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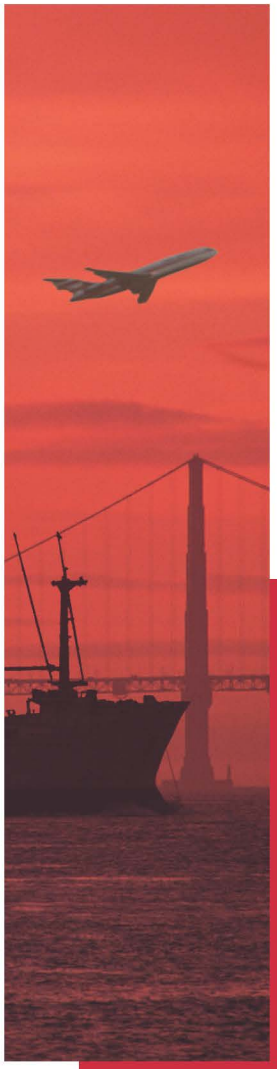

Agriculture and Rural Development

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IMPROVING THE CONCEPT OF 'MOTORWAYS OF THE SEA'

STUDY

EN

2014

EUROPEAN PARLIAMENT

DIRECTORATE-GENERAL FOR INTERNAL POLICIES

POLICY DEPARTMENT B: STRUCTURAL AND COHESION POLICIES

TRANSPORT AND TOURISM

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STUDY

This document was requested by the European Parliament's Committee on Transport and Tourism.

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Abstract

This study provides an overview of the Motorways of the Sea programme since its inception. On the basis of the research carried out, three principal barriers have been identified.

These barriers are as follows: 1) stakeholders are not sufficiently aware of the programme; 2) there is a lack of continuity once the project funding has stopped; 3) cooperation between stakeholders is not always optimal.

These three factors combined with other barriers mean that the impact of the programme has been lower than one might expect. To this end, recommendations and possible scenarios for improving the concept of Motorways of the Sea have been formulated.

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LIST OF ABBREVIATIONS

CEF	Connecting Europe Facility
EC	European Commission
EILU	European Intermodal Loading Unit
ESPO	European Seaports Organisation
ERDF	European Regional Development Fund
EU	European Union
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IT	Information Technology
KPI	Key Performance Indicator
LNG	Liquified Natural Gas
MFF	Multiannual Financial Framework
MoS	Motorways of the Sea
PACT	Pilot Action for Combined Transport
Ro-Ro	Roll-on/Roll-off
SSS	Short Sea Shipping
TEN-T	Trans-European Transport Network
TEU	Twenty Feet Equivalent Unit

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EXECUTIVE SUMMARY

Aim

Since the introduction of the Motorways of the Sea programme (MoS) in 2001, the concept has changed and was adjusted following developments within the shipping sector and the changes in focal points on the European agenda. The Committee on Transport and Tourism requested a study on 'improving the concept of Motorways of the Sea' in order to obtain a complete overview of the historical development of the concept. The context of this review is the major reform of the Trans-European Transport Network (TEN-T) and its financing under the new Multiannual Financial Framework (MFF), through the Connecting Europe Facility (CEF).

This report provides the requested overview of the Motorways of the Sea programme and uses this as a basis for recommendations and possible scenarios for improving the concept of MoS. These are based on both input from desk research in the form of a review of the literature and information gathered from ports and other stakeholders through interviews and a survey.

Development of the MoS programme

The MoS programme was introduced by the European Commission's White Paper on transport policy in 2001, which was entitled 'European transport policy for 2010: time to decide''. This paper expressed the Commission's wish to revive short sea shipping and to establish a European network of short sea shipping links. In 2004, the concept of the MoS was further developed and their establishment was presented as a priority project within the TEN-T programme (2007-2013). The reason for this was the potential contribution of short sea shipping to the reduction of road congestion and to the improvement of the accessibility of peripheral regions and island regions. It was expected that this development would be to the benefit of cohesion and of a dynamic internal market.

According to the 2004 TEN-T guidelines, projects applying for MoS funds should involve at least two ports in two different Member States, and their objective should be modal shift or cohesion. The MoS programme can contribute to various forms of investment, in relation to:

- facilities and infrastructure for ports and hinterland connections;
- year-round accessibility of facilities (e.g. dredging and icebreakers);
- information and communication technology (ICT) investments for traffic management or electronic reporting systems;
- start-up aid if public support is deemed necessary for the financial viability of the project, such aid being limited to two years and granted only in support of duly justified capital costs;
- studies identifying market potential for new services and analysing new and existing cargo flows for new services, as well as impact assessments, implementation and financing.

In 2012, the Europe 2020 strategy was presented. This strategy focuses, among other things, on sustainability. Following the new TEN-T guidelines which appeared in 2013, this focus has found its way into the MoS programme. These new guidelines state that MoS and TEN-T funding becomes part of the CEF, and offer new possibilities within the MoS programme, namely:

- connections with third-country ports;
- inclusion of hinterland connections;
- inclusion of alternative fuel projects.

Realisations

Motorways of the Sea has evolved into an EU programme that has funded more than forty projects via TEN-T, resulting in a budget - including the 2013 calls - of over EUR 400 million in incentives. Total investment by both public and private actors is estimated at EUR 2 billion. In addition, four projects were funded via the Marco Polo programme, resulting in just under EUR 20 million in incentives. Despite these substantial investments, the share of short sea shipping compared to the shares of other modes dropped slightly in the period 2001-2011. One could therefore argue that stimulating short sea shipping has not directly resulted in a structurally better competitive position for this mode of transport.

However, one could conclude that the MoS programme has indirectly stimulated enhanced cooperation between ports, which in time could have beneficial effects on the management and enhancement of short sea shipping flows.

The main criticisms expressed by both academia and the ports themselves are as follows:

- Some ports (large or small) are still not aware of the MoS programme.
- The MoS programme has suffered from not being seen as an appealing proposition, thanks to the fact that the concept of MoS was not very clear from the outset. Some of the ports that are familiar with the MoS programme are not aware of its complexity.
- The main beneficiaries of the programme are not sufficiently aware of the opportunities that it offers. Many port representatives (who were also interviewed) indicated that they were not aware of all of the opportunities offered by the programme. This leads to potential interesting connections for short sea shipping operations being missed. Even when the programme is recognised by stakeholders, the procedures are perceived as cumbersome. Meanwhile, calls for proposals are sometimes hard to interpret correctly. Information should be clearer and more concise regarding the priorities within a call for proposals. The time required to set up projects and consortia exerts pressure on the capacity of port authorities.
- A clear impact assessment of the MoS programme is currently missing. This leads to the conclusion that better Key Performance Indicators (KPIs) need to be determined prior to investments with a view to assessing their impact within the full transport market.
- The MoS programme requires continuous adjustment and orientation taking market drivers into account.

Recommendations and scenarios

A general recommendation to be addressed in all potential scenarios is to increase the visibility of MoS. A clear identification of stakeholders is needed, and an active approach to get these stakeholders involved may be pursued. Application processes for MoS projects must be made as straightforward as possible, with simple and clear calls for tenders. Stakeholders should be proactively approached with the opportunities that the MoS programme provides.

Other recommendations are aligned with scenarios. Besides a baseline scenario consisting of the continuation of the MoS programme in its current form, two other scenarios have been developed:

1) Sustainability scenario: This scenario focuses on reducing environmental impact through use of alternative fuels, innovative ship design, port facilities, and the use of new materials such as composites. The MoS programme needs to improve if it is to have a sustainable impact on the quality and competitive position of the Motorways of the Sea;

2) Supply chain management scenario: this scenario focuses on the entire supply chain, of which SSS is a part. The results of projects without this focus could fall behind on original objectives as there might be a lack of cooperation between stakeholders relevant to the project. Motorways of the Sea are part of complex supply chains that neither start nor end at seaports. Short sea shipping is in many (if not all) cases one of various different transport modes within a chain, and a number of stakeholders are represented within these chains from shipper to end customer. The MoS projects need to consider the integrated supply chain so that they are 'connected' to other 'shackles' in the chains and are not standalone projects. Supply chains in which SSS plays a central role are not restricted by the boundaries of Europe. They connect the European industry and consumer areas to other important European and non-European regions. Third countries must be considered as part of the SSS networks and must therefore be involved in MoS projects.

1. INTRODUCTION

The concept of the Motorways of the Sea (MoS) was introduced by the European Commission's White Paper on transport policy in 2001: 'European transport policy for 2010: time to decide' (European Commission, 2009). This paper expressed the Commission's wish to revive short sea shipping and to establish a European network of short sea links. In 2004, the concept of the Motorways of the Sea was further developed and their establishment was presented as a priority project within the Trans-European Transport Network TEN-T programme (2007-2013).

Over time, the concept has changed and been adjusted as a result of developments within the shipping sector (such as the continuously growing capacity of container ships) and the changes in focal points for the European agenda (e.g. the preparation and publication of the Europe 2020 strategy). The Committee on Transport and Tourism requested a study on 'improving the concept of Motorways of the Sea' in order to obtain a complete overview of the historical development of the concept. Meanwhile, the setting in legislation and concrete realisations to date also need to be addressed. The context of this review is the major reform of the Trans-European Transport Network (TEN-T) and its financing in the new Multiannual Financial Framework (MFF) through the Connecting Europe Facility (CEF).

1.1 Methodology

The following three different analyses have been conducted to provide the requested overview of the Motorways of the Sea programme:

- an analysis of the development of the concept of MoS;
- an analysis of MoS projects assessing the achievements of the programme to date;
- a review of comments, critiques and evaluations.

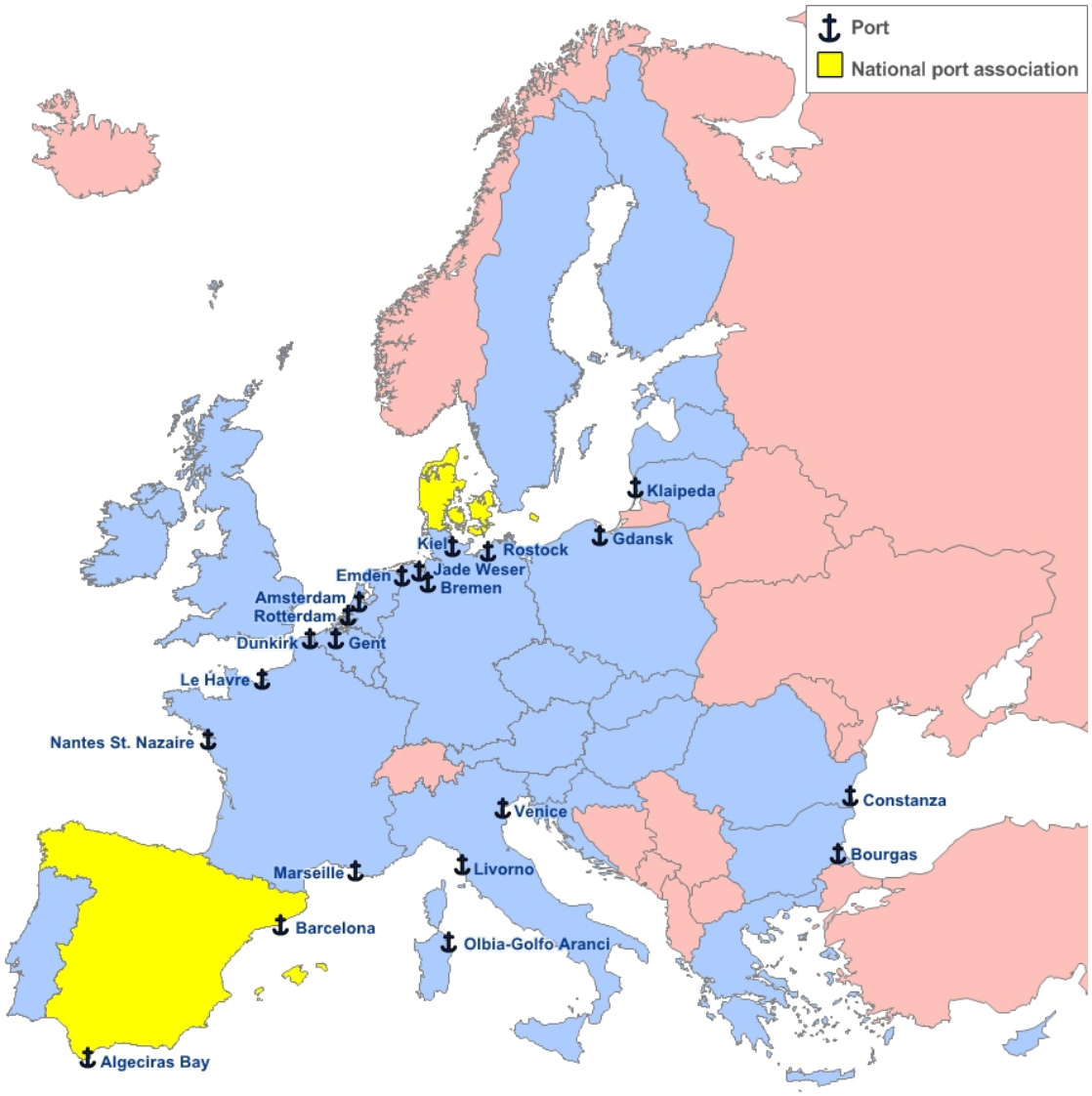
These analyses form the basis for the recommendations as well as for the scenarios for improving the concept.

For all three analyses, a combination of methods has been used, involving on the one hand a review of the literature on the basis of desk research, and on the other information gathered from ports and other stakeholders through interviews and a survey.

Partners in France (Catram Consultants) and Germany (the Institute for Shipping Economics and Logistics), as well as the European Seaports Organisation (ESPO) worked together with Buck Consultants International (BCI) to ensure a representative geographical coverage of stakeholders throughout Europe and across all four Motorways of the Sea corridors[1]. Catram Consultants and the Institute for Shipping Economics and Logistics interviewed stakeholders and evaluated projects in both France and Germany. In addition, ESPO circulated a survey among its members. Table 5 in Annex 2 and Map 1 provide an overview of all stakeholders who contributed to this study by either completing a survey or participating in an interview. The survey form is included in Annex 3. Furthermore, three MoS projects were evaluated in order to obtain an in-depth view on both on the MoS programme is used and how it is perceived by its users.

[1] These corridors will be addressed in Section 2.2 - see Annex 1 for maps of all four corridors.

Map 1: Geographical overview of contributing stakeholders



Source: BCI (2014).

1.2 Structure of the report

This report is structured as follows:

Chapter 2 provides an analysis of the concept of MoS. This includes its development over time, the financial and legislative framework, and comments, evaluations and critiques relating to MoS.

Chapter 3 presents the results of the interviews, survey and project evaluations. These are followed in Chapter 4 by observations, recommendations, possible scenarios for the development of MoS and closing remarks.

2. MOTORWAYS OF THE SEA CONCEPT

2.1 Introduction

The changes and adjustments made to the Motorways of the Sea concept (Section 2.2) and the financial and legislative framework (Section 2.3) will be described in this chapter. In addition, Section 2.4 illustrates the development of the Motorways of the Sea with a brief analysis of the project proposals during the period 2007-2013. The evolution of short sea shipping cargo volumes is covered in Section 2.5, while Section 2.6 addresses viewpoints from academia on the Motorways of the Sea. Finally, Section 2.7 concludes matters by summarising the key findings.

2.2 Development of the concept

1996-2003: Preparation of the TEN-T

At the Essen European Council in 1996, Community guidelines were adopted for the establishment of a Trans-European Transport Network (TEN-T) by 2010. Eleven priority projects were listed, one of which was dedicated to seaports (European Parliament and Council Decision No 1692/1996/EC). The European Commission presented its vision on transport and the accompanying policy in the 2001 White Paper on transport[2]. The position was that the growing demand for transport should be responded to not only by building new infrastructures but by optimising the transport system itself in order to meet the requirements of enlargement and sustainable development.

Issues addressed in the White Paper included unequal growth between the different modes of transport and congestion on main road and rail routes of the Trans-European transport network[3] (TEN-T, as identified in 1996), leading to bottlenecks and affecting EU competitiveness, as well as generating harmful effects on the environment and public health. Congestion was perceived to be a serious problem caused by bottlenecks, missing links in infrastructure and lack of interoperability between modes. It results in higher fuel consumption and loss of economic competitiveness. According to the White Paper on transport, the external costs of road traffic congestion amount to 0.5 % of EU GDP. Forecasts at the time of writing predicted a significant growth in transport by 2010 and a rise in congestion costs to 1 % of the Member States' GDP.

One of the objectives of the White Paper was to shift freight away from road and by doing so reduce road congestion. The principal measures for achieving this included the promotion of transport by sea and inland waterways. The concept of the Motorways of the Sea was introduced by the White Paper on Transport: 'The way to revive short sea shipping is to build veritable sea motorways within the framework of the master plan for the Trans-European network. This will require better connections between ports, rail and inland waterway networks together with improvements in the quality of port services. Certain shipping links (particularly those providing a way around bottlenecks - the Alps, Pyrenees and Benelux countries today and the border between Germany and Poland tomorrow) will become part of the Trans-European network, just like roads or railways.'[4]

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2 European Commission, 2001. White Paper: European transport policy for 2010: Time to Decide.

3 Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the Trans-European transport network.

4 European Commission, 2001. White Paper: European transport policy for 2010: Time to Decide, p. 13.

Following the publication of the White Paper in 2001, the Commission adopted the programme for the promotion of short sea shipping in 2003 (European Commission, COM(2003)0155). This programme consists of fourteen measures to promote short sea shipping, among which is 'Motorways of the Sea', and refers back to the 2001 White Paper on transport. The measure proposed regarding MoS is: 'To finalise deliberations on the Motorways of the Sea to make adherence to them attractive to the market players with a view to fulfilling the objectives of the White Paper.'[5]

In 2003, the Commission also set up a high-level group for the elaboration of the TEN-T programme. This group, known as the Van Miert High-Level Group, took the view that the success of the Motorways of the Sea would depend on improving logistics chains, simplifying and automating administrative and customs procedures, and introducing common traffic management systems. This position was a development of the focal points of the MoS programme. Furthermore, the high-level group recommended including the Motorways of the Sea programme on a priority list for TEN-T, and in terms of maritime projects insisted that there should be no competition between TEN-T and Marco Polo[6].

Marco Polo was an EU programme that was launched in 2003 with the aim of reducing road congestion and the pollution it causes by promoting a switch to greener transport modes for freight traffic, such as rail, sea routes and inland waterways (European Parliament and Council Regulation No 1382/2003). Following criticism from the Court of Auditors[7], the programme was ended in 2013 (European Commission, COM(2013)278). Marco Polo co-funded direct modal-shift or traffic avoidance projects and projects providing supporting services that enable freight to switch from road to other modes of transport both efficiently and profitably. Although it was possible to set up a MoS project in the framework of the Marco Polo programme, most such projects were actually funded by TEN-T. Section 2.3 will address this issue in more detail.

The recommendations of the Van Miert High-Level Group were articulated and formalised in the 2003 proposal for new guidelines for the extension of the TEN-T network (European Commission and Council, COM(2003)564). Subsequently, in 2004 the Community guidelines for the development of the Trans-European Transport Network were revised (European Parliament and Council Decision No 884/2004/EC)[8]. A total of thirty priority projects were selected, among which was the Motorways of the Sea. Furthermore, the 2010 deadline for TEN-T to be realised was postponed to 2020. This revision implied that both TEN-T and the Marco Polo programme would be able to support short sea shipping projects.

2004: TEN-T Priority Project 21

In 2004, the Motorways of the Sea became a priority project (No 21) in the TEN-T programme following the adoption of Article 12a - Motorways of the Sea (European Parliament and Council Decision No 884/2004/EC). The reason for this was the potential contribution of short sea shipping to reducing road congestion and improving the accessibility of peripheral regions and island regions. It was expected that this development would benefit cohesion and a dynamic internal market.

[5] Action sheet 4 of the European Commission's programme for the promotion of short sea shipping – COM(2003)0155.
[6] Van Miert High-Level Group on the Trans-European Transport Network, 17 June 2003.
[7] European Commission, 2013, COM(2013)0278, The Marco Polo programme - Results and outlook.
[8] Decision No 884/2004/EC of the European Parliament and of the Council of 29 April 2004 amending Decision No 1692/96/EC on Community guidelines for the development of the Trans-European transport network.

The objective of the Motorways of the Sea programme within TEN-T is to improve existing short sea services and to develop new maritime links. Article 12a further states that MoS projects need to be proposed by at least two Member States and that the projects shall combine both public and private sectors.

If necessary, aid granted from national budgets can be supplemented by aid from the Community. A tendering process should take place through public calls for proposals, organised jointly by the Member States concerned and intended to establish new links from the category A ports[9] within each maritime corridor. MoS refers to the four maritime corridors defined by the European Commission as Motorways of the Sea (see Annex 1 for maps of all four corridors):

1. Motorway of the Baltic Sea; Baltic Sea Member States and the route between the North Sea and Baltic Sea.
2. Motorway of the Sea of Western Europe; Atlantic Arc, North Sea and Irish Sea.
3. Motorway of the Sea of South-East Europe; Adriatic Sea, Ionian Sea and Eastern Mediterranean Sea.
4. Motorway of the sea of South-West Europe; Western Mediterranean Sea.

The MoS programme can contribute to various forms of investment in relation to:

- facilities and infrastructure for ports and hinterland connections;
- year-round accessibility of facilities (e.g. dredging and icebreakers);
- information and communication technology (ICT) investments for traffic management or electronic reporting systems;
- start-up aid if public support is deemed necessary for the financial viability of the project, to be limited to two years and granted only in support of duly justified capital costs.

Besides investments in port infrastructure and facilities, the MoS framework can support suitable studies identifying market potential for new services and analysing new and existing cargo flows for new services, as well as impact assessments, implementation and financing. Studies could also identify sub-projects and propose an implementation of the Motorways of the Sea project[10].

In 2005, the Commission published the guidelines for the first call for proposals[11]. Several requirements for eligibility were defined:

- A project should concern at least two ports in two different Member States.
- The objective of projects is modal shift or cohesion.
- Projects must be a part of an MoS corridor.
- Freight must be predominant but the combined transport of persons and goods is not excluded.

[9] In the TEN-T guidelines, ports are classified into three categories: A, B and C. The selection of ports was based on annual traffic volumes of freight or passengers or their location on islands, or in the peripheral or outermost regions. Category A includes ports with a total annual traffic volume of not less than 1.5 million tonnes of freight or 200 000 passengers.

[10] European Commission, 2005. Motorways of the Sea - Article 12a of the TEN-T Guidelines. A Vademecum issued in conjunction with the call for proposals TEN-T 2005.

[11] Idem 12.

2007: Coordination of MoS

In the early years of MoS, the number of projects was limited and in fact only seven eligible projects were submitted between 2004 and 2007. A partial explanation for this is provided by the fact that the concept of MoS suffered from a lack of clarity. Other probable reasons for the limited number of projects were the rather vague conditions for project proposals and the lack of promotion up to 2007[12]. In short, MoS suffered from implementation problems. To coordinate the implementation of MoS, the European Commission appointed a special MoS Programme Coordinator, Luis Valente de Oliveira[13], and six coordinators for other selected priority projects in 2005. This has had a positive impact on the projects.

The main goal of the Coordinator was to bring more focus to the MoS programme. The enhanced focus of MoS was based on the notion that maritime trade was considered to be the strongest manifestation of the connection of Europe with other continents, and seaports facilitated this connection. In his Annual Report of 2009, Mr Valente de Oliveira mentioned the specialisation of seaports. In Europe, approximately 75 % of all intercontinental trade goes through the seaports of Antwerp, Hamburg and Rotterdam. Although this volume offers the aforementioned ports advantages of scale, it is also the source of road congestion both to and from these ports[14].

The MoS Coordinator proposed priorities in his different annual reports. These were based on his visits to various European ports and discussions with European actors from 2007 onwards. These actors range from policymakers and civil servants to planners, shippers and engineers. Among the recommendations were the following[15]:

- to broaden the regional scope of MoS to include the connections of Mediterranean ports to Africa and the Middle East, and connections to the West African ports;
- to create a single dedicated funding arrangement for MoS with a view to better articulating the various funding frameworks;
- to support research and development in the area of environment-friendly ships and equipment characterised by less emissions and increased safety.

If the accessibility and attractiveness of seaports is to be enhanced, special attention needs to be paid to hinterland connections. The MoS programme was therefore connected to TEN-T projects for rail (Priority Projects 22 and 23) and road (Priority Projects 7 and 25)[16]. As an example, the Coordinator mentioned the transport axis from the Baltic Sea to the Adriatic coast[17].

In 2007, Bulgaria and Romania joined the European Union, which meant that the EU now bordered the Black Sea. Therefore, following the 2007 enlargement, project proposals could also address the Black Sea area, e.g. by linking the Black Sea with other Motorways of the Sea areas[18].

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12 Valente de Oliveira, Luis, 2008. Annual Activity Report 2007-2008.
13 European Commission, 2007. IP/07/1411 Two new European coordinators for the Trans-European Transport Networks. 27 September 2007.
14 Valente de Oliveira, Luis, 2009. Annual Activity Report Sept 2008-June 2009.
15 Valente de Oliveira, Luis, 2013. Annual Activity Report 2012-2013.
16 Priority project 22 Railway axis Athens–Sofia–Budapest–Vienna–Prague– Nuremberg/Dresden; Priority project 23 Railway axis Gdansk–Warsaw–Brno/Bratislava–Vienna; Priority project 7 Motorway axis Igoumenitsa/Patras–Athens–Sofia–Budapest; Priority Project 25 Motorway axis Gdansk–Brno/Bratislava–Vienna.
17 Idem.
18 European Commission, 2013. TEN-T working programme 2013.

The Coordinator aimed to promote the MoS programme by, among other things, attending coordination meetings and stimulating cooperation between consortia and other stakeholders. Furthermore, he attempted to exploit synergies and avoid duplication of effort in order to make the best possible use of the available resources. The coordination meetings were used by the Coordinator as sounding-boards to identify new priorities and assess missing links[19].

At the outset in 2007, the MoS programme lacked clarity and the number of projects was small. However, in 2013 the perspectives for MoS had changed enormously according to the Coordinator, who stated in his 2013 report: 'Not only has the sector accepted the concept … the results of the Call 2012-2013 were extremely successful. Not only 22 eligible proposals were received … but finally 13 proposals requesting EUR 169.7 million were retained for funding (more than double the amount of the indicative funding). This success confirms that the sector has fully accepted the new concept and is using it to improve efficiency and meet new challenges.'[20]

Preparing 'Europe 2020'

The TEN-T guidelines, which date back to 1996, were recast in 2010 following several substantial amendments and to take account of the need for clarity (European Parliament and Council Decision No 661/2010/EU)[21]. The Motorways of the Sea continue to be an integral part of the Trans-European Transport Network. The recast of the TEN-T guidelines did not entail major changes to the MoS programme. This was in contrast to Europe 2020, the framework for European policy for the period 2014-2020.

The 'Europe 2020' strategy was presented in 2010[22]. It prioritises growth on the basis of three characteristics, thus affirming *smart*, *sustainable* and *inclusive* growth with the aim of Europe emerging stronger from the economic and financial crisis. Sustainable growth has implications for the (maritime) transport sector. One of the seven flagship initiatives put forward by the Commission is entitled 'A Resource-efficient Europe' and, among other things, focuses on the modernisation of the transport sector and a shift to a low-carbon economy. Another goal is to achieve a reduction in greenhouse gas emissions of at least 20 % compared to 1990 levels to increase the share of renewable energy sources by 20 % and to bring about a 20 % increase in energy efficiency - the so-called '20/20/20' climate/energy target.

The focus on sustainability in Europe 2020 found its way into the MoS programme. One of the solutions mentioned in 2010 was the use of Liquefied Natural Gas (LNG) for short sea shipping[23]. In the TEN-T working programme of 2013 it was clearly stated that sustainability is one of the goals of the TEN-T MoS network: 'The aim of the TEN-T MoS network is to promote the general sustainability and safety of transport in particular by providing an alternative to congested or less environmentally-friendly land transport. It should contribute to the common effort addressing climate change. Also, it should strengthen the cohesion of the EU by facilitating connections between Member States and between European regions, and by revitalising peripheral regions.'[24].

[19] Valente de Oliveira, Luis, 2013. Annual Activity Report 2012-2013.
[20] Valente de Oliveira, Luis, 2013. Annual Activity Report 2012-2013, p. 5.
[21] European Parliament and Council of the European Union, 2010. Decision No 661/2010/EU of the European Parliament and of the Council of 7 July 2010 on Union guidelines for the development of the Trans-European transport network (recast).
[22] European Commission, 2010. Communication from the Commission: Europe 2020 - A strategy for smart, sustainable and inclusive growth, 3 March 2010.
[23] Valente de Oliveira, Luis, 2010. Annual Activity Report 2009-2010.
[24] European Commission, 2013. TEN-T working programme 2013. Annex 2, p.2.

Apart from interest in sustainable shipping, another influential factor has been the constant increase in tonnage of ships. The construction of container ships with a capacity of 18 000 TEU (Maersk Triple E class) led to a review of the focus of the MoS programme. The primary focus on specialisation of seaports was adjusted, since direct connection to the global transport system was not feasible for most of the seaports. In accordance with this, 87 ports were proposed for a European Core Network (out of 300 Class A ports in the TEN-T network)[25]. An overview of all TEN-T core network ports is provided in Annex 4.

The focus remained on the extension of the number of transhipment ports and a better articulation between transhipment ports and hinterland ports. The main functions of the former are receiving intercontinental cargo and transhipment to (and from) other European ports, whereas the latter focus on overland distribution and connecting markets and production areas. Next to that, the efficiency of the ports needs to be improved by means of IT systems and the development of port services. Improving port services and introducing smoother procedures will make short sea shipping a more attractive mode of transport for shippers.

New TEN-T Guidelines and Connecting Europe Facility

In 2013, the decision of 2010 to recast the TEN-T guidelines was repealed and new guidelines were presented (European Parliament and Council Decision No 1315/2013). Alongside cohesion, efficiency and increasing the benefits for users, sustainability is clearly stated as one of the objectives of the Trans-European transport network[26]. The new guidelines thus invoke sustainability in the following terms:

'(i) development of all transport modes in a manner consistent with ensuring transport that is sustainable and economically efficient in the long term.

(ii) contribution to the objectives of low greenhouse gas emissions, low-carbon and clean transport, fuel security, reduction of external costs and environmental protection.

(iii) promotion of low-carbon transport with the aim of achieving by 2050 a significant reduction in CO2 emissions, in line with the relevant Union CO2 reduction targets.'

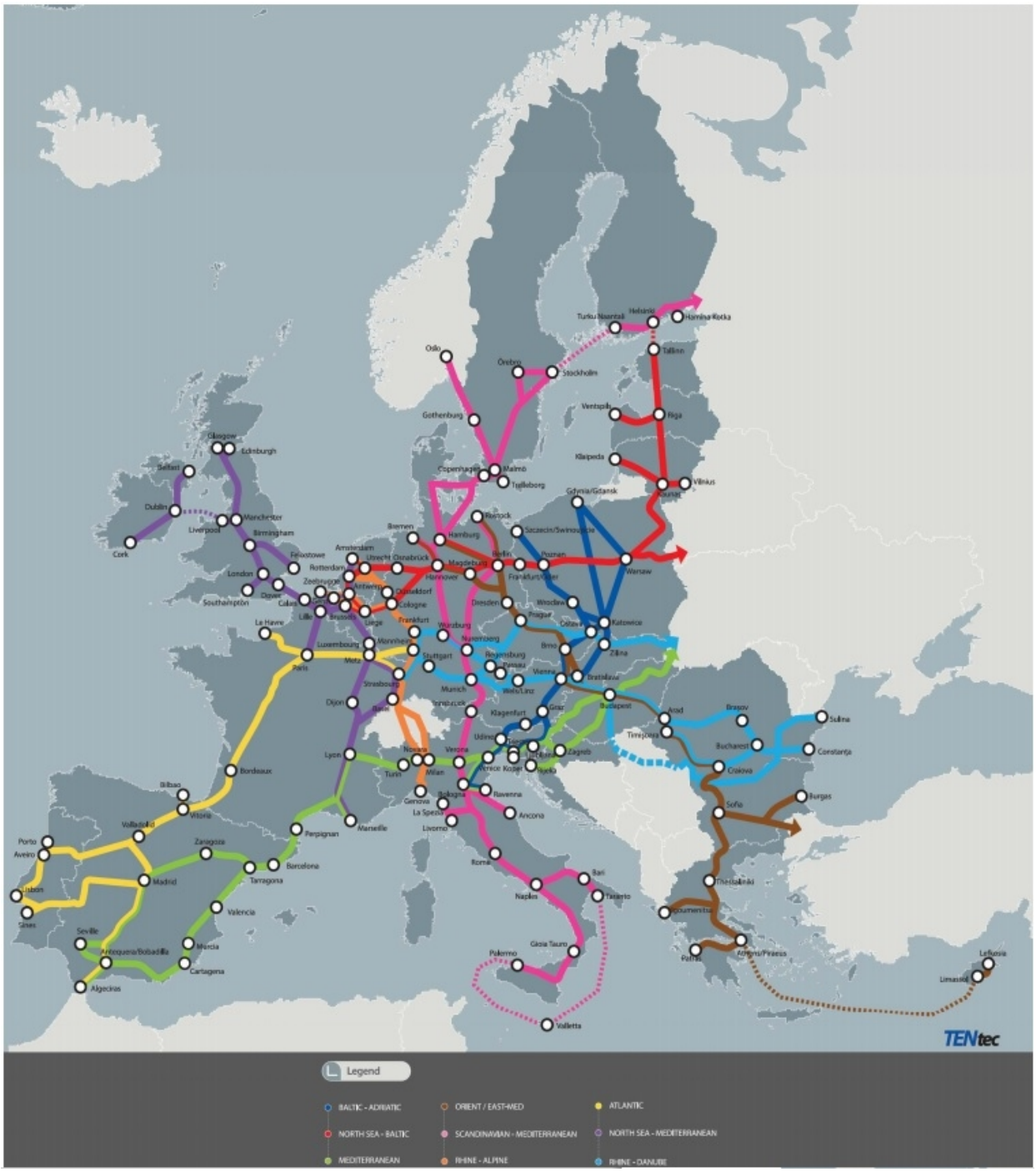
The revised TEN-T guidelines define the TEN-T Core Network of transport infrastructure, which includes all transport modes. They also set a deadline of 2030 for the completion of this Core Network and its nine Corridors (see Map 2). Each TEN-T corridor starts and/or ends in a port, and MoS will be used as a maritime dimension of the Core Network Corridors[27].

[25] Valente de Oliveira, Luis, 2010. Annual Activity Report 2009-2010.

[26] European Parliament and Council of the European Union, 2013. Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the Trans-European transport network and repealing Decision No 661/2010/EU.

[27] European Commission, 2014. Communication from the Commission. Building the transport core network: core network corridors and Connecting Europe Facility, COM(2013)0940.

Map 2: Map of the Core Network Corridors



Source: European Commission (2014).

Furthermore, the guidelines contained a new article (Article 21), which was dedicated to the MoS. This set out a number of new possibilities:

- Connections with third-country ports: 'Maritime links between maritime ports of the comprehensive network or between a port of the comprehensive network and a third-country port where such links are of strategic importance to the Union.'
- Including hinterland connections: 'A maritime link and its hinterland connections within the core network between two or more core network ports; or a maritime link and its hinterland connections between a core network port and ports of the

comprehensive network, with a special focus on the hinterland connections of the core and comprehensive network ports.'

- Including alternative fuel projects: 'Projects of common interest for motorways of the sea in the Trans-European transport network may also include activities that have wider benefits and are not linked to specific ports, such as services and actions to support the mobility of persons and goods, activities for improving environmental performance, such as the provision of shoreside electricity that would help ships to reduce their emissions, making available facilities for ice-breaking, activities ensuring year-round navigability, dredging operations, and alternative fuelling facilities, as well as the optimisation of processes, procedures and the human element, ICT platforms and information systems, including traffic management and electronic reporting systems.'

The guidelines also stated that funding for the Trans-European Transport Network should in particular be based on the CEF. This includes funding for the Motorways of the Sea.

Following the discontinuation of the Marco Polo programme in 2013[28], CEF is now the only source of MoS funding. Although it was renewed in 2006[29] and updated in 2009[30], the programme received criticism from the European Court of Auditors in 2013[31]. According to the Court, a total budget of EUR 552 million in the 2003-2013 period did not result in attaining the output targets that were set, hence rendering the programme ineffective. The Marco Polo programme had little impact on shifting freight off the roads. Furthermore, there were insufficient relevant project proposals put forward, thanks partly to the lengthy procedures, risks, complexity and administrative costs involved. Also, many of the funded projects were either scaled down or not continued at all, while other projects would probably have been initiated even without EU funding. However, Sustainable Freight Transport Services will remain an integral part of the Connecting Europe Facility.[32]

CEF is designed to fund the trans-European transport, telecommunications and energy networks and enable synergies between the three sectors. It is in line with the Europe 2020 strategy, as has been made clear by Parliament and the Council: 'In order to achieve smart, sustainable and inclusive growth and to stimulate job creation in line with the objectives of the Europe 2020 Strategy, the Union needs an up-to-date, high-performance infrastructure to help connect and integrate the Union and all its regions, in the transport, telecommunications and energy sectors.'[33]

Besides Europe 2020, CEF is also linked to the 2011 White Paper entitled 'Roadmap to a Single European Transport Area — Towards a competitive and resource efficient transport

[28] European Commission, 2013. COM(2013)0278, The Marco Polo programme - Results and outlook.

[29] European Parliament and Council of the European Union, 2006. Regulation (EU) No 1692/2006 of the European Parliament and of the Council of 24 October 2006 establishing the second 'Marco Polo' programme for the granting of Community financial assistance to improve the environmental performance of the freight transport system (Marco Polo II) and repealing Regulation (EC) No 1382/2003 (1).

[30] European Parliament and Council of the European Union, 2009. Regulation (EU) No 923/2009 of the European Parliament and of the Council of 16 September 2009 amending Regulation (EC) No 1692/2006 establishing the second 'Marco Polo' programme for the granting of Community financial assistance to improve the environmental performance of the freight transport system (Marco Polo II).

[31] European Court of Auditors, 2013. Have the Marco Polo programmes been effective in shifting traffic off the road? Special report No 3. See also footnote 9.

[32] European Parliament and Council of the European Union, 2013. Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the Trans-European transport network and repealing Decision No 661/2010/EU.

[33] European Parliament and Council of the European Union, 2013. Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010.

system'[34]. This White Paper set the goal of reducing the greenhouse gas emissions of the transport sector by at least 60 % by 2050 compared to 1990 figures. The TEN-T network plays a central role in achieving this goal. Several targets are set for TEN-T policy, one of them being to shift 30 % of road freight carried over distances of more than 300 kilometres to other modes by 2030, with this figure increasing to over 50 % by 2050.

2.3 Legislative and financial framework

As mentioned in Section 2.2, the Motorways of the Sea became part of the TEN-T programme in 2004[35] following the adoption of Article 12a of TEN-T (European Parliament and Council Decision No 884/2004/EC). The Motorways of the Sea was depicted as one of the 30 priority projects within the programme, providing a legal framework for the funding of short sea shipping projects. The TEN-T programme is addressed to public entities and to national, regional and local government.

The Motorways of the Sea constitute the maritime dimension of the TEN-T[36]. For the period 2007-2013, a budget of EUR 310 million was earmarked for MoS projects within the TEN-T programme. The total MoS investment of both public and private actors has been estimated at EUR 2 billion[37].

The current TEN-T allows for a maximum support level of 50 % for research studies and 20 % or 30 % for infrastructure projects in the case of transnational projects[38]. The latter is always the case for MoS projects since at least two Member States must be involved if a funding application is to be accepted.

There is also the possibility of covering start-up losses within the launch period of an MoS project by up to 30%, through what is known as 'start-up aid'. Article 12a of the TEN-T guidelines states that start-up aid is limited to a period of two years. Examples of eligible potential funding are, among other things, the depreciation of ships and user-specific infrastructure. The aid must not distort competition in the relevant markets[39].

Most MoS projects are funded through the TEN-T programme (TEN-T - MoS projects). We will first discuss the TEN-T funding and then examine the other funding options.

TEN-T funding

The MoS programme started in 2004. In its first years only a few project proposals were accepted. Table 1 presents the annual budget for MoS projects and the total project budget granted by the Commission. The 2013 multiannual work programme Motorways of the Sea Call had a budget of EUR 80 million, which was allocated in September 2014. The 2014 call for projects was also published in September 2014, but its budget will not be allocated to project proposals until 2015. The year 2014 has therefore not been taken into account in the table below. The years in the table are those of publication of the call, not of allocation of the budget.

[34] European Commission, 2011. White paper: Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system.
[35] Decision No 884/2004/EC of the European Parliament and of the Council of 29 April 2004 amending Decision No 1692/96/EC on Community guidelines for the development of the Trans-European transport network.
[36] MoS One-stop Helpdesk, 2014.
[37] Valente de Oliveira, Luis, 2009. Annual Activity Report September 2008-June 2009.
[38] European Commission, 2005. Motorways of the Sea - Article 12a of the TEN-T Guidelines. A Vademecum issued in conjunction with the call for proposals TEN-T 2005, 28 February 2005.
[39] Motorways of the Sea - Article 12a of the TEN-T Guidelines. A Vademecum issued in conjunction with the call for proposals TEN-T 2005, 28 February 2005.

Table 1: Annual budgets for MoS projects

Year	Annual budget (in million EUR)	No of projects granted	Total project costs (in million EUR)	Contribution from TEN-T (in million EUR)
2004	-	1	2.4	**1.2**
2005	-	3	8.3	**4.2**
2006	-	3	4.6	**2.0**
2007	20	-	-	**-**
2008	30	3	63.3	**12.8**
2009	85	1	85.5	**17.1**
2010	100	8	363.1	**73.6**
2011	50	7	188.7	**45.5**
2012	25	13	557.5	**169.3**
2013	*80*	*15*	272.24	78.05
2004-2013 Total	***390***	***54***	1545.64	403.75

Source: MoS – One-Stop Helpdesk (2013) and INEA (2014).

Table 1 shows that the number of projects granted has increased over the years. After a slow start, annual budget allocations were only granted to projects in part, and the programme became more popular in the period 2010-2013. Accordingly, the TEN-T contributions increased over the years and did not follow the annual budget allocations. In 2012, a total of almost EUR 170 million was granted to MoS projects, while only EUR 25 million of the 2007-2013 budget was allocated to the call of 2012. The allocated budget for 2013 was EUR 80 million.

The discrepancy between the planned annual budget and the actual contribution for each year is partly due to the fact that the budget allocated to MoS actions is indicative and the Commission reserves the right to amend it in justified cases. Annexes 5 and 6 provide an overview of the MoS projects that are funded through TEN-T.

Other funding possibilities

As mentioned in Section 2.2, up to and including 2013, MoS could also be supported by the Marco Polo programme. The aim of this programme differed from that of the TEN-T programme as it aimed to support start-up activities in intermodal services and to improve the environmental performance of the freight transport system. Furthermore, it was addressed to private actors. The table below provides an overview of the differences between TEN-T and Marco Polo projects in the MoS context.

Table 2: Overview of TEN-T and Marco Polo MoS project characteristics up to and including 2013

TEN-T	Marco Polo
Infrastructure and facilities	Transport services
Start-up aid	Ancillary infrastructure
Creation of a transport network	Modal shift objective
Public sector-driven	Private sector-driven
Pre-selection at Member State level	Direct call for proposals

Source: MoS Helpdesk, 2010[40].

The setting-up or improvement of new short sea shipping services falls within the remit of private actors. These parties were able to participate in the Motorways of the Sea project via the Marco Polo programme. Funding for Marco Polo/MoS projects was limited to three years.

For the period 2003-2006, the Marco Polo funds dedicated to short sea shipping and MoS projects amounted to EUR 102 million. For the period 2007-2013, the Marco Polo programme was given a budget of EUR 450 million. This budget was not only dedicated to short sea shipping and MoS projects, but also applied to (a combination of) other modes of transport such as rail and inland waterways (European Commission, Regulations Nos 1382/2003 and 1692/2006).

In the period 2007-2013, a total budget of EUR 19.54 million was allocated by the Marco Polo programme to four projects (see Annex 7).

The Commission has also proposed other funding sources relating to participation in MoS:

- Structural Fund monies for educational purposes (lifelong learning);
- Funding from the Cohesion Fund and the ERDF (INTERREG) for regional development projects and investments in infrastructure;
- Research and development (Framework Programmes for Research and Technological Development 6 and 7) for the development of logistics models and concepts and the development of new vessels.

According to the MoS Helpdesk, these alternative funding possibilities have led to only one project being co-funded by the Cohesion Fund. This concerns investment in the port of Gdynia (Poland), as part of the MoS Baltic Link Gdynia-Karlskrona[41].

[40] As mentioned in: BPO and TransBaltic, 2010. Baltic Motorways of the Sea. Successful projects, barriers and challenges for MoS policy implementation.
[41] Project: 2009-EU-21010-P.

State aid

The Commission authorised Member State aid for MoS projects in order to avoid submissions being withdrawn or discouraged by insufficient EU funding. In cases where a large number of valid projects were presented in a given year, EU funding could have lacked the capacity to support all of the projects. For TEN-T-MoS projects, the maximum has been set at 30 % of total costs for all funding applied for, with a maximum duration period of two years. The amount and period for state aid complementary to Community funding differs for TEN-T-MoS and Marco Polo/MoS projects. In 2008, the Commission noticed that there were doubts among stakeholders and Member 'State authorities regarding whether the latter could grant complementary state aid to Marco Polo/MoS projects. This was caused by the differences between two sets of regulations: on the one hand the guidelines on state aid to maritime transport, and on the other those on state aid for the Marco Polo programme. The Commission considered that these should be the same. Therefore, in the absence of EU funding, or to the extent that EU funding was not sufficient, state aid was authorised for the start-up phase of Marco Polo/MoS projects, to a maximum of 35 % of operational costs and with a maximum duration of five years (Official Journal of the European Union, C 317, volume 51, 12.12.2008).

Connecting Europe Facility

Since 2014 TEN-T, and MoS as a component of TEN-T, have been part of the Connecting Europe Facility[42]. The budget for TEN-T in CEF was set at EUR 26 250 billion for 2014-2020. Out of this budget, a total of EUR 11 305 billion is targeted on Member States which are eligible for the Cohesion Fund. The remaining sum of EUR 14 945 billion is available for all Member States.

The funding rates for studies must not exceed 50 % of the eligible costs, while for actions to support the development of the Motorways of the Sea the maximum funding rate remains at 30 %. In a communication on the Connecting Europe Facility, the Commission estimated the total funding for the Motorways of the Sea to be approximately EUR 500–900 million for the period 2014-2020[43]. The actual spending on Motorways of the Sea will ultimately depend on the project selection.

The funds are allocated to specific sets of CEF priorities via annual and multiannual work programmes, which specify the total amount of financial support to be committed for each of these priorities in a given year. The first annual and multiannual calls for projects were published in September 2014[44,45]. The Motorways of the Sea are priorities for funding objectives 3 and 4 in the 2014 multiannual work programme. Objective 3 focuses on 'optimising the integration and interconnection of transport modes and enhancing the interoperability of transport services, while ensuring the accessibility of transport infrastructures', and allocates an indicative budget of EUR 250 million to the MoS

[42] Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010.

[43] European Commission, Brussels 7/1/2014. Communication from the Commission. Building the transport core network: core network corridors and Connecting Europe Facility, COM(2013)0940.

[44] European Commission, 2014. Annex to Commission implementing decision establishing a Multi-Annual Work Programme 2014 for financial assistance in the field of Connecting Europe Facility (CEF) - Transport sector for the period 2014-2020, C(2014)1921.

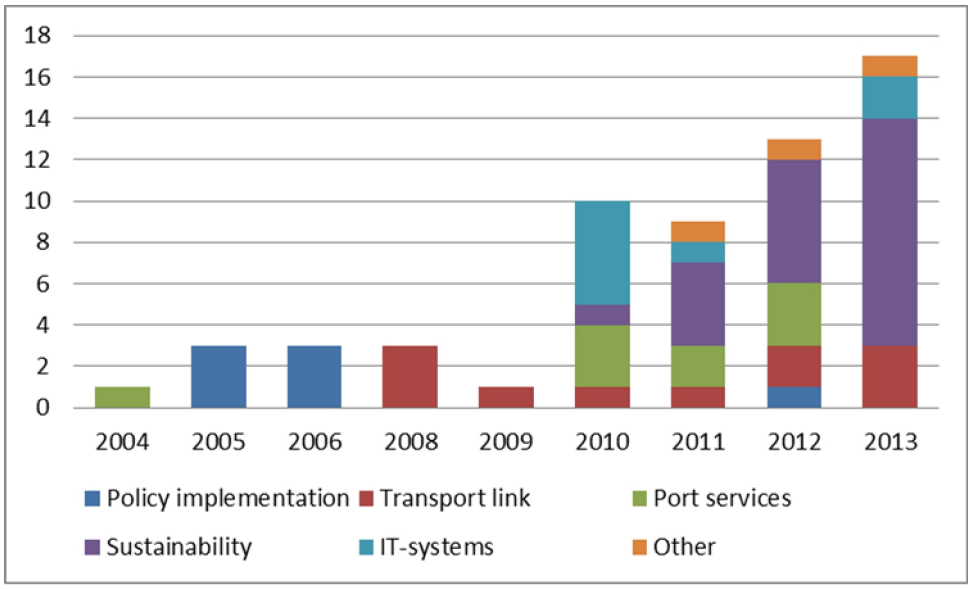
[45] European Commission, 2014. Annex to Commission implementing decision establishing an Annual Work Programme 2014 for financial assistance in the field of Connecting Europe Facility (CEF) - Transport sector, C(2014)1919.

programme[46]. The fourth objective concerns only Member States eligible for funding from the Cohesion Fund. It covers all objectives set out in the 2014 multiannual work programme, including the previously mentioned third objective. It allocates an indicative budget of EUR 100 million to the MoS programme[47].

2.4 Overview of MoS projects

The figure below shows the focal points of the project proposals selected for the period 2004-2013. This overview is an indication of the concept development of the Motorways of the Sea (some proposals in this overview related to more than one focal point).

Figure 1: Motorways of the Sea projects per category



Source: MoS – One-stop Helpdesk, analysis by BCI (2013).

The categories are structured as follows:

- Implementation policy: Master plans and operative and policy supporting frameworks.
- Transport link: short sea shipping connections between two ports and hinterland connections.
- Port services: Maritime Single Windows, traffic management, port data.
- Sustainability: Liquefied Natural Gas (LNG) bunker facilities and emission reduction.
- IT systems: Design, optimisation and implementation of IT systems related to port services.
- Other: Year-round accessibility, icebreaking resources and education.

[46] European Commission, 2014. Multiannual work programme 2014. CEF transport call 2014 – funding objective 3.

[47] European Commission, 2014. Multiannual work programme 2014. CEF transport call 2014 for cohesion countries.

The analysis of the projects within MoS illustrates the concept development and the focal points within the programme (as described in Section 2.2):

- In the first stage (2004-2006), the focus was mainly on developing an implementation policy and improvements to port services. The proposals in this phase focused on the regional collaboration within the MoS programme (e.g. the Baltic Sea or the Western Mediterranean). Projects for the development of a regional master plan were granted in this phase.
- In 2008 and 2009, various project proposals were granted with a focus on new transport links.
- From 2010 onwards, when greener shipping came into focus, project proposals were granted for more sustainable shipping. In 2011 and 2012, six project proposals concerned the use of Liquefied Natural Gas (LNG) in short sea shipping. In 2013, eight of the eleven projects that targeted sustainability involved the use of LNG. Furthermore, interest shifted to the development and integration of port services and information systems.

2.5 Development of short sea shipping and road cargo

As we saw in Section 2.2, the MoS concept is aimed at improving existing short sea shipping services and developing new maritime links. Furthermore, the contribution of the MoS programme to the improvement of short sea shipping was expected to affect road congestion and reduce road freight traffic. In this context, short sea shipping cargo volumes and modal split developments over the previous years were analysed. Table 3 shows that short sea shipping volumes have increased since 2005. The effects of the 2008 crisis are clear, with short sea shipping cargo volumes dropping by almost 13% in 2009. However, volumes have been growing ever since this point, allowing for a minimal decline in 2012.

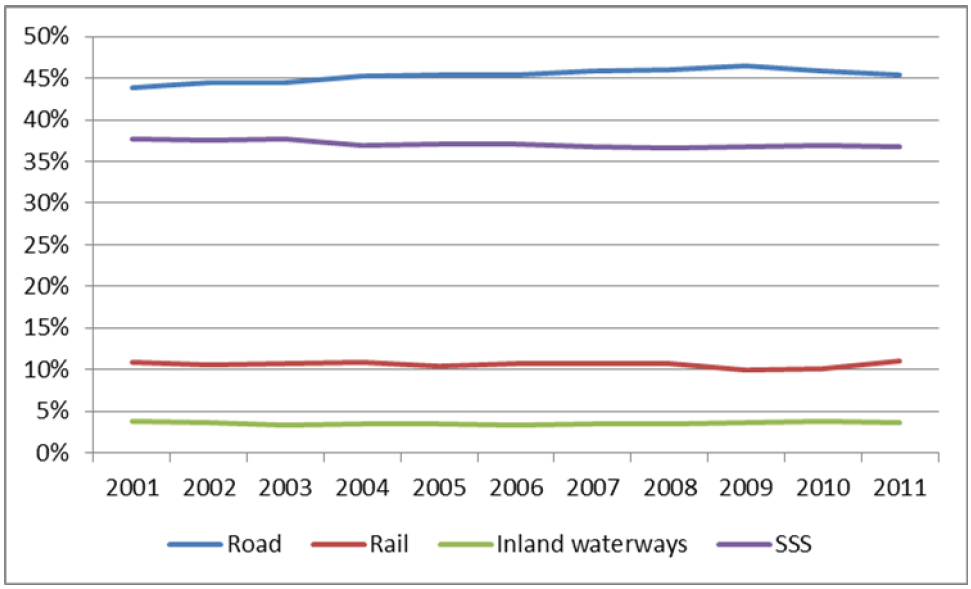
Table 3: SSS cargo volume development in the EU-27 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012
SSS cargo volume	100.00%	103.16%	106.02%	107.01%	94.08%	99.09%	103.19%	103.15%
Yearly growth		3.16%	2.87%	0.99%	-12.93%	5.02%	4.10%	-0.04%

Source: Eurostat, 2014.

The absolute growth of short sea shipping volumes is depicted in Table 3. Meanwhile, the relative development of the share of freight volumes that is transported via short sea shipping is shown in Figure 2. Relative shares of all modalities remained stable since 2001. In the period 2010-2011, short sea shipping showed a small decline of 0.8 % while road transport grew by 1.4 %.

Figure 2: Modal split development in the EU-27 2001-2011*



* Air and Sea: only domestic and intra-EU-27 transport; provisional estimates. Road: national and international haulage by vehicles registered in the EU-27 Airfreight and Pipeline freight is not incorporated in this figure.

Source: European Commission, 2013a.

On the one hand, the development of short sea shipping cargo volumes and, on the other hand, the slight decrease in their relative share of freight volumes indicate that the total transport market grew in this period. However, relative shares of modes of transport remain almost the same. Although the impact of the MoS programme cannot be deduced from these numbers, one can conclude that the programme did not have a major impact on shifting the modal split of freight transport.

2.6 Views on MoS from academia

Over the years, critical appraisals of the MoS programme have been provided. In 2007, the Napier University Transport Research Institute analysed the economic barriers, weaknesses and challenges of MoS[48]. The main conclusion addressed the market distortion brought about by current and ongoing public financing of road and rail infrastructure in contrast to short sea shipping infrastructure or the 'seaway'. In other words, road and rail infrastructure receive more publicly financed investments and subsidies than short sea shipping infrastructure. This improves the quality of road and rail and means that these modes of transport benefit in terms of their competitive position when compared to other modes such as short sea shipping.

This market distortion has been mentioned by several other academics, such as Baindur and Viegas[49], who argue that stakeholders look for subsidies to support the purchase of ships with a view to being a part of infrastructure on water. This market distortion encompasses all short sea shipping. This is relevant when discussing MoS due to the fact that the Motorways of the Sea, which are focused on SSS, have to compete with road

[48] Kristiansen, Jorgen, 2007. Motorways of the Sea: Economic Barriers, Weaknesses and Challenges. Napier University Transport Research Institute.

[49] Baindur, Deepak and José Viegas, 2011. Challenges to implementing Motorways of the Sea concept — lessons from the past, Maritime Policy & Management: The flagship journal of international shipping and port research, 38:7, pp. 673-690.

corridors. The gains of these motorways are influenced by the discrepancies in subsidies for different types of infrastructure. The argument here is that infrastructure for each mode of transport should benefit equally from public investments and subsidies.

Alfred Baird has made a contribution to the discussion by stating that MoS focus too much on the 'soft' factors for short sea shipping, such as administrative factors[50]. Port facilities and hinterland connections should receive greater encouragement and support from the Commission. For port developments, 'the market' is expected to provide the infrastructure and to take on the risks. In comparison, road and rail traffic rely on governmental support for their lifetime, while Marco Polo, the funding source for MoS short sea shipping services, limited support to just three years.

Therefore, according to the mentioned academic reviews, there is a different approach when looking at infrastructure support. There are differences between road and rail on the one hand and short sea shipping on the other hand in terms of both the quantity and the duration of investments and subsidies. The assumption is that this leads to a distortion of the competitive position of the modes of transport.

In 2011, an evaluation of the Motorways of the Sea programme was carried out by Baindur and Viegas[51]. This addressed several other difficulties in terms of short sea shipping competing with road freight transport. Firstly, the lack of uniformity and standards of inspections was highlighted, as well as the greater administrative burden which increases costs for carriers. Different projects have been carried out in the MoS programme to ensure greater uniformity of inspection standards. Notwithstanding the foregoing, checks on intra-European maritime trade are intensive, especially when compared to inspections of road freight. The MoS programme has not yet produced measures to reduce the burden of those inspections (the Blue Belt programme, which was launched in July 2013 as a key action within the Port Policy review by the EC, should ease customs formalities for ships, cutting red tape and reducing delays at ports)[52]. 1 March 2014 saw the adoption of the new Regular Shipping Scheme. Union goods that are shipped by shipping companies with this status from a Member State port to another EU port maintain their Union status. This eliminates the need for customs clearance at the destination[53].

Furthermore, ships are obliged to pay for port services (e.g. light dues, pilotage, towage and mooring). Similar charges do not exist for other modes of transport. Port charges vary from port to port and pricing policies across Europe are very diverse. To switch to an alternative port is not always easy as a result of existing trade, and implies changing logistics chains and back offices of ship-owners.

Furthermore, a technical barrier has hindered the development of MoS. Maritime containers are not in widespread use in intra-European transport as these containers do not optimally fit Euro-pallets. In 2013 the Commission proposed a new standard, known as the European Intermodal Loading Unit (EILU). This combines the advantages of both maritime containers (ISO 1 series) and land containers (swap bodies). A swap body is a standard container that can be used in both road and rail transport but is not stackable, and is cheaper than an ISO

[50] Baird, 2006. Motorways of the Sea: Economic Barriers, Weaknesses and Challenges.

[51] Baindur, Deepak & José Viegas, 2011. Challenges to implementing Motorways of the Sea concept — lessons from the past, Maritime Policy & Management: The flagship journal of international shipping and port research, 38:7, pp. 673-690.

[52] European Commission, 2013b, COM(2013)0510. Blue Belt, a Single Transport Area for Shipping.

[53] DG Move, 2013. First step of the Blue Belt initiative.

container. However, European industry has not adopted this standard, mainly due to the fact that it has already invested in loading units[54].

The final difficulty addressed by Baindur and Viegas[55] concerns the imbalance of trade flows in transport corridors. This is a problem for MoS and any intermodal service. It is not as easy to seek out and find return cargoes as is the case with road transport, where one can use the extensive road network to pick up cargo in adjacent regions. In short sea shipping, stakeholders need to find large quantities of cargo in both directions between rather specific European regions. This often requires combining cargo from several shippers to achieve sufficient volume to make a new shipping line profitable. A complicating factor is that on a macroeconomic level it is highly likely that there will be an imbalance in trade between ports of origin and ports of destination. It is very difficult to find balanced volumes of cargo between seaports and their hinterland regions.

In their evaluation, Baindur and Viegas[56] also discussed the Commission proposal put forward during the first stage of the MoS programme for a 'European ports' label' based on quality and efficiency of services. Key performance indicators (KPIs) would be developed for both ports and shipping services, and a benchmark survey would be performed to compare European ports and shipping links. The sector's reaction to these measures was mixed, since they could directly influence ports' market position. This approach has not been further developed, although the idea remains part of the programme.

Furthermore, the commercial risks involved in starting up short sea services are high, since ships are a large-scale investment and transport demand is volatile. This risk has been addressed in part by creating opportunities for shipping companies within the Marco Polo programme, although the running time of projects within this programme was rather short in terms of being able to establish a profitable new short sea service. Research has been performed on a short sea shipping project between Scotland and continental Europe[57]. The result of a survey among logistics operators showed that almost all companies would expect daily services in both directions and would be either 'sure' or 'likely' to use these services. However, the operators also said that during the first two to three years of operation user loyalty needs to be built up before shippers are willing to commit large traffic flows. Consequently, companies require a high-quality service to run smoothly for several years in order to gain the necessary confidence to commit large flows of their cargo to a new short sea service. The start-up aid that is available via the MoS programme helps shipping companies to (partially) cope with these risks.

Applying for MoS is a complicated process, as was stressed by the participants in a seminar and debate on the Motorways of the Sea held on 11 May 2010 in Sopot, Poland[58]. An example mentioned was the fact that a TEN-T-MoS project has to receive initial approval from the relevant ministries at national level. The project then needs to be approved a second time by the European Commission. The involvement of at least two countries and, in some cases, multiple ministries make the decision process complex and liable to be influenced by different priorities at different levels. This comment has also been made by

[54] Baindur, Deepak and José Viegas, 2011. Challenges to implementing Motorways of the Sea concept — lessons from the past, Maritime Policy & Management: The flagship journal of international shipping and port research, 38:7, pp. 673-690.
[55] Idem 69.
[56] Idem 69.
[57] Baird, 2005. EU Motorways of the Sea policy – lessons to be learned from practical experience. In the European Conference on sustainable goods and passenger transport held in Kristiansand, Norway.
[58] BPO & TransBaltic, 2010. Baltic Motorways of the Sea. Successful projects, barriers and challenges for MoS policy implementation.

others, such as Baindur and Viegas[59]. The complex application process requires considerable effort and takes a long time, which in turn makes it very costly - even more so as project administration is either poorly funded or not funded at all[60].

The condition of MoS having to be routes between at least two EU Member States has been critically examined by Gese Aperte and Baird[61]. They provide the example of Italy, which has successful domestic short sea services subsidised by the national government via the ECOBONUS system and are not permitted to apply for MoS funding. The ECOBONUS system supports transport companies that frequently use a short sea shipping line. The aid covers up to 30 % of the seaway price. Gese Aperte and Baird added that the ECOBONUS system is a less complex and more user-friendly incentive scheme that both truckers and service providers find easier to understand than the current MoS funding framework.

In a paper of 2009, Jean-Didier Hache[62] examined the integration of the EU's island regions in the Motorways of the Sea. From the beginning, this has been an objective of the MoS programme, as improving the accessibility of peripheral and island regions will benefit cohesion. Hache concluded that the MoS programme had hardly benefited any island region. To what extent this has been caused by difficulties arising from the legislation or by a lack of entrepreneurship or interest on the part of the island regions themselves remains unclear. However, the special nature of island maritime traffic causes some difficulties in regard to setting up short sea services:

- Trade tends to be unbalanced, with imports vastly exceeding exports.
- In some cases, island exports consist mainly of goods that require special shipping, such as oil, gas or cattle.
- Island traffic is mostly seasonal and dependent on tourism or agricultural exports.
- Islands tend to trade primarily with their national mainland, but MoS require trade between two different Member States.

2.7 Key findings

Several academics have concluded that the freight transport market is distorted and that short sea shipping faces barriers in competing with road transport. The observations made by academics in the previous section can be summarised as follows;

- There is a difference in the amount and duration of infrastructural investment between road and rail, on the one hand, and short sea shipping, on the other. This difference leads to a distortion of the relative competitive position of the different modes.
- The Motorways of the Sea programme focuses too strongly on 'soft' factors influencing the competitive position of short sea shipping. More attention should be paid to infrastructure and 'hardware' to support this mode for transport.
- Short sea shipping is exposed to a number of factors which affect its competitive position and which other transport modes do not encounter. An example is the use of ports that require payment of port dues issued by private port authorities. Users

[59] Baindur, Deepak and José Viegas, 2011. Challenges to implementing Motorways of the Sea concept — lessons from the past, Maritime Policy & Management: The flagship journal of international shipping and port research, 38:7, pp. 673-690.
[60] Idem 74.
[61] Gese Aperte and Baird, 2012. Motorways of the Sea policy in Europe.
[62] Hache, Jean-Didier, 2009. Integrating the EU islands in the Motorways of the Sea.

of other infrastructure do not usually have to face these types of dues. Another example is that the administrative burden for ports, including inspection schemes, is more intensive than for other modes, especially road transport.

- Short sea shipping services require large volumes of flow between port regions and their hinterlands. In general, there is an imbalance in flows between regions, which makes it hard to achieve volumes that are sufficient and sustainable enough to enable shipping lines to operate profitably. Conversely, road transport is far more flexible in this respect, as it involves relatively small volumes and thanks to the dense road network there are more possible locations from which return cargo can be picked up.
- There is an obvious 'chicken-and-egg' problem regarding the profitability and sustainability of short sea shipping operations. On the one hand, operators require large volumes to operate ships; on the other, shippers only wish to contract large volumes to short sea shipping once they have had sufficient positive experiences in shipping smaller volumes over long periods of time. In many cases, this leads to low revenues in the first years of operations that are unable to cover the high start-up costs.
- The complexity of the MoS programme itself has also been recognised by academics. This mainly concerns the conditions under which projects are eligible for funding.

Although the present authors do not share all of the views and opinions expressed in the academic research, we believe these observations offer insights concerning possible improvements for the MoS programme. Whilst the MoS programme has not so far succeeded in removing all of the barriers mentioned above, improvements can potentially be realised. For instance, red tape is considered to be a barrier for projects. The next chapter will confirm that this view is shared not only by academics but also by participants in the MoS programme.

There are large commercial risks involved in setting up a new SSS service. The size of operations in short sea shipping requires a relatively long period of growth of a service before a break-even business case can be achieved. Commitment from shippers to a service is critical in the early years of services. In the opinion of the authors, the challenges of starting up a new service and the timeframe should be taken into account when evaluating the feasibility of services.

Furthermore, the MoS programme has hardly included the EU islands' regions. Researchers suggest that dropping the requirement that an MoS project must involve at least two Member States would be a possible solution to this problem. The reason is that if applicants are allowed more flexibility in defining geographical scope it will become easier to develop short sea shipping services. The potential for modal shifts from road exists not only between countries, but also within Member States, which means it should be possible to identify interesting opportunities.

The next chapter will outline observations formed when looking at the MoS programme from a participant perspective. Together with the observations made by academics, this will create a basis for the scenarios for improvement that are described in Chapter 4.

3. SURVEY RESULTS

External views on the MoS programme have already been discussed in Section 2.6 when reviewing the literature on the programme. This chapter goes into the details of the survey carried out at ESPO ports, the in-depth interviews with stakeholders, and the MoS project evaluation carried out by the authors and partners. Map 1 in Chapter 1 shows the stakeholders who have participated in the evaluation (via the survey, an interview or the evaluation of a MoS project). In total, 24 ports and three logistics service providers participated in this study (for an overview, see Annex 2).

Both the survey and the in-depth interviews addressed the following basic topics:

- Knowledge of the MoS programme;
- Experience in participation in MoS projects (if relevant to the stakeholders);
- Role of cofinancing with MoS funding and its relationship with other programmes;
- Possible improvements to the MoS programme and/or funding schemes.

Annex 3 consists of the survey carried out at ESPO ports. The same aspects were raised in the in-depth interviews with stakeholders, although here the questions went into greater detail in such areas as the results and procedures of the MoS project and the potential barriers to entering the MoS programme.

Three MoS projects were analysed in more detail with the project partners by means of interviews. Additional topics were addressed, and the analysis was carried out in the framework of the following general objectives:

- The process of gathering information on the MoS programme and funding opportunities;
- The MoS application procedures;
- Experiences during the project phase.

3.1 Results

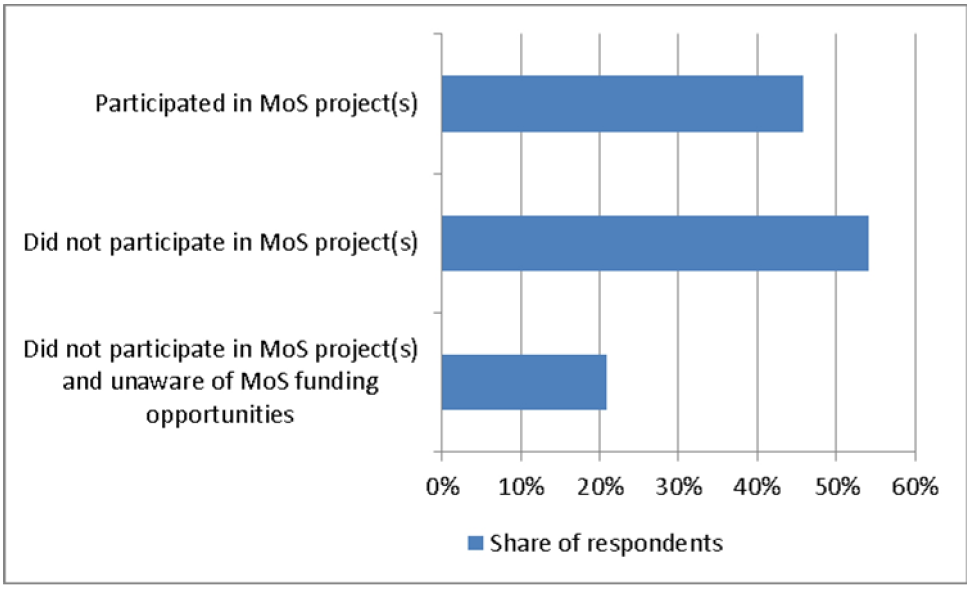
The following results were derived in a qualitative fashion from the survey and the interviews. The results are categorised according to the following aspects:

- Participation in the MoS programme and projects;
- Added value of the MoS programme;
- Partnerships in MoS projects;
- Scope of the MoS programme;
- Recommendations for the MoS programme.

Participation in MoS

- Of the 24 ports that contributed to this evaluation, 11 have participated in MoS projects while 13 have not. For some of the stakeholders, there is an obvious reason for not participating as things stand - for instance, if they represent several individual ports within a country and if their role is confined to involvement in coordinating projects and proposals. Five of the participating ports mentioned that they were in fact not aware of the MoS funding opportunities. '*MoS should focus on more regular information to the ports in terms of financing programmes/possibilities*' (interview with a North-West European port, 2014)[63].

Figure 3: Overview of participation of respondents



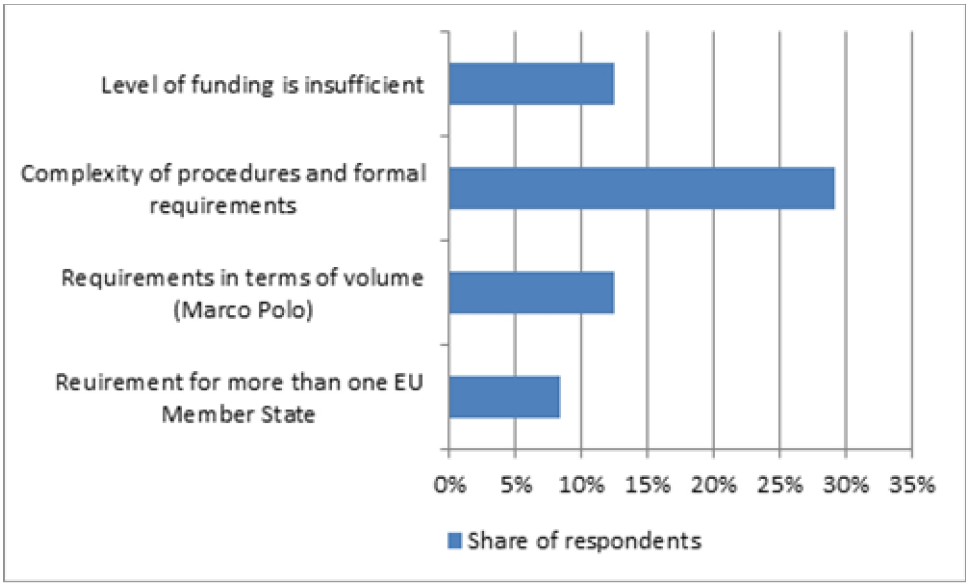
Source: BCI (2014).

- In the framework of the Marco Polo financing, three ports out of 24 saw the requirements in terms of volume as a barrier to entry. Given the highly volatile nature of the market, it is hard to make up-front assumptions on volumes to be shifted. Meanwhile, for smaller ports it is necessary to rely on larger ports to take the lead and to make sure that volume requirements are met.
- Two ports mentioned that they saw opportunities in modal shift via short sea shipping within a Member State. As participation of ports from more than one Member State is a requirement for acceptance for a MoS project, they noted this as a barrier to entry.
- Complexity of procedures and formal requirements within the programme were seen as barriers to participation by some of the stakeholders/ports. Seven stakeholders mentioned such aspects as being a barrier to either entering the programme or proposing a project.
- As regards the funding rates for the MoS programme, there were a variety of answers coming from the stakeholders. However, in general, the level of financing seems to be acceptable. Three out of 24 respondents indicated that the level of

[63] The identities of the individuals who provided these quotes have been kept anonymous as the interviews were confidential.

financing is insufficient and it is very difficult to secure commitment for co-financing up-front to cover the full costs of projects and investments. Twelve believed the current rate of funding to be sufficient and a welcome addition to start-up projects. Ports have identified own resources and local/national co-financing opportunities to cover the total project costs.

Figure 4: Overview of barriers



Source: BCI (2014).

Added value of MoS

- The main added value identified by the stakeholders was that the programme provides the opportunity for ports to cooperate. This is not an obvious approach in a highly competitive market. MoS lets the ports research and evaluate the optimisation of supply chains (by setting up new short sea shipping lines, improving ICT communication, etc) in a transparent fashion, so that market partners can create new initiatives based on the results of projects, or refrain from action if the opportunities are not there.
- The added value of the scope of the MoS programme was recognised by the stakeholders. Five out of 24 mentioned that the added value of MoS when compared to other EU financing instruments lies in the stimulus offered for cooperation between seaports in the EU, in combination with the upward effect on volumes transported through intermodal or short sea transport.
- MoS projects enable market partners to find opportunities for short sea shipping volume. This initial phase is difficult to realise in a regular business environment because it calls for large amounts of time and cooperation between numerous stakeholders. Within a MoS project, these efforts can be coordinated, and opportunities are created that can be further explored.
- The financing opportunities within the MoS schemes were welcomed by ports. 22 of the 24 stakeholders mentioned funding. The general opinion was that the level of financing in force permits the speeding-up of investments and projects, but that additional commitment is required for the total project start-up. MoS financing is seen as enabling the coverage of large investments, although for infrastructure work in particular the percentage is perceived as limited.

Partnerships in MoS

- The commitment to be provided in the proposal phase is also a threshold, as transport operators cannot guarantee volumes for the long run since the market is very volatile. More flexibility in terms of up-front assumptions on volumes and expected modal shift should make entry into the programme easier.
- For smaller ports, it is difficult to set up partnerships as the administrative burden is quite large. However, there is some potential to be found in these smaller ports. Smaller projects with relatively small scale trade lanes and less volume might produce good results in terms of modal shift to short sea shipping, as it will be easier to coordinate smaller volumes between ports within a corridor.

Scope of the MoS programme

- The definition of the scope of projects was not clear to all ports that participated in the survey. When looking at the type of projects financed by MoS it is unclear whether these matched the objectives of the programme itself. There seems to be a spread of projects, financed from IT projects and research through to actual modal shift implementation. An evaluation of past projects to establish whether the objectives and results of the individual projects actually contribute to the achievements envisaged by the MoS programme is recommendable according to some stakeholders: *'At present, there is the impression that MoS within the TEN-T programme is a reservoir pool for all kinds of funding projects. It should be evaluated whether the original focus on funding projects is still valid'* (interview with representative of a Northern European port, 2014).
- The MoS programme appears to focus on maritime transport, which in itself is considered to be a good thing as this is not done by other instruments. However, short sea shipping and ports are parts of complex supply chains. According to a number of stakeholders, the scope of MoS should therefore be widened to include port complexes rather than simply individual ports. It is also argued that the relationship between hinterland connections and MoS opportunities must be made explicit in projects.
- Five stakeholders suggested that MoS lacks sufficient geographical reach: countries like Norway in the northern corridor and ports in the Black Sea area, as well as in Turkey and in Morocco and other North African countries, should also be part of the scope to realise efficiencies on these corridors. It should be mentioned here that some ports were hesitant to embrace participation by third-country ports on the grounds that this could lead to unfair competition: *'Our port would be ready to consider and apply for a MoS project that is able to catch the considerable amount of trucks coming from Morocco and crossing Spain and France, the idea being to start from Gibraltar, Málaga or even Almería'*[64] (interview with representative of a Mediterranean port, 2014).

[64] The 2013 TEN-T guidelines refer to the possible incorporation of third-country ports. Ports are therefore not aware of the new opportunities the 2013 TEN-T guidelines provide, or are awaiting the results of the 2013 calls to see to what extent the EU grants funds to projects involving third-country ports.

Recommendations made by stakeholders

- One of the important aspects of the feedback received from the stakeholders concerned the transparency and relevance of financing from the MoS programme. For instance, some ports (six stakeholders mentioned this point) were concerned that funding or subsidies for business initiatives lead to unfair competition between ports: *'A thorough market analysis by the EC regarding competition in a relevant market or transport lane should go along with every application for MoS funding. Stakeholders in the specific market or lane should be notified on the MoS of the competitor's application for funding'* (from questionnaire; representative of a North-West European port, 2014).
- The difficult part of MoS projects is to keep new routes and shipping lines open after the project has ended. The focus should be on the evaluation of actual effects five to ten years after the project has ended. While most projects seem to identify potential new lines after the project has ended and subsidies cease, it is impossible to compete with the low rates of road freight transport.
- An aspect mentioned by ports in the Mediterranean was the re-establishment of a system similar to the ECOBONUS system[65]. This system was mentioned as a means of providing MoS financing directly to end-users of the motorway. This would be an incentive to actually use the established short sea links even more. The current method of financing the MoS programme via TEN-T does not support such a financing scheme. The programme's rules of engagement should be adjusted in order to make this kind of incentive available.

MoS project evaluation

Three projects with MoS funding have been evaluated together with the coordinating partner of the projects. The projects evaluated were:

- Motorways of the Sea Rostock-Gedser (2010-EU-21107-P: see Annexes 5 and 6).
- High Quality Rail and Intermodal Nordic Corridor Königslinie (2008-EU-21010-P: see Annexes 5 and 6).
- FRESMOS (2009: see Annex 7).

The results of this in-depth analysis of the projects are presented below according to the different stages of project development. A description of each project is added in order to contextualise the statements presented.

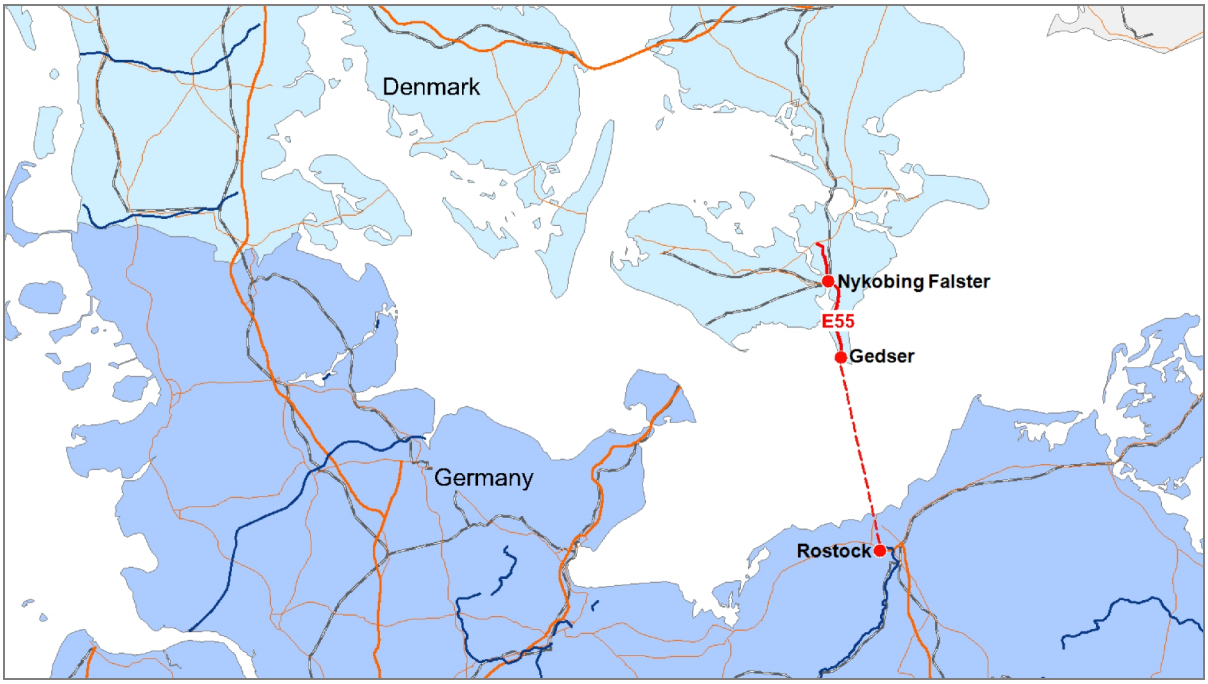
[65] The ECOBONUS system directly supports transport companies that frequently use a short sea shipping line. Aid is granted to a maximum of 30 % of the seaway price.

Motorways of the Sea - Rostock-Gedser 2010-EU-21107-P (TEN-T)

Member States involved:
Germany and Denmark

Start date: January 2010
End date: December 2013

Budget:
Total project cost covered by this decision: EUR 122 415 926
EU contribution: EUR 24 483 185
Percentage of EU support: Studies and works: 20 %



Source: BCI, 2014.

This project is part of a larger infrastructure project on the Copenhagen-Berlin transport axis that entails the extension of the Rostock-Berlin railway, the upgrading of the E55 motorway serving the port of Rostock, and the introduction of new ferries. The current ferries are operating at capacity limits owing to rising demand on this axis, and have reached the end of their technical lifetimes. New ferries will double capacity, improve reliability and environmental performance and reduce service costs. Furthermore, the E55 crosses the town of Nykøbing Falster, resulting in a bottleneck in the transport corridor. This problem will be addressed by a new bypass.

In addition, the link will compete for traffic with the Fehmarnbelt axis (a tunnel planned for 2021 to connect Germany and Denmark). Also, the Baltic Sea will become a Sulphur Emission Control Area in 2015: this is expected to result in significantly higher sea freight rates owing to the obligation to use expensive low-sulphur fuel or alternative fuels. Both developments will reduce the competitiveness of the Rostock-Gedser link. Investments in port infrastructure and vessels and the achieving of a top level of performance are required to increase competitiveness. To attain the goal of a high frequency service with nine departures per port per day and a turnaround time of 15 minutes, purpose-built port infrastructure and vessels are required.

With the proposed investments in new ferries and the E55, the project aims to develop intermodal traffic, which is expected to reach 6 % of the link's annual traffic by 2017.

Observations during the pre-proposal phase

- The suggestion was made to provide a comprehensive overview of the relationship between TEN-T and MoS projects within the funding instruments. The relationship between funding opportunities and project scope must be made clear.
- While the application documentation is very well structured, they nonetheless include a multitude of complicated documents. This does not enable an easy understanding of the present eligibility criteria in order to assess the feasibility of participation in the MoS programme.

Observations during the proposal phase

- Information exchange between the European Commission and consortia could be improved by more regular and direct communication regarding the status of the application and the steps in the evaluation.
- Some remarks were made regarding the use of the helpdesk during the proposal phase. Responses to queries are sometimes provided with considerable delay, which can impede action. In addition, many answers were very general or consisted of references to text sections in formal documents. Direct contact with officials who are familiar with the transport sector and the MoS programme would be helpful.

Observations during the project phase

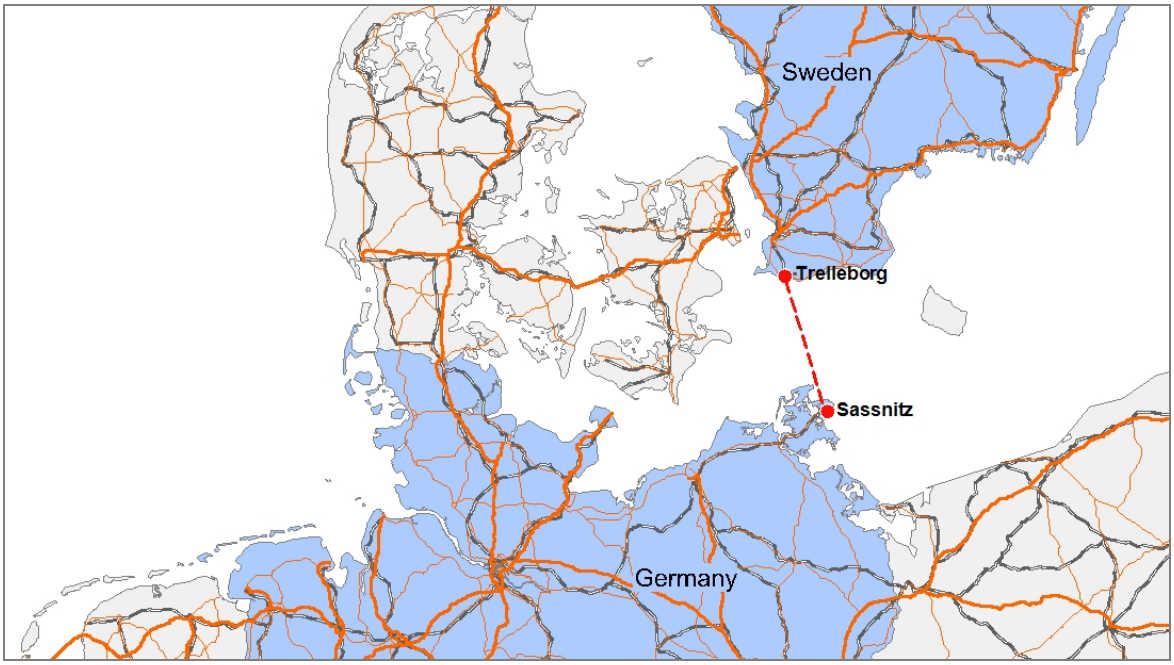
- In general, the project partners found that objectives were being met. However, the project had yet to be completed and the final reports had not been approved at the time of interview.
- Further improvement and development of the TENtec module (an information portal on TEN-T) was considered to be of added value for the consortium partner communication as well as for communication with the Commission. This was seen as of potential help in terms of structuring information flows during the project.

High Quality Rail and Intermodal Nordic Corridor Königslinie 2008-EU-21010-P (TEN-T)

Member States involved:
Sweden and Germany

Start date: January 2008
End date: December 2013

Budget:
Total project cost covered by this decision: EUR 50 349 000
EU contribution: EUR 10 200 000
Percentage of EU support: Studies and works: 20.26 %



Source: BCI, 2014.

This project entails the upgrading of the rail-ferry link between the ports of Trelleborg (Sweden) and Sassnitz (Germany) in order to increase the share of rail and intermodal transport. This link is part of the Swedish-German corridor and the Sweden-Central Europe/Italy corridor.

Investments in infrastructure in both ports will improve the existing rail-ferry service by offering more capacity, increased efficiency, faster handling in the ports and greater flexibility due to the option of a sixth departure (in peak demand periods only). In Sassnitz, investments in new infrastructure provide the possibility of loading/unloading and storing intermodal transport units. By combining rail and intermodal transport (e.g. unaccompanied trailers), the volume base is enlarged.

The aim of the project is to achieve an increase in the total number of tonnes transported in rail wagons, from the 2008 figure of 1.7 million to 3 million by 2018 and 3.9 by 2028.

Observations during the pre-proposal phase

- There was a need for more clear and concise information on the priorities within a given call for proposals. The interpretation on activities that are eligible for funding seems to be wide-ranging. For instance, the scope of projects within 'innovative actions' can be interpreted in a very broad manner. A clear explanation from the EC on what the actual objectives are and what type of activities can or cannot be funded is required.
- The calls for proposal are sometimes hard to interpret correctly by potential project partners as documents are extensive and complicated in terms of structure. A clear and concise presentation of the objectives, criteria for application, expected results, timeline, etc. would help in the interpretation of the formal documents.

Observations during the proposal phase

- The presentation and availability of documents during the proposal phase was considered to be very good.
- The online submission tool is making administration and communication between partners more clear and efficient. This is working considerably better than previous methods.
- Project partners experience most problems in meeting criteria for application, i.e. the required cooperation between partners in different Member States and the expected impact of projects.

Observations during the project phase

- According to the project partners, when project objectives are not met this is related to the changing economic conditions. This has led to a reduction of volumes transported and priorities set by market partners.
- The communication during the project phase was perceived as professional and adequate. This has led to a smooth communication regarding deadlines, deliverables and project coordination in general.
- The timeframe of projects is considered to be adequate. Whilst the scope of MoS projects can be very ambitious, the time required to realise objectives can be met. The sustainable continuation of the MoS results in a project is naturally out of the scope of the project, although project partners felt that if timeframes could be extended it would be possible to have more measures implemented to ensure a sustainable continuation of services.

FRESMOS (Marco Polo)

Member States involved:
France and Spain

EU contribution: EUR 4 171 450
State aid: EUR 30 000 000

The FRESMOS project involves an SSS link between the French port of Nantes-Saint Nazaire and the Spanish port of Gijón. The service is to be operated by GLD Atlantique. The dedicated freight Ro-Ro service crosses the Bay of Biscay and aims to divert Franco-Iberian traffic flows from all-road trucking through the congested and environmentally sensitive trans-Pyrenean mountain roads.

Source: European Commission, 2014.

The service targets a broad range of cargo, including perishables. The FRESMOS Motorways of the Sea project intends to capture 3-5 % of road traffic in the western Pyrenees.

Besides the Marco Polo grant, the European Commission has approved complementary state aid for the project amounting to EUR 30 million, and France and Spain will each grant EUR 15 million.

Observations during the pre-proposal phase

- The information regarding the application procedure and the procedure proper was considered satisfactory by the partner interviewed.
- It is difficult to meet the required thresholds for eligibility. The business case is not as clear as wished for, and competition on long distances by road is hard to ignore when designing a proposal.

Observations during the proposal phase

- No comments were made on the proposal phase.

Observations during the project phase

- The project was not as successful as anticipated. Two basic elements should be taken into account in the future development of the MoS concept. An SSS service requires a pair of ports with a sufficiently long road connection and a rich hinterland at both ends if it is to grow and become profitable without EU aid in the long term.
- This statement is based on the expectation that when the aid for the projects ends there will be insufficient volume to keep the current services up and running. A sustainable business case is not possible with a 45 % northbound and 75 % southbound 'intake'.

4. MAIN OBSERVATIONS, BARRIERS AND SCENARIOS FOR IMPROVEMENT

On the basis of the results of the evaluations described in the previous chapters as well as the academic views on MoS, the main observations are provided in Section 4.1. Meanwhile, Section 4.2 provides three barriers affecting the development of the programme and examines the likely (qualitative) impact of each barrier on MoS results. Next, Section 4.3 addresses the recommendations relating to the observations and barriers. Finally, Section 4.4 addresses three scenarios for the future development of the MoS programme.

4.1 Main observations

Since the coining of the concept in the 2000s, Motorways of the Sea has evolved into an EU programme that has funded more than forty projects, resulting - including the 2013 calls – in a budget of over EUR 400 million in incentives. The total investment by both public and private actors is estimated at EUR 2 billion. In addition, four projects were funded via the Marco Polo programme prior to 2013, resulting in just under EUR 20 million in incentives. Despite these substantial investments, the share of short sea shipping compared to other modes of transport dropped slightly in the period 2001-2011. As explained in Section 2.5, the competitive position of SSS has not improved as much as might have been expected, nor has its modal share improved significantly. Obviously, this cannot be only a matter of the investments made through the MoS programme, as market circumstances largely dictate the choices that shippers and operators make in relation to the selection of transport modes.

Various representatives of the world of academia have put across their views on the MoS programme and ports. Furthermore, ports, national port associations and transport companies have been asked to provide their opinions on MoS. On the basis of this collective input, the following main observations are put forward (with regard to ports, reference throughout is to the 24 ports that were surveyed).

Positive feedback

- Over 60 % of the ports that are familiar with the MoS programme consider the current rate of funding to be both sufficient and a welcome addition to start-up projects.
- The MoS programme leads to an increase in cooperation between ports from different Member States.
- There is a potential for widening the geographical scope of MoS to neighbouring countries, e.g. Norway, North African countries and non-EU countries in the Black Sea region.
- There is also potential for widening the scope of MoS and incorporating entire supply chains.

Feedback regarding room for improvement

- Some ports (both small and large) do not currently know about the MoS programme.

- Some of the ports that are familiar with the MoS programme are not aware of the complex EU financing schemes. In the case of the Rostock-Gedser project, an overview of the relationship between TEN-T and MoS projects and their funding possibilities was suggested.
- The scope of the MoS programme was not clear to all respondents, and some were therefore not able to provide feedback.
- The application process is complex and time-consuming, and calls for proposals are sometimes hard to interpret correctly. There should be clearer and more concise information on the priorities within a call for proposals, as mentioned in the Königslinie case study.
- The commercial risks of starting up a new short sea shipping service are high, owing to:
  - volatile transport market conditions;
  - the fact that user loyalty needs to build up over several years;
  - the fact that return cargo flows can only be sourced from a relatively small area by comparison with road transport.
- There is a demand for MoS connections within a single Member State, which could be favourable to the inclusion of island regions in the MoS programme. At present, the EU's island regions hardly benefit at all from MoS.

On the basis of the survey, the academic research, project evaluations and personal experience in transport solution design, the authors have formulated the following main observations:

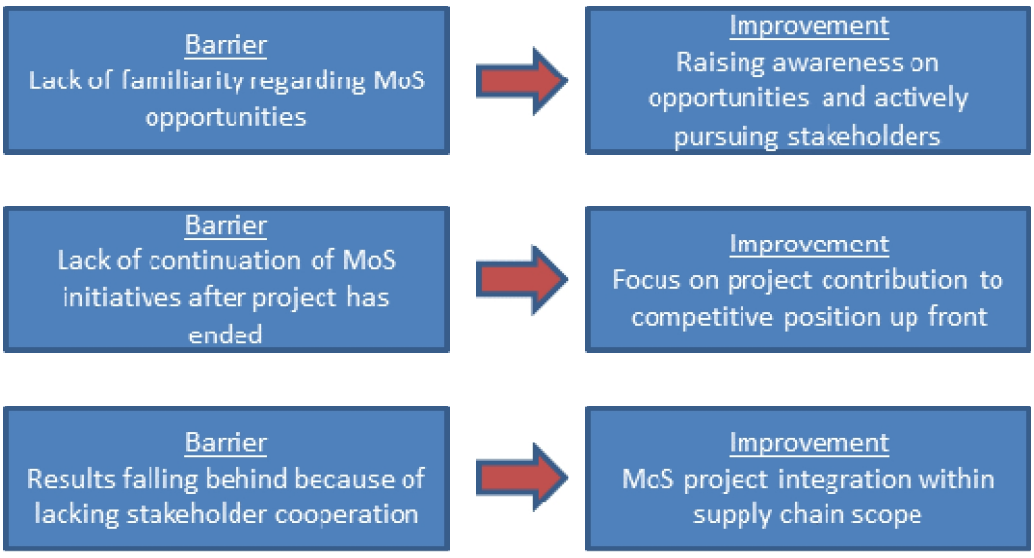
- The impact of the MoS programme is limited if one sees it in terms of market share development over recent years. In other words, short sea shipping did not gain market share because of the MoS programme. In the case of the FRESMOS project, it is expected that when the EU aid ends, the service will lack sufficient volume to keep it up and running. In this case, the MoS funding will not have a sustainable impact on SSS use. The MoS programme is lacking a clear ex-post impact assessment. This leads to the conclusion that better KPIs need to be determined prior to investments being made to assess their impact within the full transport market.
- The MoS programme has suffered from lack of appeal due to the fact that the concept of MoS was not very clear from the outset. The MoS Coordinator attempted to improve matters on several occasions by making new proposals to fine-tune the programme. However, this was not as successful as anticipated because his proposals were not translated into guidelines.
- The geographical scope of the programme was more of an impediment than an added value. SSS is an international modality connecting different consumer markets and shipping basins. The limitations regarding geographical scope lead to inefficiencies and opportunities being missed.
- The opportunities represented by the programme are not very well known among its main potential beneficiaries. Many ports indicated that they were not aware of all opportunities within the programme. This leads to missing out on potentially interesting connections for short sea operations. Furthermore, even when the programme is recognised by stakeholders, the procedures are perceived to be cumbersome. The time required to set up projects and consortia places pressure on the capacities of port authorities.

- Given the fact that a large share of the SSS market can be related to countries that do not fall within the scope of MoS, it is evident that opportunities are being missed. Shipping routes involving third countries need to be incorporated into the programme in order to create better opportunities for port stakeholders.
- Infrastructure investments alone are not beneficial to the MoS objectives. These types of financing can be considered in CEF funding schemes. The added value of MoS should be in terms of the full supply chain operations that are related to SSS. This includes soft factors such as the development of organisational models.
- The MoS programme requires continuous adjustment and orientation taking market drivers into account. Observations and evaluations of the programme or projects end up with the programme office. We were told that feedback links with relevant EU policymakers are not currently in place.

4.2 Barriers

The barriers encountered by stakeholders are such that it is clear that there is room for improvement in the MoS programme. A combination of factors is to be considered in this respect, and Figure 5 shows the main barriers that are derived from the analysis in the previous chapters and the observations in Section 4.1. The improvements suggested in this figure in part provide the basis for scenarios to improve the MoS programme.

Figure 5: Barrier overview



Source: BCI, 2014.

The three possible improvements that require attention when developing the MoS programme, regardless of which scenario might be implemented are:

- 'Awareness': the barrier is the lack of familiarity of stakeholders with the MoS opportunities. Improvement lies in the increased visibility of MoS. Clear identification of stakeholders is required, and an active approach to involving them should be pursued.
- 'Sustainable economic impact': the barrier to be considered is the lack of continuation of project initiatives after a project has ended. The MoS programme needs to improve in order to have a sustainable impact on the quality and competitive position of the Motorways of the Sea (short sea shipping as a mode of transport). Focus is required on

project objectives and evaluation of the actual improvement of the competitive position.

- 'Integrated approach': results of projects might fall behind on the original objectives owing to a lack of cooperation between stakeholders relevant to the project. Motorways of the Sea are a part of complex supply chains that neither start nor end at seaports. In many (if not all) cases, short sea shipping is one of the multiple modes of transport within a chain and various stakeholders are represented within these chains from shipper through to end customer. The MoS projects need to take account of the integrated supply chain so that they are 'connected' to other ''links in the chain and do not function as standalone projects.

4.3 Recommendations for the improvement of MoS

The suggested improvements in this section reflect the authors' views on improvements. These views are based on the survey results, observations by academics and general information on the MoS programme results. Some of the proposed improvements are general to the MoS programme. Others are linked to the three main barriers that require attention, as discussed in the previous section.

General recommendations for improvements and methods for increasing awareness

- It is imperative to increase awareness of the opportunities provided by the MoS programme by undertaking active campaigning targeted on all stakeholders, thus focusing not only on ports and port authorities but also on shippers and operators in the supply chains. Several ports are unaware of the opportunities, and this in turn leads to a lack of initiative towards operators and shippers who may be considering short sea shipping as a mode of transport. The focus on providing knowledge and information on MoS should be widened to other stakeholders, such as (intermodal) operators, logistics service providers and shippers. This will help more potential partners to reflect together on possible services and projects within the MoS network.
- Application processes for MoS projects must be made as straightforward as possible. A potential project requires evaluation during the proposal phase within a country and then secondly by the European Commission. It should be clearer to project partners at an early stage whether projects are considered to be feasible and supported from the perspective of all stakeholders; otherwise, it is a waste of time to prepare a (time- consuming) proposal.
- Calls for proposals should be clear and simple. They must be clearly understandable by stakeholders and kept as straightforward as possible. Thresholds for participation could be lowered in order to attract new ideas that will boost the impact of the MoS programme. The total volume to be shifted to short sea shipping should not be the major criterion for a project - its sustainability and the potential business case are more important factors.
- An aspect of information-sharing is the combination and coordination of data on other EU programmes/fundings. This should ensure that ports become well aware of the focus of each programme and enable them to determine the best possible options for obtaining support for their initiatives.

- The MoS programme should allow more flexibility in setting up partnerships. This means that it is necessary to investigate the option of allowing the establishment of MoS projects between ports within a single Member State rather than the current minimum of two Member States. In addition, enlarging the possibilities of including third countries such as North African countries, Turkey or Norway should be considered. There seem to be a considerable number of short sea shipping initiatives that could contribute to the objectives of the programme. However, this requires thorough research, as it is necessary to avoid projects whose only result is the shifting of cargo from one EU port to another (with no extra cargo being shipped via short sea).

Improvements to support a sustainable economic impact

- The first years of an SSS service are, generally speaking, difficult and unlikely to be profitable due to high start-up costs. It would be practical to consider whether financing schemes could be organised in such a way as to provide more help for operators over this start-up phase. To this end, stakeholder' consultation seems useful.
- The ECOBONUS system is an example of a possible financing structure that could lead to a more equal distribution of benefits among stakeholders. A 'bonus' for potential users of a short sea shipping line can result in increased use of the service in the first two to three years of operation. This will in turn result in lower costs per transfer, and in case of success the bonus can be abolished in order to avoid permanent market distortion.
- It is necessary in the proposal phase to evaluate economic sustainability after the project has ended in the best possible way. A sensible idea would be to have an independent check on the business cases presented, at least in terms of the assumptions used to provide the business case so that risks can be mitigated from the outset.
- Business case calculations are required to obtain support for awarding MoS funding. The business case calculation for services provided within the MoS framework needs to consider a number of different aspects. For instance, the service can be benchmarked by an independent authority regarding the competitive position vis-à-vis other modes of transport. Of relevance in this case is benchmarking according to actual transport prices paid in the market and not a multiple year average (this is because shippers make short-term decisions).
- New MoS projects should build on lessons learned from their predecessors. Business cases for MoS projects that have been completed should be compared with the actual situation when the project ended. MoS project evaluations should be matched with the KPIs set and MoS priorities should be adjusted based on the results.
- Special attention must be paid to distortion of competition. Funding of MoS projects must not lead to an unfair competitive advantage for one mode of transport. The result of this would be market inefficiency, and it will be seen (notably after the project has ended) that the new service cannot be maintained. This is because competition then turns out to be stronger than anticipated.

Improvements to support an integrated approach

- When providing information on the MoS programme to stakeholders, it is essential to make the scope of MoS clear. In particular, the relationship between EU financing schemes is important so that stakeholders are aware from an early stage as to whether their project fits into any of the EU funding schemes.
- In addition to this recommendation, it should be considered whether there are possibilities within and between European Commission funding schemes that will enable full supply chains to be considered and funded within a single project.
- In project proposals and running projects, attention must be given to the fact that MoS are part of entire supply chains. It needs to be carefully considered whether the proposed project actually contributes to the objectives set out in the MoS programme. A short sea shipping line cannot be sustainably operational unless forward and backward connections are taken into account. The FRESMOS project partners learned that an important hinterland at both ends is required in order to nourish the service and make it profitable without EU aid in the long term. The key questions here are whether projects actually stimulate short sea shipping as a mode of transport and whether they improve the competitive position of short sea shipping. This is sometimes difficult to assess at the outset, but requires the attention of the Evaluation Committee as well as close consideration when preparing a proposal. It is recommended that in the proposal phase the consortia are challenged to show how the hinterland connections are organised and what potential risks and opportunities there are in these parts of the supply chain. In particular, the integration and synchronisation of short sea shipping networks with inland shipping and rail networks and services is important in this respect.

Barriers versus improvements

It is probably not feasible to address all improvements at once and as a result see all three main barriers being tackled. There are also improvements suggested that are applicable to more than one barrier. The matrix below shows this overlap and the impact of improvements per barrier, which is helpful when deciding on next steps in MoS development.

Table 4: Improvements and their impact per barrier

	Involvement of stakeholders	Sustainable economic impact	Integration
Raising awareness	5	3	3
Application to be made easier	5	4	4
Impact assessment and prevention of distortion	4	5	3
Clarification of scope	5	4	5
Increasing geographical scope	5	4	5
More flexible financing schemes	3	5	4
Increasing sustainability	3	5	4
Increasing supply chain scope	4	5	5
Alignment with other EU funding programmes	3	4	5

1 = negative; 2 = rather negative; 3 = neutral; 4 = rather positive; 5 = positive

Source: BCI , 2014.

4.4 Scenarios

In order to improve the Motorways of the Sea programme one has to understand that the programme needs to provide added value to the competitive position of short sea shipping without disturbing market conditions. Added value can be achieved by having a clear view of the scope of the programme. Scenarios for development have been set up from this perspective. Added value may result from a focus of the programme on a number of aspects in its content.

- Baseline scenario: keep the programme content as it is, focusing on supporting innovative solutions for the improvement of SSS.
- Sustainability scenario: focus on reducing the ecological footprint of short sea shipping.
- Supply chain management scenario: focus on TEN-T core network corridors and facilitating robust supply chains and integrated transport solutions.

The scenarios are addressed from a content perspective, and each scenario needs to take account of the general recommendations made in the previous section. Therefore, the

scenarios do not focus solely on a single identified barrier. However, the effect on the solution to each of the barriers may vary between the scenarios.

One of the main questions for each of the scenarios is how to give a clear picture of the expected impact. This is done in a qualitative manner at the end of this section, where an overview is given of each of the barriers and the way the impact can be evaluated.

Baseline scenario

In this scenario the MoS programme is kept in its present form. The focus will remain on projects that realise infrastructure investments that support market stakeholders in developing better short sea shipping services. In this scenario infrastructure is considered in a broad sense, including, for instance, both information infrastructure and investments in port infrastructure.

As stated earlier, MoS are in fact infrastructures that support short sea shipping as a mode of transport. This infrastructure requires maintenance and, where possible, improvement.
The programme will look at existing port infrastructure throughout the EU in order to ascertain whether infrastructures for short sea shipping can be improved on. Ports are requested to come up with ideas on specific infrastructure requirements that are relevant for the competitive position of this mode of transport.

Examples of infrastructure improvements might include investment in Ro-Ro docks, dedicated short sea shipping berths and terminals, as well as IT infrastructure coordinating and levelling the flow of information within the short sea shipping sector, etc.

Sustainability scenario

This scenario will focus on further improving the sustainable character of short sea shipping. Since the introduction of Horizon 2020 and with a clear focus on the Commission's part on sustainability, a relatively large number of MoS projects have included this theme. These projects aim at implementing LNG, retrofitting ship engines and scrubbers. However, sustainability can be seen in a wider perspective.

Whilst the current focus on LNG is important, it should be actively broadened to include other alternative fuels. LNG seems to be the focus for many stakeholders, but at this stage a lock-in effect is a real threat. With very large investments in LNG infrastructure, the development of the commercial use of other alternative fuel sources is being slowed down. This could create a dependency on LNG that is for the most part imported into the European Union. Furthermore, (liquefied) natural gas burns more cleanly than conventional gasoline or diesel due to its lower carbon content, although it does still emit large amounts of CO_2. Therefore, other alternative fuels such as methanol and hydrogen should be encouraged in order to be able to make them options for commercial use. Consequently, the MoS programme should focus on all available alternative fuels with the ultimate goal of zero emission in SSS.

The design of ships should also be included in this scenario. Fuel is not the only determinant of sustainability in SSS. The design of the engine, hull, bow, etc can contribute to lower fuel consumption and therefore to lower emissions. The use of new materials in ship design should be encouraged. Furthermore, sustainability should be approached in a wider context than that of ships alone. Port facilities are also relevant, and shore power for ships is an example of emissions reduction in ports.

This scenario appeals to the demand side of the SSS market, which is seeking sustainability. Shippers and operators are increasingly using KPIs on CO_2 and other pollutants in order to make their operations more sustainable. By focusing the MoS programme on sustainability, operators and shippers will be able to meet their goals and KPIs on sustainability with the use of SSS instead of other competitive modes of transport.

Supply chain management scenario

SSS services are part of intermodal supply chains. They need to be considered as such and not as standalone shipping services. The integration of SSS services into complex supply chain operations represents the added value of the MoS programme in this scenario. This is closely related to the TEN-T core network currently under development. The corridors of the TEN-T network connect industry with consumer areas, and SSS is one of the modes of transport that can make this happen.

In fact, freight is hardly ever shipped solely between two ports. In other words, short sea shipping is just one of the links in complex supply chains. The current challenge facing supply chain management throughout the world is to become robust. This means that an effective disruptive mitigation must be in place in case of unforeseen events, whether they be natural events or others. The effects of global warming, amongst other things, have put pressure on companies to speed up strategic thinking on robustness. Transport solutions are an integral part of this mitigation process.

The integration and synchronisation of transport networks and (intermodal) services is required. SSS services should seamlessly connect to inland shipping and railway services. This will make short sea shipping and intermodal modes of transport the backbone of the finely-meshed industrial arteries of the EU.

Supply chains in which SSS plays a central role are not restricted by EU boundaries. They connect European industry and consumer areas to other important regions in third countries. Third countries must be considered as part of the SSS networks and should therefore be involved in MoS projects. Intra-EU trade via SSS has to cope with several barriers (mostly being tackled by the Blue Belt programme). However, when it comes to moving freight from third countries through EU ports, the barriers remain considerable. Customs procedures, multiple inspections and long waiting times are adversely affecting SSS efficiency. MoS projects should focus on soft factors and barriers in order to make SSS more competitive. This concerns procedures in EU ports as well as third-country ports.

Imports from third countries and exports to them from the EU generate greater opportunities for European businesses. Reducing time lost in the supply chains would be beneficial for businesses throughout the EU. This can be achieved by implementing best practices that reduce existing barriers. In addition, the organisation of partnerships should be considered an eligible opportunity. Partnerships addressing specific barriers within SSS corridors should be welcomed by the MoS programme.

Qualitative overview of the impact of the scenarios

The baseline scenario will result in more ports being involved, since it lowers the threshold for infrastructure projects. Infrastructure improvement is the current focus of many port authorities, including those with limited resources. The MoS programme will become of greater interest to these ports. Infrastructure improvements will lead to a better competitive position of the short sea shipping market, ideally resulting in a more sustainable impact as shipping lines will be able to better operate their services.

The sustainability scenario will result in a more sustainable impact of MoS-funded projects and SSS in general. The negative impact on the environment will be reduced and short sea shipping services will become more sustainable transport solutions. Through the promotion of new designs, use of new materials and new alternative fuel sources, SSS will be able to become a transport mode with a low ecological footprint. This will benefit its competitive position versus other modes of transport.

In the supply chain management scenario it is evident that a myriad of stakeholders are involved. Each project will have a broader scope than short sea shipping. The integration will build on the objectives of the TEN-T network that is being implemented. The multimodal corridors for the European hinterland can be connected to the MoS services so that integrated supply chains can be more easily developed in the future. Operators, terminals and shippers are among the stakeholders who will play an active role in each project. With this approach the sustainability of projects will increase in terms of continuity after projects have ended. This is because risks can be mitigated during the project by involving more partners having influence on the full supply chain. Through the integration of the parts of the supply chains that are located in neighbouring countries, the scenario also has an impact on new opportunities for increasing import and export markets. Currently, projects with third countries are eligible for MoS funding, but require additional endorsement from the third-country government, while participation is limited to studies. Furthermore, a MoS project with a third country must be both supported and jointly submitted by two Member States.

By removing the barriers now existing between Member States and third countries, it will be possible to improve the competitive position of SSS operations. Not only will this help reduce barriers in the European ports, but through knowledge transfer to third countries efficiencies will also be achieved on both sides of the services.

4.5 Closing remarks

The 2013 ports proposal indicates the relevance of the MoS programme and states that the investment climate in several TEN-T ports is not sufficiently attractive[66]. Not only does MoS provide financial support for investments in these ports, but several challenges are also identified and when these are met the demand for MoS is likely to increase as a result of the improvements in the investment climate of ports.

However, in its current form, the MoS programme has not been able to stimulate SSS in the manner in which it was designed to achieve this objective. Therefore, a new direction should be considered in line with the CEF policy that is shaped by the EU.

All three scenarios are potential paths by means of which the MoS programme could be further developed. Besides these scenarios, general recommendations have been formulated that should be addressed regardless of the development of the programme. The authors suggest that the baseline scenario is not to be pursued.

Regarding the new direction for the MoS programme, the authors suggest following a supply chain management scenario. This scenario has the biggest impact on the competitive position of short sea shipping and does not exclude a focus on sustainability. On the contrary, it facilitates and promotes sustainability. However, it should be borne in

[66] European Commission, 2013, COM(2013)0296. Proposal for a regulation of the European Parliament and of the Council establishing a framework on market access to port services and financial transparency of ports.

mind that the current MoS programme has had a rather broad focus that has not provided the results that were anticipated. Any new MoS direction needs a clear focus and transparent goals.

The last guidelines of CEF and the 2014 call for projects partly confirm the scenarios proposed in this study. The focus is quite broad and among the priorities are the integration of SSS in supply chains and the environment. The environmental focus is not only on LNG but also on methanol, scrubbers and other new technologies. This largely concurs with the suggested sustainability scenario. The focus on supply chains remains sub-optimal, and future guidelines and calls for projects could be reinforced with more attention being paid to supply chains that cross EU borders, since 75 % of EU external trade consists of maritime trade. This implies that there are already maritime links with third countries. With a focus on cross-border supply chains, MoS could both create new SSS links with third countries and improve those already in place.

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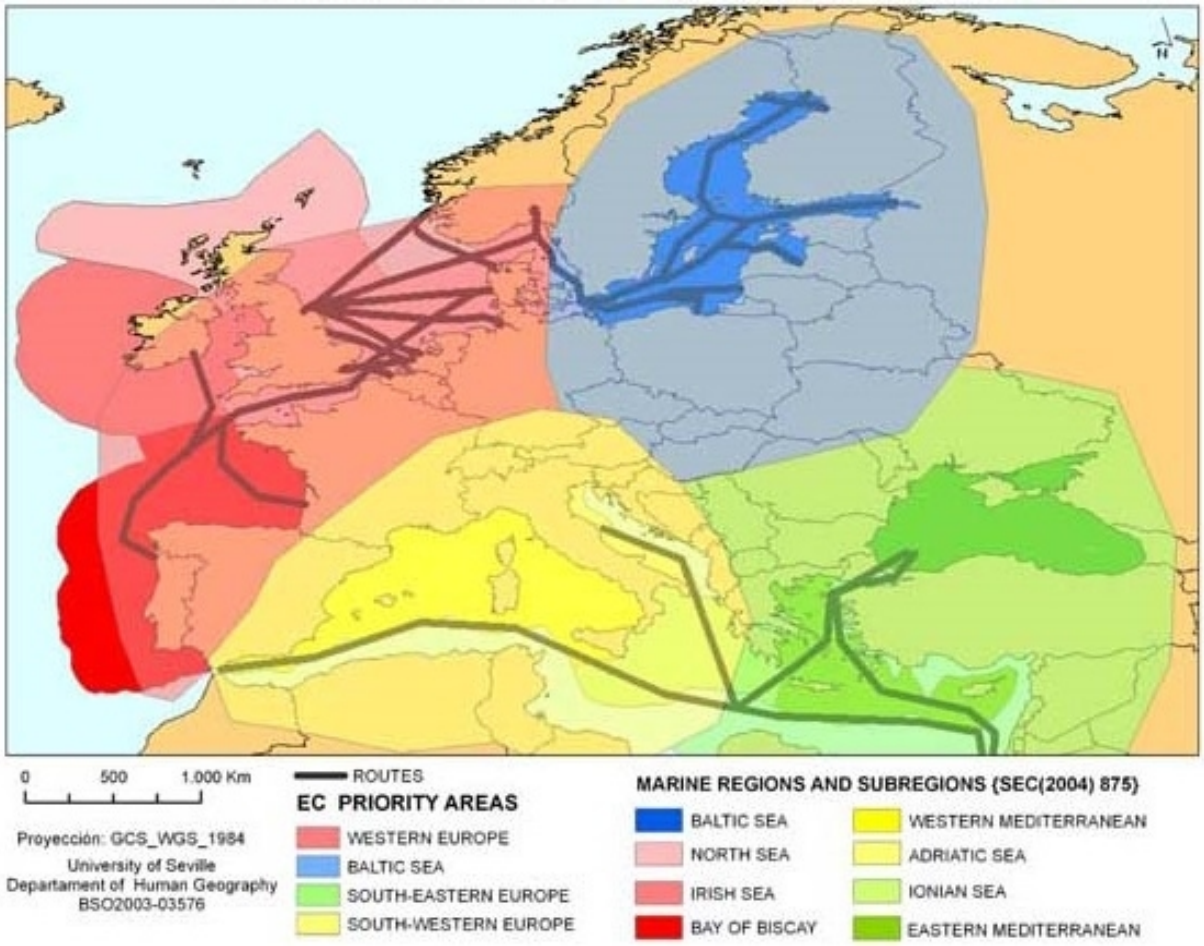
ANNEX 1 MOS CORRIDORS MAP

Map 3: Map of the Motorways of the Sea



Source: European Commission, 2014.

ANNEX 2 RESPONDENTS

Table 5: Overview of contributing stakeholders

	Stakeholder
Survey	Port of Olbia-Golfo Aranci
	Port of Venice
	Port of Algeciras Bay
	Port of Gdansk
	Port of Constanza
	Port of Livorno
	Port of Barcelona
	Port of Burgas
	Port of Ghent
	Port of Hamburg
	Spanish Port Association
	Danish Port Association
Interviews	Port of Rotterdam
	Port of Amsterdam
	Port of Klaipéda
	Port of Nantes Saint Nazaire
	Port of Dunkerque
	Port of Marseille
	Port of Le Havre
	Port of Rostock
	Port of Bremen
	Port of Emden
	Port of Kiel
	Port of JadeWeser
	Louis Dreyfus Armateurs (LDA – operator)
	SNAT (Major trucking company in France)
	Scandlines (Ferry operator)

Source: BCI (2014).

ANNEX 3 SURVEY

Background

The 'Motorways of the Sea' are part of the Trans-European transport network (TEN-T) and benefit from European funds. They have been given three main objectives: (1) freight flow concentration on sea-based logistics routes; (2) increasing cohesion; (3) reducing road congestion through modal shift.
On 22 April 2013, the Committee on Transport and Tourism of the EU Parliament requested a study on 'Improving the Concept of 'Motorways of the Sea'', which is intended to provide a timely overview of the topic, its historical development and setting in legislation, as well as its concrete realisations to date.
Buck Consultants International and its partners Catram Consultants and the Institute for Shipping Economics and Logistics have been selected to carry out the study.
To better capture the (co-financing) needs of the ports, a brief, qualitative questionnaire has been designed. We would be grateful if you would participate and answer the below four questions in free form text by 14 February 2014.

Questions

1. Have you already participated in a MoS project? If yes, which one?

   If no, please go to question 3.

2. What were your experiences? Did you achieve the expected results?
3. Are your needs for co-financing sufficiently covered by existing EU instruments? What is the specific added value of MoS compared to these other instruments?
4. How should the MoS framework evolve? What should be focused on? Which areas should be included in a better way? What should be the key issue?

ANNEX 4 TEN-T CORE NETWORK PORTS

Table 6: Overview of TEN-T core network ports

MS	Node name	Seaport
BE	Antwerpen	Core
	Gent	Core
	Oostende, Zeebrugge	Core (Oostende) Core (Zeebrugge)
BG	Burgas	Core
DK	Aarhus	Core
	København	Core
DE	Bremen, Bremerhaven	Core (Bremen) Core (Bremerhaven)
	Hamburg	Core
	Lübeck	Core
	Rostock	Core
	Wilhelmshaven	Core
EE	Tallinn	Core (Old City Harbour) Core (Muuga Harbour) Core (Paljassaare Harbour)
IE	Cork	Core
	Dublin	Core (G.D.A. port cluster)
	Limerick	Core (Shannon-Foynes)
EL	Athens	Core (Piraeus)
	Igoumenitsa	Core
	Iraklion	Core
	Patras	Core
	Thessaloniki	Core
ES	A Coruña	Core
	Algeciras	Core (Bahía de Algeciras)
	Barcelona	Core
	Bilbao	Core
	Cartagena	Core
	Gijón	Core
	Huelva	Core
	Las Palmas	Core
	Palma de Mallorca	Core
	Sevilla	Core
	Tarragona	Core
	Tenerife	Core (Santa Cruz)
	Valencia	Core
FR	Bordeaux	Core
	Calais	Core
	Dunkerque	Core
	Le Havre	Core
	Marseille	Core (Marseille) Core (Fos-sur-Mer)

MS	Node name	Seaport
	Nantes Saint-Nazaire	Core
	Rouen	Core
HR	Rijeka	Core
IT	Ancona	Core
	Augusta	Core
	Bari	Core
	Cagliari	Core (P.Foxi) Core (Cagliari)
	Genova	Core
	Gioia Tauro	Core
	La Spezia	Core
	Livorno	Core
	Napoli	Core
	Palermo	Core (Palermo) Core (Termini Imerese terminal)
	Ravenna	Core
	Taranto	Core
	Trieste	Core
	Venezia	Core
CY	Lemesos	Core
LV	Riga	Core
	Ventspils	Core
LT	Klaipèda	Core
MT	Marsaxlokk	Core
	Valletta	Core
NL	Amsterdam	Core
	Rotterdam	Core
	Moerdijk	Core
	Terneuzen, Vlissingen	Core (Terneuzen) Core (Vlissingen)
PL	Gdansk, Gdynia	Core (Gdansk) Core (Gdynia)
	Szczecin, Swinoujscie	Core (Szczecin) Core (Swinoujscie)
PT	Lisboa	Core
	Porto	Core (Leixões)
	Sines	Core
RO	Constanța	Core
	Galați	Core
SI	Koper	Core
FI	Helsinki	Core
	Kotka-Hamina	Core (Hamina) Core (Kotka)
	Turku-Naantali	Core (Turku) Core (Naantali)
SE	Lulea	Core
	Malmö	Core
	Stockholm	Core (Stockholm)
	Trelleborg	Core
UK	Belfast	Core
	Bristol	Core
	Cardiff/Newport	Core (Cardiff) Core (Newport)

MS	Node name	Seaport
	Dover/Folkestone	Core
	Edinburgh	Core (Forth, Grangemouth, Rosyth and Leith)
	Felixstowe-Harwich	Core (Felixstowe) Core (Harwich)
	Glasgow	Core (Clydeport, King George V dock, Hunterston and Greenock)
	Grimsby/Immingham	Core (Grimsby and Immingham)
	Liverpool	Core
	London	Core (London, London Gateway, Tilbury)
	Milford Haven	Core
	Southampton, Portsmouth	Core (Southampton)
	Teesport	Core

ANNEX 5 MOS PROJECTS WITHIN TEN-T

Table 7: Overview of MoS projects within TEN-T

Year	Project Code	Project Title	Programme	Member States	Actual Costs (EUR million)	Actual TEN-T Funding (EUR million)
2004	2004-PT-91204-S	PORTMOS - Integration of the Portuguese Ports and Maritime System in the Motorways of the Sea	TEN-T	PT	2.4	1.2
2005	2005-GR-90701-S	Eastern Mediterranean Motorways of the Sea Master Plan	TEN-T	GR, IT, SI, CY, MT	3.7	1.8
2005	2005-SE-91406-S	Master Plan MOS in the Baltic Sea	TEN-T	DK, EE, FI, SE	2.8	1.4
2005	2005-EU-90609-S	Western Europe Sea Transport & Motorways of the Sea (WEST-MOS)	TEN-T	ES, FR, IE, IT	1.8	0.9
2006		Building the Motorways of the Sea - the Mediterranean	TEN-T		-	-
2006	2006-EU-93017-S	Master Plan Studies for development of the Baltic Sea Information Motorway	TEN-T	DK, EE, FI, SE, LT, PL	3.0	1.2
2006	2006-EU-93016-S	West Med corridors	TEN-T	ES, FR, IT, MT	1.6	0.8
2008	2008-EU-21010-P	Motorway of the Sea - High Quality Rail and Intermodal Nordic Corridor Königslinie	TEN-T	DE, SE	13.5	2.8
2008	2008-EU-21020-P	Motorways of the Sea Esbjerg - Zeebrugge	TEN-T	BE, DK	23.8	4.8
2008	2008-EU-21015-P	Motorways of the Sea projects in the Baltic Sea Area Klaipéda-Karlshamn link	TEN-T	LT, SE	26.0	5.2
2009	2009-EU-21010-P	Baltic Link Gdynia-Karlskrona	TEN-T	PL, SE	85.5	17.1

Year	Project Code	Project Title	Programme	Member States	Actual Costs (EUR million)	Actual TEN-T Funding (EUR million)
2010	2010-EU-21106-S	ITS Adriatic multi-port gateway	TEN-T	IT, SI	2.9	1.4
2010	2010-EU-21105-S	MIELE	TEN-T	CY, DE, ES, IT, PT	16.0	8.0
2010	2010-EU-21101-S	MoS 24 - ICT based Co-modality Promotion Centre for integrating PP24 into Mediterranean MoS	TEN-T	BE, FR, IT, MT	4.9	2.5
2010	2010-EU-21102-S	Monitoring and Operation Services for Motorways of the Sea (MOS4MOS)	TEN-T	EL, ES, IT, SI	5.6	2.8
2010	2010-EU-21112-S	LNG infrastructure of filling stations and deployment in ships	TEN-T	BE, DK	26.8	9.6
2010	2010-EU-21108-P	The Baltic Sea Hub and Spokes Project	TEN-T	DK, EE, SE	172.6	15.8
2010	2010-EU-21109-S	MonaLisa	TEN-T	DK, FI, SE	22.5	11.2
2010	2010-EU-21107-P	Motorway of the Sea Rostock - Gedser	TEN-T	DE, DK	111.8	22.4
2011	2011-EU-21010-M	Green Bridge on Nordic Corridor	TEN-T	DE, SE	84.6	19.8
2011	2011-EU-21007-S	COSTA	TEN-T	EL, ES, IT, PT	3.0	1.5
2011	2011-EU-21005-S	LNG in Baltic Seaports	TEN-T	DK, EE, FI, LV, SE	4.8	2.4
2011	2011-EU-21002-P	On Shore Power Supply - an integrated North Sea network	TEN-T	BE, DK, SE, UK	5.0	1.0
2011	2011-EU-21009-M	IBUK – Intermodal Corridor	TEN-T	ES, UK	32.0	7.3

Year	Project Code	Project Title	Programme	Member States	Actual Costs (EUR million)	Actual TEN-T Funding (EUR million)
2011	2011-EU-21004-S	TrainMoS	TEN-T	DE, EL, ES, IT, PT, SE, UK	2.5	1.3
2011	2011-EU-21001-M	Adriamos	TEN-T	IT, GR	56.7	12.2
2012	2012-EU-21017-S	Methanol: The marine fuel of the future (TEN-T)	TEN-T	SE, DE, FI	22.5	11.3
2012	2012-EU-21010-S	Pilot Scrubber - New generation lightweight pilot scrubber solution installed on a Ro-Ro ship operating on the Motorway of the Baltic Sea (TEN-T)	TEN-T	FI, NL, SE	13.6	6.8
2012	2012-EU-21023-S	Sustainable Traffic Machines - On the way to greener shipping (TEN-T)	TEN-T	DK, DE	12.9	6.5
2012	2012-EU-21009-M	LNG Bunkering Infrastructure Solution and Pilot actions for ships operating on the Motorway of the Baltic Sea (TEN-T)	TEN-T	SE, FR, NL, UK	74.6	23.1
2012	2012-EU-21003-P	LNG Rotterdam Gothenburg	TEN-T	NL, SE	137.1	34.3
2012	2012-EU-21006-S	SEAGAS	TEN-T	FR, ES	2.1	1.0
2012	2012-EU-21019-S	ANNA-Advanced National Networks for Administrations (TEN-T)	TEN-T	NL, DE, SE, GE, UK	37.1	18.5
2012	2012-EU-21021-S	WiderMoS (TEN-T)	TEN-T	DE, IT, PT, ES	5.9	3.0
2012	2012-EU-21020-S	Business to Motorways of the Sea (TEN-T)	TEN-T	UK, EL, ES, IT, SL	11.4	5.7
2012	2012-EU-21007-S	MONALISA 2.0 (TEN-T)	TEN-T	SE, DE, EL ES, UK, DK, MT, FI, IT	24.3	12.2

Year	Project Code	Project Title	Programme	Member States	Actual Costs (EUR million)	Actual TEN-T Funding (EUR million)
2012	2012-EU-21013-M	Kvarken Multimodal Link - Midway Alignment of the Bothnian Corridor (TEN-T)	TEN-T	SE, FI	20.6	6.1
2012	2012-EU-21011-P	TWIN-PORT (TEN-T)	TEN-T	ES, FI	56.3	11.3
2012	2012-EU-21008-M	WINMOS (TEN-T)	TEN-T	SE, ES, FI	139.2	29.7
2013	2013-EU-21001-P	BRIDGE - Building the Resilience of International & Dependent Gateways in Europe	TEN-T	FR, UK	72.03	14.26
2013	2013-EU-21003-S	Into the future - Baltic SO2lution	TEN-T	DK, FI, SE	7.26	3.63
2013	2013-EU-21004-P	Sustainable Trelleborg-Swinousjcie MoS services based on upgrading port infrastructure, developing intermodal transport and integrating hinterland corridors	TEN-T	PL, SE	11.13	2.24
2013	2013-EU-21005-P	Channel LNG	TEN-T	BE, FR, UK	54.45	12.68
2013	2013-EU-21006-S	Deployment of next generation scrubber technology for clean and sustainable short sea shipping in the North Sea ECA	TEN-T	FR, NL, UK	20.00	10.00
2013	2013-EU-21007-S	LNG in Baltic Sea Ports II	TEN-T	DE, LT, SE	1.66	0.83
2013	2013-EU-21009-P	ATLANTICA OPTIMOS	TEN-T	ES, FR	18.19	3.64

Year	Project Code	Project Title	Programme	Member States	Actual Costs (EUR million)	Actual TEN-T Funding (EUR million)
2013	2013-EU-21010-P	Sustainable Traffic Machines II – The green link between Scandinavia and Continental Europe	TEN-T	DE, DK	11.39	2.28
2013	2013-EU-21011-S	Study in the form of a Pilot Action for a small scale LNG bunkering network for the European Emission Control Area (PASCAL = PilotActionSmallsCaleLng)	TEN-T	DE, NL	24.70	12.35
2013	2013-EU-21012-S	TRAINMOS II	TEN-T	EL, ES, IT, PL, PT, UK	2.82	1.41
2013	2013-EU-21015-P	Sustainable Motorway of the Sea Ghent-Gothenburg through environmental upgrade and compliance while maintaining competitiveness of short sea shipping	TEN-T	BE, DK, SE	19.01	3.80
2013	2013-EU-21016-P	Sustainable Motorway of the Sea Immingham-Gothenburg through environmental upgrade and compliance while maintaining competitiveness of short sea shipping	TEN-T	DK, SE, UK	12.70	2.54
2013	2013-EU-21017-S	Development of North Adriatic ports' multimodal connections and their efficient integration into the Core Network (NAPA STUDIES)	TEN-T	HR, IT, SI	5.63	2.82

Year	Project Code	Project Title	Programme	Member States	Actual Costs (EUR million)	Actual TEN-T Funding (EUR million)
2013	2013-EU-21018-S	Pilot Implementation of a LNG-Propulsion System on a MoS Test Track in the Environmental Model Region 'Wadden Sea'	TEN-T	DE, NL	6.14	3.01
2013	2013-EU-21019-S	Costa II East - Poseidon Med	TEN-T	CY, EL, IT	5.13	2.56

ANNEX 6 MOS PROJECT PORTFOLIO

Table 8: Updated MoS project list by INEA (December 2014)

Project Code	Title	Cross-border	Action type	Planned duration (years)	Initial End Date	Estimated End Date	Estimated End Date deviation (months)	Inital total costs (€ M)	Actual total costs (€ M)*	Estimated total costs (€ M)**	Inital TEN-T funding (€ M)	Actual TEN-T funding (€ M)*	Estimated TEN-T funding (€ M)**
2008-EU-21010-P	Motorway of the Sea - High Quality Rail and Intermodal Nordic Corridor Konigslinie	Yes	Mixed (Studies & Works)	6,0	31/12/2013	31/12/2013	0	50,3	13,5	13,5	10,2	2,8	2,8
2008-EU-21015-P	Motorways of the Sea projects in the Baltic Sea Area Klaipéda-Karlshamn link	Yes	Mixed (Studies & Works)	5,4	31/12/2013	31/12/2014	12	26,0	22,2	22,5	5,2	4,5	4,5
2008-EU-21020-P	Motorways of the Sea Esbjerg - Zeebrugge	Yes	Works	5,0	31/12/2012	31/12/2012	0	26,5	16,9	16,9	5,3	3,3	3,3
2009-EU-21010-P	Baltic Link Gdynia-Karlskrona	Yes	Works	4,8	31/10/2013	31/10/2013	0	85,5	85,5	85,4	17,1	17,1	17,1
2010-EU-21101-S	MoS 24 - ICT based Co-modality Promotion Center for integrating PP24 into Mediterranean MoS	Yes	Studies	2,9	31/12/2013	31/12/2013	0	4,9	4,9	4,7	2,5	2,5	2,3
2010-EU-21102-S	Monitoring and Operation Services for Motorways of the Sea (MOS4MOS)	Yes	Studies	1,2	31/05/2012	31/05/2012	0	5,6	5,1	5,1	2,8	2,5	2,5
2010-EU-21105-S	MIELE	Yes	Studies	3,3	31/12/2013	31/12/2013	0	16,0	16,0	14,3	8,0	8,0	7,2
2010-EU-21106-S	ITS Adriatic multi-port gateway	Yes	Studies	3,2	30/06/2013	31/12/2013	6	2,9	2,9	2,9	1,4	1,4	1,4

Project Code	Title	Cross-border	Action type	Planned duration (years)	Initial End Date	Estimated End Date	Estimated End Date deviation (months)	Inital total costs (€ M)	Actual total costs (€ M)*	Estimated total costs (€ M)**	Inital TEN-T funding (€ M)	Actual TEN-T funding (€ M)*	Estimated TEN-T funding (€ M)**
2010-EU-21107-P	Motorway of the Sea Rostock - Gedser	Yes	Mixed (Studies & Works)	4,0	31/12/2013	31/12/2013	0	122,4	111,8	93,3	24,5	22,4	18,7
2010-EU-21108-P	The Baltic Sea Hub and Spokes Project	Yes	Mixed (Studies & Works)	4,0	31/12/2013	31/12/2013	0	311,4	172,6	149,9	24,8	15,8	12,8
2010-EU-21109-S	MonaLisa	Yes	Studies	3,3	31/12/2013	31/12/2013	0	22,5	22,5	22,5	11,2	11,2	11,2
2010-EU-21112-S	LNG infrastructure of filling stations and deployment in ships	Yes	Studies	3,2	31/03/2013	31/12/2013	9	26,8	26,8	26,8	9,6	9,6	9,6
2011-EU-21001-M	Adriatic Motorways of the Sea (ADRIAMOS)	Yes	Mixed (Studies & Works)	4,0	31/12/2014	31/12/2014	0	56,7	56,7	64,5	12,2	12,2	12,2
2011-EU-21004-S	TrainMoS	Yes	Studies	1,8	15/10/2013	31/12/2013	2	2,5	2,5	2,5	1,3	1,3	1,3
2011-EU-21005-S	LNG in Baltic Sea Ports	Yes	Studies	3,0	31/12/2014	31/12/2014	0	4,8	3,4	2,5	2,4	1,7	1,2
2011-EU-21007-S	COSTA	Yes	Studies	2,2	30/04/2014	30/04/2014	0	3,0	3,0	3,0	1,5	1,5	1,5
2011-EU-21009-M	IBUK – Intermodal Corridor	Yes	Mixed (Studies & Works)	3,3	31/12/2014	31/12/2014	0	32,0	32,0	32,0	7,3	7,3	7,3
2011-EU-21010-M	Green Bridge on Nordic Corridor	Yes	Mixed (Studies & Works)	4,0	31/12/2014	31/12/2014	0	84,6	84,6	67,9	19,8	19,8	16,0

Project Code	Title	Cross-border	Action type	Planned duration (years)	Initial End Date	Estimated End Date	Estimated End Date deviation (months)	Inital total costs (€ M)	Actual total costs (€ M)*	Estimated total costs (€ M)**	Inital TEN-T funding (€ M)	Actual TEN-T funding (€ M)*	Estimated TEN-T funding (€ M)**
2012-EU-21010-S	PILOT SCRUBBER – New Generation Lightweight Pilot Scrubber Solution installed on a Ro-Ro Ship operating on the Motorway of the Baltic Sea	Yes	Studies	4,0	31/12/2015	31/12/2015	0	13,6	13,6	13,6	6,8	6,8	6,8
2012-EU-21021-S	WiderMoS	Yes	Studies	2,6	31/12/2015	31/12/2015	0	5,9	5,9	5,9	3,0	3,0	3,0
2012-EU-21023-S	Sustainable Traffic Machines - On the way to greener shipping	Yes	Studies	4,0	31/12/2015	31/12/2015	0	12,9	12,9	12,9	6,5	6,5	6,5
2012-EU-21011-P	TWIN-PORT	Yes	Mixed (Studies & Works)	4,0	31/12/2015	31/12/2015	0	56,3	56,3	56,3	11,3	11,3	11,3
2012-EU-21020-S	Business to Motorways of the Sea	Yes	Studies	2,5	31/12/2015	31/12/2015	0	11,4	11,4	11,4	5,7	5,7	5,7
2012-EU-21013-M	Kvarken Multimodal Link - Midway Alignment of the Bothnian Corridor	Yes	Mixed (Studies & Works)	4,0	31/12/2015	31/12/2015	0	20,6	20,6	20,6	6,1	6,1	6,1
2012-EU-21008-M	Winter Navigation Motorways of the Sea, WINMOS	Yes	Mixed (Studies & Works)	4,0	31/12/2015	31/12/2015	0	139,2	139,2	139,2	29,7	29,7	29,7
2012-EU-21007-S	MONALISA 2.0	Yes	Studies	4,0	31/12/2015	31/12/2015	0	24,3	24,3	24,3	12,2	12,2	12,2
2012-EU-21017-S	Methanol: The marine fuel of the future	Yes	Studies	3,0	31/12/2015	31/12/2015	0	22,5	22,5	22,5	11,3	11,3	11,3

Project Code	Title	Cross-border	Action type	Planned duration (years)	Initial End Date	Estimated End Date	Estimated End Date deviation (months)	Inital total costs (€ M)	Actual total costs (€ M)*	Estimated total costs (€ M)**	Inital TEN-T funding (€ M)	Actual TEN-T funding (€ M)*	Estimated TEN-T funding (€ M)**
2012-EU-21019-S	ANNA - Advanced National Networks for Administrations	Yes	Studies	3,9	31/12/2015	31/12/2015	0	37,1	37,1	37,1	18,5	18,5	18,5
2012-EU-21006-S	SEAGAS	Yes	Studies	4,0	31/12/2015	31/12/2015	0	2,1	2,1	2,1	1,0	1,0	1,0
2012-EU-21003-P	LNG Rotterdam Gothenburg	Yes	Works	4,0	31/12/2015	31/12/2015	0	171,4	171,4	173,1	34,3	34,3	34,3
2012-EU-21009-M	LNG Bunkering Infrastructure Solution and Pilot actions for Ships operating on the Motorway of the Baltic Sea	Yes	Mixed (Studies & Works)	4,0	31/12/2015	31/12/2015	0	74,6	74,6	74,6	23,1	23,1	23,1
2013-EU-21001-P	BRIDGE - Building the Resilience of International & Dependent Gateways in Europe	Yes	Works	3,0	31/12/2015	31/12/2015	0	53,6	53,6	53,6	14,3	14,3	14,3
2013-EU-21007-S	LNG in Baltic Sea Ports II	Yes	Studies	2,0	31/12/2015	31/12/2015	0	1,5	1,5	1,5	0,8	0,8	0,8
2013-EU-21018-S	Pilot Implementation of a LNG-Propulsion System on a MoS Test Track in the Environmental Model Region 'Wadden Sea'	Yes	Studies	3,0	31/12/2015	31/12/2015	0	6,1	6,1	6,1	3,1	3,1	3,1
2013-EU-21006-S	Deployment of next generation scrubber technology for clean and sustainable short sea shipping in the North Sea ECA	Yes	Studies	2,0	31/12/2015	31/12/2015	0	9,7	9,7	9,7	5,1	5,1	5,1

Project Code	Title	Cross-border	Action type	Planned duration (years)	Initial End Date	Estimated End Date	Estimated End Date deviation (months)	Inital total costs (€ M)	Actual total costs (€ M)*	Estimated total costs (€ M)**	Inital TEN-T funding (€ M)	Actual TEN-T funding (€ M)*	Estimated TEN-T funding (€ M)**
2013-EU-21003-S	Into the future - Baltic So2lution	Yes	Studies	2,3	31/12/2015	31/12/2015	0	7,3	7,3	7,3	3,6	3,6	3,6
2013-EU-21017-S	Development of North Adriatic ports multimodal connections and their efficient integration into the Core Network (NAPA STUDIES)	Yes	Studies	2,5	31/12/2015	31/12/2015	0	5,6	5,6	5,6	2,8	2,8	2,8
2013-EU-21019-S	Costa II East - Poseidon Med	Yes	Studies	2,1	31/12/2015	31/12/2015	0	5,1	5,1	5,1	2,6	2,6	2,6
2013-EU-21005-P	Channel LNG	Yes	Works	3,0	31/12/2015	31/12/2015	0	26,6	26,6	26,6	5,3	5,3	5,3
2013-EU-21012-S	TRAINMOS II	Yes	Studies	1,4	31/12/2015	31/12/2015	0	2,8	2,8	2,8	1,4	1,4	1,4
2013-EU-21004-P	Sustainable Trelleborg-Swinousjcie MoS services based on upgrading port infrastructure, developing intermodal transport and integrating hinterland corridors	Yes	Mixed (Studies & Works)	3,0	31/12/2015	31/12/2015	0	10,9	10,9	10,9	2,2	2,2	2,2
2013-EU-21009-P	ATLANTICA OPTIMOS	Yes	Works	1,8	31/12/2015	31/12/2015	0	18,2	18,2	18,2	3,6	3,6	3,6
2013-EU-21010-P	Sustainable Traffic Machines II – The green link between Scandinavia and Continental Europe	Yes	Works	3,0	31/12/2015	31/12/2015	0	11,4	11,4	11,4	2,3	2,3	2,3

Project Code	Title	Cross-border	Action type	Planned duration (years)	Initial End Date	Estimated End Date	Estimated End Date deviation (months)	Inital total costs (€ M)	Actual total costs (€ M)*	Estimated total costs (€ M)**	Inital TEN-T funding (€ M)	Actual TEN-T funding (€ M)*	Estimated TEN-T funding (€ M)**
2013-EU-21015-P	Sustainable Motorway of the Sea Ghent-Gothenburg through environmental upgrade and compliance while maintaining competitiveness of short sea shipping	Yes	Works	3,0	31/12/2015	31/12/2015	0	19,0	19,0	19,0	3,8	3,8	3,8
2013-EU-21016-P	Sustainable Motorway of the Sea Immingham-Gothenburg through environmental upgrade and compliance while maintaining competitiveness of short sea shipping	Yes	Works	3,0	31/12/2015	31/12/2015	0	12,7	12,7	12,7	2,5	2,5	2,5
Grand Total								**1.667,0**	**1.465,3**	**1.414,4**	**390,1**	**367,7**	**355,7**

ANNEX 7 MOS PROJECTS WITHIN MARCO POLO

Table 9: Overview of MoS projects within Marco Polo

Year	Project Title	Programme	Member States	End date of the action	Maximum TEN-T Funding (EUR million)	Total EU contribution paid
2007	Ro-Ro Past France,	Marco Polo	BE, FI, NL, ES	25/11/2012	6.8	5.81
2009	FRESMOS	Marco Polo	ES, FR	30/06/2014	4.17	
2010	Gulfstream.MOS	Marco Polo	ES, FR, UK	31/03/2015	5.57	
2012	Atlantica	Marco Polo	ES, FR	30/09/2019	3	

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