaining 50% accounted for by a combination of rail and waterway, depending upon the location.

**9. Extend access to clean fuels at core nodes.** With road and sea as the two main modes for freight transport in the corridor, one of the most direct ways to improve air quality and reduce greenhouse gas emissions is to promote the availability of cleaner fuels at seaports and motorway service stations respectively in compliance with the EC Directive on the deployment of alternative fuels infrastructure and with the EU policy on LNG, CNG, hydro energy. For sea transport within the Sulphur Emission Control Areas (includes Channel and North Sea), there is a requirement by the 1st January 2015 to reduce SOx emissions from 1% to 0.1%, a measure that will require significant adjustments to be made by shipping lines, which may lead to the installation of new technologies or use of new fuels, or both. Moreover, ports should be encouraged to provide access to sources of cleaner fuels.

## 6. Recommendations and outlook by the European Coordinator

### 6.1 Corridor specific elements and recommendations

#### *Economic conclusions regarding the corridor*

The corridor is characterised by high levels of activity today. There are high levels of transport volumes (44% of EU27 volume for total port throughput; 56 % of EU27 air cargo, and there is high growth potential, with high potential impacts and user/non-user benefits, to be achieved in part by making more optimal use of the multimodal infrastructure.

Market analysis indicates that there is substantial growth expected within the North Sea Mediterranean Corridor, linked to the attractiveness of the major cities, and the faster-than-average growth in long-distance traffic.

The study of the corridor also shows that economically and demographically there is essentially a clustering of economic activity within the centre of the corridor, creating population growth around the major cities, and transport growth, linked also to the establishment of global hubs at the major container ports and airports.

The corridor network has good infrastructure, developed over a long period of time, including some major success stories such as the Eurostar/Thalys high speed rail network, but high demand, and in certain cases, ageing infrastructure lead to persistent levels of congestion and a long list of bottlenecks. Renewal and modernisation are recurring themes.

It is therefore crucial that investments are made on the North-Sea Mediterranean Corridor because they address present-day issues which are closely linked with the long term development of the European economy, employment and trade with the rest of the world. Although a full list of projects has been drawn up, given the size of all the investments necessary for the Corridor, I am therefore focusing on the projects that can guarantee the quickest positive results and impact for the Corridor.

#### *High dependence on road transport and under-utilisation of other modes*

Relative to other corridors there is under-utilisation of waterway and rail, and therefore high potential for achieving greater balance across modalities. It is therefore recommended for the Corridor to focus on the development of long distance waterway and rail corridors, supported by new technology and the application of common technical standards.

It can be concluded, that the degree to which demographic and economic clustering stimulates transport volume growth creates a high potential risk for the corridor, which is still highly dependent upon road transport for inland transport.

Seaports as hubs are leading the development of multimodal distribution. This process needs to be supported by equivalent capacities in inland logistics hubs, and frequent multimodal services.

Port forecasts within the corridor typically indicate expectations of throughput increasing by 50% or even 100% by 2030, with the container sector growing the fastest. Available national forecasts suggest that corridor port throughput has the

potential to increase by an additional 1bn tonnes, of which around 60% would be distributed inland via the hinterland networks belonging to the corridor.

If all ports can achieve waterway shares similar to Rotterdam, Amsterdam and Antwerp, and rail shares similar to Zeebrugge or Hamburg, much of the expected growth can be absorbed 'off-road'.

The critical issue is not only related to the ports access but also to their location and connection with their hinterland. Therefore the logistics chain between production and consumption sites should be reinforced, in particular through the development of the port platforms.

To address the risk of over-dependence on the road transport, I believe that we in the coming years must look to the actions and initiatives taken by the core continental seaports in the corridor which are actively developing facilities and programmes to develop multimodal hinterland networks, and there is sufficient critical mass of cargo to make this feasible.

Such initiatives need to be helped by providing the necessary rail and waterway networks to raise the shares of these inland modes to levels observed, for example in the parallel corridor between the Dutch and Flemish ports and the German Ruhr area and in particular raising the performance of the inland rail and waterway networks south and west of the Rhine, where non-road modal shares are still low, and developing networks of inland multimodal platforms as logistics hubs.

I would therefore encourage projects such as the Canal Seine-Nord Europe for France, a number of Belgian projects which will improve the connections between the Escaut and the North along two axes, one via Ghent/Antwerp and the other via Liege, the Terneuzen lock for The Netherlands or EuroCapRail for Belgium and Luxembourg to be given a high level of priority over the next few years.

### ***ERTMS***

For rail, there is significant work to be done to achieve TEN-T compliance and to address all of the issues identified by RFC. ERTMS deployment is currently low, but it is feasible to achieve interoperability on the corridor "C" sections between The Netherlands, Belgium, Luxembourg, France and the Swiss border, by 2020.

It is therefore recommended that the first priority for the deployment of ERTMS within the corridor is to develop the corridor "C" route, by undertaking the necessary actions identified in The Netherlands, Belgium, and in France (Longuyon to Basel).

I would therefore recommend that a number of projects like the ERTMS deployment for the sections Antwerp, Namur and Luxembourg as well as Longuyon-Basel and Rotterdam-Antwerp be taken into consideration as soon as possible. Since the Longuyon-Basel line will be finalised by 2018, this corridor could play the role of booster of the interoperable railway network in Europe.

### ***Rail***

Finally, there is a need to address key rail bottlenecks in Paris, Lyon, Strasbourg, Luxembourg and Brussels, and to increase cross-border and long-distance rail-freight volumes. Improving capacity for trains bypassing Lyon will help to open up more opportunities for the development of rail services to the port of Marseille/Fos. Slow development of cross-channel through-rail remains a concern, requiring further attention.

I therefore recommend that in the coming years projects like the Strasbourg railway line bottleneck, Bettembourg Railway Node Upgrade, and Bettembourg/Dudelange terminal, North-South Rail Junction in Brussels, the first treatment of the Lyon Rail Node and the Marseille Mourepiane and Fos terminals as well as the Dublin-Cork rail lines being developed with the Dublin Interconnector / - (DART) - Programme, and associated sub-projects are given due attention.

### ***Interconnectivity***

In the North and the West of the corridor, where accessibility from the island regions is the critical issue, there is a need to develop Motorways of the Sea, and to improve hinterland connections at the seaports.

To solve these issues, projects like the Port infrastructure and Ringaskiddy road connection in Cork and the Alexandra Basin development in Dublin should be encouraged as well as major cross-border projects such as the Ghent-Terneuzen lock, Canal Seine Nord Europe, investments required to improve the rail connection to the ports of Zeebrugge and Antwerpen, cross border rail freight services.

## **6.2 Further analysis of the Corridor**

Given that the Work Plan will be revised in 2016 and 2018, it is my recommendation as European Coordinator that the Corridor Fora taking place in the coming years should discuss and take a stand on the following issues:

### ***Overlapping issue – crossing sections between corridors:***

Corridors cannot only focus on their internal situation. We must bear in mind that Corridors are interlinked and therefore have an impact on each other. I believe that there must be a clear definition of responsibilities for each corridor and coordinator. It is though my recommendation that we work in close cooperation with horizontal coordinators for MoS and ERTMS on a number of projects. For instance, development of freight links on either side of the Channel and towards the Irish Sea. It is also important to consolidate exchange with Rail Freight Corridors.

Moreover, I intend to focus on specific issues such as the Lyon node, the Terneuzen locks and to work more closely with the established inland waterway Working Group and with my fellow European Coordinators who have overlapping sections with my Corridor and the European Coordinators who have horizontal responsibilities (ERTMS, Motorways of the Sea).

### ***Improved market analysis***

During the corridor study, we have been mainly looking at the past, the present, and at pre-existing studies and analyses of the transport sector. In the future, we must take a step further and update our vision of the future, anticipating the changes likely to affect the transport situation in order to meet the constantly evolving demand.

Future market analysis should investigate further the strategies and expectations of market players including service providers such as shipping lines, forwarders, and railway undertakings, and infrastructure managers such as railways, waterway managers, ports, inland ports, airports, in order to develop a common and synchronised vision of the future, focusing on jobs and economic growth.

### ***Environmental impacts and new technologies:***

I would recommend that the Corridor Forum uses the next few years to deal with environmental impacts, noise, greenhouse gases, emissions and climate change and take into account the development of new technologies and Information Transport Systems (ITS) that will enable to deal with these issues.

The Corridor Forum could look into projects focusing on the availability of clean fuels (e.g. at ports), infrastructure for electric vehicles (e.g. Irish E-Cars project) and information systems for maritime and inland navigation: SafeSeaNet and RIS.

Member States should start integrating innovation when planning policies and identifying investment projects in order to remain efficient, effective, sustainable and competitive.

We have been able to establish an overview of all the investments necessary for our Corridor up to 2020 and beyond 2020. However, if we want this list to be used as a guiding tool for the Corridor, the list should be refined and should focus on those projects with a clear EU added value.

### **Conclusion**

We have now reached a crucial point. We have established the legislation, the TEN-T guidelines, the Connecting Europe Facility and the funding. We have implementation instruments clearly defined via the corridors, European Coordinators and corridor work plans setting out the perspectives for the next coming years focusing on the critical issues and possible solutions to overcome them. It is important to acknowledge that my proposed work plan reflects the contributions of the concerned Member States and other stakeholders and is based on the corridor study. You are now being asked to approve this work plan in the coming months which will enable us to move from study to implementation. The realisation of the North Sea Mediterranean Corridor will contribute to the strengthening of the social and economic cohesion between all the regions of the EU and to the development of a high-quality transport network throughout the European Union. It will benefit all EU citizens, businesses and make Europe stronger and more competitive. It is now time to move forward together.

## Contacts



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[http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/northsea-med\\_en.htm](http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/northsea-med_en.htm)

## Useful links

(available here: [http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/corridor-studies\\_en.htm](http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/corridor-studies_en.htm))

- Corridor Study
- List of projects
- TENtec maps







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