Motorways of the sea – from concept to implementation within the Baltic Sea area

1 The concept of Motorways of the Sea

A free movement of commodities, citizens and financial resources are pillars of the European Union. For that reason, an efficient and effective transport system is a necessary element for the functioning and development of the EU. A variety of geographical and special structures of cargo flows as well as environmental concerns require modern and friendly transport and logistics solutions for Europe. The Motorways of the Sea (MoS) concept aims at introducing new intermodal maritime-based logistics chains in the EU. These chains should be more sustainable and more efficient in commercial terms than road transport.

The qualification “motorways of the sea” was for the first time defined in the White Paper “European transport policy for 2010: time to decide” (European Commission 2001). The Commission proposed the development of MoS as a “real competitive alternative to land transport”. Unfortunately, the authors of the document did not present a precise definition of the sea motorway concept, which consists of several, generally known transport policy ideas such as short sea shipping, sustainable development, intermodal transport, shifting the balance between the modes of transport, linking modes of transport, and development of Trans-European Transport Infrastructure. To sum up, according to the document, sea motorways should become a “real competitive alternative to land transport”.

According to the assumptions, the concept of sea motorways consists of several shipping line connections which are an extension of land routes. MoS should substitute land transport and resolve bottleneck problems on roads. Main elements of the MoS concept are shipping connections, seaports, regulations and coordination issues.

A very important element of the sea motorway implementation process is placing the concept on the list of the priority projects in the Report of the High Level Group on the Trans-European Transport Network (Karel van Miert Report) in 2003. The Report considered the concept as one of the eighteen new infrastructure projects in the European Union. The fact that the Report defines four main areas of concept implementation is also of great significance. The four main areas are as follows (High Level Group TEN-T 2003):

(1) Motorway of the Baltic Sea
(2) Motorways of the Sea of Western Europe (leading from the Iberian peninsula via the Atlantic Arc to the North Sea and the Irish Sea)
(3) Motorways of the Sea of South-East Europe (connecting the Adriatic Sea with the Ionian Sea and the Eastern Mediterranean including Cyprus)
(4) Motorways of the Sea of South-West Europe (Western Mediterranean) connecting Spain, France, Italy including Malta and linking the Motorways of the Sea to South-East Europe.

Additionally, the Report defines a list of prerequisites or parallel actions for successfully launching the new sea motorway projects:

- concentrating freight on maritime routes
- convincing haulers, shippers and forwarders about the benefits and merits of the maritime alternative
- eliminating customs checks and other administrative burdens and developing electronic reporting for port authorities
- providing appropriate facilities that should preferably be specifically designed for this activity (e.g. ro-ro terminals, logistic equipment, parking places) and direct access to ports
- adhering to free market competition rules
- ensuring year-round navigability in the Baltic Sea with icebreakers.

The network of Motorways of the Sea consists of facilities and infrastructure of at least two ports in two different Member States. The sea motorway should consist of the following elements: port facilities, elec-
Maciej Matczak: Motorways of the sea – from concept to implementation within the Baltic Sea area

Electronic logistics management systems and administrative management and customs procedures as well as infrastructure for direct land and sea access including winter access to secure year-round safety navigation.

The foregoing report has become a basis for redefining priority projects in 2003/2004. In the Decision No. 884/2004/EC of the European Parliament and the Council of 29 April 2004 formal approval of the projects and new guidelines for Trans-European Networks (TEN) were established. Thirty new Trans-European Transport Networks (TEN-T) projects were indicated among which 21 incorporated the MoS concept. Despite plenty of documents issued, discussing the notion of a sea motorway, a detailed definition of the concept was not developed at that time.

A more precise definition of the MoS was established in Vademecum issues in conjunction with the call for proposals TEN-T 2005. The document indicates crucial elements of the MoS concept like eligibility of projects, evaluation criteria, beneficiaries and eligible costs or financing plan with relationships to other support programmes. According to the document, the eligible costs of the programme included:

- investment aid in infrastructure and facilities
- start-up aid related to capital costs
- studies related to the Motorways of the Sea projects.

Moreover, the funding sources were pointed out in the TEN-Regulation and TEN-T Guidelines (TEN-T fund), the Marco Polo programme, the Structural Fund Programmes (Cohesion funds, ERDF, INTERREG) and in national state aid programmes. TEN-T funding has been applied for by the Member States (infrastructure), Marco Polo funding by companies (service), EU Structural Funds by Member States or their regions or federal states (infrastructure). Actually, TEN-T and Marco Polo funding are of crucial importance for the MoS concept development (see Table 1).

The calls for MoS project proposals were launched in 2005 (within TEN-T) and 2007 (Marco Polo) by the TEN-T Executive Agency (TEN-TEA) and the Executive Agency for Competitiveness and Innovation (EACI, Transformation of Intelligent Energy Executive Agency). These special agencies are responsible for implementing the TEN-T and Marco Polo programmes on behalf of the European Commission. Moreover, they efficiently manage the entire project life cycle (organizing calls, supporting the Member States), prepare financial decisions and provide feedback to the European Commission. So far, the MoS projects, which have been selected and financed by the Agencies, are as follows:

1. TEN-TEA: 12 projects (calls 2006–2010)
2. EACI: 3 projects (calls 2007–2010)

It could be stated that the portion of MoS in overall transport projects is very low: in case of TEN-T, MoS projects only constitute 0.7% of the total budget (TEN-TEA 2011). Within the Marco Polo programme, 104 projects were selected. Within this amount, only three are MoS projects.

The financial sources available in the framework of the MoS concept in the funding period 2007–2013 for projects are as follows:

- Marco Polo: approx. EUR 450 million allocated to five types of action (catalyst, Motorways of the Sea, modal shift, traffic avoidance, common learning)
- TEN-T: approx. EUR 8 billion in total including about EUR 450 million for the MoS project.

In both cases, TEN-T and Marco Polo, the last call for proposals was launched in 2011.

In case of TEN-T, the call for proposals ended (the deadline was 23 September 2011). The total budget of the call was EUR 150 million, for MoS EUR 40 million (European Commission 2011a). The financial contribution of TEN-T co-financing for MoS in 2011 is 20% for infrastructure works and facilities (implementation projects), 30% for cross-border sections, 50% for pilot ac-

Table 1
Characteristics of TEN-T and Marco Polo support for the MoS concept

<table>
<thead>
<tr>
<th>Marco Polo</th>
<th>TEN-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport services</td>
<td>- Infrastructure and facilities</td>
</tr>
<tr>
<td>Ancillary infrastructures</td>
<td>- Start-up aid</td>
</tr>
<tr>
<td>Modal shift objective</td>
<td>- Creation of a transport network</td>
</tr>
<tr>
<td>Private sector driver</td>
<td>- Public sector driven</td>
</tr>
<tr>
<td>Direct call for proposals</td>
<td>- Member State pre-selection</td>
</tr>
</tbody>
</table>

Source: www.mos-helpdesk.eu (20.07.2010)
tions, 50% for studies or study parts of projects, 30% for start-up aid, i.e. depreciation of capital costs.

The Marco Polo call for proposals 2011 referring to MoS was open until 16 January 2012. For the MoS action the grant was limited to 30% of the total eligible costs necessary and actually incurred. Ancillary infrastructure costs were eligible up to 20% of the total eligible costs.

Important initiatives concerning the development, marketing and implementation process of the MoS concept are created by the Motorways of the Sea – One Stop Help Desk. The mos-helpdesk.eu website aims to provide:

- information on funding possibilities for the Motorways of the Sea projects
- details about information events (called info days) and promotional activities to support the calls for proposals relevant to Motorways of the Sea projects
- tips on how to prepare funding applications for Motorways of the Sea projects under the TEN-T and Marco Polo programmes.

2 Motorways of the Sea in the Baltic Sea area

The Baltic Sea is one of the most intensely utilized sea areas in the world. It is connected with the strong activity of both bulk shipping (export of Russian mineral resources – oil, coal) and general cargo, like containers, "ro-ro" and ferry traffic. The Baltic seaports served over 752 million tonnes of cargo in 2010. The leading group of cargo was liquid bulk with a share of about 45%. The other important areas of activity were: dry bulk (24%), containers (8%), ro-ro cargo (12%) and other types (11%).

The basic area of the MoS concept development is the ro-ro and container segment. It could be stated that the total volume of cargo transported by ferries through the Baltic reached a level of 3.12 million trailers and 9.86 million passenger cars in 2010 (Matczak 2011a). The majority of traffic occurred between Baltic seaports (internal connections). At the same time, the total container traffic in Baltic seaports reached a level of 5.9 million twenty-foot equivalent unit (TEU) in 2009 and 7.395 million TEU in 2010 (with a majority of feeder traffic, Matczak 2011b: 13).

The Baltic Sea is almost an inland sea of the European Union. Therefore it has a significant position in the process of spatial integration of the EU. The main element of integration seems to be a transport system. Therefore, the process of limiting road transport between Baltic Sea countries and shifting these flows to ferry and sea container connections is so important. At the same time, heavy maritime traffic to/from Russia (e.g. oil, coal, containers) has a significant influence on the situation of the Baltic.

The other group of Baltic features are environmental characteristics concerning the inland location of the sea (limited exchange of sea water and high fresh water outflow from rivers), a relatively shallow area (limited draught of vessels), difficult conditions of winter navigation (necessity of icebreaking). The significance for recognized ecological or socio-economic reasons has caused the Baltic to be listed by the International Maritime Organization (IMO) as a Particularly Sensitive Sea Area (PSSA), Emission Control Area (ECA) and Sulphur Emission Control Area (SECA). To sum up, the crucial features concerning the Baltic Sea, the following elements can be indicated:

- sea area with some of the most dense traffic flows in the world (oil and chemical tankers, ro-ro, containers, passengers)
- a well developed system of shipping lines (fast growth in container traffic)
- sensitive environment (inland location, shallow, heavy climatic conditions)
- special requirements regarding winter navigation.

The Baltic Sea is an area of location of the sea motorway, as has been previously presented in official EU documents. As a follow up, the Baltic countries and the European Commission have started multilateral cooperation in order to specify, plan and implement the MoS concept in the Baltic. The activity is realised by several types of actions like bilateral or multilateral projects, common actions on the national level and establishment of the Baltic Sea Task Force Group.

---

Ro ro is the abbreviation for Roll-on/Roll-off which refers to vessels designed to carry wheeled cargo such as cars, trucks riven on and off the ship on their own wheels. This is in contrast to lo-lo (lift-on/lift-off) vessels which use a crane to load and unload cargo.
The Baltic Sea Task Force Group was established in Copenhagen during its first meeting in January 2004. Leading countries were chosen to chair the sub-groups working on different key issues within the context of the Task Force Group. Poland was chosen to lead the infrastructure sub-group, Germany the financing sub-group, Finland the information exchange (information motorways) sub-group, Sweden the icebreaking sub-group and Estonia the safety and security sub-group. The Group initiated several studies in the framework of the Master Plan Studies for development of the Motorways of the Baltic Sea (work packages: Study on goods flows and maritime infrastructure – “Baltic Sea Maritime Outlook 2006”, Baltic Sea Winter Motorways, Safe major routes in the Baltic Sea motorways, and North Sea Baltic Hub) and made a contribution to such activities for instance with the German/Finnish Call for MoS proposals in February 2006 and the Joint Baltic Call for MoS proposals from 14 September 2006 to 8 January 2007 (Yliskylä-Peurolahti 2010).

Special focus should be placed on the second element because in the framework of the Joint Baltic Call 13 proposals were prepared. Eight projects were submitted and two of them received TEN-T budget contributions (the first Baltic MoS projects, cf. Baltic Ports Organzation/TransBaltic 2010: 10-17):

(1) 2008-EU-21010-P: High Quality Rail and Intermodal Nordic Corridor Königslinie (MoS: Sassnitz – Trelleborg)\(^9\)

(2) 2008-EU-21015-P: Motorways of the Sea projects in the Baltic Sea Area Klaipēda – Karlshamn link\(^8\).

The next TEN-T call for proposals in 2008 (non-MIP)\(^2\) did not include the MoS action. The financial crisis and problems of the global economy have caused a wider scope of financial support provided in the framework of TEN-T. The call for proposals 2009 included the European Economic Recovery Work Programme (EUR 500 million), the Annual Work Programme (EUR 140 million)\(^9\) and the Multi-Annual Work Programme (EUR 370 million). Within the framework of the Multi-Annual Work Programme it also focused on MoS (maximum EUR 30 million). However, following the internal and external evaluation process, only one MoS proposal was recommended for funding (Baltic Link Gdynia-Karlskrona\(^9\)) in the framework of call 2009. In order to encourage Baltic applicants even more, an “Open regional call for proposals concerning Motorways of the Sea projects in the Baltic Sea area 2009–2013” was published on 25 November 2009. The main characteristics of the “open” call were that project proposals had to be directly submitted to the transport ministries of the Baltic countries and authorized for pre-evaluation (not TEN-TEA). The proposals have been jointly evaluated by these ministries and authorities based on specific evaluation criteria. The approved MoS project proposals received the necessary governmental support and were presented by the relevant Member States for TEN-T financing. Project proposals could be submitted to the Member States concerned at any time. However, the Member States concerned needed approximately three months for internal evaluation. When submitting a proposal, there was a need to coordinate the time schedule for the relevant EU call.

The next opportunity for submitting a MoS project proposal was the call for proposals in 2010. In the framework of the call, the following Baltic MoS projects were selected\(^11\):

- 2010-EU-21108-P: The Baltic Sea Hub and Spokes Project\(^12\)
- 2010-EU-21107-P: Motorway of the Sea Rostock-Gedser\(^13\)
- 2010-EU-21109-S: MonaLisa\(^14\)
- 2010-EU-21112-S: Infrastructure of filling stations for Liquefied Natural Gas (LNG) and deployment in ships\(^15\).

So far, there is no information concerning the outcomes of the TEN-T call for proposal 2011.

To summarize, as of today (January 2012) seven MoS projects located in the Baltic Sea have received financial support from the TEN-T budget (see Fig. 1). It could be stated, that the Baltic Sea is the main area of location of European MoS projects in the framework of TEN-T.

The main challenge in the Baltic MoS development process is the creation of an overall strategy for the Baltic Sea Region and the consistent implementation of that schedule. So far, the theoretical efforts concerning the
The schedule will conduct the process of MoS implementation.

The other way to support the development process of MoS in the Baltic is the Marco Polo fund. Three MoS project proposals were approved:


Despite the large number of proposals submitted, no specific Baltic MoS projects have received financial contribution from Marco Polo so far. That situation is connected with two kinds of problems. The first are the barriers and limitations of the Marco Polo programme, the second is the scarcity of well prepared applications. Thus, for concept activation, application framework, requirements and process need to be revised.

The port of Karlskrona in Sweden together with investments for noise reduction along the rail and road access; creating new ferry berths and a ferry terminal together with a new storage yard, intermodal terminal and access roads in the Port of Gdynia.


The aim of the action is to create the necessary framework for an integrated maritime transport system, which will promote and support a cost-effective and efficient door-to-door transport solution, link trade to transport and facilitate growth in the entire BSR. The action consists of 4 main activities: The Marine Integration Project (MIP), Port Access Aarhus, Port Access Gothenburg and Port Security Tallinn.

The Action is part of a global project covering infrastructure initiatives on the transport axis Copenhagen-Berlin: extension of the railway Rostock-Berlin, upgrading of the European road E55 into the port of Rostock, infrastructure investments in the port of Gedser and the Nykøbing Falster bypass road. Moreover, in the framework of the Action, new ferries with double capacity will be put into service (2012).

The Action aims at improving the quality of maritime transport, safety at sea, the exchange of maritime data, the environmental performance of shipping and the implementation of e-Maritime relevant applications. The project is expected to deliver a new methodology in maritime route planning similar to air navigation; a new pilot system of automated verification of ship crew certificates; re-surveys of HELCOM fairways in the Baltic Sea leading to harmonized distribution of survey data and water level information; a pilot system for sharing maritime data at a global scale.

The project consists of feasibility studies on the LNG seaport filling station infrastructure (Belgium, Denmark) as well as a full-scale pilot action. The pilot project deals with the modification of the design of two newly built Ro-Pax vessels into a LNG propulsion system.
3 Further perspectives

As far as MoS policy is concerned, four areas will be considered during the revision:

- the scope of MoS (including ro-ro passenger traffic and bulk cargo transport)
- redefining the MoS concept (establishment of a single MoS concept with clear criteria of evaluation where also regional characteristics are taken into consideration – e.g. Baltic Sea)
- MoS funding (elimination of fragmentation of financial sources; funds for seaport hinterland connections or utilization of soft/smart infrastructure)
- MoS implementation (scale of modal shift as well as limitation of externalities as the main evaluation criteria).

Moreover, monitoring process or practical effects (financial and cargo transshipment monitoring procedures) should be improved by other quantitative and qualitative elements, e.g. market penetration, efficiency of gains, safety and security, social conditions, etc. (Baltic Ports Organization/TransBaltic 2010: 10-17). These elements also apply to the TEN-T programme.

Important impulses for changes in the MoS concept were generated in 2011. Two new documents concerning the future of the European transport policy were issued: the White Paper "Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system" (European Commission 2011b) and the Regulation of the European Parliament and of the Council establishing the Connecting Europe Facility (European Commission 2011c).

The new White Paper 2011 focuses on environmental impacts of the transport system in Europe. One of the goals of the new policy (No. 3) is "...30% of road freight over 300 km should shift to other modes such as rail or waterborne transport by 2030, and more than 50% by 2050". From that point of view, a radical improvement of the programme of MoS should be a core area of future activity. Unfortunately, the MoS concept is not directly indicated in the document but only mentioned as an element of the TEN-T network. Nevertheless, a new funding framework for transport infrastructure concerning TEN-T will be available for MoS as well.

The Connecting Europe Facility is a framework perspective for TEN-T development in the period 2014–2020. The financial envelope for the implementation of the programme shall be EUR 50 billion. The contribution for transport is estimated EUR 31,649 billion. The main objectives in the field of transport are defined as follows: removing bottlenecks and bridging missing links, ensuring sustainable and efficient transport in the long run, optimizing the integration and interconnection of transport modes and enhancing the interoperability of transport services. It should be indicated that the contribution of the Connecting Europe Facility for the MoS development is defined on the level of infrastructure (grant for works on ports infrastructure and hinterland connections) or traffic management systems (grants for supporting the development of the MoS up to 20% of eligible costs). What is also important is the fact that the document includes proposals of nine new core network corridors in the field of transport. Two of them include the Baltic Motorways of the Seas:

1) Baltic-Adriatic Corridor includes MoS connection: Helsinki – Tallinn

The key role of MoS development in the Baltic Sea is also underlined by Regional policy documents. For instance, the concept could be an effective solution for meeting the challenges defined in the EU Strategy for the Baltic Sea Region (European Commission 2009) or the VASAB Long-Term Perspective for Territorial Development of the Baltic Sea Region (VASAB Secretariat 2010: 30). The Baltic MoS implementation could improve the transport sustainability as well as territorial coherence of the Region.

To summarize, it could be stated that the MoS concept is still in the first phase of implementation. On the European as well as the Baltic scale there are only a few examples of MoS projects co-financed within the context of both TEN-T and Marco Polo. However, it is important that the majority of actions has been continuing the construction process. For that reason, the real influence of the MoS development on the Baltic transport system can only be estimated in the future. The concept has become more
and more mature and the applicants more experienced. Thus, it is very probable that the number of supported projects will increase during the next calls. Despite that, the redefinition of TEN-T or especially Marco Polo priorities is necessary.

Owing to its internal location and environmental sensitivity (e.g. PSSA, ECA, SECA), the Baltic Sea should be regarded as a natural area of MoS development. Financial contributions from TEN-T or Marco Polo programmes and concentration of the European policy on sustainable transport solutions create a unique opportunity for speeding up the future implementation process of MoS in the Baltic Sea Region.

On the other hand, the size of the Baltic Sea maritime transport market as well as the concentration of cargo flows in a few main transport corridors have created a highly competitive environment. Thus, the necessity of keeping a fair competition could limit the tempo of MoS development.

References
