

# **Developing a common picture of maritime transport and its hinterland in the North Sea Region**

***Insights from the NSRP projects, relevant  
EU funding programmes and transport  
research***

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## List of abbreviations

ATM	Air traffic management systems
AWP	Annual Work Programme
BWMC	Ballast Water Management Convention
CO <sub>2</sub>	Carbon dioxide
EACI	Executive Agency for Competitiveness and Innovation
ECA	Emission controlled area
EERP	European Economic Recovery Plan
ERDF	European Regional Development Fund
ERTMS	European Rail Traffic Management System
FAB	Functional airspace block
FDT	Association of Danish Transport and Logistics Centres
FP7	Seventh framework programme
GHG	Greenhouse gas
ICT	Information and communication technology
ICZM	Integrated coastal zone management
IHO	International Hydrographic Organization
IMO	International Maritime Organization
INSPIRE	Infrastructure for Spatial Information in the European Community
ISO	International Organization for Standardization
ITS	Intelligent Transport System
IWW	Inland waterway
HHM	Hafen Hamburg Marketing e.V.
MAP	Multi-Annual Work Programme
Mn	Million
MoS	Motorways of the Sea
MOW	Flemish Ministry of Mobility and Public Works
MTC	Maritime Transport Cluster
NIOZ	Royal Netherlands Institute for Sea Research
NSR	North Sea region
NSRP	North Sea Region Programme
RIS	River Information Services
SC	Supply chain
SME	Small and medium enterprises





## Maritime transport and its hinterland in the NSR



SOA

Service Oriented Architecture

SSS

Short Sea Shipping

TEN-T

Trans-European transport network

TUHH

Hamburg University of Technology

WP

Work package

## 1 Introduction

The objective of WP3 of the MTC project is to establish the state-of-the-art in maritime transport based on a close collaboration among the NSRP projects. The analysis is conducted at project level encompassed with insights from relevant EU funding programmes and transport research across the NSR. The intention is to help inform and where appropriate highlight necessary changes to policy and programmes, which will in turn be investigated in-depth with MTC stakeholders in the NSR through the other WPs within the MTC project.

The activities in this work package will closely be linked to and based on the MTC Network which comprises all existing NSRP projects related to maritime transport and its hinterland. Thereby the MTC network will be strengthened and favourable conditions will be created to ensure project results are visible for relevant stakeholders.

By analysing the maritime transport sector from research, programme and project perspectives, it is aimed to create a comprehensive basis that will link Interreg projects with on-going transport policy developments in the EU as well as with maritime industry trends and developments.

This report summarises first insights and results concerning the three areas of investigation:

- **Consultation of the NSRP-projects** related to maritime transport and its hinterland.
- **Analysis of relevant EU funding programmes** related to maritime transport and its hinterland.
- **Analysis of relevant transport research** related to maritime transport and its hinterland.

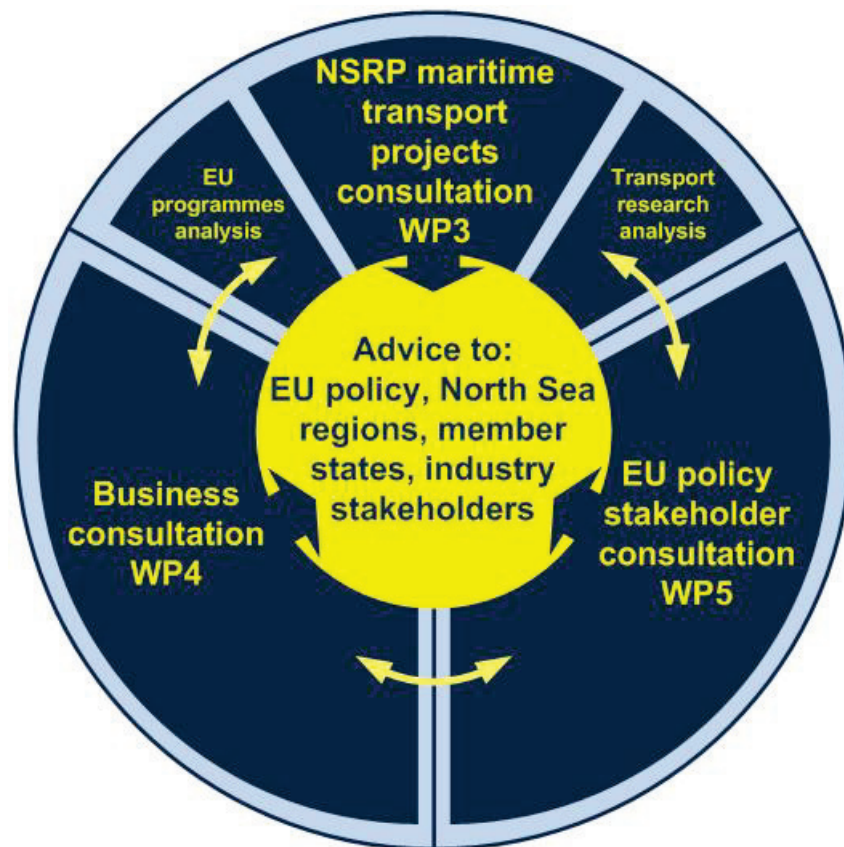


Figure 1: Interaction within the MTC project

## 2 Consultation of the NSRP-projects related to maritime transport and its hinterland

### 2.1 Background of the survey

MTC intends to raise awareness about the results being or expected to be achieved in individual projects and to ensure that these results are known and used as widely as possible in the NSR and beyond. By applying the cluster idea to the maritime transport sector MTC aims to identify synergies between the NSRP project results and consolidate these into main programme outcomes on maritime transport.

In July/August 2011 a questionnaire survey was conducted by the project MTC aiming to launch a dialogue with maritime transport and hinterland projects within the North Sea Region Programme (NSRP). The goal of the questionnaire was to catch the projects' objectives, experiences, expectations and knowledge to identify synergies between them and highlight hot topics.

With the help of the survey the projects will be involved in developing a common picture of maritime projects in the NSRP and establishing the MTC network. Thereby, it is intended to strengthen the position of specific projects by using the MTC network to spread their ideas. Results of this first consultation phase will be discussed with business, public and research communities in a feedback-loop. Afterwards outcomes will be connected to policy development.

The following 14 projects were invited to take part in the survey; the project **E-Harbours** was included partially due to a late submission and **POYO** did not complete the questionnaire (so far)<sup>1</sup>. In the following, a brief project description and indication of the lead beneficiary are highlighted.

**Ballast Water Opportunity - North Sea Ballast Water Opportunity** (Royal Netherlands Institute for Sea Research (NIOZ), The Netherlands: Facilitating the ratification of the Ballast Water Management Convention (BWMC).

**BLAST - Bringing Land and Sea Together** (Norwegian Hydrographic Service, Norway): Improve Integrated Coastal Zone Management and Planning and maritime safety by contributing to harmonising terrestrial and sea geographical data.

**CNSS - Clean North Sea Shipping: Competitive Marine Transport Services and Reduction of Emission - a North Sea Model** (Hordaland County Council, Norway): Emission and greenhouse gas reduction from ships, using studies to reveal the status of air quality in ports and surrounding areas. CNSS will create transparency on cost-efficient technology solutions and develop and improve the introduction of successful air quality programs.

**Cruise Gateway - towards sustainable growth of cruise shipping in the NSR** (Hafen Hamburg Marketing e.V., Germany): Developing the NSR as a cruise destination.

**Dryport - a modal shift in practice** (Västra Götaland Region, Sweden): Develop effective Hinterland intermodal freight transport nodes.

**E-Harbours - E-Logistics in NSR Harbour Cities** (Municipality of Zaanstad, The Netherlands): Create a lasting change towards sustainable energy logistics for NSR harbour cities.

**Food Port - Connecting Food Port Regions - Between and Beyond** (Province of West Flanders, Belgium): Develop the NSR as the best food cluster and hub in Europe for food products delivered via efficient and sustainable transport systems.

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<sup>1</sup> A list of the projects' contact persons in general and with regard to the survey can be found in Annex A.

**iTransfer - innovative TRANsport Solutions for Fjords Estuaries and Rivers** (Institute for Sustainability, UK): Develop innovative, sustainable solutions to improve regional accessibility by water-based public transport in the NSR.

**LO-PINOD - Logistics Optimisation for Ports Intermodality: Network, Opportunities, Development** (Institute for Sustainability, UK): Enhance multi-modal accessibility and interconnectivity of ports of regional importance.

**NMU - Northern Maritime University** (Transport Research Institute, Napier University, UK): Common and lasting transnational network of universities that will directly address the needs of the maritime industry.

**NS Frits - North Sea Freight and Intelligent Transport Solutions** (People United Against Crime, UK): Develop a multi-lingual electronic communication and data capture system for the freight supply chain.

**POYO - The Port is Yours** (Albeda College, The Netherlands): Focussing on maintenance processes in order to increase the efficiency in the production process of the ports in the North Sea Region.

**StratMoS - Motorways of the Seas Strategic Demonstration Project** (Rogaland County Council, Norway): Promote and facilitate the shift of cargo from road to sea based inter-modal transport.

**SUSCOD - Sustainable Coastal Development in Practise** (Province of North-Holland, The Netherlands): Application of integrated coastal zone management through an innovative ICZM (Integrated Coastal Zone Management) 'assistant' web tool

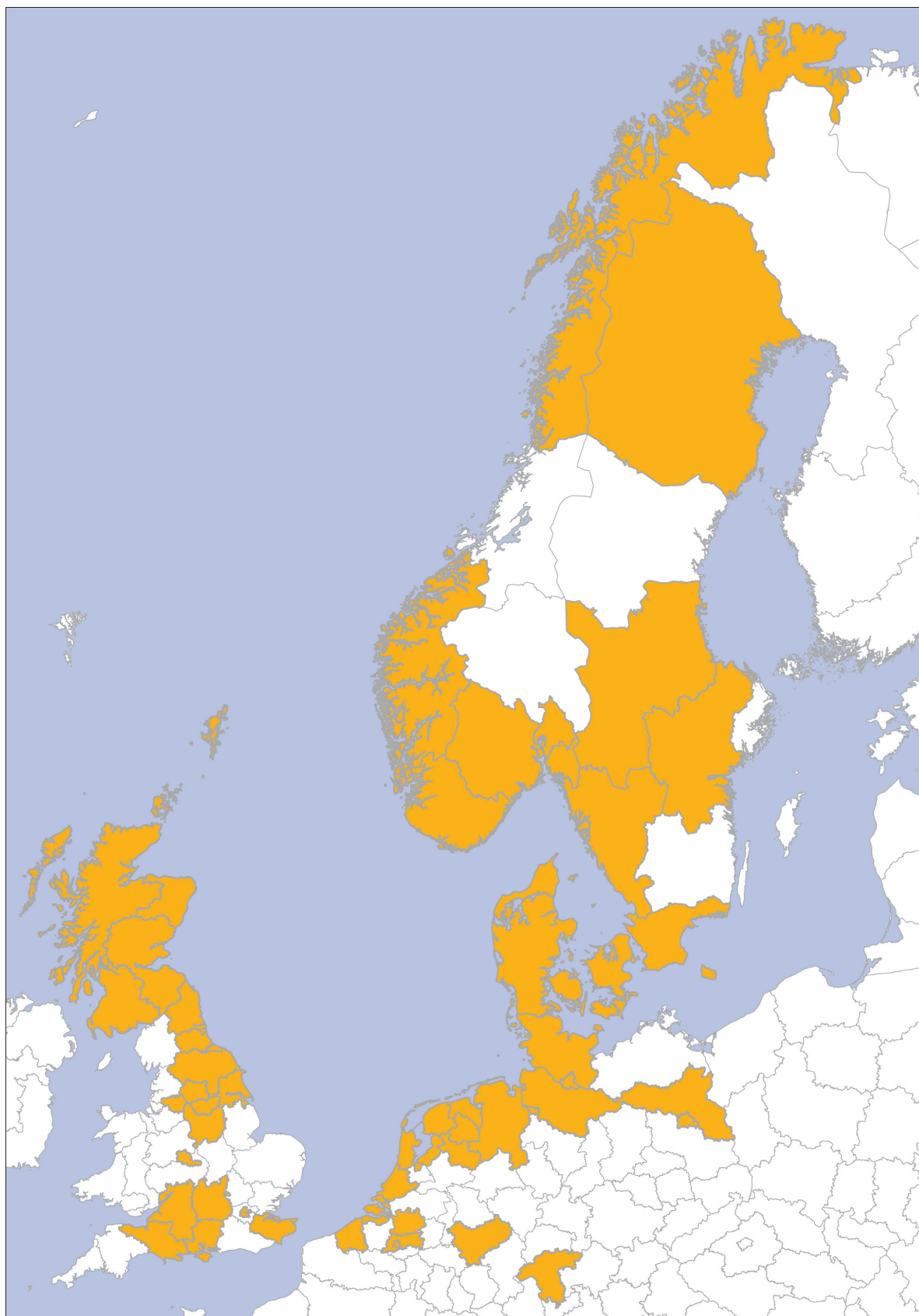
## 2.2 Project data

In the following some general information about the projects is presented to provide an overview regarding their allocation to the programme priorities and areas of intervention, their budget and the aspects of the transport chain covered. A map comprising the regions covered by the projects investigated by the MTC project is displayed as well.

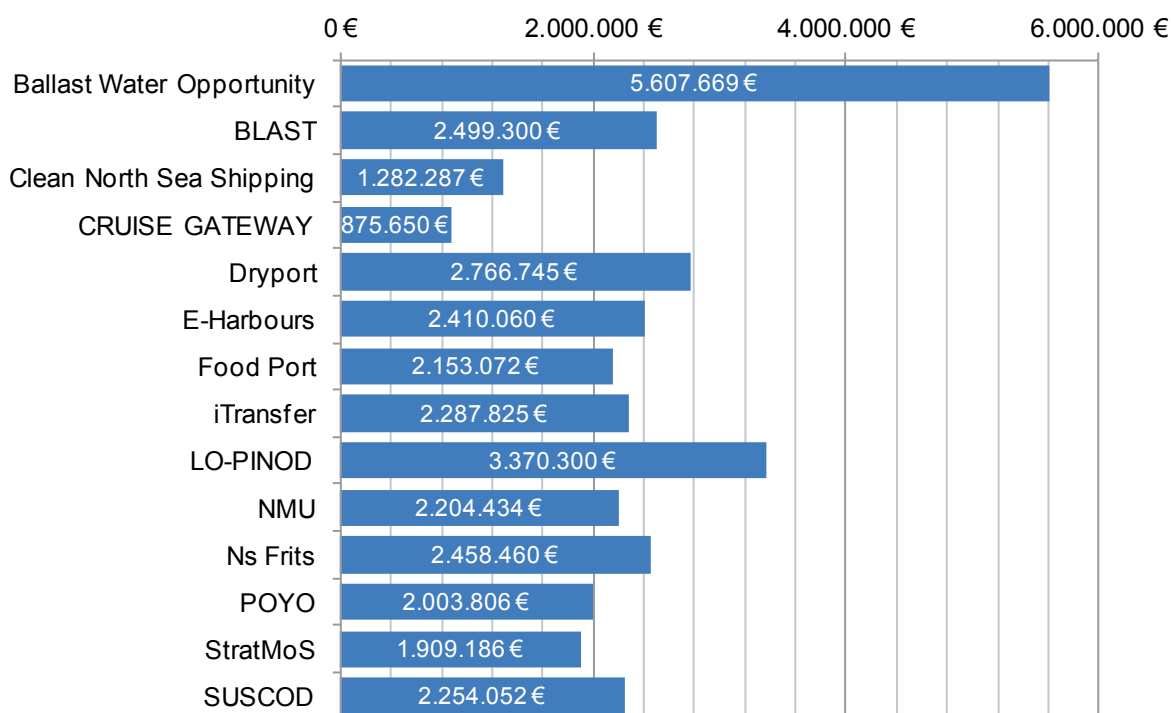
Project name	Priority	Area of intervention
<b>Ballast Water Opportunity</b>	2 - Promoting the Sustainable Management of our Environment	2.2 Developing measures to prevent the introduction of unwanted organisms from other areas into ballast water receiving local ecosystems
<b>BLAST</b>	2 - Promoting the Sustainable Management of our Environment	2.1 Sustainable development of the coastal land and sea areas through integrated coastal zone management
<b>CNSS</b>	3 - Improving the Accessibility of Places in the North Sea Region	3.3 To promote the development of efficient and effective logistics solutions

<b>Cruise Gateway</b>	3 - Improving the Accessibility of Places in the North Sea Region	3.1 To promote regional accessibility strategies
<b>Dryport</b>	3 - Improving the Accessibility of Places in the North Sea Region	3.3 To promote the development of efficient and effective logistics solutions
<b>E-Harbours</b>	3 - Improving the Accessibility of Places in the North Sea Region	3.3 To promote the development of efficient and effective logistics solutions
<b>Food Port</b>	3 - Improving the Accessibility of Places in the North Sea Region	3.2 To promote the development of multi-modal and transnational transport corridors
<b>iTransfer</b>	3 - Improving the Accessibility of Places in the North Sea Region	3.1 To promote regional accessibility strategies
<b>LO-PINOD</b>	3 - Improving the Accessibility of Places in the North Sea Region	3.2 To promote the development of multi-modal and transnational transport corridors
<b>NMU</b>	1 - Building on our Capacity for Innovation	1.1 Building the innovation capacity of businesses
<b>NS Frits</b>	3 - Improving the Accessibility of Places in the North Sea Region	3.3 To promote the development of efficient and effective logistics solutions
<b>POYO</b>	1 - Building on our Capacity for Innovation	1.2 Building the transnational dimension of clusters and research and innovation networks
<b>StratMoS</b>	3 - Improving the Accessibility of Places in the North Sea Region	3.2 To promote the development of multi-modal and transnational transport corridors
<b>SUSCOD</b>	2 - Promoting the Sustainable Management of our Environment	2.1 Sustainable development of the coastal land and sea areas through integrated coastal zone management

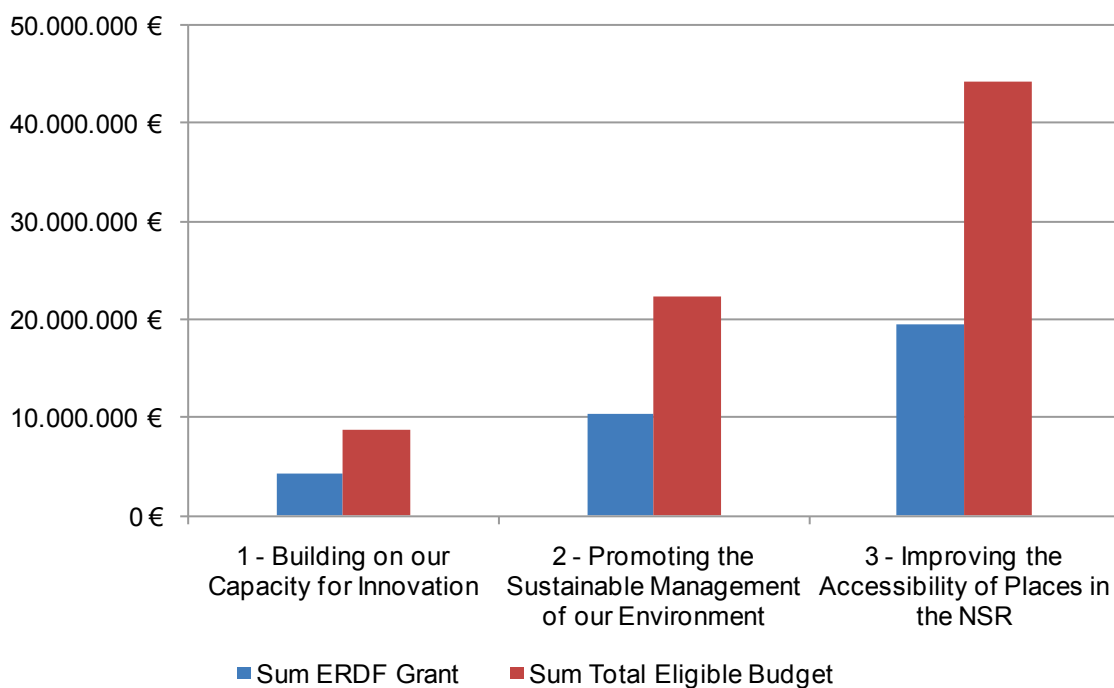
**Table 1:** Programme priority and area of intervention of considered projects



**Figure 2:** NUTS2 regions covered by considered projects



**Figure 3:** ERDF grant of the considered projects



**Figure 4:** Sum of the projects' budgets according to NSRP priorities

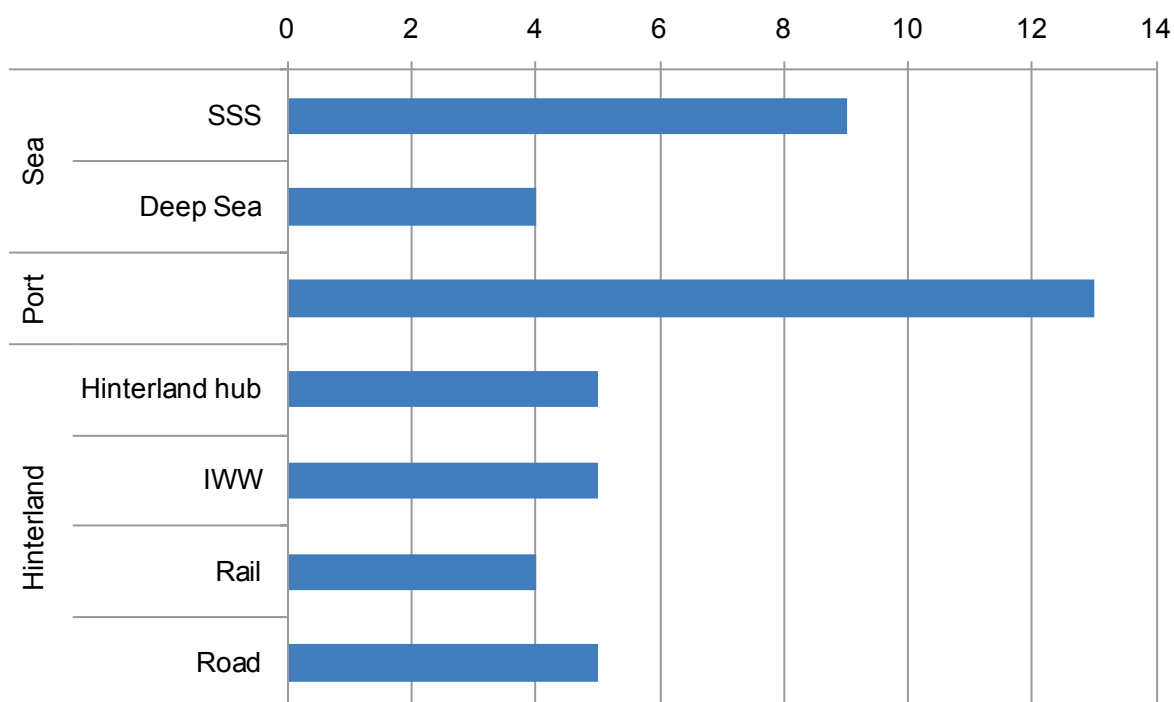


Project name	Aspects of the transport chain covered by the project						
	Sea		Port	Hinterland			
	Deep Sea	SSS		IWW	Rail	Road	Hub
Ballast Water Opportunity	X	X	X	-	-	-	-
BLAST	X	X	X	-	-	-	-
CNSS	-	X	X	-	-	-	-
Cruise Gateway	-	-	X	-	-	-	-
Dryport	-	X	X	X	X	X	X
E-Harbours	-	-	X	X	-	-	-
Food Port	-	X	X	X	X	X	X
iTransfer	-	-	X	X	X	X	-
LO-PINOD	X	X	X	-	X	X	X
NMU	X	X	X	-	-	-	X
NS Frits	-	X	-	-	-	X	-
POYO	_*	_*	X*	_*	_*	_*	_*
StratMoS	-	X	X	X	-	-	X
SUSCOD	-	-	X	-	-	-	-

**Table 2:** Aspects of the transport chain covered by the considered projects (multiple answers possible)

(\*PoYo results were inserted by the authors and derived from the project description)





**Figure 5:** Comparison of the different aspects of the transport chain covered by the projects (multiple answers possible)

## 2.3 Methodology

As a technique to analyse qualitative data in a structured way, computer assisted qualitative data analysis software has been utilized to enable researchers to seek relationships between various themes, to connect ideas, to visualise findings and finally, to derive implications for policy and practice. Within this research project the software package 'NVivo 9' was chosen to manage the data received from the questionnaires completed by the NSR projects. Basically, NVivo 9 assists managing data, recognizing key themes, connecting coded data, and graphically model key outcomes. In a first step the completed questionnaires were inserted into the programme before identification of key themes named 'nodes' could start. Thereafter, text passages were 'coded' and linked with appropriate nodes. Thus, coding is an umbrella term for data categorisation and unitization because the coding process comprises establishing categories as nodes and unitizing text passages as codes within the analytical process of qualitative data analysis. After accomplishing coding, data analysis reached the next step and supported by a feature named 'matrix coding', initial connections between nodes were identified and served where applicable as a guideline for interpretation of results in the next paragraph.

## 2.4 Survey results

In the following the survey results are presented regarding the following aspects:

- Major stakeholders of the projects (business and policy) and the kind of involvement,
- Triggers for initiating the project,
- Aims of the projects,
- Major (achieved / expected) results of the project,
- Key success factors for implementing the overall project and/or project results,
- Actual or expected main obstacles for implementing the overall project and/or project results,

- Remaining gaps after the project is completed and future needs expected to be deduced regarding maritime transport policy development,
- Remaining gaps after the project is completed and future needs expected to be deduced regarding maritime transport research,
- Project collaboration within the NSR programme,
- Benefit from collaboration in the NSR,
- Specific suggestions concerning future maritime transport policy priorities relating to the NSR,
- Specific suggestions concerning future priorities in maritime transport research relating to the NSR.

### Major stakeholders of the projects (business and policy) and the kind of involvement

Respondents were asked to indicate their project's major stakeholders as well as the way of involving them. Regarding the way of involvement, respondents' answers have been a mixture of thematic (for example consultation, implementation of prototypes) and organizational involvement (for example project partnership). Involved stakeholders have been clustered in six groups: **Public institutions, research institutions, ports, shipping companies, shippers and passengers as well as further transport/ logistic companies and service providers**. The type of involvement has also been clustered in six sub-categories: **Consultation, dissemination and communication, implementation of best practices/pilots/prototypes/demo cases, invitation to events, personal/direct contacts and project partnership**.

**Shipping companies** included cargo and passenger transport actors such as cargo shipping lines, ferry companies and cruise lines. The group '**Further transport, logistic companies and service providers**' includes all logistic players other than ports and shipping companies, such as logistic centers, regional transport associations, landside transport infrastructure and service providers, IT companies, hauliers, intermodal service provider, private sector fuel supply chain advisors and providers as well as consulting companies.

Most often **public institutions** have been named as project stakeholders. The primary form of involvement is an active project partnership. Public institutions are involved in implementing pilot, prototypes and best practices as well as through dissemination and communication activities and consultations. **Ports** are especially involved by the projects through dissemination and communication activities as well as through project partnership. **Shipping companies** are mostly approached using dissemination and communication activities, personal/direct contacts and invitations to events. Only one respondent named a shipping company as an active project partner. **Shippers and passengers** again are involved using dissemination and communication channels. **Transport and logistics companies** other than ports and shipping companies are mostly involved through consultation and as a partner in implementing best practices, pilots, proto types or demo cases.

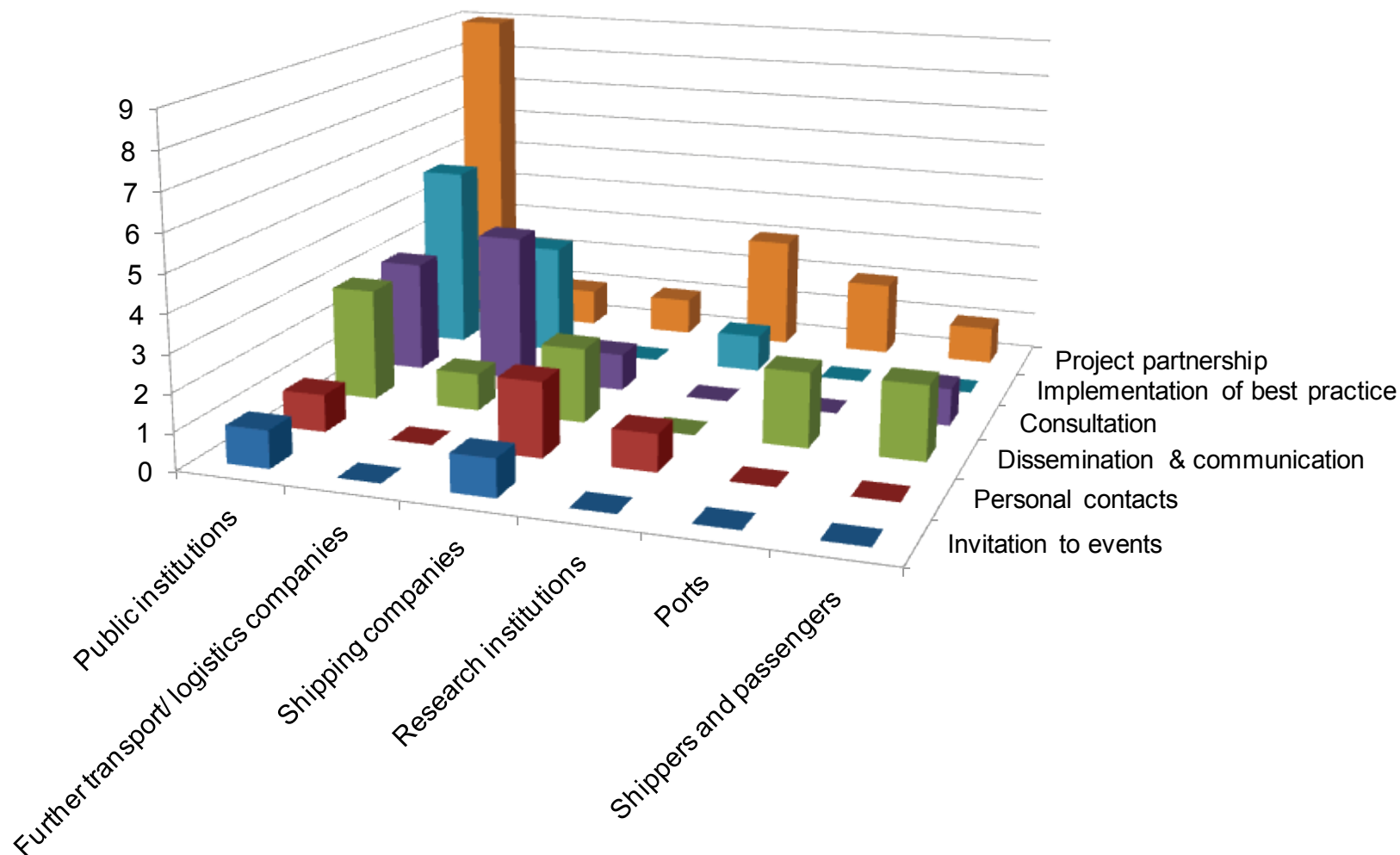


Figure 6: Involved stakeholder and type of involvement by number of references in the survey

### Triggers for initiating the project

Respondents were asked to name the triggers motivating them to start the project. Regarding the results it can be said that many triggers were equal for several projects. Given answers were clustered by the following main topics: inefficient supply chains, insufficient flow of information, sustainable development, potential for modal shift, lack of maritime professionals, regional development, implementation of regulation, stakeholders lack information and know how, insufficient accessibility of peripheral regions, lack of required business networks and recession and its impact on maritime industry.

Very often **inefficient supply chains** were the initial impetus for a project. Thereby different aspects of the supply chain were specified by the respondents such as the *insufficient integration of ports and their hinterland*, *insufficient port master planning*, *lack of safety and security in maritime transport* and the *lack of transparency on technological solutions* for improving the supply chain.

Very close to this kind of trigger is the **insufficient flow of information** which was further specified as *inadequate harmonisation of maritime data and information* and the *insufficient ICT integration*.

Another important topic which very often was decisive for starting a project is **sustainable development**. Several respondents indicated that this topic was tackled due to the *lack of sustainable integration* i.e. the integration of the economic, social or socio-economic and environmental dimension of sustainability. Other reasons were *high pollution rates at ports*, *environmental accounting* as well as the *lack of standardisation* in this context as well as the *competition regarding resources* with regard to the use of coastal zones.

Equally relevant is the **potential for modal shift** from road to sea, rail and inland waterways as starting point for the projects.

Furthermore the **lack of maritime professionals**, education and qualification as well as the harmonisation in that field were indicated as trigger for some of the respondents' projects.

Further, **regional development** played a role for some projects with regard to *competitiveness of the NSR or Europe* as a whole. Thereby aspects like education, cruising and innovative public transport were referred to.

For some of the projects the concrete **implementation of regulation** outlined the initial situation. Only a few projects mentioned the point that **stakeholders lack information and know how** as trigger. Other topics likewise were named only by a few projects, such as **insufficient accessibility of peripheral regions**, the **lack of required business networks** and the **recession and its impact on maritime industry**.

Additionally, the respondents were asked to prioritise the named triggers. Results are shown in Figure 7. Concerning the triggers specified as being of first priority it became evident, that the topics **sustainable development**, **inefficient supply chains** and **potential for modal shift** were the most important triggers for initiating a project.

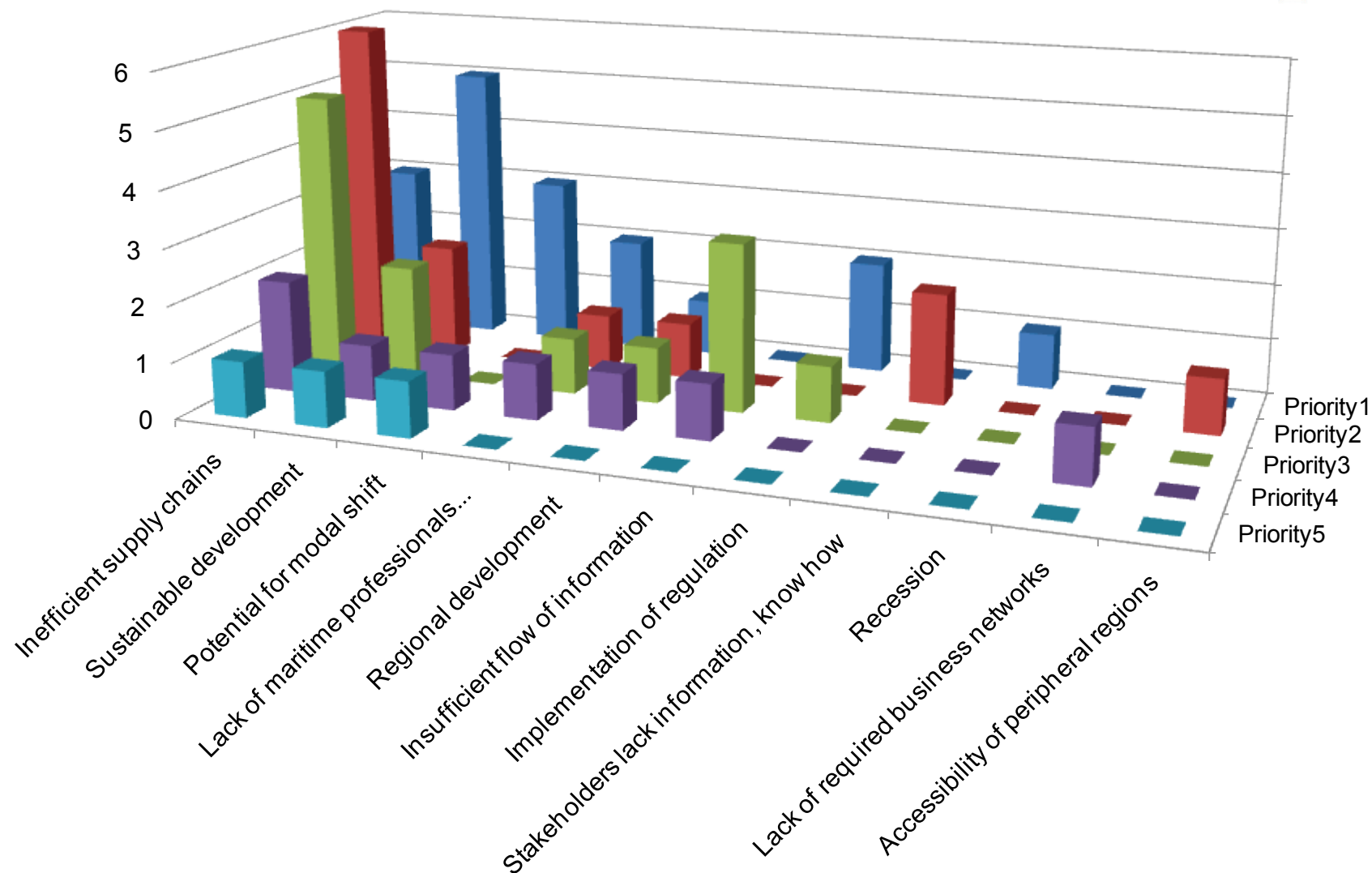


Figure 7: Prioritised triggers of the projects by number of references in the survey (multiple allocations possible)

## Aims of the projects

The aims of the individual projects can be incorporated into nine main themes, namely sustainable development, modal shift, ICT development, improving hinterland connectivity, supply chain development, regional development, policy maker's advice, education, and accessibility.

**Sustainable development** is the most stated aim of several projects. It implies improvement of existing technology regarding air emission (e.g. development of alternative fuels, but also CO<sub>2</sub> monitoring) of ships (especially linked to sustainable cruise tourism) and port areas (use of underutilised port operational land for alternative energy generation or enhancement of renewable energy generation) as well as coastal areas (to improve Integrated Coastal Zone Management and Planning) on the way to improve safe and reliable services at ports/ in supply chains (by utilising ITS to improve traffic flows with fewer disruptions and loss).

Corresponding to the aim to improve hinterland connectivity, **modal shift** initiatives promote and facilitate a shift of cargo from road to sea based intermodal transport and improve accessibility within the NSR by supporting the implementation of MoS and related transport networks in integrated logistical chains. In addition, the viability of using rivers for effective public transport at planning authority level and at community level will be proven and partners from different commercial and professional backgrounds will be brought together to start coordinating innovating and service provision.

**ICT development** is a diverse purpose of the projects stating that there exists a need to design and develop a reference base and to harmonise it with land reference bases, to develop an electronic communications and data capture network, and to exchange knowledge and expertise by developing a new information support mechanism.

To **improve** local and/or regional **hinterland connectivity** effective hinterland intermodal freight networks shall be funded to bring forward delivery in modal shift cases and to promote the development of multimodal and transnational transport corridors. Exemplary, achieving intermodal integration may be achieved by incorporating DryPorts into the EU Motorways of the Sea concept.

**Supply chain development** may take place through adapting a public concept to a private sector model, by promoting efficient and effective logistic solutions (to strengthen the food industry by optimising and coordination of food logistic chains), and by bringing together partners from different commercial and professional backgrounds to start coordinating innovation and service provision.

The aims promoting **regional development** are diverse containing the support of regional cohesion, regional research and innovation (contribute to new economy in the NSR), or regional employment (to instigate new work relationships between competing ports to benefit the local economy and safeguard local jobs in the maritime sector; to improve accessibility contributing to sustainable economic growth and to improve the quality of life and job opportunities for people living and working in the NSR, to promote the NSR as a cruise destination of its own right).

**Policy maker's advice** should be presented to facilitate ratification of the BWMC, to influence ICZM strategies on EU level, and to give input on policies and strategic developments by simply reaching politicians.

In regard to **education** in the NSR, two aims are to build on the one hand transnational knowledge networks by enhancing the transnational recognitions of educational content within the network, and

on the other hand to develop multidisciplinary education offerings in maritime business and industry-academic knowledge exchange.

The **accessibility** of a transport logistic system shall be improved e.g. by proving the viability of using rivers for effective public transport at planning authority level and at community level and by providing added value to design and delivery processes.

In the following figure the aims of the projects are visualised in a metrics combining indications by priority order of aims from 1 to 5. Especially, modal shift, regional development and sustainable development were linked with high priority by several projects and sustainable development is included within most priority statements.

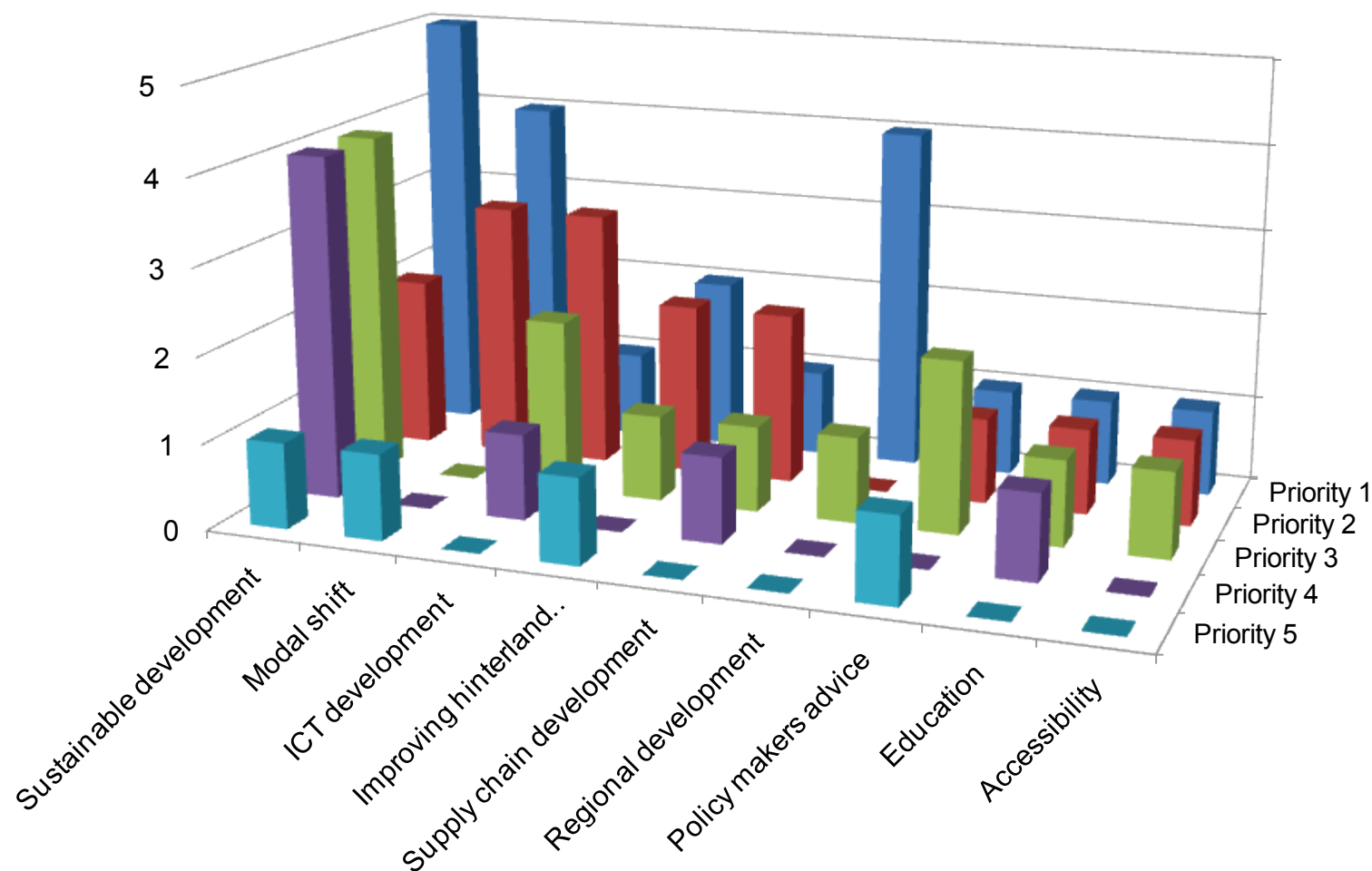


Figure 8: Prioritised aims of the projects by number of references in the survey (multiple allocations possible)



## Major (achieved / expected) results of the projects

Survey participants were asked to name the major results of their projects. They were further asked to indicate whether the results have already been achieved or are expected to be achieved in the future. Also, participants were asked to rank their answers accordingly to the priorities set by the project team. Here, multiple entries per priority have been possible.

Answers of the respondents have been clustered along two major dimensions:

The **area of application** shows the thematic focus of project results. Seven sub categories have been extracted from the respondents' answers:

- Sustainability,
- Accessibility,
- Cruise,
- Education,
- ICZM,
- Intermodality/Modal shift and
- Supply Chain Optimization.

The **type of product** shows what the actual outcome – the product - of project activities looks or will look like: Here, four sub categories have been identified:

- Concepts, strategies, prototypes and studies
- ICT solutions,
- Networks and co-operations and
- Raising awareness, stimulating policy and business sector activity.

Figure 9 shows in which areas of application concrete results have been stated. It can be seen that the majority of project results deal with sustainability topics, followed by accessibility themes and intermodality. Further results have been gathered from the fields of ICZM, SC optimisation, cruise industry and education. Results of the highest priority show a comparable picture. In most cases, results from the sustainability field have been named as being priority one, followed by intermodality, accessibility and ICZM. Cruise industry topics, education and supply chain optimization were each named once as being of highest priority. Figure 10 shows the project results in terms of field of application and the type of outcome. Most of the results have been concepts, strategies, prototypes and studies followed by ICT solutions and stimulation of the policy and business sector. In 3 cases established networks have been named as an actual project outcome.

There seems to be some interrelation between certain thematic contents and the type of product/outcome projects produced. For example, ICZM themes are predominantly approached by creating ICT solutions (which are then used to derive planning and management solutions). This corresponds to results dealing with SC optimization. In contrast, project activity related to the cruise industry produce results in terms of stimulating policy and business stakeholders. Results trying to foster sustainability have been named most often. The way projects deal with this aspect in terms of project outcome is however less clear compared to other fields of application. In most cases results here have been concepts and strategies followed by ICT solutions, policy and business stimulation and network building.

A complete overview on actual project outcomes can be seen in Annex B.

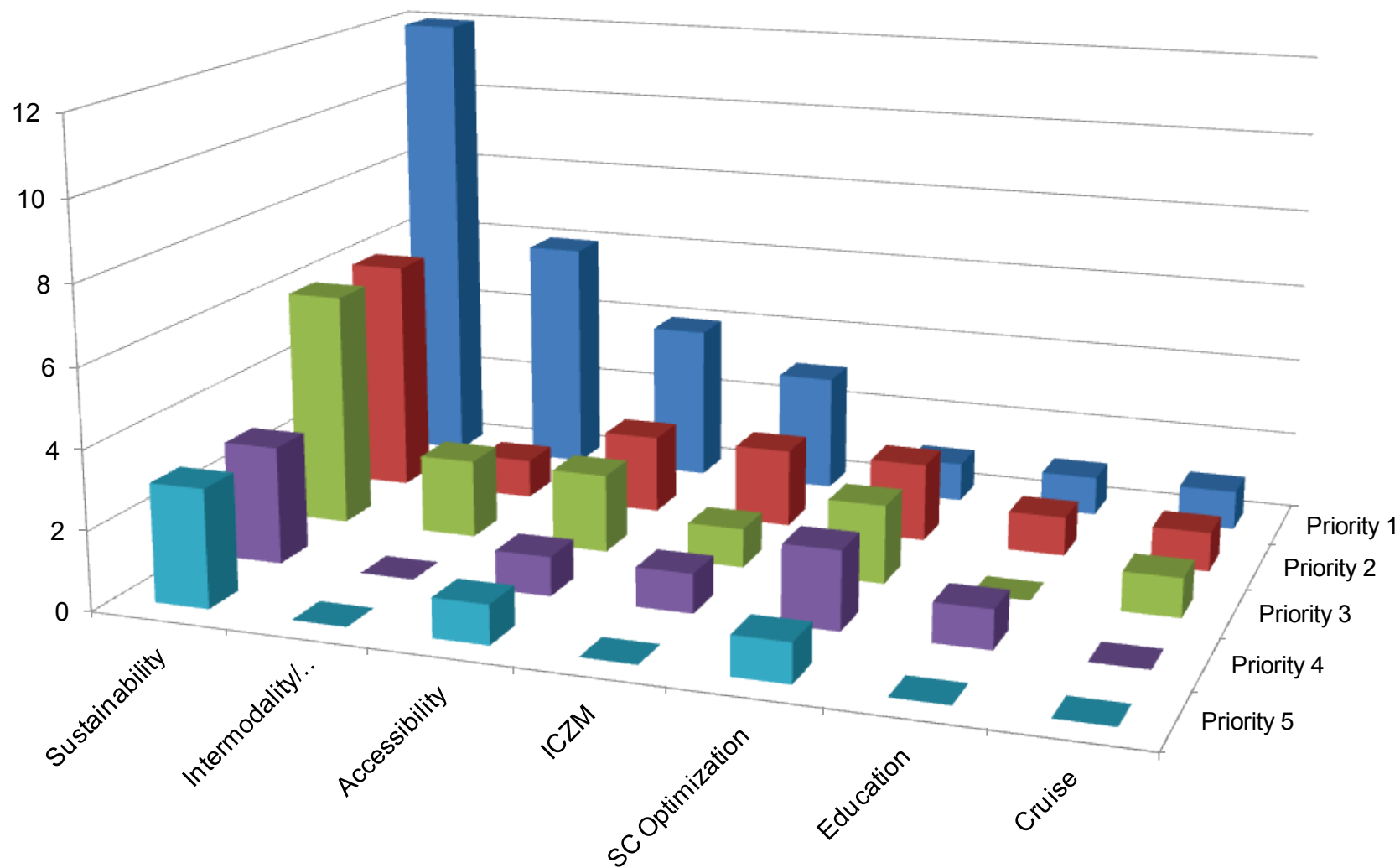


Figure 9: Prioritised results of the projects by number of references in the survey (multiple allocations possible)

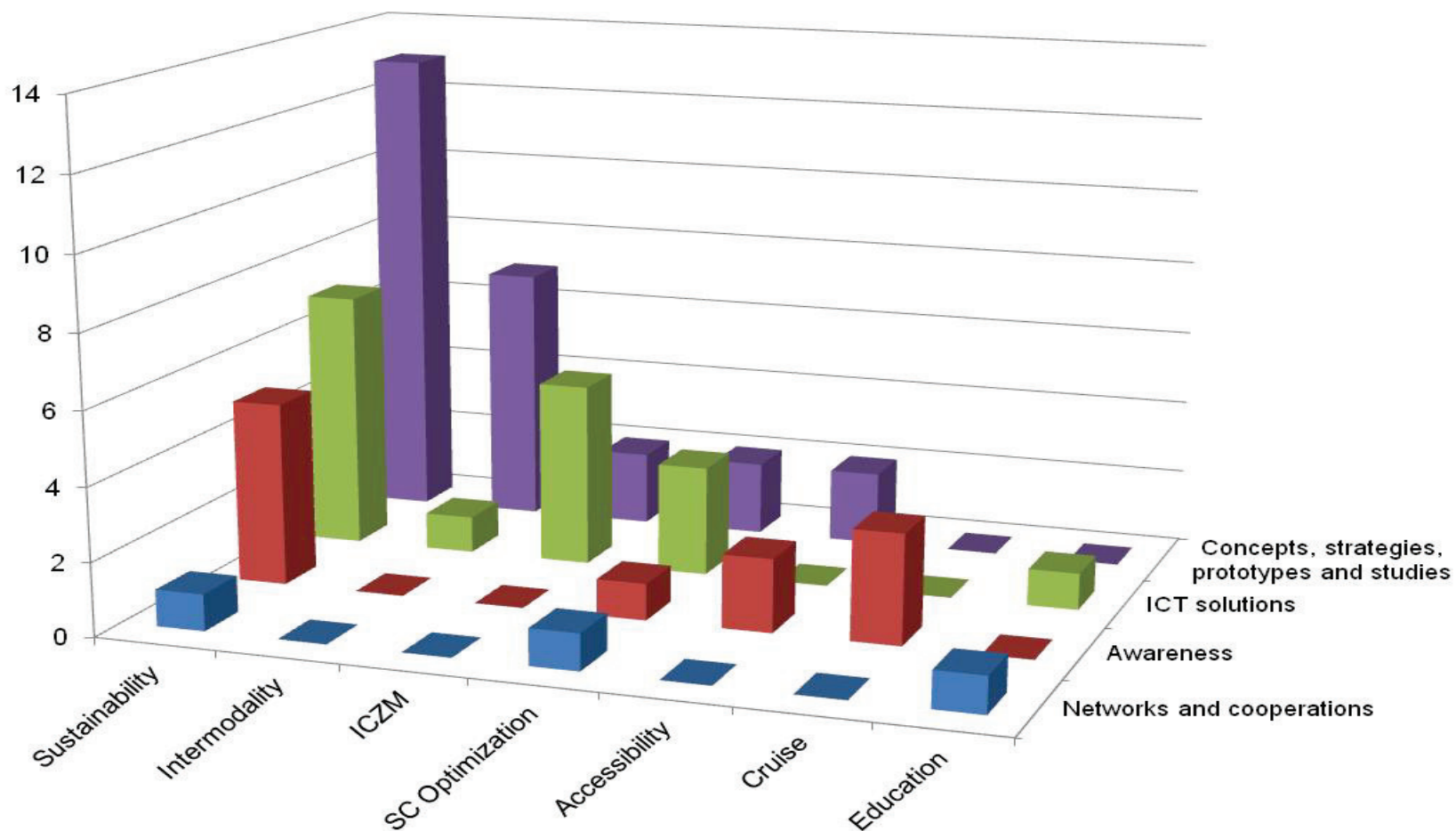


Figure 10: Products/ Outcomes and area of application of NSRP maritime projects by number of references in the survey

## Key success factors for implementing the overall project and/or project results

This question deals with those factors which were identified as success factors for implementing the overall project and/or project results. The response behaviour with regard to this question again allowed for clustering the given answers to the following topics: involvement of stakeholders in project activities, composition of project partnership, efficient and simple project management, target-oriented and proactive cooperation, implementation of pilots, proto types and demo cases, creating knowledge of importance for stakeholders, awareness of the problem context and successful communication and dissemination.

From several respondents the **involvement of stakeholders in project activities** was specified as success factor for reaching the project's aims. Thereby mostly the involvement of *private companies* such as transport and logistics companies, data providers etc. played an important role. From a few respondents the involvement of *EU, national and regional policy makers* was stated here, too.

As equally relevant the **composition of project partnership** was named. Thereby *cooperation of public and private actors*, the *cooperation with research institutes* and the *transnationality* of the project consortium were specified. Closely linked to this is the success factor **efficient and simple project management**, e.g. the *efficient launch of the project* or to clearly *share responsibilities* among the partners. Also **target-oriented and proactive cooperation** within the partnership was mentioned by some respondents.

Another important factor mentioned is the **implementation of pilots, proto types and demo cases** to prove the project's intention.

Furthermore, the factor **creating knowledge of importance for stakeholders** was identified to be very promising; thereby the point *being a lighthouse project* seems to be of interest.

For some respondents the **awareness of the problem context** among the stakeholders was identified to lead to success. Thereby *already existing awareness* (before starting the project) as well as *awareness increased by the project* was specified. In this context another factor was identified as being of importance by a few respondents, namely: **successful communication and dissemination**.

## Actual or expected main obstacles for implementing the overall project and/or project results

Main obstacles for implementing the overall results are diverse and can be highlighted as competition between organizations and regions, complex legislation and standards, delays based on unforeseen circumstances, dissemination to external stakeholders, economic crisis, funding of projects, industry connectivity to project work and outcomes, lack of motivation of project partners, project coordination and communication, and last but not least the small scale of project.

**Competition between organizations or regions** takes place if competing organizations have the same aim (e.g. a lot of organizations promoting cruise in Europe that have to be considered) or the commercial confidentiality of innovative technology and competitiveness of businesses has an inherent element of non-cooperation at a level outside the project. There exists the tendency to go for regional interests first which makes trans-nationality difficult. Additionally, this lacks acknowledgement of regional ports' economic value and the inherent prioritisation of land-side infrastructure for facilities of national significance.

**Complex legislation and standards** impede implementing results. There occur different practices of handling data in different countries, different legislation (with respect to coastal zone planning) licences and planning mechanisms, missing approved European standards/specifications (for

geospatial data), and EU competition regulation (different interpretation at national level). Moreover, complexities of the EU project and funding regulations prevent many private sector partners to engage with the Interreg programme.

**Delays based on unforeseen circumstances** are related to the assumption that the reality occurs to act slower than the concept development. When it comes to implementing new technology the testing phase might show that further testing is needed or that the outcome is not what was expected. As a worst case scenario a poor system development may create technological problems that render the system unworkable.

International **dissemination to external stakeholders** over several countries with several languages appears to be very difficult. Besides, in regard to competition commercial confidentiality of innovative technology and competitiveness of businesses has an inherent element of non-cooperation at a level outside the project

The **economic crisis** delayed major investments and infrastructure decisions as private sector decisions influenced public sector planning and hampered the longer scale view and sustainable projects. The recession caused serious financial hardship (at regional ports, forcing them to sell operational land for non-port uses and foregoing future development and expansion in all perpetuity).

**Funding of projects** may be an obstacle for implementing long-lasting project results if it is not successful to find a financial arrangement after the project ends or if private sector partners do not participate due to the complexity of the Interreg application process. Hence, a small project budget could lead to low activity and partners who did not produce valuable outcomes.

Scarce **industry connectivity to project work** and outcomes has several characteristics, such as deficit coordination (across the renewable energy sector, port sector and public sector to plan expansion and diversification, leaving it to individual companies to "dictate" terms of operation and location), incomplete integration (hampers successful implementation of courses and integration of new educational offerings into existing programmes) and absence of interest (of maritime industry stakeholders, end users of the system - the transport and logistics sector, and shippers to step into a modal shift project).

A **lack of motivation of project partners** may be a serious obstacle to achieve project results appearing through poor performance by or even exclusion of key partners who did not deliver what is required or even total unwillingness to contribute from external organizations (data providers).

Obstacles in **project coordination and communication** can lead to inefficient mobilisation of the project participants (no means to force partners to perform), and poor work planning or poor specifications of assignments to partners.

Due to a **small scale of projects**, e.g. if only a few partners of a larger region are involved (the NSR includes many more ports than the project partners), some aspects cannot be solved on the NSR level for they are global topics (onshore power etc.). Besides, involvement of shippers requires a mental shift first (modal shift acceptance) and without industry engagement technology implementation is not possible (a new technology without users is useless).

### Remaining gaps after the project is completed and future needs expected to be deduced regarding maritime transport policy development

Respondents were asked to identify remaining gaps after completion of the project and future needs for maritime transport policy. Answers have been clustered in seven areas: applying project results in

a larger context, foster intermodality, refine EU policies, implementation of project results into practice, missing utilization of project results after the end of the project, simplify regulations for financial support to projects and strengthening the tourism industry.

Most of the respondents stated that **applying project results in a larger context** will be a challenge for the future. That includes a wider geographic spread, different languages, increasing the political scope, inclusion of different transport modes, or an increased numbers of users of project results or participants in projects.

The second most often named topic referred to the **promotion of the concept of intermodality**. In this context, respondents named different approaches such as short sea shipping services connected to inland ports, the general suggestion of shifting traffic from road to other modes of transport, the development of inland waterways (other than the Rhine), the development of railport facilities that are able to handle roll on roll off (RoRo) traffic, and to provide further incentives to reward modal shift.

Equally often mentioned was the need to **refine EU policies** after a project's expiration. With the exception of the Ballast Water Management Convention (BWMC) answers did not refer to a specific policy but have been of a rather general nature. Concrete examples have been the need for setting incentives to improve intermodal transport, the improvement of government support to infrastructure within sea transport (and the associated question of what actually is the infrastructure of sea transport – the suggestion here was that maritime infrastructure is the deck of the ship, which acts as a mobile infrastructure platform), land-side planning, policy regulating and ensuring supply facilities for fuel and land-side infrastructure for ferry services as well as the revision and “levelling” of competition regulation at a country level. For the last point, one respondent stated that competition distortion should be allowed if it serves environmental and social aims.

Another future need arising from the project work is the **implementation of project results into practice** which are from a rather conceptual nature. Most answers however lack a concrete elaboration of where and how this should be realised. Only one respondent named international organizations such as ISO, IHO, and IMO or EU directives such as INSPIRE as a possible customer/receiver for concrete application of project results.

Also, respondents often mentioned that gaps exist not thematic or content-wise, but in terms of a **missing utilization of project results after the end of the project lifetime**. Different approaches of securing project results have been suggested such as sustainable products which can be presented at events, meetings etc., installing a neutral coordinator/match maker such as a local authority especially in dealing with private sector actors.

One mentioned each factor related to the need to **simplify regulations for financial support to projects** as well as **tourism** to play a more important role in EU NSR policy/strategy.

### Remaining gaps after the project is completed and future needs expected to be deduced regarding maritime transport research

Respondents were asked to outline potential remaining gaps and to further specify what they expect to deduce with regard to maritime transport research after completion of the project. Considering the range of answers it can be stated that expectations are rather diverse and there only were a few overlaps.

To **improve co-modality** was mentioned as a remaining gap from a few projects. Thereby several fields of possible investigations were specified. One respondent suggests carrying out business cases of SSS. Another respondent stressed the need to investigate means to level the playing field between the various modes of transport, i.e. to mitigate the distortion of competition in disfavour of sea



transport. Furthermore the importance of inland waterways was pointed out by one respondent and it was proposed to focus on direct moves from seaports into the hinterland by water.

A few projects mentioned gaps and further needs in the field of **sustainable transportation** including fuel consumption reduction and electrical energy application. One answer dealing with passenger transport proposed the identification of financial mechanisms to secure the instigation, continuation and safeguarding of services that have a wider, socio-economic and environmental benefit for the EU maritime territory. In this context it was suggested to further identify traffic volumes (passengers and freight) which could be shifted to water based transport and to quantify the benefit of resulting CO<sub>2</sub>-reductions. Another respondent suggested focusing on the implications of the rapidly growing maritime based renewable energy sector on transport corridors and the maritime habitat as a relevant field after completion of the project.

Another suggestion made by one respondent was to further investigate new market development such as the **off-shore** industry.

One reference was made regarding **ways of collaboration in maritime transport**. The respondent stated that aiming to make shippers collaborate, using a neutral coordinator or match maker is required and that this idea cannot be completely realised during the project's lifetime.

One respondent expected that gaining more knowledge about **marine bio-invasions** could be a field worthy to focus on after the project's end.

Another respondent outlined the vision of the maritime transport cloud, i.e. to **make use of cloud computing** to disseminate information in a Service Oriented Architecture (SOA) approach to share applications and data through cloud computing.

A few respondents stated that their project is in a too early stage to already name gaps or future needs. Some respondents see no future needs specifically for maritime transport at all.

### Project collaboration within the NSR programme

The projects were asked to name other projects they collaborate with. Also, they were asked to describe the type of collaboration. In total, a vast number of cross-project collaborations in a variety of different ways can be stated.

Results have been clustered into five broader categories of collaboration:

- Implicit exchange through partners, which are engaged in different projects
- Exchange of knowledge, methods, and contacts
- Joint communication and dissemination
- Joint events, meetings or conferences
- Lead partner networking

Figure 11 summarises the respondents' answers and shows with which projects collaboration takes place and how. In most cases collaboration takes place implicitly through **partners** which are engaged in different projects (mentioned 18 times). In 15 cases projects stated that collaboration takes place through **joint events, meetings or conferences**. Other forms of collaboration have been **joint communication and dissemination activity** (6) and **lead partner networking** (8). Six times, **direct exchange of knowledge, methods or contacts** has been stated as way of collaboration.

Table 3 provides an overview on which projects collaborating with each other.

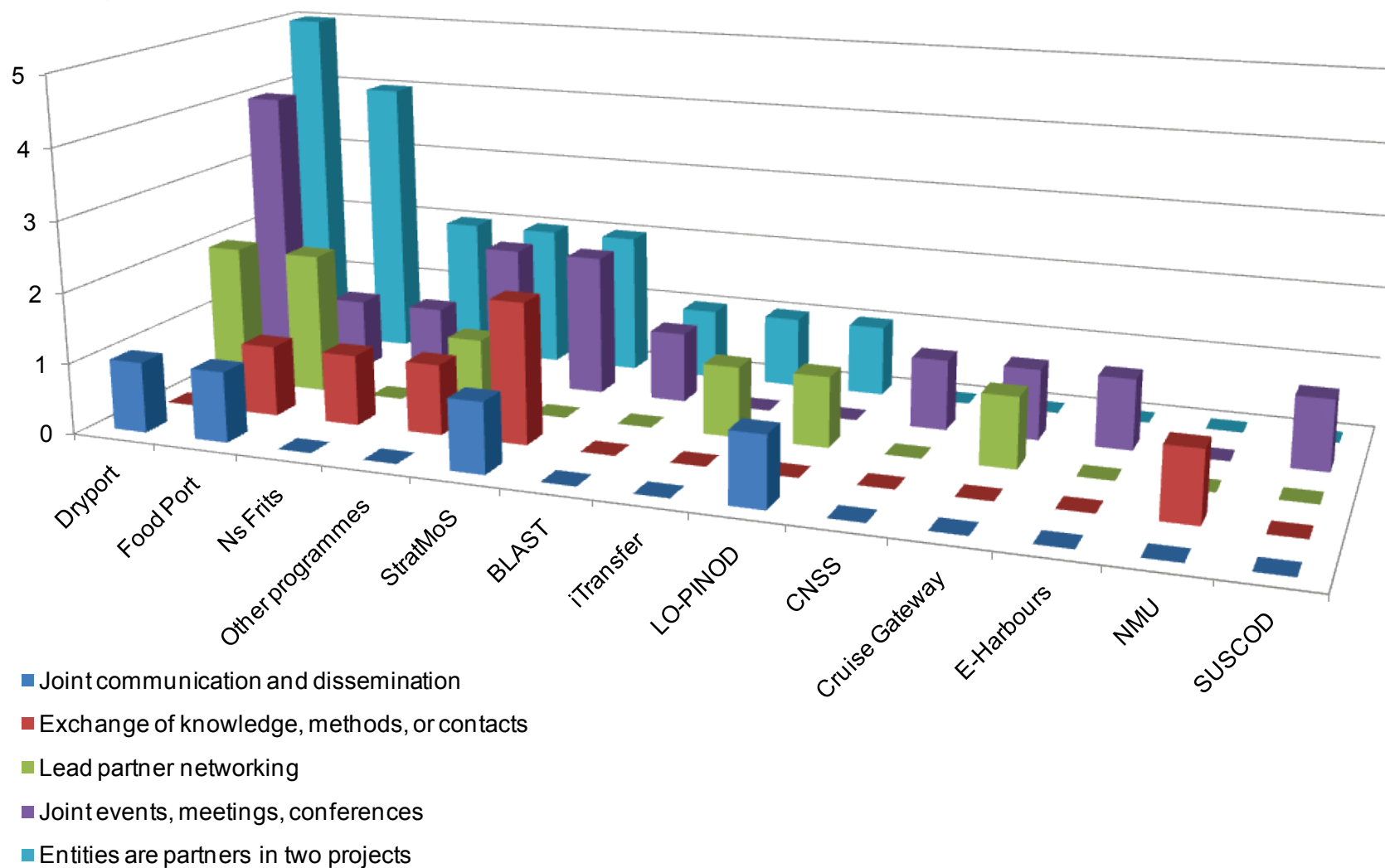


Figure 11: Projects and type of collaboration by number of references in the survey



Collaborates with:	BLAST	CNSS	Cruise Gateway	Dryport	E-Harbours	Food Port	iTransfer	LO-PINOD	NMU	Ns Frits	StratMoS	SUSCOD	Other programmes
Ballast Water Opportunity													
BLAST												X	
CNSS					X								X
Cruise Gateway		X											
Dryport						X			X	X	X		X
E-Harbours		X	X					X					
Food Port				X						X	X		
iTransfer			X	X		X		X					X
LO-PINOD				X		X	X						
NMU				X							X		
NS Frits				X		X					X		
POYO													
StratMoS				X		X				X			X
SUSCOD	X												

Table 3: Inter-project collaboration

### Benefit from collaboration in the NSR

Main benefits of collaboration in the NSR are exchange of cultural aspects, experiences, ideas and knowledge as well as networking and representing and asserting joint interests.

On the one hand, *cultural exchange* between port destinations is deemed valuable for individual interest in travelling and exchange, sharing and gaining of *experiences* (to see the differences in manoeuvre space and impact at partner level) help to get inspiration by other partners. On the other hand, main benefits of collaboration are regarded to be the exchange of *ideas* and profound *knowledge*.

Collaboration in the NSR is good starting point and support for **networking** (formation of knowledge networks and new cooperation of institutions; becoming a part of network between entities and persons, including both public and private sector). Collaboration helps actors to become more aware of the potential of the developed systems and joint initiatives have the potential to improve traffic flows at a larger scale (e.g. StratMoS and DryPort link with NS FRITS by considering different parts of the intermodal transport chain).

**Representing and asserting joint interests** is of value for the NSR projects. Topics can be discussed on a transnational level (shared interest regarding maritime issues among other NSR projects; several high priority national topics related to maritime safety and the coastal zone; enabling commercially operating ports to come together under neutral leadership to share knowledge and explore transnational issues; to share innovation and to profile the economic value and importance of regional ports jointly at national and EU level) due to higher visibility of partners and project results. NSR projects can even speed up infrastructure decisions (3 year periods; to learn from how political influence and governance can give results; using ERDF money and program policy influence to address market gaps, to instigate innovation, and to deliver earlier and at lower cost).

### Specific suggestions concerning future maritime transport policy priorities relating to the NSR

With this question respondents were required to make suggestions related to priorities in future maritime transport policies in the NSR. Again the received answers were rather diverse.

Some respondents placed their suggestions in the field of **sustainable development**. By one answer it was proposed to *strengthen sustainable maritime transport services in peripheral regions*. Another respondent proposed to introduce *incentives for the implementation of green technological advancements* specifically regarding alternative fuels/propulsion systems. Furthermore it was suggested to *foster the expansion of ECAs*. Equally connected to sustainable development is the suggestion by one respondent to redefine distortion of competition regarding environmentally friendly initiatives. One more suggestion also deals with *redefining distortion of competition* by proposing to include the deck of a ship as part of the transport infrastructure so that the different modes have a fairer competition e.g. regarding funding.

A few respondents suggested to **foster accessibility of peripheral regions**. Thereby one suggestion dealt with the enlargement of the network between Western Europe MoS - Barents Sea to the Northern Sea Route in Russia (NSR). Another focus on this context is to shape future funding mechanisms and priorities for regional ports.

One respondent highlighted **more awareness for passenger transport** (e.g. for cruise vessels and ferries). Another respondent would like to have maritime transport policies prioritising the **innovative utilisation of geospatial data**.

Two respondents rather focused on the structure in which future policy priorities are embedded. From one respondent the suggestion was made to **establish an overarching research network** in the field of maritime transport. Another respondent suggested to **link projects of the Interreg-programme with other EU-funding programmes** such as Marco Polo II, TEN-T.

Again a few projects stated that it is too early for their project to create any suggestions in this aspect, while one respondent stated that there are no suggestions out of the project and two respondents gave no answer at all.

### Specific suggestions concerning future priorities in maritime transport research relating to the NSR

For some projects it was too early to make suggestions concerning future priorities in maritime transport research relating to the NSR. Nevertheless, seven future research fields could be determined in the name of the other projects: accessibility of peripheral regions, co-modality and level playing field for maritime transport infrastructure (funding for deck of ship as the MoS platform), education, geospatial information, off-shore development, sustainable transportation, and tourism:

- Improve the accessibility of peripheral regions through maritime transport services development in peripheral regions / small markets
- Promote co-modality of maritime services, to redefine and mitigate previous distortion of competition against sea transport
- Expand maritime education and training
- Find ways to utilise harmonised and integrated geospatial information in maritime logistics and maritime transport
- Support maritime transport related to offshore industry developments (esp. energy sector)
- Establish sustainable transportation in regard to emissions and environmental impacts (support the IMO in its efforts to lower emission levels not only in North Sea area, convince stakeholders of the need to search for and to invest in environmentally friendly fuels - maybe subsidies to promote biofuel, wind energy)
- Integrate services and functionality at a pan North Sea level meaning that the North Sea energy grid and maritime transport can grow towards a certain level of symbiosis.
- Promote tourism as a dynamic sector in the NSR economy and a way to connect the region

## 2.5 Summary of the NSRP-projects – analysis

This analysis investigated 13 projects of the NSRP dealing with maritime transport and its hinterland aiming to analyse the projects' objectives, experiences, expectations and knowledge to identify synergies between them and highlight hot topics. The main objective is to make their results and ideas visible to stakeholders of the business and policy community. The analysis is mainly based on a survey conducted in summer 2011.

Regarding the **aspects of transport chain covered by the projects** it can be stated that almost all projects are dealing with *port* issues, also the SSS leg is part of many of the projects' focus. The deep sea leg as well parts of the *hinterland* such as the hinterland hub, IWW, rail and road are covered by some of the projects.

With regard to the **major stakeholders of the projects** and the kind of involvement it can be summarised that most often *public institutions* have been named as project stakeholders followed by *shipping companies, ports or other transport and logistics companies*. The primary form of involving

public institutions is via active project partnership whereas *shipping companies and ports* are mostly approached using dissemination and communication activities. *Transport and logistics companies* are mostly involved through consultation and as a partner in implementing best practices, pilots, prototypes or demo cases. *Research institutions* are also named as stakeholder mainly involved via project partnership.

To outline the **hot topics investigated by the projects**, triggers for initiating the project, as well as aims and results of the projects have been clustered according to the themes they are covering. Considering *triggers for initiating the project* it is evident that the topics sustainable development, insufficient supply chains and potential for modal shift are the most important ones. For some of the projects aspects like the lack of maritime professionals, regional development issues and the insufficient flow of information were named as triggers. Regarding the *aims envisaged by the projects* the following hot topics have been identified: sustainable development was the aim mentioned most often and with the highest priority, followed by modal shift and ICT development. Improving hinterland connectivity as well as supply chain development is also part of several projects' aims. For some projects regional development and accessibility were named. From a few projects aims were specified which are not dealing with concrete topics such as education and policy maker's advice. When it comes to the *major achieved or expected results* of the projects it can be seen that the majority of project results deal with sustainability topics, followed by intermodality and accessibility themes. Further results have been gathered from the fields ICZM, SC optimisation, cruise industry and education. Most of the results have been realised as concepts and strategies followed by ICT solutions and stimulation of the policy and business sector. In a few cases established networks have been named as an actual project outcome. Thus, it can be summarised that sustainability, modal shift/intermodality and supply chain development are the most important topics that are addressed the most often by the projects, followed by education, regional development, hinterland connectivity, ICT development, ICZM and cruise (see Figure 12).



**Figure 12:** Hot topics addressed by the considered NSRP-projects

Taking a closer look at **key success factors** for implementing the projects, the involvement of stakeholders in project activities, the composition of project partnership as well as efficient and simple project management within a target-oriented and proactive cooperation were mainly specified as success factor for achieving the project's aims. Other important factors mentioned were the implementation of pilots to prove the project's intention/capabilities, the creation of knowledge of importance to stakeholders and the awareness of the problem context closely linked to successful communication and dissemination. Besides these factors, **obstacles** hampering the project implementation were specified as competition between organizations and regions, complex legislation and standards, delays based on unforeseen circumstances, dissemination to external stakeholders, economic crisis, funding of projects, industry connectivity to project work and outcomes, lack of motivation of project partners, project coordination and communication, and last but not least the small scale of the project concerned.

Considering the range of answers to questions on **future gaps and specific suggestions in the field of maritime transport research and policy development** it can be stated that expectations are rather diverse and there are only a few overlaps.

*Remaining gaps* after the project is completed and future needs expected *regarding maritime transport policy* development are the following: applying project results in a larger context, promotion of the concept of intermodality, refine EU policies, implementation of project results into practice, missing utilization of project results after the end of the project lifetime, and simplify regulations for financial support to projects.

*Remaining gaps* after the project is completed and future needs expected *regarding maritime transport research* are: improve co-modality, sustainable transportation, off-shore industry, ways of collaboration in maritime transport, marine bio-invasions and making use of cloud computing.

*Specific suggestions concerning future maritime transport policy priorities* relating to the NSR were:

- Strengthen sustainable development
  - strengthen sustainable maritime transport services in peripheral regions,
  - give incentives for the implementation of green technological advancements,
  - foster the expansion of ECAs (Emission Control Areas),
  - redefine distortion of competition.
- Foster accessibility of peripheral regions.
- Raise awareness for passenger transport.
- Support innovative utilisation of geospatial data.
- Improve the structure in which future policy priorities are embedded, such as
  - establishing an overarching research network,
  - linking projects of the Interreg-programme with other EU-funding programmes.

*Specific suggestions concerning future priorities in maritime transport research* relating to the NSR were stated as:

- Improve the accessibility of peripheral regions through maritime transport services development in peripheral regions / small markets.
- Promote co-modality of maritime services, to redefine and mitigate previous distortion of competition against sea transport.
- Expand maritime education and training.
- Find ways to utilise harmonised and integrated geospatial information in maritime logistics and maritime transport.
- Support maritime transport related to offshore industry developments (esp. energy sector).
- Establish sustainable transportation in regard to emissions and environmental impacts (support the IMO in its efforts to lower emission levels not only in North Sea area, convince stakeholders of the need to search for and to invest in environmentally friendly fuels - maybe subsidies to promote bio fuel, wind energy).
- Integrate services and functionality at a pan North Sea level meaning that the North Sea energy grid and maritime transport can grow towards a certain level of symbiosis.
- Promote tourism as a dynamic sector in the NSR economy and a way to connect the region.

### 3 Analysis of relevant EU funding programmes related to maritime transport and its hinterland

This activity encompasses the investigation of NSRP projects and comprises a systematic analysis of the EU funding programmes which are relevant to the maritime transport sector in the NSR. It is aimed to create insight, understanding of the complexity and relevance as well as transparency on the subject of EU funding programmes by analysing and comparing objectives, categories of action, overall budget, funding mechanisms and the emphasis they give to projects related to maritime transport and its hinterland. The work intends to focus on the NSR and adjacent areas. Hereby the following EU programmes were analysed:

- relevant European Territorial Cooperation Programmes
- the 7th Framework Programme,
- the Marco Polo II programme
- the TEN-T programme.

#### 3.1 General information on the considered programmes

All programmes were considered in the current programme period 2007-2013. In the following sub-sections some general information is provided on the different programmes including their aims and their areas of action.

##### European Territorial Cooperation Programmes

The European Territorial Co-operation objective is financed by the European Regional Development Fund (ERDF) and supports cross-border, transnational and interregional co-operation programmes with a total budget of €8.7 billion from 2007-2013. Thereby, as part of the (ERDF-) European territorial cooperation objective, the European Transnational Cooperation Programme with a total ERDF contribution of €1.8 billion adds an important dimension to regional development in Europe. It aims to establish and develop transnational cooperation through the financing of networks and of actions conducive to integrated territorial development leading to agreed priorities and a coordinated strategic response.

The main categories of action are the following:

1. Innovation (especially networks of universities, research institutions, SMEs)
2. Environment (especially water resources, rivers, lakes, sea)
3. Accessibility (including telecommunications, and in particular the completion of networks)
4. Sustainable urban development (especially polycentric development).

Thirteen transnational co-operation programmes cover larger areas of co-operation such as the Baltic Sea, Alpine and Mediterranean regions. The following 10 programmes focus on maritime transport: Northern Periphery, Baltic Sea, North West Europe, North Sea, Atlantic Coast, Alpine Space, Central Europe, South West Europe, Mediterranean, South East Europe.

##### 7th Framework Programme

FP7 is the abbreviation for the Seventh Framework Programme for Research and Technological Development which is the EU's main instrument for funding research in Europe.

The Framework Programmes for Research have two main strategic objectives:

- to strengthen the scientific and technological base of European industry;



- to encourage its international competitiveness, while promoting research that supports EU policies.

Basically, FP7 is made up of four main blocks of activities named Cooperation, Ideas, People, and Capacities forming four specific programmes plus two specific programmes on nuclear research called Joint Research Centre and Euratom.

The programme cooperation inherits ten thematic areas (working programmes) named (1) Health, (2) Food, Agriculture and Biotechnology, (3) Information & Communication Technologies, (4) Nano-sciences, Nanotechnologies, Materials & New Production Technologies, (5) Energy, (6) Environment (including Climate Change), (7) Transport, (8) Socio-economic Sciences and Humanities, (9) Security, (10) Space. The transport related activities envisaged to be addressed during the lifetime of FP7 are:

- Aeronautics and air transport (reduction of emissions, work on engines and alternative fuels, air traffic management, safety aspects of air transport, environmentally efficient aviation)
- Sustainable surface transport - rail, road and waterborne (development of clean and efficient engines and power trains, reducing the impact of transport on climate change, intermodal regional and national transport, clean and safe vehicles, infrastructure construction and maintenance, integrative architectures)
- Support to the European global satellite navigation system –Galileo and EGNOS (navigation and timing services, efficient use of satellite navigation).

### Marco Polo II programme

Marco Polo II aims to ease road congestion and its attendant pollution by promoting a switch to greener transport modes for European freight traffic. Railways, sea-routes and inland waterways have spare capacity. The programme proposes to support actions to reduce congestion, to improve the environmental performance of the transport system and to enhance intermodal transport, thereby contributing to a more efficient and sustainable transport system which will provide EU added value without having a negative impact on economic, social or territorial cohesion. Marco Polo II is run by the European Commission's Directorate-General for Mobility & Transport and the EU's Executive Agency for Competitiveness and Innovation (the EACI).

Their main categories of action are the following:

- Modal shift actions
- Catalyst actions
- Motorways of the sea actions
- Traffic avoidance actions
- Common learning actions

The Marco Polo II Work programme 2011 will limit, as far as Short Sea Shipping (SSS) – based services are concerned, the scope of the programme for modal shift, Motorways of the Sea and catalyst actions to those services which implement innovative technologies or operational practices which significantly reduce polluting emissions of maritime transport, such as the use of low sulphur fuels, of LNG powered vessels, of vessels operating scrubber technologies for the cleaning of exhaust emissions or of vessels using shore side technology.

### TEN-T programme

The European Commission's TEN-T programme dedicates financial support towards the realisation of important transport infrastructure projects - in line with the overarching goal of European competitiveness, job creation and cohesion.

Their main categories of action are the following:

- the Multi-Annual Work Programme (MAP):
  - for the implementation of the TEN-T priority projects - as defined in the TEN Guidelines - and to address horizontal priorities
  - to help complete the TEN-T network as approved by the European Parliament and the Council (target completion date of 2020), therefore Community funding aims to motivate as much public and private financing as needed
  - MAP projects are of a larger size and longer duration than Annual projects (80-85% of the TEN-T budget is for the MAP)
  - Within the MAP different calls were published regarding:
    - Priority Projects
    - Galileo
    - European Rail Traffic Management System (ERTMS)
    - River Information Services (RIS)
    - Motorways of the Sea (MoS)
    - Air traffic management systems - Functional airspace blocks (ATM/FABs)
    - Intelligent Transport Systems for Roads (ITS)
- the Annual Work Programme (AWP)
  - intends to complement the Multi-Annual Calls, thus also gives priority to projects addressing key TEN-T issues (such as bottlenecks or cross-border projects)
  - priorities are defined for each call
  - has a higher degree of flexibility to meet new priorities
  - AWP not suited to cover large projects over a long period of time (15-20% is dedicated to Annual Calls)
- the one-off European Economic Recovery Plan (EERP), only 2009
  - ad hoc programme which was adopted in 2009 in the framework of the Commission's European Economic Recovery Plan as a response to the economic and financial crisis facing Europe
  - aimed to give an immediate boost to the European economy by accelerating investments in infrastructure.

## 3.2 Focus on maritime transport and its hinterland of the considered programmes

Aiming to create further insight with regard to the overall goal of the MTC project, all considered programmes have been analysed in terms of the budget allocated and the number of projects being thematically located in the area of maritime transport and its hinterland (see Table 4). In a first step, all relevant projects have been identified. Therefore, descriptions from all projects of the respective funding programmes have been extracted from the programme websites and have been classified as being relevant or not relevant in the maritime and hinterland transportation context. Extracted lists of projects have been further refined in a twofold way. First, the projects' budgets have been extracted from the programmes' or projects' websites and have been compared with the overall amount of funding to calculate the share of funds allocated to maritime and hinterland transportation topics. Second, relevant projects underwent a content analysis on the basis of project descriptions. This information has been used to cluster projects along broader thematic areas. For the transnational co-operation programme, results have been further refined in geographical terms. Projects have been analysed in terms of their affiliation to 10 relevant sub-programmes consisting of different contiguous geographic EU regions such as the Baltic Sea region, the Mediterranean etc. The developed clusters should thereby not be seen as a stringent, unquestioned structure, as different analysers most



certainly would come to somehow different results. Still, the cluster results should provide some guidance in terms of the thematic direction of the maritime and hinterland related parts of the different funding programmes.

In terms of budget it can be seen that three programmes (TEN-T, 7<sup>th</sup> Framework Programme and Transnational co-operation programme) only allocate modest funds to maritime and hinterland transportation topics compared to the overall funding activities (see Figure 13). Only Marco Polo II shows above average funding activities (albeit within a much smaller total budget). The main reason for this is that most of the funded rail projects have been predominantly assigned to the maritime hinterland transportation leg. Also, as a programme almost exclusively promoting modal shift actions, Marco Polo II deals by its nature with maritime and hinterland transportation related topics. The North Sea Region Programme allocates around 39% of allocated funds indicating its strong dedication to maritime and hinterland transport themes. This is not just true in comparison with the other analysed funding programmes but also within the transnational co-operation programme comprising other transnational regions with a historically strong focus on maritime and hinterland transportation issues, such as the Baltic Sea region or the Mediterranean.

Programme	Overall budget (2007-2013)	Allocated budget for projects in maritime transport and its hinterland (% of the total already allocated budget in previous calls)	Number of funded projects in maritime transport and its hinterland
<b>European Territorial Cooperation Programmes</b>	Total: €1,8 billion Northern Periphery: €35 million Baltic Sea: €220,8 million North West Europe: € 355 million Atlantic Area: €104 million Alpine Space: €98 million Central Europe: €246 million South West Europe: € 99 million Mediterranean: €193,2 million South East Europe: €206 million North Sea: €134 million	Total: € 143.766.312 (12%) Northern Periphery: € 0 (0%) Baltic Sea: € 26.437.150 (15%) North West Europe: € 13.379.518 (6%) Atlantic Area: € 10.279.835 (12%) Alpine Space: € 8.050.412 (12%) Central Europe: 13.906.106 (8%) South West Europe: € 3.206.273 (5%) Mediterranean: € 11.115.822 (8%) South East Europe: € 19.779.268 (13%) North Sea: €37.611.928 (39%)	Total: 61 Northern Periphery: 0 of 31 Baltic Sea: 8 of 73 North West Europe: 5 of 64 Atlantic Area: 5 of 48 Alpine Space: 4 of 35 Central Europe: 5 of 94 South West Europe: 1 of 46 Mediterranean: 9 of 105 South East Europe: 8 of 66 North Sea: 16 of 53
<b>7th Framework Programme</b>	€ 53,3 billion, thereof € 4,2 billion for transport (7,9%)	€185 million (30% of € 615 million allocated for Sustainable Surface Transport (SST) from 2007-6/2011; and 12% of €1,5 billion allocated from the transport budget from 2007-6/2011)	50 projects (13% of 381 projects in calls 2007-09/2011)
<b>Marco Polo II programme</b>	€450 million	€108,93 million (53% of €204,4 million allocated from 2007-2010)	50 projects (48% of 104 projects in calls 2007-2010)
<b>TEN-T programme</b>	€8,013 billion	€163,3 million (2,2% of €7,3 billion allocated from 2007-2010)	35 projects (11% of 318 projects in calls 2007-2010)

**Table 4:** EU funding programmes: Indicated focus on projects related to maritime transport and its hinterland by allocated budget and number of projects

## Maritime transport and its hinterland in the NSR

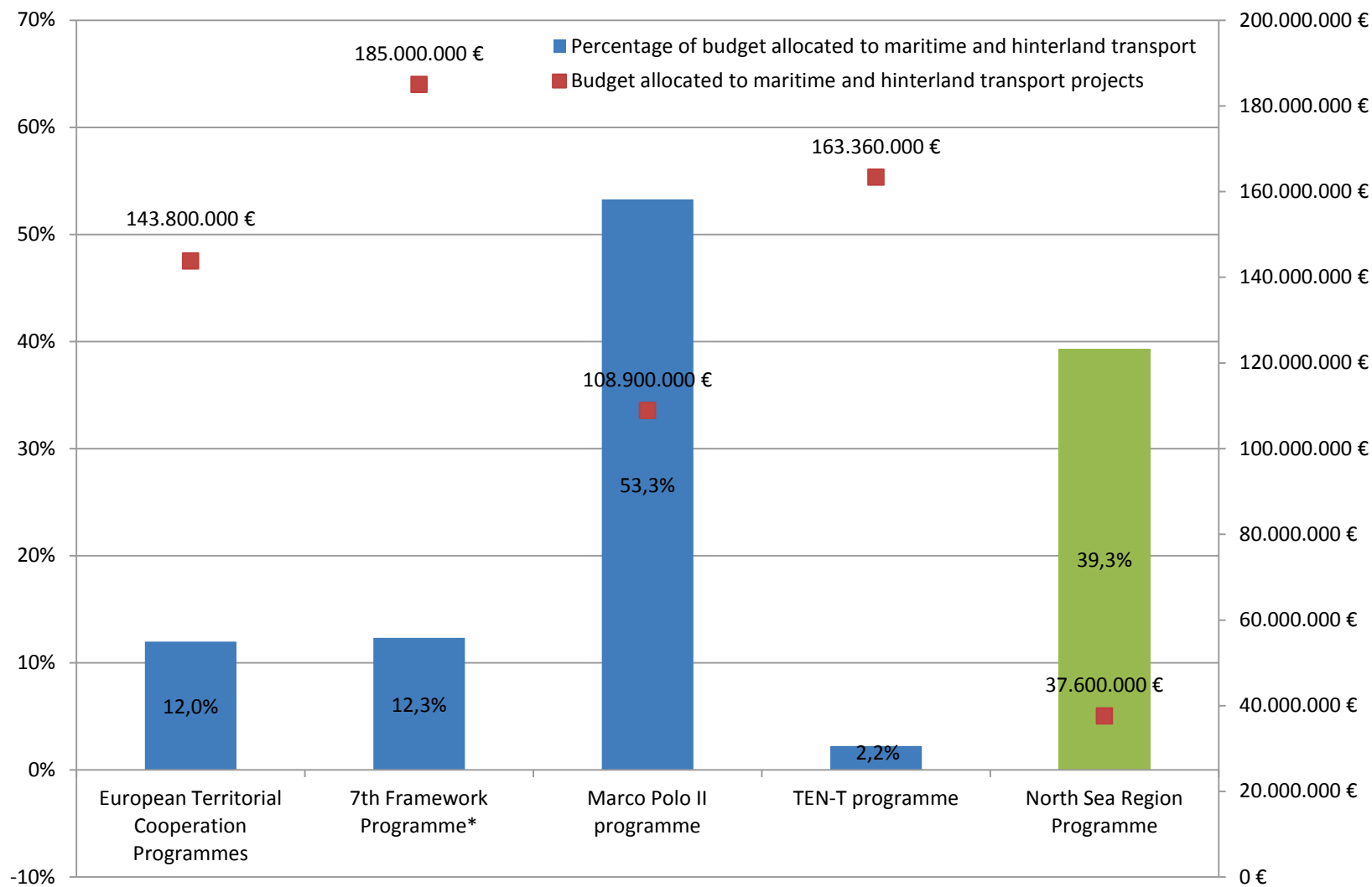


Figure 13: Budget of programmes allocated to maritime and hinterland transport (relative and absolute values)

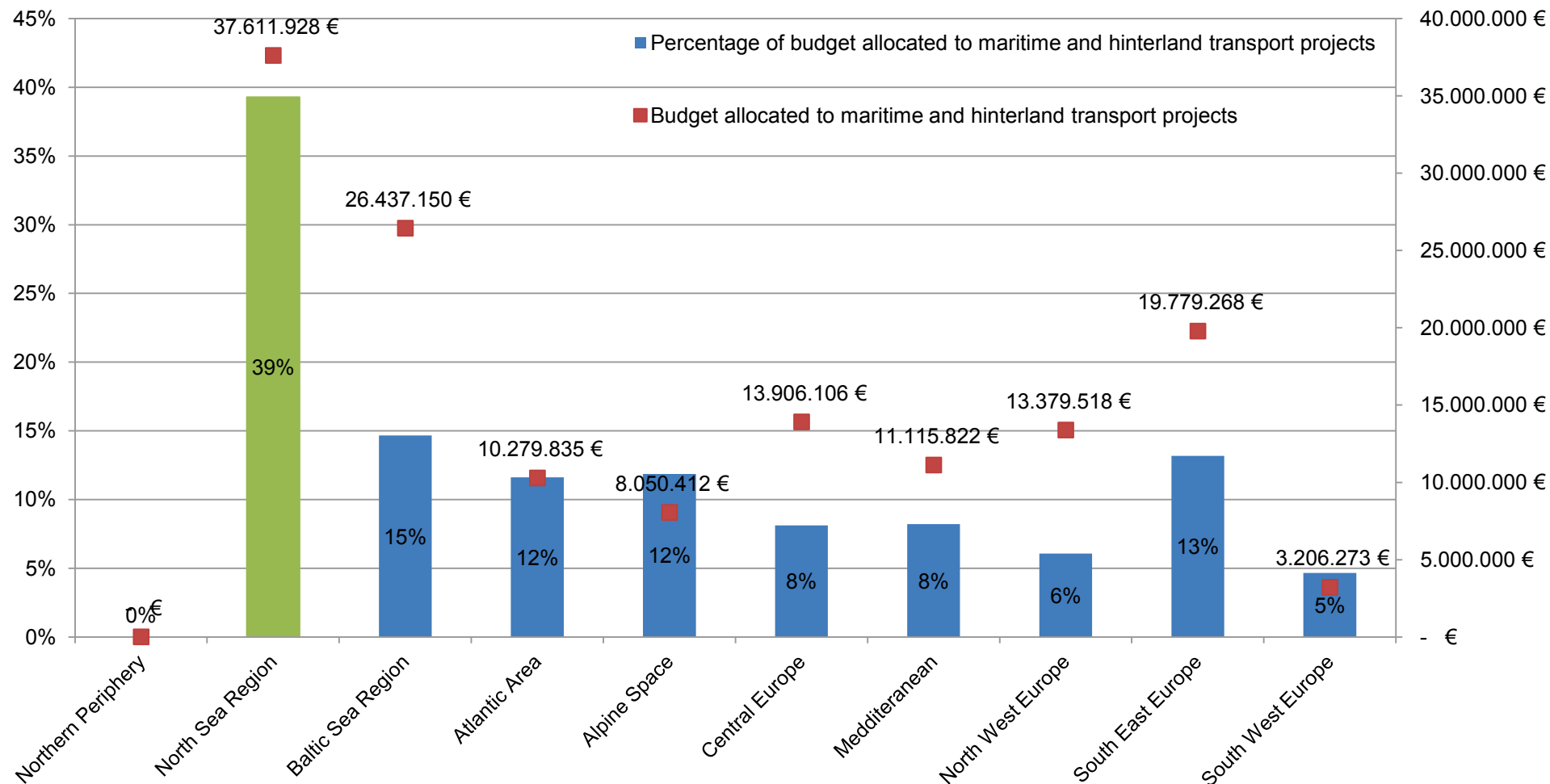
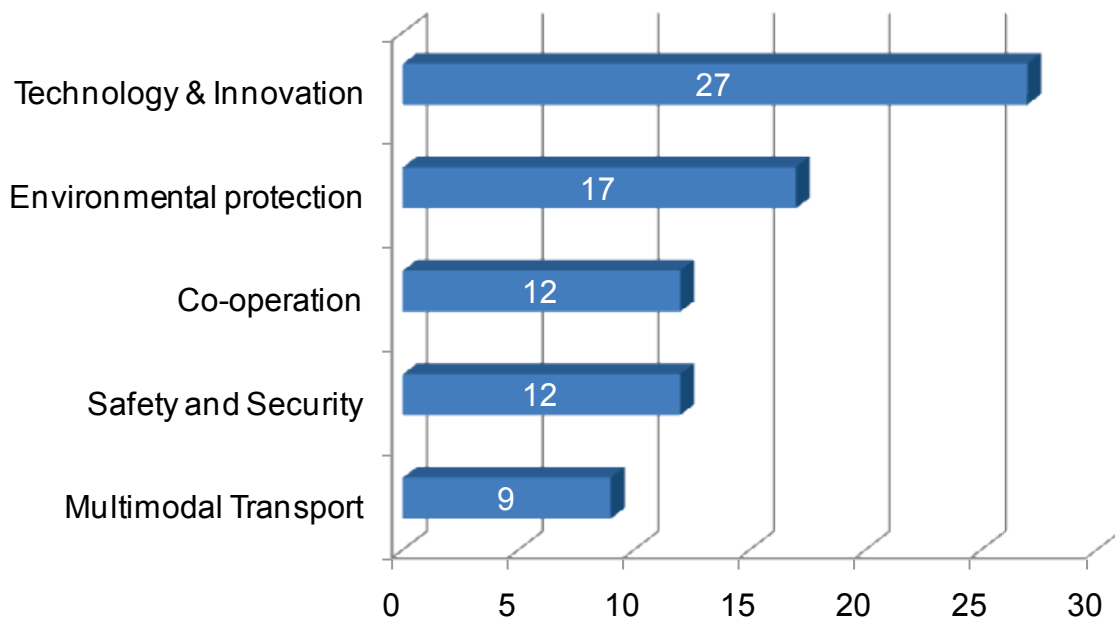


Figure 14: Comparison of funds allocated to maritime and hinterland transportation of the regional sub programmes within the transnational co-operation programme

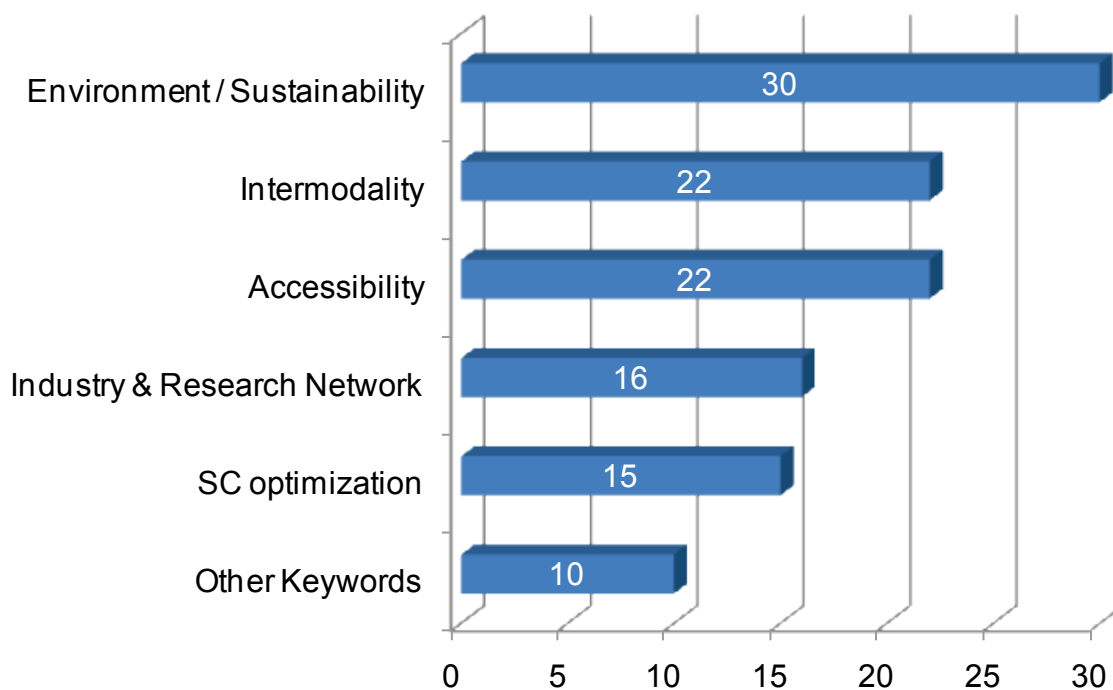
In terms of the thematic focus within the field of maritime and hinterland transportation the following findings have been derived from the content analysis of the different programmes.

Within the 7<sup>th</sup> framework programme 50 projects have been identified as relevant in the maritime and hinterland transport context of MTC. Thereby, “Technology and Innovation” has been identified as the dominant topic. This mirrors the programme’s strategic focus of being a research-oriented funding programme. Environmental protection, safety and security, co-operation as well as multimodal transport are further fields of research within the maritime and hinterland transport related part of FP7. Results of the cluster analysis can be seen in Figure 15.



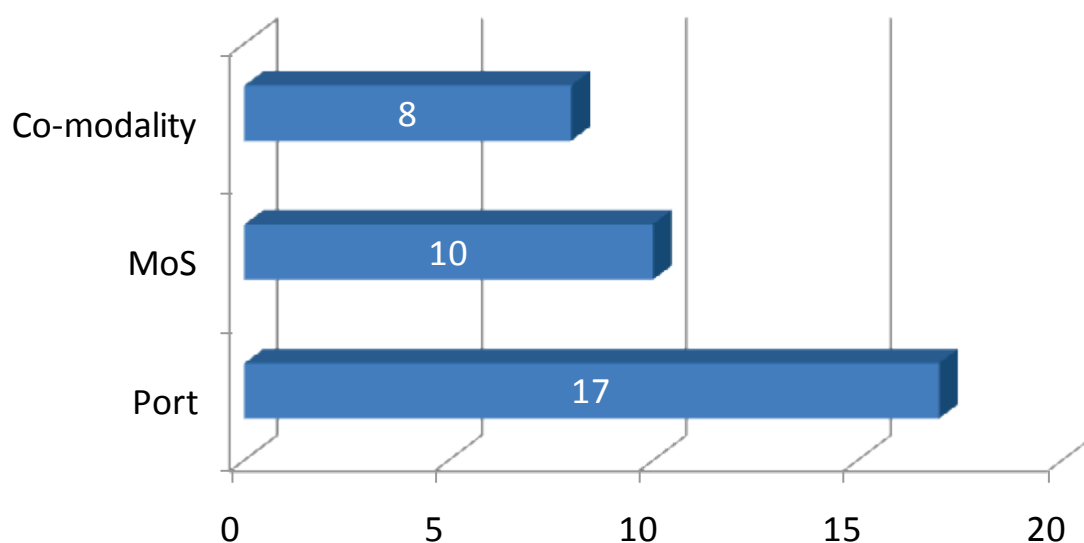
**Figure 15:** 50 FP7 projects related to maritime and hinterland transport  
key theme focus, multiple allocations possible

Within the Transnational Co-operation Programme 61 projects have been identified as thematically belonging to the field of maritime and hinterland transportation (see Figure 16). Projects thereby predominantly deal with sustainability/environmental issues, followed by intermodal transport and accessibility. Other identified fields of funding are the development of industry or research networks as well as supply chain optimization approaches.



**Figure 16:** 61 transnational cooperation programme projects related to maritime and hinterland transport key theme focus, multiple allocations possible

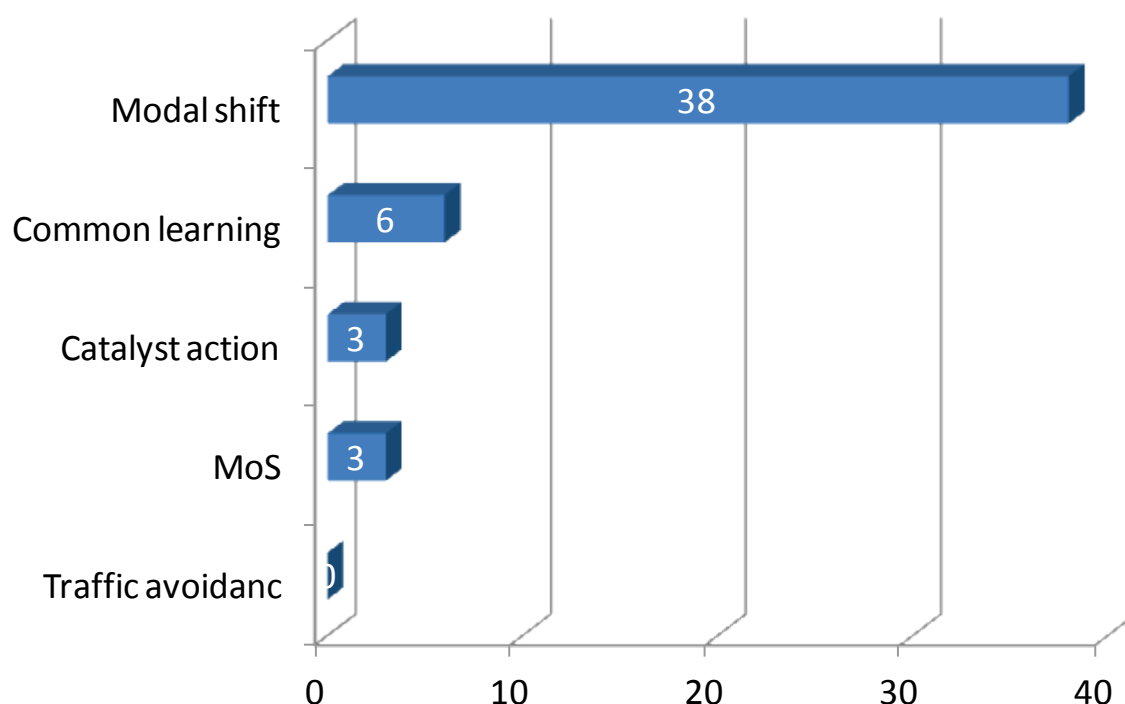
In the TEN-T programme 35 projects deal with maritime and hinterland transportation topics. Due to the program's main focus on infrastructure (or studies preparing infrastructure projects) projects can be clustered along the major topics "Port", "MoS<sup>2</sup>" as well as "Co-modality". Results of the cluster analysis can be seen in Figure 17.



**Figure 17:** 35 TEN-T projects related to maritime and hinterland transport key theme focus

<sup>2</sup> Here MoS projects of the different MoS calls as well as projects being part of or supplement to priority project 21 were counted.

Within Marco Polo II, 50 projects have been identified as thematically belonging to the maritime and hinterland transportation field. From the content analysis using pre-defined categories implemented by the programme itself, it can be seen, that - as expected - most projects (38) deal with modal shift activities. Common learning actions (6 projects) focus on enhancing and disseminating knowledge of optimization or advances in freight logistics and on improving co-operation. Catalyst actions (3 projects) aim to overcome structural barriers to developing new approaches to non-road freight transport. MoS actions (3 projects) aim at shifting freight from road to short sea shipping. Traffic avoidanc



**Figure 18:** 50 Marco Polo II projects related to maritime and hinterland transport key theme focus

### 3.3 Summary of the programme – analysis

The major objective of this report is to provide in-depth insight into the maritime and hinterland transport perspective of current NSRP projects. Therefore, in chapter 3 an analysis of four relevant funding programmes, namely the Transnational Co-operation programme, the 7<sup>th</sup> Framework Programme, the Marco Polo II programme and the TEN-T programme has been performed as a complementing source of information to further understand the NSRP projects, their results, strategic orientation etc. and to put the NSR-programme into a broader, programme-related context.

The analysis has been performed as follows. First, all programmes have been analysed to gather basic information in terms of overall objectives, programme budgets and information regarding the funding process. For the latter, further information can be found in Annex C. Second, all programmes have been analysed budget-wise and content-wise according to their focus on maritime and hinterland transportation topics. Overall findings of the respective programmes show that funds for maritime and hinterland transportation activities are only marginal in most of the programmes. In the 7<sup>th</sup> Framework Programme and the Transnational Co-operation programme, only around 12% of overall funding went into maritime and hinterland transportation. For TEN-T even less funding (2.2%) was allocated towards that topic. In Marco Polo II, the share is comparably high (53%) due to its main focus on modal shift and a large number of rail projects which have been predominantly assigned to the



maritime hinterland transportation leg; however the overall budget in Marco Polo II is very small. In terms of allocated budget, the NSR programme sticks out in comparison with other funding programmes as well as in comparison with other transnational co-operation programmes such as the Atlantic area, the Baltic Sea region or the Mediterranean. Overall, more than €37 million has been spent on projects with a focus on maritime and hinterland transportation issues in the NSR. This accounts for 39% of all funds allocated to projects from 2007 to 2011, making the NSR programme a cornerstone of maritime and hinterland transportation related research and development activities within the transnational co-operation programme.

In terms of the thematic orientation, analysed projects and identified major topics reflect to a large extent the respective programmes strategic goals and major fields of activity.

Marco Polo II aims to foster business-driven modal shift activities. 39 of 51 projects in the field of maritime and hinterland transportation can be assigned to direct modal shift activities. Other projects deal with activities facilitating modal shift such as common learning and catalyst actions.

Within the TEN-T programme 35 of an overall 318 projects are dealing with maritime transport and its hinterland. These projects predominantly deal with ports, MoS and co-modality.

The framework programme is more research-oriented than the other funding programmes. In consequence, many projects deal with the development of technologies and innovation. Environmental protection, safety and security, cooperation and intermodality are further fields of funding.

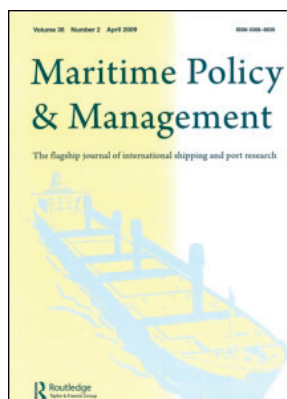
Within the transnational co-operation programme, projects deal predominantly with sustainability issues trying to develop solutions to environmental questions in an interregional context. Also, many projects aim to improve intermodality and accessibility, following the programmes objective to improve regional development in the EU. The development of research and industry networks as well as supply chain optimization activities are further fields of funding.

## 4 Analysis of transport research related to maritime transport and its hinterland

The objective of section 4 of the report is to identify key developments, themes, findings and trends from recent and ongoing maritime transport research. Our approach here is to analyse published outputs over recent years in refereed journals, trade magazines, and academic conferences, with specific relevance to maritime transport/logistics. Key aims are to ascertain whether and in what ways this published output differs from topics in the funded programmes and projects, and to help inform the future research agenda/priorities.

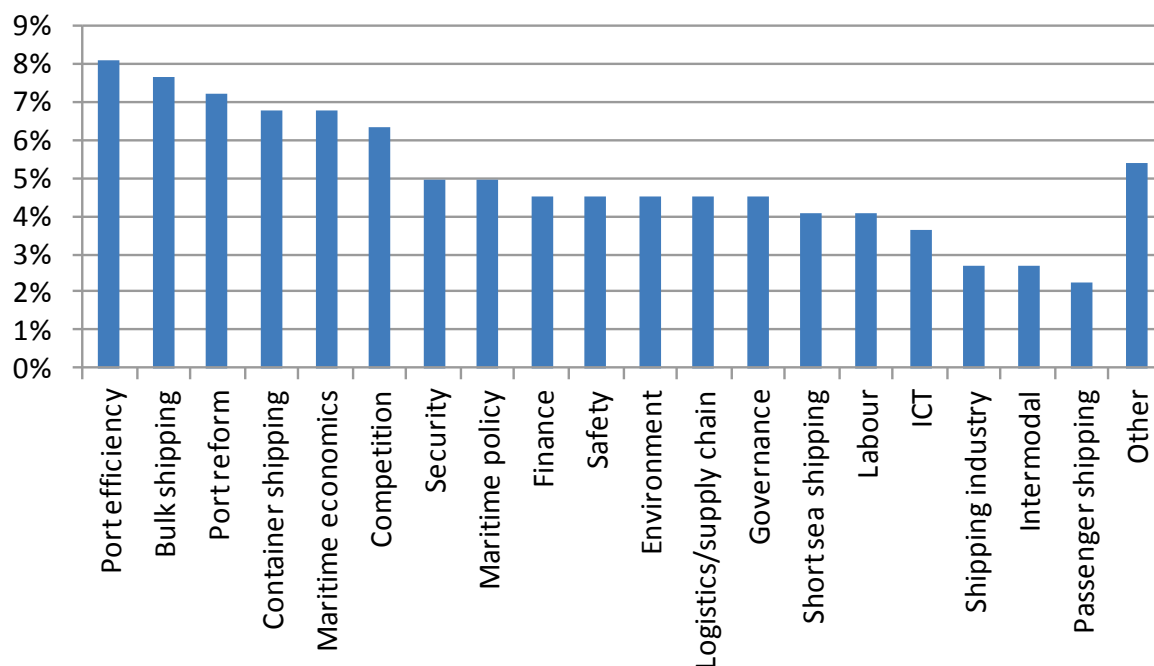
### 4.1 Review of journal articles published in the field of maritime transport research

#### Maritime Policy & Management



[www.tandf.co.uk/journals/titles/03088839.asp](http://www.tandf.co.uk/journals/titles/03088839.asp)

Thirty years ago maritime management decisions were taken on the basis of experience and hunch. Today, the experience is augmented by expert analysis and informed by research findings. **Maritime Policy & Management** seeks to provide the latest findings and analyses, and the opportunity for exchanging views through its Comment Section.



**Figure 19:** Articles published in Maritime Policy & Management, by subject area, by percentage, 2005-2011

A multi-disciplinary and international refereed journal, MP&M brings together papers on the many different topics that concern the maritime industry. Emphasis is placed on business, organizational, economic, socio-legal and management topics at port, community, shipping company and shipboard levels. The Journal also provides details of conferences and book reviews.

During the 7-year period 2005-2011, 222 peer reviewed articles were published in MP&M. The articles covered a wide range of issues (Figure 18). Most common areas of research covered were port efficiency, bulk shipping (i.e. mainly a focus on dry bulk), port reform, container shipping, maritime economics, competition, security and maritime policy. Combined these eight subject areas accounted for over 50% of all articles published in MP&M.

Other areas of published research focused on matters such as safety, environment, logistics/supply chain, governance, short sea shipping, labour and ICT.

## Maritime Economics & logistics



[www.palgrave-journals.com/mel/index.html](http://www.palgrave-journals.com/mel/index.html)

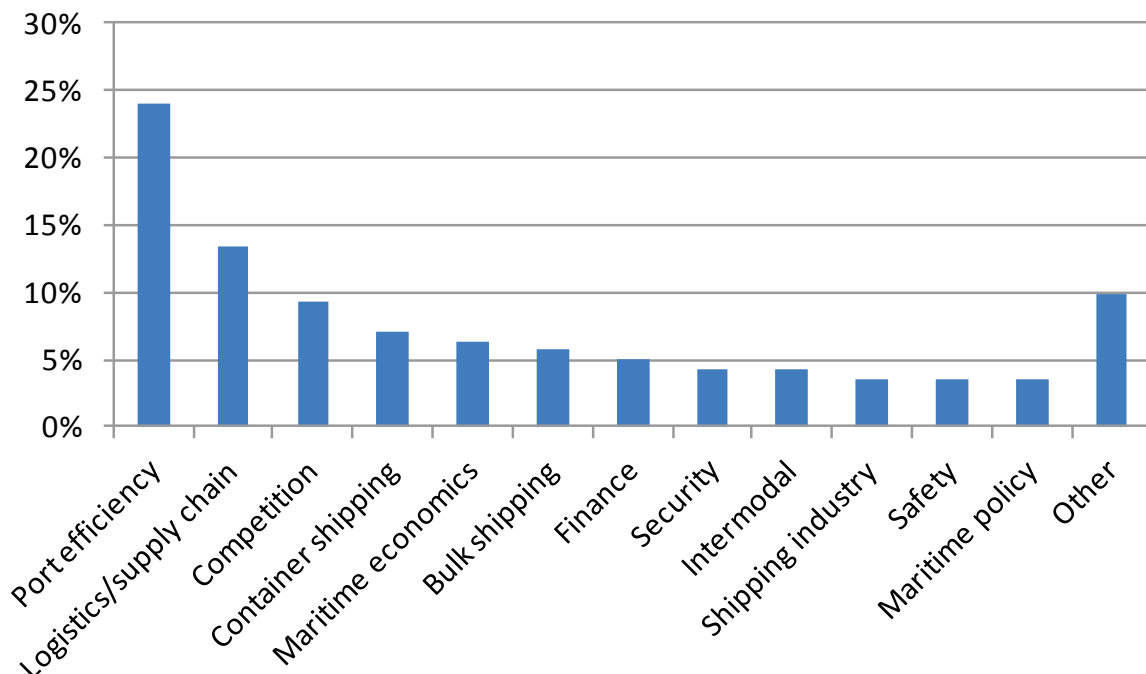
**Maritime Economics & Logistics** is a quarterly scientific journal committed to the rigorous methodological analysis of global supply chains. This includes primarily ocean transportation, ports, marine terminals and maritime logistics.

According to the journal, research in maritime economics is changing, most noticeably from the rather narrow 'modal' approach of the past to one focusing on the optimisation of global supply networks. With such a perspective, ports, particularly container terminals, become crucial nodes in complex transport networks, while ocean carriers are being transformed into logistics service providers through vertical integration and investments in information technology.

The mission of MEL is to map the forefront of this research and thus promote maritime economics and logistics as a distinct and well-defined branch of both applied economics and international business.

All contributions to the main section of MEL are subject to strict peer-review. Articles are thoroughly researched, scientifically rigorous and, at the same time, of direct applicability and usefulness to practitioners and policy-makers alike. Often, MEL includes a special section under the heading 'Policy Perspectives'. Papers here, often solicited ones, emphasise strategic policy implications rather than scientific rigour in a strict sense.

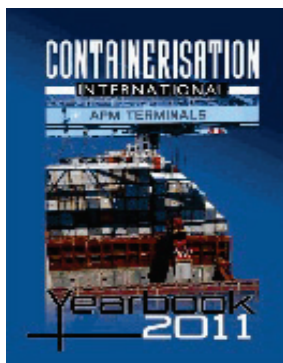
During the 7-year period 2005-2011, 141 articles were published in MEL. Almost a quarter of articles were concerned with port efficiency, with a strong emphasis on container terminals. Other main themes of articles included logistics/supply chain, competition, container shipping, and bulk shipping. Remaining areas of research attracting attention are finance, security, intermodal, safety and maritime policy.



**Figure 20:** Articles published in Maritime Economics & Logistics, by subject area, by percentage, 2005-2011

## 4.2 Review of trade/industry literature

### Containerisation International



[www.ci-online.co.uk](http://www.ci-online.co.uk)

**Containerisation International (CI)** and ci-online provide a news and information service for the container industry. CI has been covering the global container shipping and ports industry since the late 1960's. The publication is widely regarded as essential reading for those involved in or with an interest in container shipping.

Over the 7-year period between 2005-2011 we have analysed a total of 1,229 articles published in CI. Over one-fifth of these articles related to logistics/supply chains, also with a heavy emphasis on users (i.e. shippers). This is followed by articles on the strategies of industry actors, intermodal issues, port capacity/planning, competition, and regulation.

Other areas of somewhat lesser focus include port efficiency, finance, ICT, port reform and the environment.

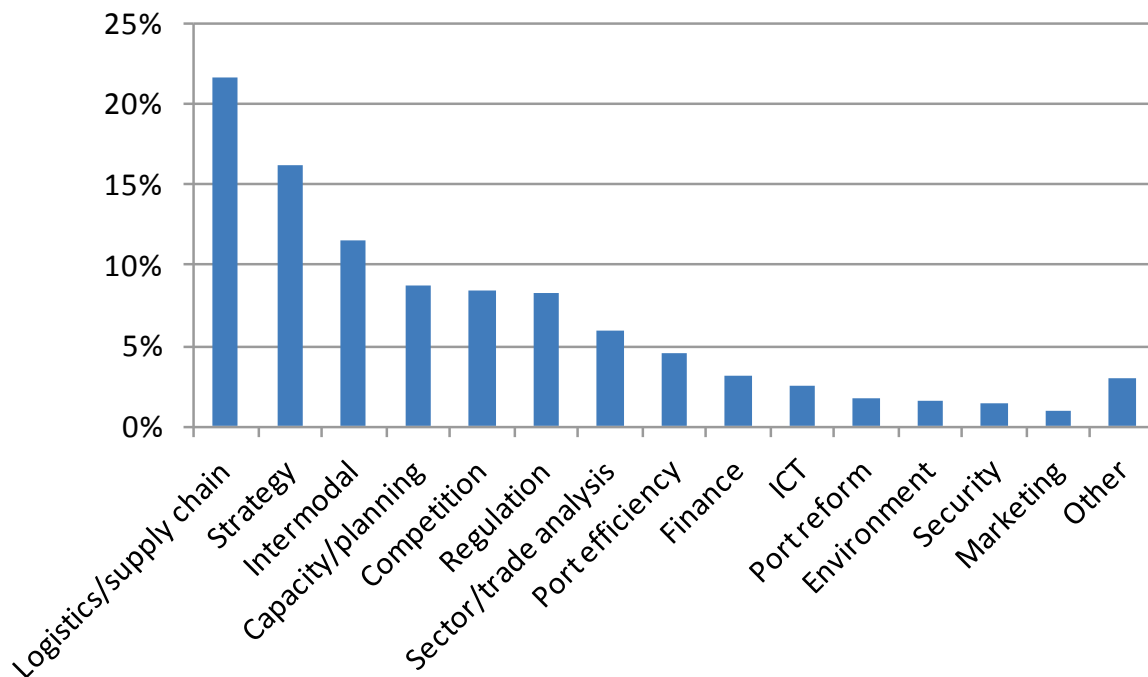


Figure 21: Articles published in Containerisation International, by subject area, by percentage, 2005-2011

## Port Strategy



[www.portstrategy.com](http://www.portstrategy.com)

In the fast-changing global market, **Port Strategy** aims to offer informed reporting and insightful opinion from industry specialists.

Each monthly issue contains a blend of news and in-depth features covering topics that are relevant to readers' business needs. Coverage includes content on key investment, management and business developments, in addition to regular features on cargo handling and ancillary issues like marine engineering, security and navigation. *Port Strategy* also offers views on the major structural changes affecting the industry and the resulting financial implications.

During the 7-year period between 2005-2011, 774 articles were published in Port Strategy. The articles have a main emphasis on port capacity/planning, competition, port efficiency, port reform, finance and strategy. Other topics covered include security, safety, innovation, labour, ICT, maintenance and intermodal.

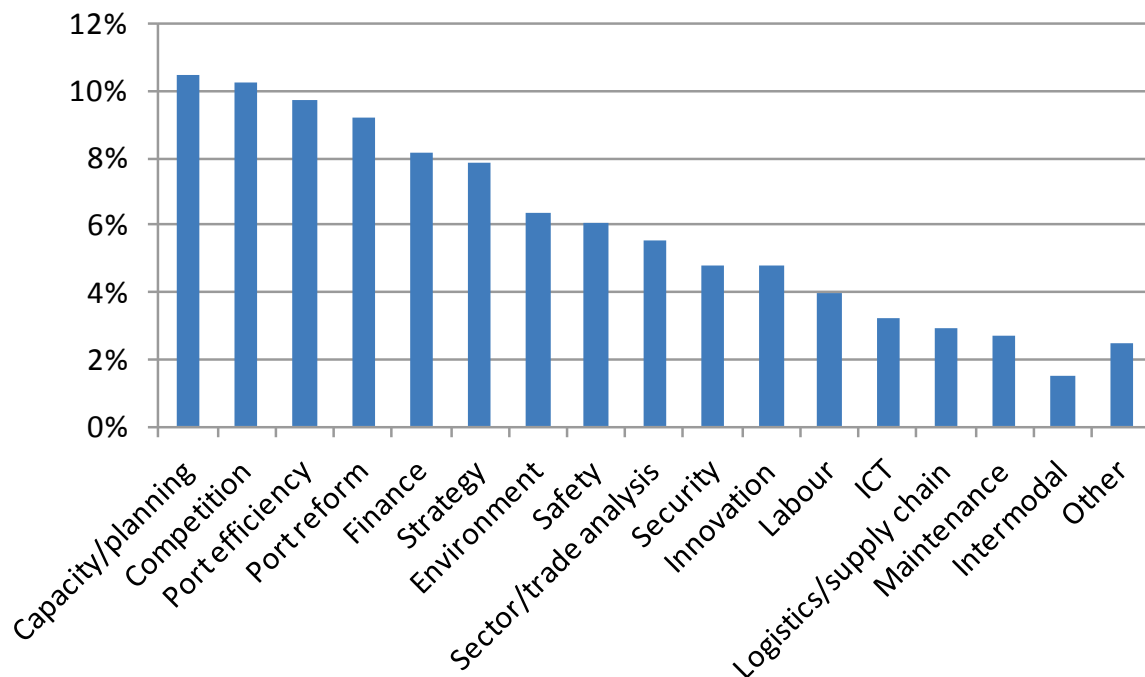


Figure 22: Articles published in Port Strategy, by subject area, by percentage, 2005-2011

## Container Management



[www.container-mag.com/cm\\_home.php](http://www.container-mag.com/cm_home.php)

**Container Management magazine** has been published for more than 24 years serving the port, terminal, intermodal and container handling equipment industries worldwide.

The editorial team aims to deliver regular in-depth articles on a wide range of topics in global port and terminal development, port privatisation, financing and acquisition, cargo and container handling technology, IT, shipping, intermodal logistics, business and case studies and legal issues.

Each issue focuses on a specific country or region, highlighting the key developments and players and analyzing current and predicted trends. In addition, the magazine publishes twice-yearly Latin American supplements and the annual World Top Container Ports report which is now established as an important reference for the port, terminal and handling equipment industries.

During the 7-year period between 2005-2011, 462 articles were published in Container Management. The main area of focus was port capacity/planning, followed by port efficiency, governance, competition and finance.

Other areas of emphasis include port reform, intermodal, ICT, safety, innovation, strategy and environment.



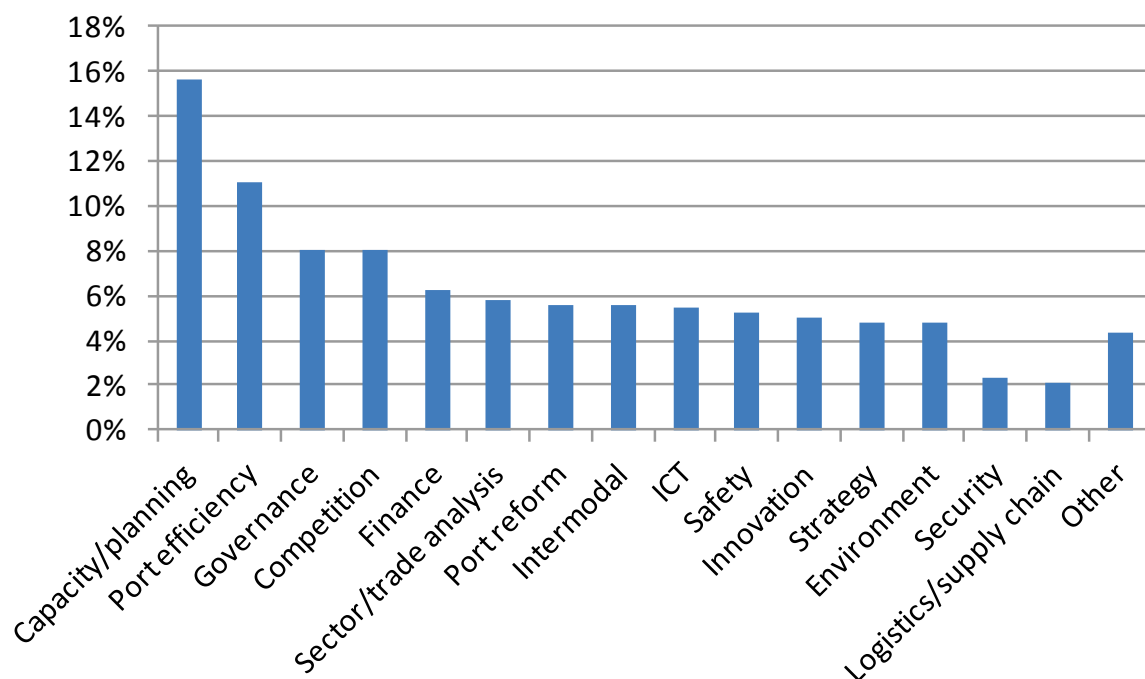


Figure 23: Articles published in Container Management, by subject area, by percentage, 2005-2011

## Cruise & Ferry Info



[www.shippax.se](http://www.shippax.se)

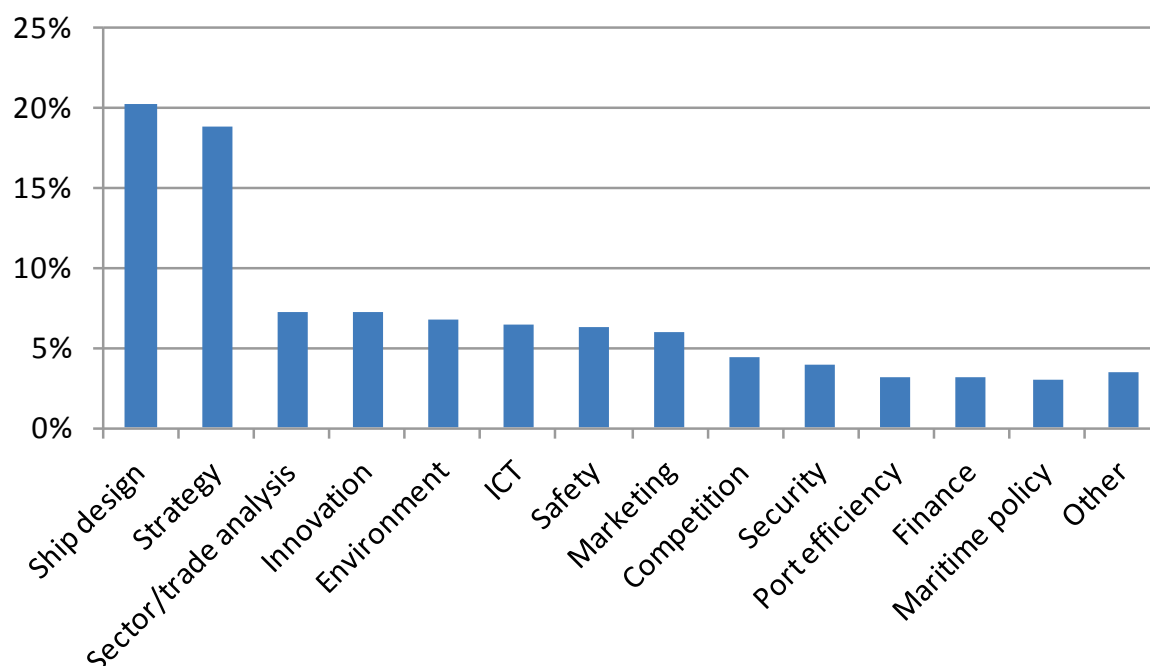
**Cruise & Ferry Info (C&FI)** magazine is produced by ShipPax Information. C&FI consider that the conditions for doing business in today's world are extraordinary. This is something that they say they understand - and embrace. The aim of C&FI is to offer business people used to executive summaries, more detailed Information and to be the place to start searching. ShipPax publications are aimed to be reference works which scan and analyse news and comment on them rather than simply copying press releases. Subscribers can gain access to a full online archive with material from all company publications. Various statistical publications are also produced covering ferry and port traffic flows, ship orders, and industry analysis.

C&FI combine a background in the industry with the know-how of professional writing and editing. This means they regard themselves as not just another media company. They claim to understand industry needs, and can share their experience when a company tries to find the business trends that are essential to every firm's competitiveness.

During the 7-year period between 2005-2011, 880 articles were published in C&FI.

Over one third of articles published in C&FI relate to either ship design or strategy issues. Thus the main focus is on how firms compete in terms of ship design, efficiency and the strategies they pursue that are largely based around the ships and the ports used. Other articles focus on specific sector/trade analyses, innovation, the environment, ICT and marketing.

Additional areas covered include security, port efficiency, finance and maritime policy.



**Figure 24:** Articles published in Cruise & ferry Info, by subject area, by percentage, 2005-2011

## 4.3 Review of recent conferences in the field of maritime transport research

### IAME 2009-2011

Our focus here is on the conferences organised by the International Association of Maritime Economists (IAME). IAME is an international forum for the exchange of research and information among those interested in maritime and maritime-related issues, with some 500 members worldwide representing almost all universities and research institutes with an interest in maritime transport. The main emphasis for research papers is related to maritime economics, business, industry-analysis, regulation and policy.

Membership of IAME is drawn from all continents and though representation mainly comprises academics, it also includes industry and government. Members have the opportunity to interact with international colleagues by attending the annual IAME conferences (which are hosted by different institutions each year) and other conferences endorsed by IAME. This forum is particularly valuable for young researchers and students as it provides the opportunity to interact with more senior and experienced researchers and practitioners.

During the 3-year period between 2005-2011, 429 papers were presented at the three IAME events organised in Copenhagen, Lisbon and Santiago respectively.

About 12% of all papers related to what is termed here as the subject of maritime economics, and primarily that is papers with some form of economic modelling focus. Other major topic areas include port efficiency, environment (especially ship emissions), corporate strategy, logistics/supply chain, regulation, bulk shipping and finance.

Further key areas of research include container shipping, intermodal (including dryports and port hinterlands), competition, governance, short sea shipping, port reform, security and labour issues.

Rather under-researched areas within IAME appear to include ferry and cruise shipping, as well as ICT, and training & education. Areas generating high interest include in particular the environment, especially papers with a focus on ship emissions, and regulation.

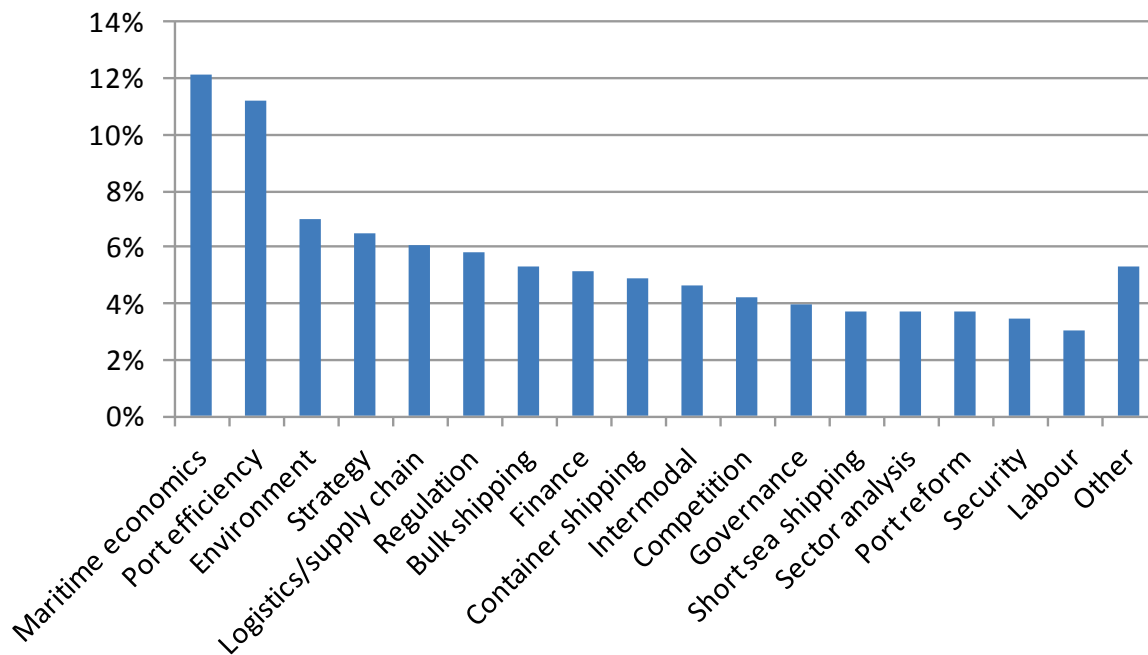


Figure 25: Papers presented at IAME conferences 2009-2011, by subject area and by percentage

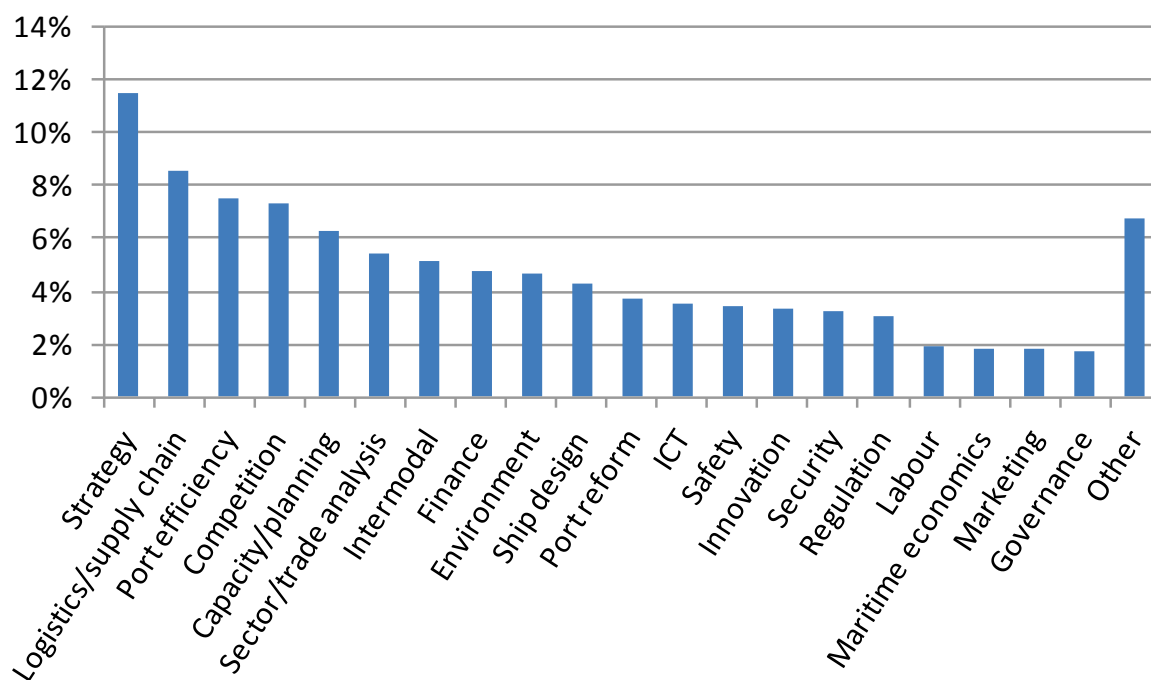
## 4.4 Summary of trends and latest developments in maritime transport research

The aggregate total number of articles/papers analysed across all 4 magazines, 2 journals, and 3 conferences comes to 4,137. From this investigation we have identified the following lead categories/subject areas across all forms of output evaluated.

Strategy is the top area for all articles, and this relates both to ports and to shipping businesses and maritime logistics. How organisations develop and set out their strategy in an effort to compete in a fast changing market place is clearly a vital aspect for the maritime industry and a top priority. However, it appears that strategy is perhaps covered rather less in the academic journals than might be expected or desired.

Other key areas in the 'top-5' topics are logistics/supply chain, port efficiency, competition, and capacity/planning (the latter with an emphasis on seaports). Within the 'top-10' areas these are followed by sector/trade analyses (e.g. focus on regions, trade routes, commodities etc), intermodal (including hinterland transport), finance, environment (mainly focus on ship emissions), and ship design. With regard to the latter, the article and research emphasis is primarily looking at ship design from the user/market need perspective, and the need to deliver high efficiency and competitive advantage, rather than from the engineering perspective. Increasingly here there is evidence that many of the fundamental ship design aspects are decided primarily from the organisation management/strategy perspective, taking into account the competitive environment, and not from the purely engineering/technical perspective. Thus, core ship and service design matters is a matter for business managers/strategists.

Other areas of importance include port reform, ICT, safety, innovation, security, regulation, labour and governance.



**Figure 26:** Summary of published articles for all journals and conferences analysed

## 5 Summary

### 5.1 North Sea Region Programme - Projects related to maritime transport and its hinterland

Current NSR projects cover a wide range of topics in the maritime sphere. This includes shipping, seaport development, and hinterlands. Considered projects have a strong focus on sustainable development, furthering maritime education, modal shift, logistics/supply chains, improving competitiveness, reducing impacts of peripherality, ICT development, regional economic development and policy making.

There has been significant industry participation in these projects, though most projects are led by public bodies, with ports also having a strong role.

Results from the sustainability arena have been named as priority one by project managers, followed by intermodality/modal-shift, accessibility and ICZM. Cruise industry topics, education and supply chain optimization were also regarded as being of highest priority.



**Figure 27:** Hot topics addressed by the considered NSRP-projects

Key success factors of projects are the involvement of stakeholders in project activities, composition of project partnerships, efficient and simple project management, target-oriented and proactive cooperation, and involvement of private companies such as transport and logistics companies, data providers etc. who play an important role. Several respondents viewed as positive the involvement of EU, national and regional policy makers, cooperation of public and private actors, the cooperation with research institutes and the transnationality of the project consortium. Also considered highly are implementation of pilots, proto types and demo cases, as well as successful communication and dissemination of results. Obstacles include competition between organizations and regions, complex legislation and standards, delays based on unforeseen circumstances, dissemination to external stakeholders, the economic crisis, funding of projects, industry connectivity to project work and outcomes, lack of motivation of some project partners, project coordination and communication, and last but not least the small scale of some projects. Complexities of the EU project and funding regulations prevent many private sector partners to engage with the Interreg programme. The economic crisis has also delayed major investments.

Remaining gaps after the projects' completion relate to applying project results in a larger context, fostering intermodality, refining EU policies, implementation of project results into practice, missing utilization of project results after the end of the project, simplifying regulations for financial support to projects and strengthening the tourism industry. Future research needs after the projects' completion are to improve co-modality (e.g. by overcoming transport policy discrimination against sea transport), focus on marine renewables and offshore sector, passenger shipping, environmental impacts such as

GHG and air pollutant emissions or marine bio-invasions as well as ways of collaboration in maritime transport;

Future policy priorities proposed include sustainable development, redefining maritime transport infrastructure vis-à-vis the ongoing distortion of competition between land and sea transport modes, fostering accessibility of peripheral regions, greater awareness and study of passenger transport (e.g. for cruise vessels and ferries), and linking projects of the Interreg-programme with other EU-funding programmes. With regard to priorities in future maritime transport research the key topics are again sustainable transportation with special emphasis on environmental aspects, co-modality, accessibility, maritime education and off-shore development.

### 5.2 EU Funding programmes and their relevance for maritime transport and its hinterland

Different EU funding programmes relevant to maritime transport and its hinterland have been reviewed.

The ERDF **European Transnational Cooperation Programme** has a total ERDF contribution of €1.8 billion and adds an important dimension to regional development in Europe. It aims to establish and develop transnational cooperation through the financing of networks and of actions.

The **7<sup>th</sup> Framework Programme (FP7)** for Research has two main strategic objectives: to strengthen the scientific and technological base of European industry and to encourage its international competitiveness, while promoting research that supports EU policies. Transport related activities envisaged to be addressed during the lifetime of FP7 are aeronautics and air transport, sustainable surface transport - rail, road and waterborne – and support to the European global satellite navigation system –Galileo and EGNOS.

The **Marco Polo II Work programme** is focusing on modal shift to ease road congestion. The programme proposes to support actions to reduce congestion, to improve the environmental performance of the transport system and to enhance intermodal transport, thereby contributing to a more efficient and sustainable transport system.

The **European Commission's TEN-T programme** dedicates financial support towards the realisation of important transport infrastructure projects - in line with the overarching goal of European competitiveness, job creation and cohesion. Within the multi-annual programme different calls were published regarding: the TEN-T priority projects, Galileo, European Rail Traffic Management System (ERTMS), River Information Services (RIS), Motorways of the Sea (MoS), Air traffic management systems - Functional airspace blocks (ATM/FABs) as well as Intelligent Transport Systems for Roads (ITS).

The three programmes (TEN-T, 7<sup>th</sup> Framework Programme and Transnational co-operation programme) only allocate modest funds to maritime and hinterland transportation topics. Marco Polo II shows above average funding activities albeit from a relatively small budget overall. However the main reason for this is that most of the funded rail projects have been predominantly assigned to the maritime hinterland transportation leg, and as a programme almost exclusively promoting modal shift actions, Marco Polo II deals by its nature with maritime and hinterland transportation related topics.

Among the European Transnational Cooperation Programme the **North Sea Region Programme** demonstrates with around 39% of allocated funds its strong dedication to maritime and hinterland transport themes. Within the 7<sup>th</sup> framework programme 50 projects or 12% of funding respectively has been identified as relevant in the maritime and hinterland transport context of MTC. Therein, "Technology and Innovation" has been identified as the dominant topic. In the Transnational Co-

operation Programme 61 projects equalling 12% of available funds have been identified as thematically belonging to the field of maritime and hinterland transportation. Projects here predominantly deal with sustainability/environmental issues, followed by intermodal transport and accessibility. In the TEN-T programme 35 projects or 2% of available funds respectively deal with maritime and hinterland transportation topics. Due to the program's main focus on infrastructure (or studies preparing infrastructure projects) projects can be clustered along the major topics "Port", "MoS" as well as "Co-modality". Within Marco Polo II, 50 projects equalling 53,3% of available funds have been identified as thematically belonging to the maritime and hinterland transportation field. From the content analysis using pre-defined categories implemented by the programme itself, it can be seen, that - as expected - most projects (38) deal with modal shift activities.

Overall findings of the respective programmes show that funds for maritime and hinterland transportation activities are marginal in most of the programmes. The framework programme is more research-oriented than the other funding programmes, with Marco Polo II being the most applied, primarily because projects must have considerable industry investments; indeed, Marco Polo funds actually constitute a relatively small percentage of total investment levels per project. The latter also tends to be oversubscribed, with the number of project applications seeking support far exceeding the level of funding available from the programme.

### 5.3 Research publications in the field of maritime transport and its hinterland

Articles and papers published over the 7-year period 2005-2011 in 4 international maritime industry magazines and 2 international academic peer-reviewed journals were reviewed. In addition, papers presented at the last 3 conferences organised by IAME (International Association of Maritime Economists) were taken into account. In total this amounted to analysis of 4,137 articles overall.

Strategy was found to be the top topic across all 4,137 articles considered, accounting for almost 12%. Strategy however seems to be less covered in the academic outputs than is clearly merited from the high level of industry interest. This is likewise an area that future EU programmes and maritime educational initiatives could focus on more, which is in turn related very much to improving the overall competitiveness of shipping.

Also within the 'top-5' topics are: logistics/supply chain, port efficiency, competition, and capacity/planning with an emphasis on seaports. There is therefore a strong emphasis here on how firms compete based on their strategy, design of supply chains, search for higher efficiency, and overcoming congestion and other constraints in seaports.

Within the 'top-10' areas these 5 topics are followed by sector/trade analyses (e.g. specific regional analyses, trade routes, commodities etc), intermodal (including hinterland transport), finance, environment (mainly focus on ship emissions), and ship design. The latter seems an important finding not least as the emphasis is on ship design from a managerial and user perspective, rather than from the technical viewpoint. This also reflects on the importance of strategic management in determining optimal maritime transport vehicles and systems aimed at delivering competitive advantage.





Figure 28: Hot topics addressed by considered research publications

## 5.4 Synopsis

The ongoing focus on sustainability needs to ensure that maritime transport functions on a level playing field with other modes in order to play a full part in offering competitive multimodal solutions. Therefore, policy could better reflect the ‘mobile infrastructure’ nature of ships, a definition which extends further than the port to include the ‘seaway platform’ that delivers territorial continuity and hence connectivity. Results show further that sustainable development particularly with respect to environmental issues is considered as being crucial for future developments in maritime transport. This requires special emphasis of transport research and policy in the field of energy efficiency and avoidance of negative environmental impacts to reduce air emissions and protect marine habitats. In addition, supply chain optimisation has been identified as an area still offering great potential to improve maritime transport logistics. Therefore, future maritime research needs to focus on supply chain integration of maritime transport chains with respect to intermodality, safety and security as well as on the integration of the nodes and links between. Passenger shipping, and notably the ferry and cruise sectors, appears to be under researched although this is clearly an increasingly important area for the industry given ongoing high investment levels and traffic growth. This is in addition linked to the high industry focus on ship design aspects more so from the managerial and strategic perspective, as opposed to from the traditional engineering/technical viewpoint. Corporate strategy represents another highly important if not critical topic, and is very much associated with how Europe’s maritime businesses can best develop long-term sustainable competitive advantage. Furthermore, a continued and increased focus on maritime education and training also seems merited with special regard to its harmonisation across the EU.

Regarding EU funding programmes, in general there seems to be a rather limited financial focus on maritime transport, certainly when compared with funding of other surface transport modes. Considering that maritime transport accounts for over 90% of EU external trade and also a large share of EU internal trade, additional research support appears to be merited.

It is these key findings and other issues identified throughout this report that will now be presented to and discussed within business and policy stakeholder groups. The aim will be to confirm and further refine where necessary the ‘hot topics’ and priorities for future research programmes to focus on.

## Annex A Contact data of considered NSRP projects

Project name	Lead Beneficiary	Official Project Manager	Contact person for completed survey
<b>Ballast Water Opportunity</b>	NIOZ Royal Netherlands Institute for Sea Research, The Netherlands	J.T.M. Flipsen T: + 31 33 253 4820 E: hans.flipsen@EMConsult.nl www.northseaballast.eu	Etienne Brutel de la Rivière T: +31 222 369 300 E: etienne.brutel@nioz.nl
<b>BLAST</b>	Norwegian Hydrographic Service, Norway	Roy H. Mellum T: +47 32 11 81 00 E: roy.mellum@statkart.no www.blast-project.eu	←
<b>CNSS</b>	Hordaland County Council, Norway	Lars Tveit T: 0047 55 23 93 21 E: Lars.Tveit@post.hfk.no www.cnss.no	Even Husby T: +47 55 23 93 56 E: Even.Husby@post.hfk.no
<b>Cruise Gateway</b>	Hafen Hamburg Marketing e.V., Germany	Sebastian Doderer T: +49 40 37709113 E: doderer@hafen-hamburg.de www.cruisegateway.eu	←
<b>Dryport</b>	Västra Götalandsregionen Regionutvecklingssekretariatet, Sweden	Rolf Thor and Dirk Harmsen T: +46 31 630947; +46 70 5144977 E: rolf.thor@vgregion.se; info@dryport.org www.dryport.org	Dirk Harmsen T: +46 70 5144977 E: info@terranordica.com

<b>E-Harbours</b>	Municipality of Zaanstad, The Netherlands	Jan Schreuder T: +31 (0)62 902 7834 E: J.Schreuder@Zaanstad.nl www.eharbours.eu/	Hugo Niesing T: +31 (0) 651 731 190 E: hniesing@wattpic.com
<b>Food Port</b>	POM West-Vlaanderen, Belgium	Liesbet Pauwels T: +32 5040 7225 E: liesbet.pauwels@west-vlaanderen.be www.food-port.eu/	←
<b>iTransfer</b>	Institute for Sustainability, UK	Ed Metcalfe, Mark Thirkell T: +44 0207 517 1835, +44 0207 517 1834 E: ed.metcalfe@instituteofsustainability.org, mark.thirkell@instituteofsustainability.org www.itransferproject.eu	Detlef Golletz T: +44 207 5176886 E: detlef.golletz@instituteofsustainability.org.uk
<b>LO-PINOD</b>	Institute for Sustainability, UK	Ed Metcalfe, Mark Thirkell T: +44 0207 517 1835, +44 0207 517 1834 E: ed.metcalfe@instituteofsustainability.org, mark.thirkell@instituteofsustainability.org www.lopinod.eu/	Detlef Golletz T: +44 207 5176886 E: detlef.golletz@instituteofsustainability.org.uk
<b>NMU</b>	Transport Research Institute, Napier University, UK	Kevin Cullinane T: +44 131 455 2951 E: k.cullinane@napier.ac.uk www.nm-uni.eu	Kevin Cullinane T: +44 131 455 2951 E: k.cullinane@napier.ac.uk

<b>NS Frits</b>	People United Against Crime, UK	Helen Parr T: +44 114 2758688 E: helen.parr@people-united.org www.nsfrits.eu	←
<b>POYO</b>	Albeda College, The Netherlands	M. Rescigno T: +31 (0)622556230 E: m.rescigno@albeda.nl -	<i>not completed so far</i>
<b>StratMoS</b>	Rogaland County Council, Norway	Olav Hauge T: +47 91336630 E: olav.hauge@rogfk.no www.stratmos.com	←
<b>SUSCOD</b>	Province of North-Holland, The Netherlands	Gertjan Nederbragt T: +31 23 5143199 E: nederbragt@noord-holland.nl www.suscod.eu	←

**Table 5:** Contact data of considered NSRP projects

## Annex B Concrete results of the NSRP projects

	Accessibility	Cruise	Education	ICZM	Intermodality/ modal shift	SC Optimization	Sustainability
Ballast Water Opportunity							
BLAST				A web-based port and coastal data collection system demonstrator. (2; 3.11.2011)  Demonstrate and evaluate the use of satellite data and 3D visualization/models in navigational aid displays. (4; 4.11.2011)			A web-based port and coastal data collection system demonstrator. (2; 3.11.2011)  Demonstrate and evaluate the use of satellite data and 3D visualization/models in navigational aid displays. (4; 4.11.2011)
CNSS							Report on existing policies, initiatives and best practices in the policy area (3; 1.9.2011)  Report on existing technologies and best practices in the technology area (2; 1.9.2011)
Cruise Gateway							
Dryport					to set three DryPorts (2 are in process, one depends on project developer) (1)	RFID testing in Sweden (3)	to set three DryPorts (2 are in process, one depends on project developer) (1)  carbon reduction calculator in function in UK RFID testing in Sweden (3)

	Accessibility	Cruise	Education	ICZM	Intermodality/ modal shift	SC Optimization	Sustainability
E-Harbours							
Food Port						Enhancing political and entrepreneurial awareness for the importance of efficient, effective and sustainable food logistics chains and improvement of the NSR as a dynamic food port region. (5)	Enhancing political and entrepreneurial awareness for the importance of efficient, effective and sustainable food logistics chains and improvement of the NSR as a dynamic food port region. (5)
iTransfer	Design changes for Gravesham land side infrastructure in terms of doubling access capacity and reducing investment costs by 40% (1)  Identification of transnational challenges to achieve more cost efficient and CO2 reduced ferry operations (2)						Identification of transnational challenges to achieve more cost efficient and CO2 reduced ferry operations (2)
LO-PINOD							
NMU			multidisciplinary education offerings at MSc and BSc level (1; partly achieved further development in the NMU extension)  construction of transnational knowledge network (2)further integration on-going)  development and enhancement of e-learning in educational offerings (4)				

	Accessibility	Cruise	Education	ICZM	Intermodality/ modal shift	SC Optimization	Sustainability
Ns Frits						<p>A multi-lingual electronic communications and data capture system for the road freight sector to provide information to end users - drivers, transport managers - about conditions in the country they are about to enter (1)</p> <p>An ICT solution has been established that includes telecommunications and data capture leading edge technologies which will transmit data at ports and other critical transport corridor points (2)</p> <p>A sustainable cross-sectorial partnership has been established for the collection and transmission of relevant data that will be used to inform the freight supply chain and other relevant agencies (3)</p> <p>Build functionality and capacity into the system to ensure compatibility for additional services to be introduced in the future to meet the changing needs of logistics operators and the growing challenges within the freight supply chain throughout Europe (4);</p>	
POYO							
StratMoS					<p>Web based tools box for MoS application in respect to environmental and social impacts and a Systems Model for assessing important factors influencing intermodal transport</p> <p>Prepared Marco Polo application and establish new sea service between Mid Norway and UK/the Continent, and acknowledgement in the North Sea Commission and EC that the Western Europe MoS should be extended to the Barents Sea and connected to the Northern Sea Route in Russia.</p>	<p>Web based tools box for MoS application in respect to environmental and social impacts and a Systems Model for assessing important factors influencing intermodal transport</p> <p>Prepared Marco Polo application and establish new sea service between Mid Norway and UK/the Continent, and acknowledgement in the North Sea Commission and EC that the Western Europe MoS should be extended to the Barents Sea and connected to the Northern Sea Route in Russia.</p>	
SUSCOD							

**Table 6:** Results achieved by NSRP project (priority set by projects in brackets)



	Accessibility	Cruise	Education	ICZM	Intermodality/ modal shift	SC Optimization	Sustainability
BLAST				<p>Increased dissemination possibilities of AIS data in the North Sea region (3, expected, 7.12.2011)</p> <p>A prototype database for integrated and harmonized land and seas data for selected test sites in the North Sea region. (1, expected, 7.12.2011)</p> <p>Develop an ICZM Decision support system demonstrator. (2, expected, 3.12.2011)</p>			<p>Increased dissemination possibilities of AIS data in the North Sea region (3, expected, 7.12.2011)</p> <p>A prototype database for integrated and harmonized land and seas data for selected test sites in the North Sea region. (1, expected, 7.12.2011)</p> <p>Develop an ICZM Decision support system demonstrator. (2, expected, 3.12.2011)</p>
CNSS							<p>Development of a Joint North Sea Shipping strategy (1, expected, 1.9.2013)</p> <p>Stimulate ports, terminal operators and shipping lines to implement new technology (5, expected, 1.9.2013)</p> <p>Model ship emission scenarios including quantification of effects (4, expected, 1.4.2013)</p>
Cruise Gateway	<p>Joint Policy Declaration "Branding NSR" (including topics like services and sustainability) (2, expected, 1.9.2013)</p>	<p>Awareness for the North Sea as destination (brand?) of green cruise (3, expected, 1.9.2013)</p> <p>Joint Policy Declaration "Branding NSR" (including topics like services and sustainability) (2, expected, 1.9.2013)</p> <p>Improving knowledge within the NSR about cruise, cruise ports, sustainable cruise tourism development, services and safety etc. (1, expected, Continuously till end of project)</p>					<p>Awareness for the North Sea as destination (brand?) of green cruise (3, expected, 1.9.2013)</p>
Dryport					<p>shift from road to rail - increase rail traffic by Railport (Gbg), increase rail freight (Be) (2, expected, on-going)</p>	<p>flows studies/marketing as support for inland freight hubs rto connect to seaport systems (4, expected, mid/2012);</p>	<p>shift from road to rail - increase rail traffic by Railport (Gbg), increase rail freight (Be) (2, expected, on-going)</p> <p>flows studies/marketing as support for inland freight hubs rto connect to seaport systems (4, expected, mid/2012)</p> <p>governance and conflict strategies (5, expected, 1.1.2012)</p>

## Maritime transport and its hinterland in the NSR

	Accessibility	Cruise	Education	ICZM	Intermodality/ modal shift	SC Optimization	Sustainability
E-Harbours							Translation of Smart Grid best practices into policies and near future planning (local/national/EU) (1, expected, July 2013) Overview of potentials of Smart Grid Application in 7 NSR harbour cities (2, expected, July 2013) Active and operational network for new related projects/experiments/incentives (2, expected, March 2013) Identification of obstacles and lessons learned into recommendations towards policies (3, expected, Jan 2013) Quantification of environmental & financial viability of Smart Grids & electric mobility (4, expected, March 2013)
Food Port					Realisation of green transport corridors for food products by putting into practice modal shift. (1, expected, 31.8.2013)	Technological innovation in the food supply chain. (2, expected, 31.8.2013)	Realisation of green transport corridors for food products by putting into practice modal shift. (1, expected, 31.8.2013)
iTransfer	Setting up new ferry connections to improve regional access (3, expected, October 2013)  Public sector tendering for ferry services (4, expected, March 2012)  Understanding effects of policy regulations on ferry operations (5, expected, June 2013)						
LO-PINOD	Increased multimodal connections (rail, road and water) between ports and regional economies (1, expected, June 2013)				Increased multimodal connections (rail, road and water) between ports and regional economies (1, expected, June 2013)  Improved local, regional and national policies to promote sustainable onward freight distribution (3, expected, May 2013)  Assess potential to improve links to regional ports through short sea shipping and coastal feeder connections. (3, expected, June 2013)	Increased resilience, improved operations and diversification for regional ports (2, expected, June 2013)	Increased multimodal connections (rail, road and water) between ports and regional economies (1, expected, June 2013)  Improved local, regional and national policies to promote sustainable onward freight distribution (3, expected, May 2013)  Improved management and performance of regional ports. (1, expected, June 2013)  Assess potential to improve links to regional ports through short sea shipping and coastal feeder connections. (3, expected, June 2013)
NMU							

	Accessibility	Cruise	Education	ICZM	Intermodality/ modal shift	SC Optimization	Sustainability
Ballast Water Opportunity							<p>Certification of BWT systems, compliance control enforcement, requirements for detection, (, expected, )</p> <p>Centre for knowledge transfer, international acknowledged test-bed (, expected, )</p> <p>web-based access to information and monitoring data, information portal, recommendations for future (, expected, )</p>
Ns Frits							
POYO							
StratMoS	Including accessibility to peripheral regions as equal objective to shifting cargo from road to intermodal transport in the MoS regime (expected, Partly achieved, 2012)				Prepared Marco Polo application and establish new sea service between Mid Norway and UK/the Continent, Including accessibility to peripheral regions as equal objective to shifting cargo from road to intermodal transport in the MoS regime (expected, Partly achieved, 2012)		Prepared Marco Polo application and establish new sea service between Mid Norway and UK/the Continent, and acknowledgement in the North Sea Commission and EC that the Western Europe MoS should be extended to the Barents Sea and connected to the Northern Sea Route in Russia.
SUSCOD				<p>state of the art report with the identification of issues, techniques, indicators etc. that could contribute to developing and designing the ICZM assistant (1, expected, 1.10.2011)</p> <p>Prototype of the ICZM assistant (1, expected, 1.3.2012)</p> <p>Tested, validated and refined assistant (1, expected, 1.12.2013);</p>			<p>state of the art report with the identification of issues, techniques, indicators etc. that could contribute to developing and designing the ICZM assistant (1, expected, 1.10.2011)</p> <p>Prototype of the ICZM assistant (1, expected, 1.3.2012)</p> <p>Tested, validated and refined assistant (1, expected, 1.12.2013)</p>

**Table 7:** Results expected to be achieved by NSRP projects (priority set by projects in brackets, multiple allocations possible)

## Annex C EU funding programmes: Fact Sheet

	Transnational programme	FP7	Marco Polo II	TEN-T
What do you need?	<p>Ideas: of course you can apply with your own ideas; some programmes have a project idea section on their website</p> <p>Partner: Partners can be</p> <ul style="list-style-type: none"> <li>- Public authorities from national, regional and local levels</li> <li>- Public equivalent bodies (e.g. associations, universities)</li> <li>- Private (commercial) organisations can participate as additional partners</li> </ul>	<p>Ideas: Individual proposals have to correspond to open calls within the thematic area of transport and their individual requirements</p> <p>Partner: If the project is not related to competition between scientists in fundamental "frontier" research you need partners out of the research field or from organization, e.g. research groups at universities or research institutes, companies intending to innovate, small or medium-sized enterprises (SMEs), SME associations or groupings, public or governmental administration, postgraduate students, experienced researchers, institutions running research infrastructures of transnational interest, organisations and researchers from third countries, international organisations, civil society organisations</p>	<p>Ideas: Only projects concerning freight transport services may be supported by the Marco Polo programme. Pure infrastructure projects, research or study projects are not eligible for support. However, also mixed passenger-freight services and RoRo Ferries services may be proposed, but the support would then only be given to the freight part.</p> <p>Partner:</p> <p>Eligible applicants: submission by a single undertaking of a EU Member State: Projects with only one partner from an EU Member State or a fully participating close third country (i.e. Norway, Iceland, Liechtenstein and Croatia) can participate in Marco Polo II. Only commercial undertakings are eligible to participate (no administrations). However, administrations may be up to 100% owners of a participating commercial undertaking.</p>	<p>Ideas: Funding in TEN-T grants can support studies or works which contribute to TEN-T programme objectives.</p> <p>Partner:</p> <p>Beneficiary(ies): At least two member states, -international organisations or joint undertakings (within the meaning of Article 187 of the Treaty), or public or private undertakings or bodies, having complete responsibility for an Action and proposing to invest their own resources or funds provided by third parties with a view to its completion. It is assumed that a proposal's applicant(s) becomes automatically the Action's beneficiary(ies) if the proposal is selected for funding.</p>

<p><b>When do have to apply?</b></p>	<p>Regional programmes initiate calls for application, which are open for a specific period of time. When calls open and for how long depends on the programme.</p>	<p>Calls for Proposals', commonly known just as 'Calls', are published during the year and an overview of individual calls and deadlines can be found online at <a href="http://cordis.europa.eu/fp7/home_en.html">http://cordis.europa.eu/fp7/home_en.html</a>.</p>	<p>Project proposals may officially only be submitted when a call has been published. The call will appear in the EC's Official Journal and on the Marco Polo II homepage and will specify all details. Note that the content of calls is quite similar each year, but some details may change from year to year.</p> <p>Current MP call is open from Oct 21-Jan 16 2012 (see <a href="http://ec.europa.eu/transport/marco_polo/getting-funds/call-for-proposals/2011/index_en.htm">http://ec.europa.eu/transport/marco_polo/getting-funds/call-for-proposals/2011/index_en.htm</a>)</p>	<p>one time per year several calls of MAP and AWP</p>
<p><b>Where to apply/ Where to get information?</b></p>	<p>You should apply for regional funding to the authority managing the relevant regional programme. That body will evaluate your project and decide whether to grant funding.</p>	<p>Respondents to a call submit a proposal online. Proposals may be submitted at any time after a call opens, until the deadline. In all EU Member States and in several other countries, National Contact Points ("NCPs") have been set up to give personalised help and advice to researchers and organisations intending to participate. Addresses of NCP's can be found at <a href="http://cordis.europa.eu/fp7/get-support_en.html">cordis.europa.eu/fp7/get-support_en.html</a></p>	<p>Proposals have to be submitted directly to the European Commission, Executive Agency for Competitiveness and Innovation - EACI</p>	<p>Applications must be presented to the EC (DG Move), TEN-T Executive Agency by:</p> <ul style="list-style-type: none"> <li>• one or more Member States, and/or</li> <li>• with the agreement of the Member States concerned, by international organisations, joint undertakings, or public or private undertakings</li> </ul>

	Information regarding the funding can be obtained from the 13 regional programmes websites. A list can be found here: <a href="http://ec.europa.eu/regional_policy/cooperation/doc/authorities_websites.xls">http://ec.europa.eu/regional_policy/cooperation/doc/authorities_websites.xls</a>		<a href="http://ec.europa.eu/transport/marcopolo/contacts/index_en.htm">http://ec.europa.eu/transport/marcopolo/contacts/index_en.htm</a> <a href="http://ec.europa.eu/transport/marcopolo/faq/index_en.htm">http://ec.europa.eu/transport/marcopolo/faq/index_en.htm</a>	<a href="http://tentea.ec.europa.eu/en/home.htm">http://tentea.ec.europa.eu/en/home.htm</a> <a href="http://tentea.ec.europa.eu/en/apply_for_funding/follow_the_funding_process/follow_the_funding_processes.htm">http://tentea.ec.europa.eu/en/apply_for_funding/follow the funding process/follow the funding processes.htm</a>
<b>Specifics</b>	-	-	Threshold value of tkm shifted is specified for each action type (exception: common learning actions) Subsidy rate up to 35% (exception: common learning actions: up to 50%) will be accounted: 2€ per 500tkm shifted duration differs for each action type (max 5 years)	Due to the Member State involvement proposals first have to past national evaluation--> two step application

Table 8: EU funding programmes: Fact Sheet