



EUROPEAN COORDINATOR PP21

**TEN-T**

**Trans-European Transport Networks**

**Annual Activity Report 2010-2011 for PP21**

**Motorways of the Sea**

A Sustainable Maritime Vision for Europe  
Building on Europe's Maritime Legacy and Looking Beyond Global Trade

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



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## **Abstract**

The development of Motorways of the Sea (MoS) will provide a framework for the deployment of high level standards for efficient, safe and environmentally friendly maritime transport operations which can be fully integrated in a door-to-door transport chain. MoS, whilst ultimately aiming at the increase of cargo flows to be carried by maritime traffic, will have as a priority the development of efficient ports and of better port hinterland infrastructure and connectivity which are the stepping stones for traffic to occur and flow smoothly. This development will help to mitigate traffic congestion and land transport deficient links between regions which are detrimental to cohesion and to a dynamic internal market. MoS will be integral to any efficient logistics chain aimed at supporting trade whilst reducing the transport footprint on the environment. Finally, MoS should become an intrinsic part of the core network of the future Trans-European Transport Network and as such fulfil its key role as the main exchange platform for the European foreign trade.

### **Methodology**

*The opinions expressed are those of the European Coordinator, based on his findings in the fourth year of his mandate. He makes recommendations of a general nature based on his talks, including those with the European representative organisations (both institutional and professional), that have convinced him that the issues addressed are common throughout Europe. This report relies much upon the previous one.<sup>1</sup> A great part of the text, namely the recommendations at the end reproduce in a great extent, what has been previously said and underline issues that need to be further addressed.*

## **1. Introduction**

The TEN-T Priority Project 21 on Motorways of the Sea (MoS) builds on the EU's "2020" goal of achieving a clean, safe and efficient transport system by transforming shipping into a genuine alternative to overcrowded land transport. The concept aims at introducing new inter-modal maritime logistics chains to bring about a structural change to transport organisation: door-to-door integrated transport chains.

Given the holistic approach required from MoS which addresses both of these impacts, international and internal trade across the entire EU and particularly on the EU maritime waterfront, a European Coordinator was appointed in the summer of 2007 to help to coordinate the efforts required for its development.

This progress report builds largely on the 2007, 2008, 2009 and 2010 findings and sets out the Coordinator's new findings in 2011. It also:

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<sup>1</sup> Complementarity - for the complete 2007-2008 annual report on this project, see:

[http://ec.europa.eu/transport/infrastructure/european\\_coordinators/2008\\_en.htm](http://ec.europa.eu/transport/infrastructure/european_coordinators/2008_en.htm)

describes the main factors that influence the sea leg of the transport chain in the EU

sets out the key links and likely developments affecting this part of the EU transport chain

addresses the progress made so far by several MoS initiatives carried out under different frameworks

provides more clarity in the MoS concept

defines a set of recommendations on priority actions to take on the fields of research, innovation and deployment of infrastructure and services.

### **What's new?**

In 2011, the perspectives for MoS have changed enormously. Firstly, the sector has accepted the concept, approach and the priorities set out in the Coordinator's previous reports. The 2010 Call was a great success in quantitative terms: eight new proposals were selected for funding of €85 million. The Call was considerably oversubscribed (€185 million) and, contrary to the past, the submitted (14 eligible) and selected (8) proposals and covered the majority of the EU territory - only the Black Sea was left out.

From the qualitative view point, it should also be highlighted that for the first time most of the proposals addressed "Wider benefit" issues, e.g. safety, ICT logistics platforms, port single windows and new organisational schemes for ports and last but not least on the use of LNG to reduce emissions – choosing the approach of pilot projects to develop and demonstrate operational solutions.

Secondly, MoS has now the critical mass required to spur change: 12 projects are on-going and the new 2011 Call is also promising in terms of anticipated quantity of participation. The 2011 Call, which closed on 23 September, offered €70 million and generated a lot of interest among stakeholders.

Thirdly, the Coordinator has promoted coordination meetings to bring together the MoS consortia and other stakeholders in order to improve cooperation and exploit synergies, avoiding duplications and making the best possible use of resources. Three meetings were organised: Genoa (end February 2011), Aarhus (April 2011) and Madrid (May 2011). These three two-day meetings attracted more than 200 participants and were fundamental to share experiences, raise awareness, disseminate results and foster the development of new proposals. These meetings were also used as a sounding board to identify new priorities and missing links.

In addition to "Meda-MoS" projects supporting the cooperation with third countries in the Mediterranean and Interreg projects (e.g. Proposse) bringing together Member States, the most important framework for MoS deployment was that of Marco Polo. Two MoS were promoted, one deploying a regular connection between Gijon and Nantes, bypassing the Pyrenees crossing for lorries and the other connects Vigo and St Nazaire, aiming at the same objective but with different hinterlands and type of cargoes. The Gijon-Nantes has been a success story, having already doubled the capacity.

The 2011 report reflects not only a theoretical and methodological approach but also builds on the new findings and concrete results of the projects currently being deployed,

on the feedback of the coordination meetings, as well as on the state of play in the countries covered by the exploratory visits undertaken by the Coordinator.

Finally, the report identifies new MoS key issues: technological, organisational and procedural, reflecting the new transport policy as outlined on the 2011 White Paper. Furthermore, it proposes a new definition of MoS for the revision of the TEN-T guidelines and in short promotes MoS as the maritime face (shipping and ports) of the new TEN-T Core Network and consequently as a tool able to integrate the key elements of the EU's maritime policy in the European transport infrastructure.

## **2. The Motorways of the Sea sector (ships, ports, hinterland connections and trade)**

Maritime transport is the backbone of international trade, yet its capacity has not been fully exploited in Europe. MoS, which focus on successful short-sea shipping routes and deep-sea transshipment operations, are designed to shift cargo traffic from heavily congested land networks to where there is more available spare capacity – the environmentally-friendly seaways; e.g. it should be remembered that road transportation doubles every ten years. That will be achieved through the establishment of more efficient and frequent, high quality maritime-based logistics services between Member States.

MoS will help to establish new, regular and frequent maritime links for the transport of goods between Member States and improve access to peripheral and island regions and states. Another primary objective is to ensure year-round navigability across European maritime regions, particularly the availability of facilities for dredging and icebreakers needed for winter access, as well as the accessibility and infrastructure links to the hinterland. It should be highlighted that Europe has a very developed know-how in the area of dredging with some of the world leading companies being owned by European interests.

*Motorways of the Sea will provide the backbone for maritime transport infrastructure which consists of: safety at sea and environment protection (maritime); ports (interface sea/land) and hinterland connections. This infrastructure will provide the core segment of transport required for both internal and external European trade, in a geomorphologic area where no single land point in the European Union is separated from one of the sea coasts for more than 650 km.*

In order to encourage shippers and owners of goods to move away from current land transport-only based schemes (mostly road) and integrate searoutes in their logistics chain, maritime options must be as good as or better than the other means of transport. As such, innovative logistics solutions need to be sought and implemented by the key transport actors, e.g., land-based transport operators, freight consolidators, logistics companies and the public sector which are all key stakeholders in the success of Motorways of the Sea.

Using TEN-T funding, the Commission is supporting the development of MoS across Europe. In the Guidelines<sup>2</sup>, PP21 Motorways of the Sea (PP21) refers, *inter alia*, to four sea areas, i.e.: (i) Motorway of the **Baltic Sea**; (ii) Motorway of the sea of western Europe;

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<sup>2</sup> Decision No 1692/96/EC of the European Parliament and of the Council 1 laid down Community guidelines for the trans-European transport network:

1) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:167:0001:0038:EN:PDF>;

2) [http://ec.europa.eu/transport/infrastructure/basis\\_networks/guidelines/guidelines\\_en.htm](http://ec.europa.eu/transport/infrastructure/basis_networks/guidelines/guidelines_en.htm)

***Maritime transport trends - some figures:***

- ***More than 80% of world trade is carried by sea***
- ***72.7% of the EU27 external trade is carried by sea, representing a total of 1469.1 million tonnes***
- ***Sea transport supports a EU27 external trade worth of €1118.2 billion. This represents a share of 48.7% (whilst for instance rail represents only 1.3%)***
- ***More than 400 million sea passengers pass through European ports every year***
- ***By 2018 the total capacity of maritime transport is still expected to surpass 2.1 billion deadweight tonnes (DWT), up from 1.2 billion DWT in 2008***
- ***40% of intra-European freight is carried by sea; Intra-EU27 sea trade represents 1336 billion tkm***
- ***The latest figures indicate that the trend in the world fleet approaches an annual 4% growth factor***

(iii) Motorway of the Sea of **south east Europe** (eastern Mediterranean and Black sea) and (iv) Motorway of the sea of **southwest Europe** (western Mediterranean). In the near future and given the current developments, the application area needs to be made consistent with the new reality. MoS needs to be seen and depicted as the underlying seacorridor connecting the entire shore of the European Union.

## **2.1. Ship operations and their impact on MoS**

Concerning global trade, the tendency is to advance further on the economies of scale with two main consequences. Firstly, there is a tendency to have increasingly larger vessels. Containerships of more than 9,000 TEUS are already in operation and new buildings of up to 18,000 TEUS (3E class) have already been ordered. This development will require larger and larger access canals and berthing places in ports, greater throughput capacity for the unloading and the transshipment of goods, bigger storage areas and finally larger and more efficient infrastructure will be necessary to cope with the handling of those goods.

***A 9000 TEU vessel would require, in average, 4500 rail wagons to fully tranship to; which would amount to +/-90 block trains (750 m long). This is an example of the magnitude of the impact of increasingly larger container vessels in the transport infrastructure. It is interesting to note that the big "round the world" canals (Panama and Suez) have already been or are being upsized to cope with the new demands for increased ship size, new buildings of 18000 TEU have already been ordered. The same happens with ports and in particular with transshipment ports where depths of more than 15 metres, as well as large parking and storage areas are becoming an ordinary selection factor. This "survival of the mammoths" factor must be confronted with an European transport network concept where a global port development strategy unfolds in such a way that door to door logistics lines are not disrupted, sustainability is not endangered and where the fittest "door to door" survives.***

Maritime transport infrastructure needs to meet these new demands, in particular as far as safety at sea and environmental protection are concerned. The 2010 TEN-T Call on MoS selected two projects addressing different aspects of these issues.

First, Mona Lisa project aims at improving quality of maritime transport, safety at sea, exchange of maritime data and facilitation of environmental performance of shipping and implementation of e-Maritime relevant applications. Although three Member States – Denmark, Finland and Sweden – are currently participating in the project, more will be able to join once the project is underway. Mona Lisa fully complies with the strategy for the Baltic Sea region and will also play a part in supporting European MoS activities.

It will achieve these objectives through studies aimed at delivering the following results: 1. A new methodology in maritime route planning, similar to air navigation. The related activity aims to define, develop and test a model in route planning based on existing Electronic Nautical Charts and Automatic Identification System

2. A new pilot system of automated verification of ship crew certificates and a concept model for an automatic verification system monitoring officer's certificates and time on watch will be designed.

***The Mona Lisa project deployed in the Baltic Sea region aims at improving the quality of maritime transport. It benefits from €11.23 million in EU contribution from the 2010 TEN-T Multi-Annual Call and forms part of TEN-T Priority Project 21 Motorways of the Sea. It will run until 2013 and includes the participation of three Member States (Denmark, Finland and Sweden).***

3. Re-surveys of Helsinki Commission (HELCOM) fairways in the Baltic Sea leading to harmonised distribution of survey data and water level information. Re-survey of HELCOM fairways and Baltic Sea port areas will be carried out with modern quality methods to ensure correct depth presented in existing sea charts and improve safe navigation for large vessels.

A pilot system for sharing maritime data at a global scale: the related activity aims to develop and test a functional demonstrator system with the final objective to extend the sharing of maritime information to a global scale, as well as expand the scope of maritime information shared between maritime authorities in accordance with their needs.

Secondly the "Liquefied Natural Gas (LNG) infrastructure of filling stations and deployment in ships", is developing concepts and requirements for filling stations (bunkering) infrastructure, as well as a full scale pilot action on LNG ship operations, as the main components of the project. The study aims at creating a strategic decision paper relevant for central stakeholders to develop framework conditions for the use of LNG for ships. The pilot project, on the other hand, will see the modification of two vessels to a more environmentally friendly LNG propulsion system, in line with the recent requirements of the International Maritime Organisation (IMO) for northern Europe.

The study, which fully complies with the EU's strategy for the Baltic Sea region and contributes to the realisation of PP21, extends from the Baltic Sea to the North Sea and the English Channel.

The pilot action will be followed by an extensive measurement programme for validating its environmental and climate benefits. LNG contains no sulphur and emits 90% less NOx than traditional fuels and CO2 can be reduced by up to 25%.

***Reduced SOX&NOX emissions are supported by EU - it supports with almost €10 million a pilot project to analyse and test the possibilities of switching to Liquefied Natural Gas (LNG) propulsion in the shipping industry in order to improve the environmental performance of the sector. The grant, which comes from the 2010 TEN-T MoS Call, will be used to deliver a feasibility study on the creation of a network of LNG bunkering stations for ships, coupled with a pilot project to evaluate the conversion of two vessels to LNG propulsion.***

The lessons learnt from the project are foreseen to have a wider benefit for other geographical areas within the EU, demonstrating that LNG propulsion is a viable fuel solution for large vessels.

Within the development of MoS concepts and operations and particularly concerning the safety of maritime operations, the co-operation of the European Maritime Safety Agency (EMSA) is essential to guarantee success. As an example, the information system developed by EMSA is one of the most advanced systems in the world. The system is in connection with more than 1000 ports, and can also be articulated with local area VTS systems.

## **2.2. Impact of the human element in MoS**

If current trends are confirmed, there may be a shortage of 10,000 to 15,000 merchant marine officers in the EU. Tackling this problem implies that adequate, education and professional training as well as promotion strategies must be addressed by both the Member States and the Commission, otherwise a strategic reserve of manpower with key knowledge for the entire transport chain disappear (pilotage services, port and terminals operations, traffic management and control, etc.).

***A 2009 study on labour market and employment conditions in EU maritime transport (ECORYS) indicates an overall figure of 80% for European seafarers crewing EU/EEA flags. Whilst in six EU Member States only nationals are employed (BG, IS, FR, LT, PL, RO), in six other EU flags, nationals represent 90% of the crew and for the remainder, figures range from 30% of non-nationals (IT and IE) to a maximum of 95% non-nationals (and mostly non-EU) for Malta.***

Concerning the new approach that MoS encapsulates integrated transport concepts, education and training is required for all actors involved in the MoS chain: from the cargo owner to the gantry crane operator and from the ship's officer to the forwarding agent. In particular, all the actors in the transport chain must have an adequate training in logistics.

***A better training of the shore-based personnel involved in maritime transport and Motorways of the Sea is favoured by many stakeholders as one of the efficient ways to reduce the cost of transport to the cargo owner. The Commission should develop different actions to promote the necessary training. In order to avoid wastage of resources, priority should be given to the existing institutions to act as the main***

*implementing actors, e.g., nautical schools, polytechnic institutions, universities to the very practical short sea shipping schools. Those actors should cooperate together in order to offer the different courses. The basis for training should be efficient logistics in order to attain competitive transport. The target industries should not only be the transport firms, but the key enterprises and industries which export or import goods or need to place their products in non-local markets.*

A tailor-made knowledge and trainee exchange system, building on the Erasmus system, could help to stimulate the attraction for seafarers' professions, reduce the wastage and the attrition in terms of knowledge (too many small schools in too many different places). Such a system would also address the MoS human resource issue at European level, allowing educators, trainers and trainees to be connected, creating a critical mass in terms of access and preservation of knowledge whilst keeping the schools in their historic communities (as Winston Churchill once put it, "a country without memory is a country without future").

One of the key objectives for MoS education and training should be to tackle global problems building on (and supporting) local knowledge. The European added value is the information system (hardware, software and the human element) that will allow local trainers and trainees to share knowledge by participating in a large European network addressing global European education and training issues. Unfortunately, no education and training proposals have been retained thus far for funding under the TEN-T MoS Calls. Nevertheless, some important but specific MoS education and training issues, such as paperless logistics, are being addressed by other MoS projects.

### **2.3. Ports and their impact on MoS**

Ports are central for world trade and the economies of scale push in the sense of a reduction of the number of ports, following the increasing payload in vessels thereby requiring better equipment and putting enormous pressure on the infrastructure. This type of demand for a port represents a heavy burden for any decision maker in the chain, as investments are important and permanently required.

On the other hand, many countries or regions legitimately plan having their own ports recovering the operation of cargoes from and to their natural hinterland. This is, in fact, the objective of each and every one of the ports. Nevertheless, the "smallness" of size of their individual home market jeopardises regular calls for large vessels, as it does not create sufficient economies of scale to justify for instance, the weekly call of a large container-carrier.

*The need to increase the specific weight and avoid wastage and double investments led either to merges – e.g. the merge between the ports of Kotka and Hamina in Finland, or to improved articulation of their capacity to attract larger operations to the geographic area, the method being to increase their specific weight and visibility whilst maintaining competition alive. This latter has developed either within a country – e.g. the North Sea Belgian ports, or between ports of different countries in a given region (e.g. Adriatic or Baltic seas). Two new TEN-T MoS projects address this issue, looking for the deployment of innovative solutions.*

In the north Adriatic region, the ports of Venice, Trieste and Ravenna in Italy and Koper in Slovenia will conduct a study and pilot action, selected under the 2010 TEN-T Multi-Annual Call, focused on the future deployment of Information and Communication Technologies (ICT) solutions enabling an efficient information exchange between the NAPA ports, including eventually the port of Rijeka (Croatia), and all the actors involved in the intermodal transport processes.

***Better collaboration between ports in the northern Adriatic fostered by EU co-funded project The Northern Adriatic Ports Association's (NAPA) ports of Venice, Trieste, Ravenna and Koper will collaborate in producing a study and pilot, which will be co-financed by the EU with almost €1.5 million from the TEN-T budget, to create information technology solutions for an efficient and attractive maritime gateway in the north Adriatic region.***

The prototype will be the first step of a more complex system, which will be expanded step-by-step to include further functionalities. At full capacity, the NAPA portal will be able to provide a wealth of information, facilitating and speeding up the completion of formalities. The project will serve as an example for other EU port clusters and ultimately contribute to enabling more effective and efficient maritime facilities in the region.

In the Baltic, the ports of Aarhus, Gothenburg and Tallinn have established a common hub and spokes project which was retained for EU co-funding under the 2010 TEN-T MoS Call. The underlying objective is to offer the joint capacity of Gothenburg and Aarhus and attract regular calls for larger container vessels. The two ports' hub will absorb most of the discharged containers on the internal Swedish and Danish markets, whilst the remainder will be transhipped for other ports (spokes) in the Baltic.

***The Baltic Sea Hub and Spokes project complies with the EU's strategy for the Baltic Sea region. Due to the expansion of the economic zone in the Baltic Sea and the increasing cooperation with Far East there is the need to develop the hub ports in the region to handle existing volumes and future growth in freight and passenger traffic. To assure this, the hub port system in Aarhus/Gothenburg and the spoke system of feeder ports in the entire Baltic Sea region should be developed through a higher integration and closer cooperation and coordination, on top of further development of the individual ports.***

The MoS project connecting the hubs of Gothenburg (Sweden), Aarhus (Denmark) and Tallinn (Estonia) as a spoke are part of a TEN-T MoS objective to create a smart network of ports called "hub and spokes". Set to receive almost €25 million from the EU up to December 2013, the project will contribute towards the realisation of PP21 by fostering an efficient logistic solution and a more sustainable intermodal transport pilot in the region which will eventually lead to a commonly shared corporate image for this type of service.

The main objectives of this project are to improve access to its markets whilst facilitating a more efficient, environmentally friendly and attractive intermodal transport solution for the region and reconciling the cities with their ports, namely by improving the connections to the hinterland in a way that reduces negative impacts to the towns, e.g. in Aarhus a tunnel connecting the port to the TEN-T network and in Gothenburg a rail viaduct

bypassing town crossings. These types of actions will increase possibilities for handling larger flow of goods by sea and therefore increased trade, growth and welfare.

***Whilst the ambition of every transshipment port is to be, at the same time, a hinterland port, most of them experience difficulties to carry both functions simultaneously. These shortcomings are either due to their geographic location e.g. being located in an island like Marsaxlokk in Malta, or because the connections with the hinterland are poor e.g. Gioia Tauro in Italy. Other ports, perfectly placed to serve a natural hinterland are far from the "round the world" trade routes or do not have any remaining growth possibility, like many old ports born from their towns and encroached in them like Lisbon in Portugal. A happy few can envisage playing both roles - e.g. Rotterdam, Hamburg and Antwerp or even Algeciras in Spain. Some new transshipment ports do not aspire to become important hinterland ports like Tangiers-Med in Morocco, whilst others invest all they can to become hinterland ports as Sines in Portugal looking at the Portuguese and Spanish hinterlands.***

In Europe, the North Atlantic connection favours mainly three main ports: Rotterdam, Hamburg and Antwerp that reach far away from their natural hinterland. These ports are responsible for 75% of the European foreign trade. The remaining 25% go to the south European ports in the Mediterranean and Atlantic. The Atlantic façade of Europe (from Cadiz to Glasgow) receives only 6% of the freight coming from abroad.

The huge concentration on this range of ports generates large economies of scale and the building up of skills and competences, which, bundled together, create the most interesting and unrivalled offer of both transport and logistics services in Europe. One of the consequences has been the increasing tendency to use those ports coupled to extensive land transportation (particularly road) to extend the hinterland of those ports and reach a very large share of European inland areas. The resulting economic imbalance also translates into congestion and negative environmental footprints.

On the other hand, the multiplicity of small ports, whilst guaranteeing closeness to the natural hinterland, is also responsible for large economic inefficiencies and for duplications of investment without guaranteeing high levels of efficiency (specialised equipment, methods and staff). This situation is well portrayed in Europe, where approximately 300 ports are classed as "TEN-T class A"; this figure will be drastically reduced to 87 Core Network ports (in the new proposal for the revision of the TEN-T Guidelines)

It is time to consider innovative solutions such as the formation of multi-port gateways. This approach would allow for the specialisation of ports in certain types of trade (but not exclusively) and thereby maximise the results of investment whilst guaranteeing competition. This approach will require an articulation of services and procedures that are common to a given region/gateway and thereby easily identifiable by shippers or shipping operators that will find the same procedures and working culture within the same gateway. Some gateways are already being explored and the north Adriatic and further volunteer associations of ports should be encouraged, e.g. Flemish ports, Ligurian ports, North Sea ports, Baltic ports, westAtlantic ports, etc.

One thing is certain: Europe needs better transshipment ports with improved hinterland connections, and in particular for the connections with the FarEast, better articulation between the transshipment and hinterland ports. This articulation can minimize the length of trips from ports to consumption and production centres, and thus the carbon footprint.

The same needs exist for traffic coming from the Americas (US and Panama) to northern Europe and to return cargoes. The answer will be similar: we need more and improved transshipment/hinterland ports or transshipment ports articulated with hinterland ports connected by short sea shipping. There is one common trait: to succeed, all of these ports have to be very efficient as competition is fierce, visible and very sophisticated.

The new TEN-T Guidelines with a streamlining of Comprehensive and Core network ports, as well as with the full integration of ports in the main transport corridors will provide a blueprint for the new developments required.

#### **2.4. Hinterland connections**

Good land connections are cardinal to efficient trade and logistics, and thus to maritime logistics and MoS. In this sense, TEN-T translates quite well the concept of a complex transport mesh that connects a whole continent.

While the links to the natural hinterland are not very relevant for a pure transshipment port, for a "normal" port the quality of its land infrastructure links is the determinant factor for success. Several projects were submitted to the TEN-T MoS Calls and are currently in development. These projects represent dedicated solutions – port /ship /hinterland – to improve the logistic chain.

***An MoS project to improve the ports of Rostock (Germany) and Gedser (Denmark) and bring improvements to the Danish road network will receive almost €25 million in EU support as part of the 2010 TEN-T Multi-Annual Call. The infrastructure improvements will have a positive effect of various TEN-T Priority Projects by relieving congested infrastructure and improving the north-south transport flow.***

An MoS project to improve the Rostock and Gedser ports will involve the deployment of new infrastructure to accommodate the new ferries which will be put into service in the first half of 2012. These new ships will improve reliability, environmental performance, capacity and reduce costs, as well as make the ferry link more viable for transport operators and foster intermodality.

The project is part of a broader action to improve the Copenhagen to Berlin axis by upgrading different types of transport infrastructures. It will positively contribute to PP21 and act as a continuation northwards of Priority Project 1 (Railway axis Berlin-Verona/Milano-Bologna-Napoli-Messina-Palermo).

The project will also involve the construction of a bypass on the E55 motorway, which currently crosses the Danish town of Nykøbing Falster, a major bottleneck. Construction of the bypass will ensure a smoother flow of traffic whilst at the same time improve safety and reduce the environmental impact of the road sector in this particular area.

Key multi-modal connections are in fact those linking ports to inland waterways and to railways axes. Nevertheless, sea-river connections whilst of the highest interest have a

limited geographical domain where to deploy, as each river or canal has its own characteristics and those determine the type of crafts to be used (preventing the use of the same type of crafts across all geographic areas in Europe).

Priority should be given to the port-railway connections and to railway operations. The same applies to the provision of railways in the quays and the railway connections to logistic platforms.

Baltic, Atlantic and Mediterranean ports form three sets or gateways which should be connected. Railway connections between north Adriatic ports and south Baltic ports must be drastically improved. In general, this connection can roughly be formed by two or three existing and or upgraded lines. In the north, Gdańsk, Gdynia and, even Hamburg could represent an adequate destination of the freight coming from Far East and disembarking in southern European ports. An Adriatic–Baltic railway corridor should be considered almost as a structuring project. Instrumental to this connection are the TEN-T road PPs 7 and 25 and the railway PPs 22 and 23, connecting the Baltic to the Adriatic, Ionian, Aegean and the Black Seas and serving a large hinterland geographical band. The newly proposed TEN-T transport corridors supporting the deployment of the future Core network represent excellent connections within Europe where ports are cornerstones.

Logistics platforms have as one of their main functions the grouping of freight which is important to give scale to any operation. Countries should be induced to define national networks for logistics platforms. The main connections between ports and their logistics platforms should ideally be based on railways or inland waterways. Cargo railway corridors must have good connections to ports. Bottlenecks in those corridors should be removed, in order to assure that freight can be transhipped via railways (e.g. railway ring of Lille). In certain cases, no better solution exists than connections by land-based motorways (e.g. Romania and Poland).

Logistics platforms networks have to be considered in connection with the network of transhipment ports and hinterland ports. An integrated map of this freight "core" network should be produced in order to identify potential for development and "desert areas" (missing links).

***The EU will co-finance with almost €2.5 million from the 2010 TEN-T MoS Call a study to analyse the bi-directional transfer of goods from central Europe to Mediterranean countries and ports through the combined use of PP 24 (Railway axis Lyon/Genova-Basel-Duisburg-Rotterdam/Antwerpen) and the MoS network. The goal is to create a “unique ICT multimodal corridor between northern and southern Europe” by virtually connecting PP24 with the Mediterranean Motorways of the Sea (MedMoS).***

The aim of the TEN-T funded MoS24 project, involving four EU Member States (Italy, France, Belgium and Malta), is to undertake a pilot action establishing a demonstrator of an interoperability platform (MoS24) for interconnecting existing ICT modules, making

them interoperable and thus delivering a service to users through the virtual MoS24 Co-modality Promotion Centre. The new ICT tool will be used to better coordinate freight traffic flows and it will enhance the strategic role of PP24 as the main gate to Europe for the traffic of goods transported via MedMoS.

The new project will collaborate with other ICT projects established in the Mediterranean region to ensure a common approach, avoid duplications and optimise results for enhanced multimodal transport.

Four other sea links projects are being developed under the Motorways of the Sea TEN-T framework:

1. Ejsberg-Zeebrugge (2008)
2. Klaipėda-Karlshamn link (Baltic Sea area) (2008)
3. High Quality Rail and Intermodal Nordic corridor Koenigslinie (2008)
4. Baltic link Gdynia-Karlskrona (2009)

See section 5 for more details on these projects.

Port platforms, quays and warehousing areas are expensive and represent a rare resource. Thus, inland platforms (dry ports, back door ports, etc) must be seen as good complements to ports as they supply logistics space to otherwise scarce and expensive storage and transshipment space. Those should preferably be connected to ports by railways.

Concerning the mass carriage of oil and gas, an additional point relates to the construction of pipelines for transporting those commodities. Pipelines should be deployed as much as possible, being particularly useful when used to bypass sea transport in "closed or confined" sea areas such as the Baltic, Adriatic, Mediterranean, Black and Marmara Seas. In those areas, the risks of accidental or operational pollution will be very important unless traffic management and other safety measures are deployed and used. The same risks apply to straits, restricted waters and other zones where maritime traffic is very intense. Areas such as Gibraltar, the English Channel and the Marmara Sea will be in considerable danger as the maritime carriage of oil increases. Pipelines have to be seen as an alternative to tankers at sea and on the roads. Accordingly, pipelines should be considered as a key infrastructure element. More initiatives to build underground (where possible) pipeline systems for oil and gas should be stimulated.

### **3. Intelligent Infrastructure**

As integrated transport chains of the 21<sup>st</sup> century, MoS cannot be deployed without telematics and information systems that link interfaces and avoid information gaps. Permanent access to continuously updated information on the key elements of the transportation process, inter-connecting permanently goods (cargo, containers), processes (transport, customs) and persons (shippers, carriers and receivers) should be one of the

main characteristics of MoS. Without such functionalities, the chain will be interrupted and service discontinued.

The TEN-T MoS Call 2010 selected two pilot projects addressing the area of intelligent infrastructure, ex single window, paperless logistics on the multimodal chain of transport, proposing smart and money saver approaches.

***The project – MIELE - will test and pre-develop a common interoperable Information and Communications Technology (ICT) platform for the maritime logistics chain in Italy, Spain, Cyprus, Germany and Portugal. The project will receive almost €8 million in co-financing from the TEN-T budget until December 2013 and will contribute to the development of PP21.***

The objective of the project, which was selected under the 2010 TEN-T MoS Call, is to design and develop an interoperable ICT platform (the “MIELE Middleware”) able to interface maritime ICT systems (i.e. port community systems and other eMaritime applications) in Italy, Portugal, Spain, Cyprus and Germany (the “national vertical pilots”).

The project will also take into consideration the requirements of Directive 2010/65 EU, which prescribes that the ICT systems for ship reporting be interoperable throughout Europe and that each EU Member State has a single interface.

The South Korean sister project of MIELE has published its forecasted savings which amount to \$200 million annually related to reduction of direct costs and a staggering \$1 billion annual savings as a result of the reduction of indirect costs such as customs operations in South Korea alone.

The project is expected to last until the end of 2013 and consists of two main phases. During the first phase, the ICT systems of the participating Member States will be analysed and common specifications identified. The second phase will deploy a full-scale, integrated and interoperable demonstrator composed of the MIELE Middleware and the national vertical pilots”, deployed according to the specifications identified in the first phase of the project.

***Ports in Italy, Greece, Slovenia and Spain will benefit from almost €3 million in EU funding from the TEN-T budget to conduct a study and pilot aimed at fostering collaboration and integration between groups of ports and intermodal door-to-door transport solutions. The activity is part of PP21.***

The study, which is referred to as MoS4MoS and was selected under the 2010 TEN-T MoS Call, brings together a number of ports in the Mediterranean area with the aim of designing a set of Information and Communications Technology (ICT) solutions which, when implemented, will improve transport flows and facilitate co-ordination between the various administrations and operators.

The ultimate objective is to facilitate freight and passenger transport between the participating ports through smart applications and better integration between the different modes of transport. The pilot study is well in advance and a peer review to

monitor its progress was recently carried out (in September in Valencia) with the European Coordinator acting as Chairman.

The economic impact study, already completed, found out that the euros of net benefits per euro invested for the partners deploying the results of this project will amount to €6.04!

At least three prototypes will be developed and tested in 2012 to facilitate operations at port gateways, short-sea capacities, intermodal transport solutions and freight corridors.

New trade and logistics objectives demand larger throughput quantities of a wider range of products in less time for yet a larger number of different destinations. The challenge is how to meet these sometimes conflicting demands and guarantee both the underlying safety and security principles, as well as the basic needs to reconcile the goods traded with their owner (which has been one of the most complex tasks that operators have to perform so far). The answer most certainly lies in the use of IT technologies adequately reflecting the transport chain processes and organisation.

Presently, the access to a vast array of information systems and telematics tools, facilitates the task but entails the need for striking a balance between individual systems and common communication platforms. In other words, it sets a demand for the interoperability standards between all of these individual technical systems which will be able to deliver a higher value service to the community of users of that specific logistics chain.

***The European Maritime Safety Agency (EMSA) has developed a vast array of tools with new potential uses which are very interesting and important. They can precisely track ships at any time and identify those which are polluting e.g. washing their tanks. An evaluation of the use of this potential in particular concerning tracking and tracing of ships and cargoes, bearing in mind, namely, the formation of a Single European Maritime Space and the necessary integration with other information systems to produce a fully reliable MoS information system.***

It is the Coordinator's firm belief that priority must be given to the deployment of such information systems. The information which they will provide will be permanently accessible to all stakeholders and most important, permit to reconcile a cargo owner with the goods it trades. This allows the cargo owner to know at all times where the cargo is, to what temperature, acceleration forces and humidity it is exposed and to which procedures the cargo is undergoing.

The feasibility of such a "tracking and tracing" system has been vastly demonstrated and many tools based on state of the art technologies - ranging from the satellite systems to the daily used GSM - already exist or constitute excellent platforms for deployment.

*Empty containers constitute a major problem which must be addressed with great determination and imagination. A great variety of solutions must be evaluated, ranging from better administrative information and coordination measures to the conception and design of cheaper, discardable and of land re-usable containers. Efficient tracking and tracing systems will certainly have a major role to play in this. A passive chip for a container costs currently €3 a piece, a more sophisticated active chip may cost up to €40 - a very low-priced investment considering the added-value services that it may provide (eg. time, position, accelerations, weather, temperature, etc).*

What is really missing is a meta-level link integrating a common sense technical tool, i.e. an information integration platform or a sort of "dedicated transport internet" accessible to all actors and stakeholders which integrates the cargo and transport information and trade characteristics of each specific operation. The stepping stone for this is to achieve the interfacing of the information originated in the different proprietary systems (e.g. operator, traffic manager, customs authorities, etc.) which entails the interoperability of those systems.

Furthermore, the platform should bear the burden of integrating and translating the information to and from all those different systems. Given these requirements, in its initial stages the platform should be developed at an institutional level in order to guarantee a level playing field for all stakeholders.

Finally, more support is required for the joint development of transport information systems that facilitate the integration of maritime transport in the global transport chain and pursue the development of concrete projects, infrastructure and services (e.g. tracking and tracing systems supporting logistics services) making the removal of bureaucratic difficulties an easier task whilst increasing the overall safety level of the transport system. In the maritime area, the framework created by the e-maritime initiative and the latest results of the TEN-T projects are very promising. In particular, the coordination with River Information Services (RIS) should be developed, given the existing potential for sea-river operations in which the same craft will be required to operate in the two different areas with consequent impacts, namely on the on-board equipment required.

To face all these new challenges, ports should be incentivised to develop and constantly update a master plan. The very fact that a given port has made a master plan to guide its development is immensely useful as it defines a framework within which all projects find a rationale and coordination tool. The main axes of a master plan should be: infrastructure, efficiency of port services, logistics and markets, and territorial integration.

## **A port framework for MoS**

Ports are the key nodal points for trade. Strong port communities, integrating all inland modal operators, are fundamental for the intermodal efficiency of any given port. Efficient ports, whether large or small, are fundamental for a well-oiled transport chain. Thus, improving the efficiency of ports is the stepping stone for projects and development actions to be carried out until 2013. Achieving a better image for ports will have a very positive effect on the shift of more freight to maritime transportation.

*For Finland, the key objective of MoS activities is rather geo-strategic. In fact, the main priorities for the Finnish transport community are cohesion and accessibility rather than modal shift.*

*The same happens with ultra-peripheral regions such as the European archipelagos and islands that must give guaranteed accessibility through a good cohesion policy. These ultra-peripheral regions must be used to the advantage of Europe by widening their own areas of influence.*

The Coordinator pinpoints five main elements for port efficiency: i.e. good infrastructure, sound hinterland connections, excellent procedures, perfect integration of the information services and well-trained staff.

Concerning, for instance, the integration of information services, "single window" procedures must be generalised throughout European ports (and their hinterland corridors). Telecommunications and telematics services will enormously facilitate an otherwise rather complex operation.

Ports also play a key role in the environmental friendliness of the transport system. Being the interface between sea and land, they are central to ecosystems and consequently must meet the environmental challenges to achieve sustainability.

*The electricity supply of ships will pose new challenges for ports and in particular for cruise ports, since each cruise ship is like a small town of 3000 inhabitants). Electricity supply in the ports is a key element. Using wind or solar energy for that purpose is a very acceptable answer if the power consumption is not particularly sizable and concentrated in time. The provision of LNG by re-fuelling tankers, to be used for electricity generation during the stay of the Cruise Vessel at the port should be studied. The costs for lowering carbon and sulphur emissions on maritime operations are not yet fully established. The entering into force of the ECAS in the Baltic and North Seas poses a challenge on how to reconcile lower emissions with economic shipping operations. There is a risk of shifting back cargoes to other modes with negative impacts for climate change (CO2) and bottlenecks. In 2015, only very high quality diesel (<0.1) will be allowed, innovation is required covering the full range of possibilities, e.g. from "scrubbers" to LNG fuelling and retrofitting technologies. The Atlantic and Mediterranean countries need to prepare for the foreseeable impact as an LNG shipping policy will impact on ships' operations and economics.*

*Large parts of the Baltic coastal areas are covered by ice in the winter. Baltic cooperation on icebreaking and winter navigation, as well as on traffic management and pollution prevention are fundamental features for successful MoS in the area.*

Europe must work at the improvement of port services (stevedoring, pilotage, towing operations). All these three services must be considered as an integral part of the logistics

chain. Consequently, their staff should work under the same conceptual umbrella and share a common aim that will entail the privatisation of docker's services and the use of concessions as a common rule of thumb. Training and education will be fundamental to guarantee the required evolution of mentalities and the ability to render highly efficient services. Furthermore, all of those involved in the transport chain must have a sound training in transport logistics.

***Strategic plans for ports should anticipate master plans. Their existence, duly approved by the proper authorities, should be an element of preference, when analysing any applications for public funding (EU, EIB, etc). The identification of strategic needs of ports is fundamental for any decision making.***

Finally, freight forwarding needs to become the "transport solution providers". The profession needs to further evolve and be able to advise all the actors in the entire logistics chain on the best ways for timely carrying a given load from one place to another. MoS forwarders have to keep a very close relationship with port administrations and shippers. The demand for an increased volume of goods to be traded in a single operation in ports places an enormous strain both in the existing infrastructure and the planning for new infrastructure. Given its European dimension, the TEN-T is directly concerned. Not only does TEN-T shape the offer for European infrastructure, but it needs to permanently meet new demands for the improvement and enlargement of the European transport infrastructure network.

***Safety at sea is essential. "Tracking and tracing" will help on safety matters. Lost containers are a danger to navigation and in particular for pleasure crafts. Many accidents have already taken place, for instance in the Gulf of Biscay, in the Mediterranean and in the Baltic Sea. If containers are equipped with a chip, they can easily be located, salvaged and towed or carried to a port. Container chips (identifiers) could not only provide a useful means of locating stray containers (washed overboard or otherwise) but reconcile the container with the cargo carried and the type of trade (origin/destination) as well.***

The MoS initiative, by stimulating the use of maritime links, rather than that of land legs for the carriage of goods over medium and long distances and by improving the integration of maritime connections in the door to door logistics chain, will favour a more flexible approach to trade flows. In fact, diversifying the offer of efficient infrastructure and increasing the co-modal interoperability of ports and ships is central to the development of a balanced trans-European transport system which boosts flexibility of transport services and regional development as tools to foster cohesion and economic development.

Motorways of the Sea can therefore be seen as the infrastructure policy for maritime transport and ports. They will represent the underlying corridor that allows European economic nodes and ports to be connected to the world markets, as well as between themselves within the internal market.

#### **4. A new definition for Motorways of the Sea**

In pace with the development of the new guidelines for the TEN-T, the concept of MoS needs to evolve. In fact they are:

"Safe, environmental-friendly and efficient maritime transport (sea lanes) sea corridors connecting the trans-European network of Motorways of the Sea Ports and the European hinterland". As such, they perform a key geo-strategic role for Europe linking the production centres with other hinterlands and forelands, supporting trade and guaranteeing sustainable transport solutions for peripheral areas as well as for a competitive industry and business. Furthermore, MoS constitute the dorsal spine of the European foreign trade by providing accessibilities and connections between the round the world and, intercontinental trades, as well as the European internal market.

These high-quality maritime connections need to share interoperable ICT systems which allow the precise positioning of each parcel of cargo transported at every moment and thus constitute a fundamental security and safety tool, as well as a value added logistics information system.

Building on the comprehensive short sea shipping network of ports and services, the MoS network will focus on supporting the core network, connecting key points of the trans-European core network of transport. The MoS network will reconcile the final customers with production (and consumption) centres through the core ports, logistics centres and intermodal terminals.

*The network will be supported by an ICT system which mirrors in real time the entire transportation process and replicates the physical transport operation, thereby allowing for a perfect monitoring of both the cargo parcel and of its carrier.*

### **New definition for the Motorways of the Sea**

Europe is a rather indented continent with a large coastal surface and numerous islands and archipelagos requiring maritime transportation for passengers and cargoes.

Europe is also one of the major world trading partners and most of its trade exchanges are carried by maritime transportation. Consequently, ports are the key nodes and ships the fundamental vehicles for trade, connecting European regions to their European or international partners. To properly support these activities, ports and ships must be able to interact efficiently between them, as well as with the transport land network

Accordingly, the following text reflects the essentials of the concept:

1 - Motorways of the Sea shall contribute to improve accessibility and cohesion within the European Union. As part of the core network, Motorways of the Sea, is the building block for the maritime dimension of TEN-T, covering the European maritime space. As such, it provides a platform for the development of all the activities required to efficiently reconcile all the key elements involved in maritime transport – ports, ships, human element and organisational systems and procedures; in order to achieve the safe, secure and sustainable maritime operations which are instrumental for European competitiveness.

Concerning the European Maritime space proper, activities will cover, *inter alia*:

- a - The safety of operations, e.g. ice breaking and year round navigation, human element, hydrographical surveys, safety information systems, dredging, navigation information systems, e-navigation.

b - The environmental performance of ships, e.g. innovative waste and waste water treatment systems, improved reception facilities, environmental performance and dynamic ship indexing, improved ship and engine efficiency, reduced emissions as required for ECAS, environmental tailored design and retrofitting procedures as well as life-cycle analysis of ships including easy recycling and disposal and the use of electro-mobility or alternative fuels for ship propulsion.

c – Traffic management and navigation services, e.g. support the deployment of improved vessel traffic management services (VTMS) and of their interface with ships, optimised bridge design and navigation systems as well as e-navigation services, tele-monitoring and tele-maintenance of ships, as well as navigation, reporting and positioning systems.

d – Optimised ship operations, e.g. short sea shipping and sea-river operations, ship and port interface development to achieve efficient logistics operations

2 – Motorways of the Sea shall comprise the European maritime space where ships evolve coming to and from European ports, the safety and security procedures that permit sustainable operations, the traffic management services and the ports as the interconnecting points to other modes and final destinations for passengers and cargo thus guaranteeing both the accessibility requirements and the integration of the different services supporting high volume of trade.

Concerning the interface ship, port and hinterland, the following activities shall be considered as priorities:

a – efficient connections from and to the core network ports, e.g. efficient multimodal connections to the European transport network and matching transshipment performances to other ships and other modes, avoidance of bottlenecks namely through terminal efficiency and infrastructure connections, support the deployment of physical infrastructure to integrate ship and port operations in the transport chain .

b – ICT integration of ships and ports in the logistics chain: support to the continued development and deployment of single-window type of services and other e-maritime systems to streamline procedures and speed up the transportation process and the official clearance of cargoes. Support to the development of the institutional ICT layer where private services connect in order to exchange all the information required on a door to door type of transport.

c – Favour the clustering of ports leading to an optimised use of common infrastructure and to larger economies of scale and thereby gaining efficiencies and avoiding bottlenecks, this will also entail the use of common information services

d – Support the development of infrastructure and ancillary infrastructure required for the development of sustainable shipping, e.g. enhanced shore based reception facilities, liquefied natural gas (LNG) infrastructure for refuelling and bunkering services, refuelling services and cold ironing systems.

e – Support the development of geo-strategic ports which will guarantee the security of supply for maritime transport services thus avoiding critical stoppages on the flow of goods due to natural calamities or man-made causes. This will address ports, access to hinterland, terminals and ships

3 – The Motorways of the Sea projects will also embed the new type of dynamic infrastructure where transport modes and units, physical infrastructure and operational requirements and operations will be brought together and their integration optimised. This will result on a level playing field (framework) able to integrate public and private parties and their respective financing capabilities in the common endeavour of deploying equipment and infrastructure whilst developing effective and optimised operations. This operational infrastructure needs to be developed with door to door services in mind.

An example of this type of priority is the corridor-specific infrastructure project which focuses on infrastructure and facilities, having the objective of improving the capacity, frequency or quality of existing maritime links, or establish new ones, as elements of the broader network of MoS in terms of logistic chain.

4 – Implementation of MoS projects – given the diversity and type of projects which are covered under MoS, the instruments to be used cover studies, pilot projects including full-scale demonstration and development projects.

## **5. On-Going Activities**

In 2011 it is important to highlight two types of activities: (1) the coordination activities and (2) the newly implemented and the ongoing projects.

(1) – the Coordination activities: the coordination activities were promoted to improve coordination, exploit synergies and avoid duplications. The Workshops so organised also identified stakeholder's priorities and user requirements. Many of those are described under the List of Development Priorities. In 2011 three coordination meetings were organised: Genoa (end February 2011) organised by the region of Liguria and the Port of Genoa; Aarhus (April 2011) organised by the City and the port of Aarhus and Madrid (May 2011) organised by the central administration (Puertos del Estado) and private stakeholders (e.g. Foundation Philippe Cousteau and Universidad Politecnica de Madrid). These three meetings (lasting 2 days each), attracted more than 200 participants and were fundamental to share experiences, raise awareness, disseminate results and foster the development of new development actions.

### **The ongoing Projects**

Currently, MoS has 12 ongoing projects, representing +/-€125 million of EU grants and a total investment of about €800 million.

**1) 2008-EU-21015-P: Motorways of the Sea projects in the Baltic Sea Area Klaipéda-Karlshamn** Total project cost: €26.040 million, EU contribution: €5.24 million

The objective of the action is to increase the share of intermodal transport in the southeast/southwest Baltic Motorways of the Seas link through Klaipéda and Karlshamn. To this end, the operator of the service, DFDS Lisco, has already increased the capacity of the link by 21%. At the same time, the implementation of the Action will considerably improve and enhance the capacity of unified rail goods handling on the Swedish side, as

well as providing infrastructure investment in Karlshamn. The current (2009) intermodal share of the corridor is 18% with the aim to reach the 56% in 2015 and ultimately in 2025 to reach 71%. The activities of the action will focus on:

- Improvement of environmental sustainability by increasing intermodal transport in the corridor. Furthermore, oil sanitation equipment will be acquired in Karlshamn to mitigate risks due to the increase in traffic
- Elaboration and implementation of a strategy to achieve modal shift, by conducting market studies
- Increasing the loading/unloading speed of containers to vessels, through the purchase and operation of a new crane in Karlshamn
- Reduction of waiting/transit time with the upgrade and modernisation of the Karlshamn ro-ro terminal
- Increasing of the efficiency and capacity for trains in Karlshamn through the development of the new shunting yard and the electrification and improvement of the port rail track
- Doubling the container handling capacity by building a new combined terminal Preparation for the improvement of hinterland rail connections through the development of design and EIA for the "missing link" Karlshamn-Olofström
- Increasing the efficiency in Klaipėda by improving the quay operability for vessels through the installation of a hydraulic device for ro-ro (roll on, roll off) ferries

Progress Report: Act1. The different responsibilities of the various actors (port, rescue service, coast guard) have been defined. Smaller investments have been carried out from the local rescue service in line with the project. There is a port plan for a larger investment in the oil port at Karlshamn.

Act.2. A larger overall study and more local/regional business oriented study have been concluded. Information and statistics have been collected. A smaller benchmarking study with stevedoring company SMELTE i Klaipėda has been carried out regarding practical container handling (capacity, efficiency, crane strategy, ...) The activity has been closed. Act. 3. The decision has been taken on the type and capacity of the crane. There have been ongoing discussions with some possible crane owners. There have been problems with the strength of our berths. Cranes have been larger and larger. We have made a comprehensive study of our berths (outside MoS) and have now a plan to strengthen some of our berths. Act. 4. The overall traffic system in the port has been looked at including the investigation and strategy for the berths. The detailed design with the new gate area will be started. The traffic in the MoS corridor is increasing all the time so temporary solutions must be done "all the time". There is a problem to mix temporary and long time solutions. The passenger flow is also increasing and the best solution was to move the passenger terminal to a new place, but it is expensive Act.5. The detailed construction of the new shunting yard will finish up in a month and before the end of 2011 the tender procedure will start. Trafikverket will finance a smaller part of the investments. Act.6. The detailed construction of the combi terminal will finish up in a month and before

the end of 2011 the tender procedure will start. Act.7. The detailed construction of renovation and electrification will finish up in a month and before the end of 2011 the tender procedure will start. Trafikverket will finance a smaller part of the investments. Act.8. All “procedures” are finished. Trafikverket has started the work. Regional actors, authorities and companies are active in a steering group. Port of Karlshamn is “coordinator”. Act. 9. Is closed from the Lithuanian side.

**Expected Results:** The growth in the MoS corridor Karlshamn – Klaipeda is about 20-25% annually, and expected to continue over time. The part that is just a trailer is increasing and the next step will be more unit based flows. More investment is needed in connecting railway infrastructure on both sides. In parallel, the passenger flows are increasing. In a parallel Inter Reg project, East West Transport Corridor 2, work with a “Green Corridor manual” is ongoing, which includes the creation of an “Information Broker” function. It will be an open information platform for actors in the corridor. An EastWest Transport Corridor Association has been funded by partners in the projects as well as those from western China to the Baltic Sea area. Several business meetings have taken place, and Lithuania is chairman of the association.

2) **2008-EU-21010-P: High Quality Rail and Intermodal Nordic Corridor Königslinie.** Total project cost - €50.349 million of which EU contribution: €10.2 million. The objective of this project is to upgrade the existing rail ferry link between the ports of Trelleborg (Sweden) and Sassnitz (Germany) in order to increase the share of rail and intermodal transport on the Swedish-German corridor in particular and the Sweden-Central Europe/Italy corridor.

Improving the existing rail ferry service by offering more capacity, more efficiency, faster handling in the ports and more flexibility due to the option of a sixth departure (in peak demand periods only), will help it compete with alternative and less sustainable routes on this transport corridor.

Improving the infrastructure in the ports will enable operation on a sufficient volume base combining rail and intermodal transport. In Trelleborg, the port will be able to efficiently service more than one rail/road/intermodal ferry route. In Sassnitz, the new infrastructure and equipment will enable the port to load, unload and store intermodal transport units (e.g. unaccompanied trailers).

The Königslinie route is currently served by two vessels operated by Scandlines AB and Scandlines GmbH. The sailing schedule (in 2007/2008) is five departures per day and per direction. Together, the two vessels have a total capacity of 2,262 lane metres - including 1,419 lane metres for train wagons and 843 lane metres for intermodal units, trucks and cars. The vessels, which are 19 and 26 years old, make the crossing in 3h45 min - 4h, and approximately 60 minutes is spent at the port to unload and reload before departing again.

From the current 1.7 million tonnes transported in rail wagons on the ferry route between Sassnitz and Trelleborg (81% of the total 2.1 million tonnes on the ferry line in 2008), the project aims to increase the volumes to 3 million tonnes of rail and intermodal transport by 2018. The overall corresponding modal shift is 1.4 billion tonne/km per year in 2018 and 2.1 billion tonne/km per year in 2028. On a cumulated basis, the modal shift is estimated at 21.6 billion tonnekm by 2028 (15 years) and 32.6 billion ton/km by 2033 (20 years).

- Progress in the individual activities: 1) Two improved rail ferries: due to start in 2013
- 2) Reconstruction and adaptation of berths in ports: In Trelleborg: additional road ramps on ferry berths 8 and 9 built and inspected early 2010. Adjustable fenders still to be installed. In Sassnitz, works to start in 2012.
- 3) Extensions and improvements of port terminals: In Trelleborg: Additional tracks on the main ramp at ferry berth 9 and pavement works in the marshalling yard area preceding ferry berths 8 and 9 completed in 2010. Other works on-going (installation of signs and lights being installed, dismantling of building). In Sassnitz: works to start in 2012.
- 4) Automatic mooring stations for vessels: due to start in 2012
- 5) IT studies and pilot, market and fast handling studies: Market study completed in March 2011. Pilot IT and EDP (phase I) completed. Common IT study (phase II) on-going, to be completed in end 2011. Fast handling study on-going.
- 6) Improvement of service quality based on IT-support: on-going, to be completed in 2013
- 7) Start up activities: temporary deployment of a 3rd ship: due to start in 2012
- 8) Support measures in the ports: In Trelleborg: four tug masters being leased, four more planned to be purchased in 2012. In Sassnitz: part of the activity is being rescheduled to 2012, the other part was due to start in 2012 in any case. The project work is characterised by a constructive cooperation between the beneficiaries and in relation to the external stakeholders, i.e. the Swedish and German governments and the TEN-T Executive Agency. No technical or administrative issue has put the project in any implementation difficulties. However, there was a market crisis imposed demand drop by some 40% and impacts resulting from framework condition and market structure changes will likely urge the beneficiaries to revise the project plan. The project phase of 2012-2013 is dominated by vessel related activities and investments (Scandlines) and the intermodal terminal activities mainly in the port of Sassnitz.

**Expected results** are based on the consideration of full scale project implementation according to the initial project plan: the overall annual modal shift is expected at 1.4 bn tkm by 2018 and 2.1 bn tkm each year in 2028. On a cumulated basis, the modal shift is estimated at 21.6 bn tkm by 2028 and 32.6 bn tkm by 2033. The efficiency of the port operations will be increased considerably by the introduction of double ramp handling of the vessels in conjunction with optimised terminal handling procedures of rail, intermodal and conventional road transport units. Taking into consideration of even growing traffic volumes, the port time of the vessels should be reduced by 33% allowing for better adjustments of the sea voyage, either in terms of schedule or travel speed of the vessel. Safety measures are planned on the ports and in particular during the vessels' mooring and the discharging and loading. However by avoiding long distance truck transport, the risk of road fatalities is reduced. The correction in costs of externalities, mainly environmental effects related to modal shift and reduced bunker consumption, is assumed to reach a share of 35% of the project's socio-economic benefit - a monetary value of some €73

million over 25 years. In terms of CO<sub>2</sub> emissions, a savings of approximately 80.000 tonnes should be saved each year by 2015.

Each euro spent is expected to have a social contribution in monetary value of 5 euro considering environmental effects, benefits to employment and reduction of transport time. Thus, a total net present value of €209 million (over 25 years) is anticipated.

3) **2008-EU-21020-P: Motorways of the Sea Esbjerg – Zeebrugge** Total project cost- €26.54 million of which EU contribution: €5.308 million

The maritime link between Esbjerg, Denmark and Zeebrugge, Belgium, in service since 2005, has provided an intermodal alternative to truck transport between Denmark and the Benelux countries. This project will be further developed into a Benelux-Scandinavia shortsea bridge. The upgrade of the service will consist of the coordinated increase of the frequency on the Zeebrugge-Esbjerg route, investment in infrastructure and facilities and the adoption of accompanying measures to foster integration of various parts of the intermodal chain. This includes an increase in service by doubling of the capacity of the ro-ro (roll on, roll off) connection between Esbjerg and Zeebrugge. An MoS approach merits in cost savings (up to some 40%) and less CO<sub>2</sub> emissions (58%) than the alternative road connection. In addition, it reduces congestion on very busy parts of the EU road network. The investment in infrastructure and facilities associated with the upgrade of the maritime link consists of a floating ro-ro ramp, the extension of an access way in Esbjerg, a ro-ro jetty, gantry cranes and ICT development in Zeebrugge. The project will give way to major improvements in the handling of goods and attract more goods on the ro-ro based intermodal concept.

The floating ro-ro ramp in the port of Esbjerg was already installed in 2009. The ro-ro jetty in the Port of Zeebrugge has been operational since the end of 2010, and only some smaller elements of works on the ancillary infrastructure remain to be done. The construction of the new port access way in Esbjerg is on schedule. Due to the withdrawal of beneficiary Sea-Ro, activities 3 and 4 will be discontinued. Activity 6 on traffic monitoring and administrative simplification needs closer attention, which will be taken up in the second half of 2011. The overall Action is on schedule, with the final completion date still estimated to be 31 December 2012

**Expected Results:** The Action will contribute to a better maritime connection between Denmark and the Benelux. According to calculations from the University of Southern Denmark, the use of the ro-ro connection can save up to 40% in transport costs and 58% of CO<sub>2</sub>emissions.

4 ) **2009-EU-21010-P: Baltic Link Gdynia-Karlskrona** - Total project cost - €35.454 million of which EU contribution: €17.09 million

The objective of the Action is to implement MoS in the Baltic Sea region through the ports of Karlskrona and Gdynia. The project will reduce the amount of freight using the northern European motorways and will diminish the related road congestion.

The Action will deliver high quality MoS infrastructure and services by combining rail and sea modes in order to eliminate the existing bottlenecks and create a seamless intermodal transport chain. The project's result is expected to be an increase in the intermodal share of the corridor from the current 3% to 10% in 2015 and 36% in 2025.

The activities of the Action will focus on the following particular objectives, namely to:

- Increase the train capacity for goods on the Scandinavian and Polish sides
- Eliminate inadequate intermodal capacity on the Karlskrona-Gdynia link taking an important step towards an intermodal transport chain connecting Scandinavia with central Europe and the Adriatic Sea
- Develop transport nodes in Alvesta, Karlskrona and Gdynia that will concentrate transport flows and achieve rail bound volumes that are economically profitable
- Promote intermodal solutions on their respective markets that can mitigate road congestion, particularly in Germany
- Eliminate conflict of interest between freight and passenger trains between Gothenburg and Karlskrona/Kalmar on the coast-to-coast line in Sweden
- Offer a missing link to TEN-T corridors by further connecting the Baltic Sea in a north-south dimension
- Harmonise the IT systems between the ports and other operators by further developing the Stena Line e-freight platform and move towards single window

**Progress report:** Activity 1: The coast to coast line activity is a partnering project, the designers and contractor have been working together to produce final design documents necessary for carrying out the works and solve “problems” as they occur. This collaboration is running as expected. The land preparation works and data collection was achieved as planned and the documentation was used in the procurement process. The contract with the design consultant was signed 24 June 2010 according to plan. The activity is running as planned and completed work regarding the the coast to coast line is land preparation work and procurement process. Activity 2: The planned and completed work regarding the terminal in Alvesta are the design and procurement process, ground preparation work regarding phase 1 together with illumination, fencing and demolition of a building which means that the terminal is up and running for the time being. Activities 3, 4, 5, 7, 8 and 9: Planned and completed work regarding the Port of Karlskrona are the planning and design of Verköbanan, electrification of Verköbanan, level crossing and triangle track together with the planning and design and procurement process regarding the off-shore land power system in the port. The ITS system of Activity 8 has been delayed, and due to cost effectiveness, the procurement process regarding Activities 3, 4, 5 and 7 has been conducted in combination with Activity 1 – Coast to coast line within the project. This has caused some delays and due to delays with these railway investments, Activity 8 has been postponed. The impact for other activities within the Action is limited. No impact on duration, cost or size can be foreseen for the time being. Activity 9 on the land power system in the port of Karlskrona, has experienced cost increases due to some miscalculations and increased prices compared to the application. The Municipality of Karlskrona is aware that the budget for this action is underestimated. After the application was submitted, a calculation of approximately €300,000 for the investment was made. This means that the difference between the accounted costs and the decided EU funding will be covered by the beneficiary (Municipality of Karlskrona). The activity will still be carried out as originally planned. Activity 10: The planned and completed work regarding Stena Line is the selection of the provider regarding the power connection system compatible to the off-shore land power system in the port of Karlskrona, together with intervention of ferry 1 and 2 (Stena Vision & Stena Spirit) of the two new planned ferries.

**Expected results:** An increased modal shift in the corridor by increased volumes of rail bound goods and sustainable handling of goods is foreseen and this will be done by renovation and electrification of the port rail track in the port of Karlskrona, together with the investments in a combined terminal in Alvesta and upgrading of the coast to coast line. In addition, the increased volumes of sea bound goods are expected by improving the quality of the maritime link. An increase of the intermodal share of the corridor expected will be 10% by 2015 and 36% by 2025. The expected results will be improved environment in both the port of Karlskrona by the off-shore land power system and in the corridor as a whole by reducing the transport sectors environmental footprint by the enhanced train capacity in the port of Karlskrona and on the coast to coast line. These activities will lead to decreased NOx, SOx and CO2 emissions. Annual deduction of: NOx = 36 tonnes + SOx = 4 tonnes + CO2 = 2 300 tonnes. The project is also expecting accelerated integration of areas with low accessibility through the increased service by the operator on the link.

The eight remaining projects were already described in sections 2 and 3, respectively. For projects selected in the 2010 Call, actual implementation started only in 2011 which does not justify more detail than already mentioned here.

## **6. Administrative framework**

The sector would benefit from an increased coordination between the different funding schemes supporting Motorways of the Sea. In fact, not only TEN-T funds finance MoS infrastructure, but Member States, regions, European Investment Bank (EIB) and particularly the Structural Funds play a key role. The same applies for the services financed under the Marco Polo scheme in which the role of private funds and of investment entities such as the EIB will be fundamental for the continued success of endeavours once the public subventions can no longer be used. Accordingly, fostering the development of Public-Private Partnerships (PPPs) to support this type of projects is an avenue that is worth pursuing, in particular for large dimension projects that can be implemented in a short time.

Finally, it should be underlined that for the development of Large Infrastructure Projects - clear and unwavering political support is central. The coordinated dissemination of good practices on the management of Large Infrastructure Projects is an important task to be guaranteed by the Commission as it will help identify the projects which stand the best chance of successful completion. This will also be a key guidance factor for any candidates to implement a new PPP or use other innovative financial instruments.

*In order to facilitate the public understanding of the full range of possibilities and opportunities offered to financially support Motorways of the Sea, the Motorways of the Sea One Stop Help Desk was created. The helpdesk, which includes a dedicated website [www.mos-helpdesk.eu](http://www.mos-helpdesk.eu), advises candidates (both Member States and private applicants) on how and where best to apply for support for their specific project. The team staffing the help desk (TEN-T EA and EACI) will help the candidates to clean sail between the different regulations and procedures and their specific timings.*

## **7. List of development priorities**

It is necessary to improve the definition of criteria allowing the identification of funding priorities for projects labelled as Motorways of the Sea. As it was clearly stated in all relevant meetings held throughout the year, priorities will consist on funding both infrastructure (hinterland connections and within ports) and intelligent infrastructure (procedures, vehicles, cargoes).

Operations, although of great relevance and the ultimate goal of activities, are not the primary objective of TEN-T funding. First and foremost, there are funding schemes better adapted to fund private sector operations (maritime, ports or other) such as the Marco Polo, and obviously because before any operations can start the infrastructure needs to be in place. Accordingly, TEN-T concentrates on the development of infrastructure which also is highly time consuming - in average it takes 10 years from preliminary studies to operation.

Finally, priority should be given to studies. Any large infrastructure investment project requires both preliminary and detailed studies to be completed prior to building works or final investment decisions. Furthermore, for a wide and complex subject such as MoS, studies also need to include the operational and team building component, i.e. the platform necessary to bring all key actors together to interact, as well as the platform to be used as an integrator of technologies and operational requirements. Such a "venture prototype" needs to be supported by a dedicated tool. The proposed studies in the form of pilot actions seem to be adequate.

In order to better clarify the different funding and development priorities an indicative list of the most important MoS elements is given as follows:

### **7.1. Within port areas**

- Railways connections to the quays and piers
- Superstructures, construction works and equipment that allow for a better coordination of administrative procedures (*one stop shop/guichet unique*) e.g. customs, health and sanitary, veterinary police, emigration, port operations' services
- Superstructures, construction works and equipment aiming at an efficient management of the cargo flows in the port area, e.g. port gateways, cranes, piers, etc.
- Dredging of berths and canals to keep navigation or to increase the size of the target vessels
- Intelligent infrastructure
- Alternative re-fuelling facilities for ships (e.g. LNG bunkering)
- Promotion of the role of European ports and the MoS network. Once the new TEN-T network is defined, the core network of ports and MoS should be promoted in a brochure outlining its operational characteristics and potential, based on common indicators (such as on the UNCTAD example provided in Annex 9).

### **7.2. Hinterland connections**

- Connections to the hinterland for – railways, inland waterways and motorways – and, especially to logistics platforms located in the interior
- Building of logistics platforms and dry ports
- Junctions, bridges, tunnels and other elements of access to the ports that could improve connections to the hinterland
- New railway lines or sections, by-passes and other upgrading which can help to lower travel time of travel and increase punctuality
- Integrated MoS systems connecting shipper and receiver and facilitating the development of door to door operations and services

### **7.3. Telecommunications**

- Port information systems, vessel traffic management and information services, river information services (when interfaces occur)
- Port community systems interfacing with logistics information systems
- Tracking and tracing systems and services for goods and vehicles (ships, port and inland vessels, ports, hinterland)
- MoS information systems, integrating vessel, VTS, port community, interfaces with other modes (e.g. ITS, ERTMS and RIS) and with intermodal platforms and business information interfaces

### **7.4. Ships**

- There are several suggestions to consider ships as a kind of "infrastructure";
- Further discussion with stakeholders on this theme, is required, in order to define the conditions under which the construction or the acquisition of a ship should be considered as a funding priority.

*The problem of emissions (CO<sub>2</sub>, SO<sub>2</sub> and NO<sub>x</sub>) from vessels is a serious one: on one side we must assure that ships are less pollutant than lorries; on the other side we cannot impose limits of emissions that make maritime transport uncompetitive. New combustibles have to be analysed before they are introduced in practice. One of the most promising is LNG (liquefied natural gas). During the history of shipping, the means of propulsion have varied, especially after the introduction of steam (coal, mazout, etc). Recent operational results for vessels using LNG show a practical elimination of soot, SO<sub>x</sub> and NO<sub>x</sub> as well as a 20% reduction of greenhouse gases.*

#### **7.5. Human Resources**<sup>3</sup>

- Priority should be given for the training of the entire staff involved in maritime operations, from seamen to pilots, VTS operators, dockers and crane operators

*Valencia Port Administration has a foundation (Fundación del Puerto de Valencia) which is in charge of promoting research and transferring results into the services of the port in order to keep abreast of developments. The widening of this benchmarking example to other ports and sectors of MoS should be pursued.*

- Training on the efficiency of processes in the transport chain needs to be provided to both operational and administrative staff
- Training in logistics for all the actors in the MoS chain, and fostering of an MoSErasmus

#### **7.6. The impact of "2020" priorities on MoS**

On the "Europe 2020 – A strategy for smart, sustainable and inclusive growth" policy lines, there is guidance and support for many necessary developments. Most of which are referred to in this report or have already been referred to in the three previous annual reports (2008, 2009 and 2010):

- 1) On the need to coordinate the mobilisation of public funding: Structural Funds, Cohesion Fund, R&D framework programme, TENs and EIB in order to achieve our goals. As a result of those proposals, a Motorways of the Sea One Stop Helpdesk was created in 2010 and provides advice to the public and stakeholders on the best source of support for their practical project ([www.mos-helpdesk.eu](http://www.mos-helpdesk.eu)).
- 2) To modernise and de-carbonise the transport sector. Past reports have proposed new research on the field of fuels. This report puts emphasis on pursuing research on efficient engines, catalysts and scrubbers, as well as efficient hull and propeller design.

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<sup>3</sup> For the most of these cases the funding of training should use the possibilities opened by the "Social Fund".

- 3) To improve and foster intelligent traffic management systems and services, ranging from the "single window" up to the interface of road and railway systems with the port systems.
- 4) To promote better logistics. From the construction of logistics platforms to the training of the numerous professions in the field. The importance of this field has been systematically underlined.
- 5) The reports illustrate how to give impulse to "a good mix of research, the setting of common standards and developing the necessary infrastructure support" to achieve the deployment of innovation in practical cases.
- 6) "To accelerate the implementation of strategic projects with high European value added". Addressing critical bottlenecks, in particular cross border sections and inter modal nodes (cities, ports, logistics platforms)." Particularly important are the safety devices for ships (see EMSA) and the "chips" for containers. The banning of "convenience flags" for European companies or companies wanting to call on European ports must gradually be implemented.
- 7) "To develop smart, upgraded and fully interconnected transport [...] infrastructures and make full use of ICT". The consideration of transport chains which has been recommended is a practical example of this proposal.
- 8) "To ensure a coordinated implementation of infrastructure projects, within the EU core network, that critically contributes to the effectiveness of the overall EU transport system". There are many practical examples under this theme, e.g.the connection of the "roundtheworld trip", location of new transshipment ports in the Mediterranean Sea, railway corridors between north and south, "articulation" of a grouping of ports, a deeper knowledge of the flows which cross the Suez and Panama canals.
- 9) In order "To reduce the transaction costs of doing business in Europe". The improvement of logistics chains has been a repeated recommendation.
- 10) "To ensure that transport and logistics networks enable industry throughout the union to have objective access to the single market and the international market beyond". This is the main purpose of the geo-strategic considerations regarding the connections with Far East, South and North America and Africa which have been produced.
- 11) "To develop an effective space policy to provide the tools to address some of the key global challenger and in particular to deliver Galileo and GMES". The suggestion regarding "chips" (tags) either for vessels or for containers comes under this umbrella.  
These have been some examples of the importance of MoS in the wider perspective of the achievement of the goals referred to in the document "Europe 2020".

- 12) The program insists on "Education, Training and Lifelong-Learning". We have indicated that a special action, concerning the merchant marine officers' level. In addition, new training for the numerous professions linked to maritime transportation, logistics and operations in harbours must be implemented. This is fundamental in order to provide a good level of initial training required by these professions instead of the on the job training currently used today.
- 13) "To promote student mobility and trainers' mobility, and improve the employment situation of young people". We have suggested setting up an Erasmus type of programme for the maritime professions by articulating mercantile marine schools within Europe. This could eventually lead to the formation of a council of those schools at the European level. Countries without apparent problems (Greece, Romania, Latvia and Norway) could induce more dynamic action on the others.
- 14) "The EU has prospered through trade, exporting round the world and importing inputs as well as finished goods". That is the reason why it is not enough to look at MoS just at the internal European level, but it is necessary to consider the external dimension of what still is the most important trade block in the world (EU): transshipment ports, Suez and Panama Canals, connections to Africa and South America, round-the-world trip in the Mediterranean Sea, port hubs, new transshipment ports in the Mediterranean (besides Marsaxlok, Gioia Tauro, Algeciras and Tangiers-Med).
- 15) "... Creating innovative instruments to finance the needed investments, including public-private partnerships (PPPs)". This will be particularly adequate for logistics platforms, "dry ports" (like the one in Zaragoza) or even port terminals.
- 16) "... To foster European growth through our participation in open and fair markets world wide". This will be achieved only if a system of efficient ports is in place, assuring good external connections.
- 17) "We have a particularly close relationship with Africa and will need to invest further in the future in developing that close partnership". For that, ports are essential. Ports in Europe and ports in Africa must cooperate, as well as everything else which comes as a result of MoS and its dynamic connection of ports with their hinterland - thus connecting markets and fostering trade.
- 18) Europe needs to develop a deeper knowledge of the implications of the different types of fuels which can be used, particularly on their environmental impacts (NOx, SOx, CO2 and particulates). There is a great hope that Liquefied Natural Gas (LNG) may drastically improve the current situation. Nevertheless LNG sets a number of challenges: safety requirements, distribution networking, shipping economics, etc. This new field deserves an additional knowledge effort either by gathering current knowledge and integrating multi-disciplinary issues or by identifying and supporting the

development of required research actions and studies to address technical problems.

As already mentioned in section 3, MoS One Stop Helpdesk proposed by the Coordinator in his 2009 report, was implemented in time to support the 2010 Calls. This advisory body plays the single interface between the candidates for funding and all EU financial instruments used to support the development of MoS related activities.

Finally, good financial engineering products such as the "Eco-bonus" should be promoted. The Eco-bonus is a promising system as it targets the support of demand instead of the supply services, thereby avoiding distortions of competition. However, Member States concerned by such a scheme must first agree on common terms of support. Governments of countries which will benefit from the relief of road traffic should, unanimously agree and sign a memorandum of understanding reflecting a common engagement (e.g.: Italy, France and Spain). Alternatively, the Commission could integrate this financial engineering product in a financing scheme such as Marco Polo or "start-up" operations in MoS/TEN-T, in which case the applicants, e.g. a port, would for instance request financial support to apply an "Eco-bonus" type of compensation (the same for every lorry volunteering embarkment on that given port for a given destination). Such a system entails punctuality of payments as it addresses small companies without large financial reserves. Its main advantage would relate to the emergence of multimodal logistics companies building on a network of small shippers and logistics services providers. This would pave the way to the emergence of a single maritime European market.

## **8. Studies and new activities**

To keep the MoS momentum going, *inter alia*, some studies to be carried out in 2011 and beyond addressing key issues: benchmarking, articulation, intelligent infrastructure, flow of goods and a conference on MoS. Better knowledge on these issues will target efforts and audiences, as well as improve the value added of European support. These areas are the following:

- The benchmarking of MoS related activities, study aiming at:
  1. Providing didactic examples to conceptual and project engineering MoS developments
  2. Highlighting indicators that will better define MoS criteria
  3. Producing a MoS ports' atlas to display all MoS key characteristics for each port.
- The organisation of conferences or workshops to consolidate a common European vision on MoS. The conference will support the development of a European common vision on MoS, build a solid MoS network and develop a consistent corporate image for MoS. These elements are fundamental to advertise and promote the image of MoS among stakeholders and interested business parties. In a media-run era, a sector of activity which is not publicized does not exist.
- Launching a prospective study on the development of a new methodology to establish an origin/destination matrix of cargo/trade flows between EU regions. This will enhance the quality of the image of the cargo flows intra-EU that is currently being hampered by the

lack of customs' trade information. In addition, its results will be useful for regional development planning purposes.

- Development of a study on the use of vehicles/cargo tracking and tracing technologies to facilitate MoS transport procedures, make an inventory of the permanent tracking & tracing tools and devices and undertake the full scale demonstration of a streamlined process including the analysis of its efficiency and safety performance.

- Promote the benchmarking of MoS activities in the northern Adriatic range. There is a need to identify key hinterland connections as well as an articulate a strategy enabling the development of a consistent interoperability approach among the ports of the north Adriatic range whilst stimulating competition in the same area.

***As a result of previous MoS reports, the TEN-T work programmes and Calls for 2010 and 2011 were re-calibrated and new objectives identified e.g. pilot actions and wider benefit actions. Given the submissions in 2010 and the interest received thus far, a successful 2011 Call both in terms of quality and quantity is expected. Such success will be instrumental for the actual development of MoS and for the deployment of MoS related infrastructure and future services. The studies, pilot actions and projects resulting from this call will need constant monitoring in order to further develop the concept, accelerate change and lead to effective deployment.***

In 2011, new opportunities have been opened under the TEN-T framework: the Call 2011 with a forecasted MoS dedicated budget of €70 million. Further calls will be organised for 2012 and beyond. In 2011, a new Marco Polo is expected. Additional funding opportunities also exist under the Structural Funds or as European Investment Bank funded actions. The challenge for Europe and for MoS stakeholders is to achieve a match of the minds that guarantees a perfect use of the resources made available - thereby guaranteeing an important role of MoS in the European economic recovery.

## **9. Revision of the TEN-T Guidelines**

The TEN-T Guidelines constitute the main regulatory basis for the development of the Motorways of the Sea. The Guidelines not only define the type of eligible actions but embody as well the financial support dedicated to MoS in the TEN-T programming period 2007-2013 where an overall indicative amount of €310 million was flagged.

In 2010, the process of revising the TEN-T Guidelines started and is expected to last until mid-2012. The TEN-T budget is, by far, the largest dedicated budget made available for MoS development up to now and should be supported by actions perfectly connected to the market's needs and to the stakeholders in order to play its expected role and help trigger development. It is important to underline that the impact of the global EU contribution in the market is rather large as it may entail a global investment of approximately €2 billion for MoS infrastructure and activities across Europe.

Whilst this level of investment can only be met by institutional partners, either alone or through PPPs, it will create an over-arching infrastructure which will constitute a level playing field for maritime logistics operations in which different private transport

operators may evolve and will be able to integrate their own maritime transport operations in a coherent European wide door-to-door transport chain.

MoS are the framework for the development of actions covering maritime transport and ports and favouring their integration in the global transport chain. In the new Guidelines, MoS are part of the Core network and constitute an invisible but fully available transport corridor covering all of the EU's coastal areas. MoS will be, *de facto*, a key infrastructure implementation tool, supporting the deployment and operation of the Comprehensive and Core TEN-T Networks

The new Guidelines should simplify and clarify the rules of engagement for MoS. They should also re-affirm MoS' vocation to support studies, both master plan style and the preliminary or final design type which are common to all infrastructure projects. In addition, schemes such as pilot actions, the integration of intelligent infrastructure, and support to start up services and the deployment of ships are all different but common elements of a coherent MoS development programme. Finally, MoS need to support the key elements of maritime infrastructure: safety at sea and environmental protection. Without investments in these areas, the free maritime infrastructure will not be operational.

Finally, the limits and the type of incentives for the combined use of different sources of funding to implement one single MoS global project should also be made clear in order to allow for an optimised use of all the available and different sources of funding.

The new articles on MoS should clarify its unifying role between the Core and Comprehensive network as well as the "feeder" services to/from other ports without which the Core ports will not function. Europe's land forms, large coastal surface and numerous islands and archipelagos require maritime transportation for passengers and cargoes. No single land point of the EU is more than 650 km away from a sea coast. Europe is also one of the major world trading partners and most of its trade exchanges are carried by maritime transportation. Consequently, ports are the key nodes and ships the fundamental vehicles for trade, connecting European regions to their European or international partners. To properly support these activities, ports and ships must be able to interact efficiently between them as well as with the transport land network

The following elements already stated in section 4 needs to be taken into account when defining the new guidelines:

*1 - Motorways of the Sea shall contribute to improve accessibility and cohesion within the European Union. As part of the core network, Motorways of the Sea, is the building block for the maritime dimension of TEN-T, covering the European maritime space. As such, it provides a platform for the development of all the activities required to efficiently reconcile all the key elements involved in maritime transport – ports, ships, human element and organisational systems and procedures; in order to achieve the safe, secure and sustainable maritime operations which are instrumental for European competitiveness.*

*Concerning the European Maritime space proper, activities will cover, inter alia:*

*a - The safety of operations, e.g. ice breaking and year round navigation, human element, hydrographical surveys, safety information systems, dredging, navigation information systems, e-navigation.*

*b - The environmental performance of ships, e.g. innovative waste and waste water treatment systems, improved reception facilities, environmental performance and dynamic ship indexing, improved ship and engine efficiency, reduced emissions as required for ECAS, environmental tailored design and retrofitting procedures as well as life-cycle analysis of ships including easy recycling and disposal and the use of electro-mobility or alternative fuels for ship propulsion.*

*c – Traffic Management and Navigation services, e.g. support the deployment of improved vessel traffic management services (VTMS) and of their interface with ships, optimised bridge design and navigation systems as well as e-navigation services, tele-monitoring and tele-maintenance of ships, as well as navigation, reporting and positioning systems*

*d – Optimised ship operations, e.g. Short Sea Shipping and Sea-River operations, ship and port interface development to achieve efficient logistics operations*

*2 – Motorways of the Sea shall comprise the European maritime space where ships evolve coming to and from European ports, the safety and security procedures that permit sustainable operations, the traffic management services and the ports as the interconnecting points to other modes and final destinations for passengers and cargo thus guaranteeing both the accessibility requirements and the integration of the different services supporting high volume of trade.*

*Concerning the interface ship, port and hinterland, the following activities shall be considered as priorities:*

*a – efficient connections from and to the core network ports, e.g. efficient multimodal connections to the European transport network and matching transshipment performances to other ships and other modes, avoidance of bottlenecks namely through terminal efficiency and infrastructure connections, support the deployment of physical infrastructure to integrate ship and port operations in the transport chain .*

*b – ICT integration of ships and ports in the logistic chain: support to the continued development and deployment of single-window type of services and other e-maritime systems, to streamline procedures and speed up the transportation process and the official clearance of cargoes.. Support to the development of the institutional ICT layer where private services connect in order to exchange all the information required on a door to door type of transport.*

*c – Favour the clustering of ports leading to an optimised use of common infrastructure and to larger economies of scale and thereby gaining efficiencies and avoiding bottlenecks, this will also entail the use of common information services*

*d – Support the development of infrastructure and ancillary infrastructure required for the development of sustainable shipping, e.g. enhanced shore based*

*reception facilities, liquefied natural gas (LNG) infrastructure for refuelling and bunkering services, refuelling services and cold ironing systems.*

*e – Support the development of geo-strategic ports which will guarantee the security of supply for maritime transport services thus avoiding critical stoppages on the flow of goods due to natural calamities or man-made causes. This will address ports, access to hinterland, terminals and ships*

*3 – The Motorways of the Sea projects will also embed the new type of dynamic infrastructure where transport modes and units, physical infrastructure and operational requirements and operations will be brought together and their integration optimised. This will result on a level playing field (framework) able to integrate public and private parties and their respective financing capabilities in the common endeavour of deploying equipment and infrastructure whilst developing effective and optimised operations. This operational infrastructure needs to be developed with door to door services in mind.*

*An example of this type of priority is the corridor-specific infrastructure project which focuses on infrastructure and facilities, having the objective of improving the capacity, frequency or quality of existing maritime links, or establish new ones, as elements of the broader network of MoS in terms of logistics chain.*

*4 – Implementation of MoS projects – given the diversity and type of projects which are covered under MoS, the instruments to be used cover studies, pilot projects including full-scale demonstration and development projects.*

## **Conclusions and recommendations**

### **What progress has been made thus far?**

Twelve TEN-T MoS projects have been already implemented, representing a total investment of around €800 million. They demonstrate that the MoS framework constitutes a strong platform for the implementation of technical concepts aimed at improving the quality of maritime operations and their integration in the global transport chain.

The promotion of Motorways of the Sea has further boosted the development of many small actions that have improved port infrastructure, information systems and, the efficiency of maritime operations or the development of better infrastructure connections between ports.

The programme also provides a sound basis of cooperation between ports and sea regions, such as the Baltic area. A common understanding on ice operations, environmental protection and traffic safety is steadily developing and helping reinforce these budding collaborations. Other sea areas (e.g. in the Adriatic) are developing a partnership leading to an articulation between different ports and countries (the northern Adriatic range), creating common strengths and addressing common weaknesses, thereby increasing the attractiveness of these regions. International cooperation with neighbouring countries and regions such as the Mediterranean and the Black Sea areas and Africa has also been initiated.

MoS may smartly use different implementation tools, taking advantage of the array of financial schemes and funding tools available such as TEN-T, Marco Polo, Structural Funds and EIB - each one of them specialised in a specific field of activity. In general, Marco Polo finances services whilst TEN-T focuses on integrated infrastructure development (both physical and information systems) for ports and their hinterland connections (e.g. logistics centres). TEN-T has a dedicated budget of approximately €300 million for MoS for the programming period 2007-2013.

MoS has been the precursor on identifying and promoting innovative issues coming with practical solutions to inform policies, e.g. intelligent infrastructure and LNG technologies. In both cases, pilot actions have been developed which are expected to deliver practical results in 2012. Unifying rather than fragmenting, MoS activities play a coordinating role fostering the development of operational standards and common procedures, as well benchmarking operations.

It is expected that the new priorities and tools proposed in the 2011 TEN-T Call, particularly the pilot actions will succeed in raising interest among the stakeholders. This type of tool allowing for full scale testing may represent the ideal basis to test a venture without touching on competition issues. It will enable the embracing of technical, operational and procedural issues and the emulation of the resulting transport operations, allowing for the start up of the commercial phase immediately after the completion of the pilot action. By providing support to develop highly complex technical tools for efficient transport operations such as information systems and customs requirements interfaced with electronic cargo manifests and logistics information systems, TEN-T MoS is bringing innovation to the real world.

## **Recommendations**

Over the past four years, the Coordinator has visited many European ports and discussed with hundreds of European actors interested in MoS ranging from master mariners, politicians, planners, businessmen, pilots and terminal operators to port managers, mayors, freight forwarders, civil servants, engineers, scholars, shipowners, ministers, traffic managers, road hauliers, shipbuilders, and shippers. All play a different role but in a common goal – they all support and believe in an increased role of maritime transport as a key development factor for a better Europe.

The Coordinator organised three large workshops involving the 12 TEN-T MoS projects and integrating the Marco Polo and Interreg actions. The workshops were also open to the participation of third countries, in particular of the neighbouring Mediterranean countries. Latin America has also actively participated in these activities. Inspired by the enthusiasm and positive criticisms of all these stakeholders, the Coordinator summarises some of their visions and ambitions in the following recommendations for European MoS support priorities:

(1) Development of integrated port infrastructure (trade, procedures, movement of goods, information systems, superstructure, vehicles and operations). Key enablers are: close cooperation between port authorities and city/regional authorities, port masterplans, and a good networking between the port community and the cargo owners (shippers). The formation of port communities should be fostered. Finally, certification of port activities or at least of port management should be widely promoted and implemented.

(2) Improved hinterland infrastructure connections, development of the missing links and value added links in the door to door transport chain integrating sea legs. MoS logistics will become a key element for industrial logistics. In the future land locked countries should be called to actively participate in defining their requirements and identifying key coastal connections.

(3) Deployment of intelligent infrastructure services (e.g. tracking and tracing) to better reconcile the shipper and its goods, increasing safety and security and allowing for a fully controlled just in time delivery system. Concerning the actual development of the European maritime space without barriers, EMSA already operates the key maritime electronic information management tools which are required to deploy the system.

(4) Promote activities and launch studies to better understand how to help the sector. Areas to be covered range from the identification of trade patterns within the internal European market (origin and destination matrix) to benchmarking the efficiency in transport chains and nodes and on how best to foster cooperation among ports and modal actors to facilitate the deployment of innovative technologies. Each port should have an observatory monitoring both its hinterland and foreland

(5) Support to the articulation of ports and port activities (ranges, gateways, hub and spoke) exploiting know-how and comparative advantages, creating a favourable environment for the development of new business opportunities and services.

(6) MoS will enormously benefit from improved education, training and cooperation efforts throughout the entire human element pillar in the area, this refers both to on-board staff and the numerous shore based professions which require knowledge in logistics as the basis of their know-how. A European-wide and comprehensive effort to improve education, training and attractiveness for maritime transport related careers needs to be

launched. It should lead to the development of a MoS Erasmus type of network – i.e. building on an aggregated European knowledge to improve access to knowledge whilst keeping a sustainable diversity of training places.

(7) Develop actions and information systems to integrate procedures and operations in a guichet unique (one stop shop) for the entire chain: foreland (shipper), feeder, port, shipping operator, port, feeder, hinterland (receiver). Clearly promote wherever and whenever possible the use of sea-river technologies, systems and services.

(8) Support the launching of actions aimed at fostering research and technological development to develop ships and equipment with reduced emissions and increased safety and environmental friendliness as these measures will have a very positive impact on MoS. One must not forget that ships require many innovations to keep abreast of change. Cruise ships have immensely innovated. The other types of vessels should follow example.

(9) Better articulate the different funding frameworks, whilst respecting their specificity in order to avoid duplication and achieve critical mass for innovation and change. The coordination of the different MoS institutional funding is fundamental to achieve effective promotion and development of MoS. The creation of a single dedicated funding for MoS would be instrumental for this.

(10) In this context, update the TEN-T Guidelines, integrating the lessons of the new practical experiences and benchmarking, thereby upgrading their capacity to meet the new demands. In this particular, having due regard to the connections with eastern neighbouring countries (Ukraine, Belorussia, Russia and Moldavia) and Eurasia (specially Kazakhstan) which are very much dependent on the railway connections to European ports and on changing-of-gauge devices.

(11) Simplify bureaucracy where possible; facilitate the use of benchmarked solutions such as the "Euro bonus" scheme as a priority Marco Polo type of action.

(12) Extend the reach to neighbouring countries and Africa supporting the development of complementary efficient logistics chains in the Mediterranean and in the sub-Saharan regions. Improvement of port management in Africa should be our first cooperation priority.

(13) Develop studies and pilot actions on the use of different types of fuels, giving priority to LNG, addressing *inter alia*: shipping economics, operational strategies and LNG supply logistics. Further research may be required on retrofitting techniques, energy efficiency and ship's structural design.

(14) Develop geo-strategic studies addressing the maritime connections of Europe with our main trade partners in the world and try to define a global view of the challenges that we have to meet. The importance of the Europe/US traffic cannot be overlooked, as it still represents about one-third of the total European traffic.

(15) A MoS development policy needs to target PPPs for the ultimate deployment and target users on the demand side as its prime objective (e.g. a new role for Marco Polo grants).

(16) Support the development of more electronic customs' services, to drastically simplify procedures whilst improving security. Customs operations are very complex and important and therefore need to be streamlined in order to increase the efficiency of ports and of the whole logistic chain which rely heavily on Customs for the quality of their operation.

(17) A strategic transport research policy with clear areas of priority, needs to be established for maritime research in general and for MoS in particular in order to boost the sector in a similar way to what was achieved in the mid-1990's (e.g. short sea shipping, maritime safety and competitiveness in shipping). Furthermore, the EU should promote and improve the gathering of statistics concerning ports, maritime transportation, shipowning, hinterlands/forelands, etc.

The Coordinator expects that many of these recommendations, as well as the example set by the 12 new TEN-T projects will be followed and implemented in the coming years, paving the way for a more efficient and innovative European transport system meeting the objectives of the transport infrastructure policy beyond 2020 and into 2050 when the Comprehensive Trans-European Network for transport will be fully deployed, supporting internal trade and cohesion but also extending its reach to adequately support the potential for external trade of the EU and consequently improving world trade and worldwide welfare.

# ANNEX 1. MAP OF PP21

