

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

*The market derived perspectives
(Insights from the maritime business sector)*

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Table of abbreviations

BSR	Baltic Sea Region
Cst	Centistoke
CO ₂	Carbon dioxide
EU	European Union
ICT	Information and Communication Technology
ICZM	Integrated Coastal Zone Management
IFO	Intermediate Fuel Oil
IMO	International Maritime Organization
IWT	Inland Water Way Transport
MDO	Marine Diesel Oil
MTC	Maritime Transport Cluster
NSR	North Sea Region
NSRP	North Sea Region Programme
ROI	Return On Investment
SC	Supply Chain
SECA	Sulphur Emission Control Area
SEEMP	Ship Emergency Efficient Management Plan
SOLAS	(International Convention for the) Safety of Life at Sea
SSS	Short Sea Shipping
WP	Work Package

1. Introduction

MTC applies the cluster idea to the maritime transport sector, thus bridging between obtained results from on-going Interreg IVB projects dealing with maritime transport issues and new business trends from the maritime industry as well as with EU transport policy development.

The overall goal of MTC is building a structure for interchanging latest knowledge and experiences concerning maritime transport in the context of the Interreg IVB North Sea Region Programme (NSRP). Furthermore the MTC project intends to develop the common voice of the Interreg IV B NSRP on maritime transport. By applying the cluster idea to the maritime transport sector, the MTC project aims to compose a policy advice based on the North Sea Region experiences to contribute to the discussions on future EU transport policy developments.

The objective of WP 4 was to gather and consolidate the experiences, expectations and knowledge out of the maritime business sector. The focus points were to identify research gaps, hot topics, needs and challenges within/for the North Sea Region Programme. In order to reach these objectives a questionnaire was designed and sent to main actors within the maritime business sector. Additionally two workshops took place.

The results of the process are summarised in this WP4 report, which will integrate the findings (market derived perspectives) and future market needs into the WP 3 results. The latest developments which the maritime business sector is faced with, identified research gaps, needs- and challenges as well as identified hot-topics will be highlighted.

Furthermore this report will deliver the necessary input to WP 5 for further discussions with sector organisations which will lead to the development of a policy advice. At the same time the results of WP 4 will be used to inform all maritime related projects within the NSRP of the intermediate outcomes.

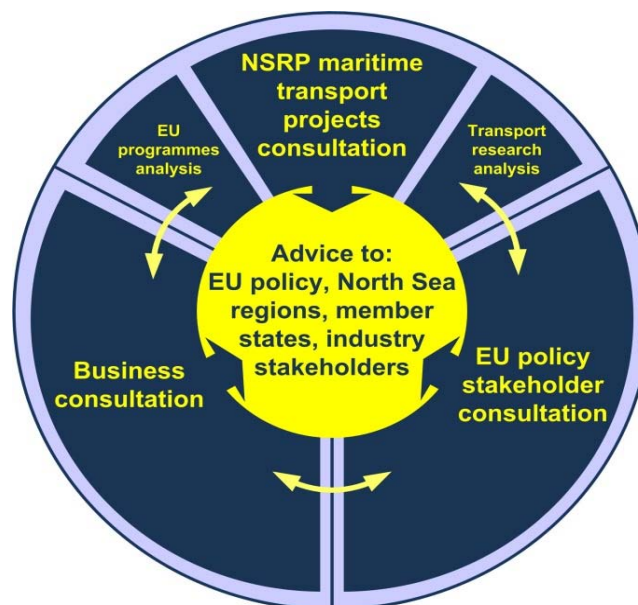


Figure 1 - Interaction within the MTC

2. Background of the survey

The results consolidated in this report are based on 40 questionnaires partly connected with telephone interviews and one-to-one business consultation. The vast majority of the participants are active in management positions. The analysis in this report is separated between seaside- and shore side actors. All interviewees interviewed are working on a high business level. Following organisations by sectors have been interviewed (some companies are active in several business sectors):

Seaside:

- 7x Ship owners (ferry-/container operator), shipbrokers and -agents
- 5x Port authorities
- 5x Seaport terminal operator
- 1x Shipbuilders & ship repairer

Landside:

- 6x Forwarding agents
- 4x Hinterland terminal operators and Dry Ports
- 4x Rail- and barge operators
- 3x Cargo owners

Besides the main players interviewed within a sector interviewed, associations of these sectors were asked too to reflect their opinion too:

- Maritime Rescue Institute (UK)
- Northern Lighthouse Board (UK)
- European Intermodal Association
- Holland Shipbuilding Association (NL) and Shipbuilders & Shiprepairers Association (UK)
- Maritime Cluster Norway, Bergen Region and Maritime Cluster North-Germany
- VDR- German Shipowners' Association (GER)
- Short Sea Promotion Centre (N, GER)
- SSS owners Association (N)
- CaTO Marine Ecosystems (NL)
- 'De Ruyter' Maritime Institute (NL)
- North Sea Foundation (NL)

Additionally two workshops took place, one in Edinburgh (UK) and one in Bergen (Norway). The participants represented wide parts of the maritime sector as described above. According to the WP 4 of the MTC project, the views of the maritime industry on intermediate findings has been gathered and consolidated during these workshops. Additionally the workshop assured already analysed intermediate findings by the questionnaires.

3. The market derived perspectives - insights from the maritime business sector

3.1. Main concerns regarding today's market development

Seaside's perspective

Asking the seaside sector what are their main concerns regarding today's market development, three main categories could be identified:

1. Concerns have been identified within the **sustainable development** umbrella which is on the one hand **environmental rules and regulations** having impact on the ordinary business. For example regulations which are applicable for only some parts of the EU (e.g. SECA) which results in competition between destinations due to the rules, or the question of upgrading ships to get in line with the new regulations.

On the other hand there are concerns how to **overcoming technical aspects**, e.g.:

- **Ballast water treatment monitoring systems** are crude and it is unclear how port authorities will verify the effectiveness of treatment systems.
- **Scrubbers** have been proposed as the most effective method to meet stringent new regulations, but there is a lack of effective research being conducted.

Finally there are concerns how to practice green shipping/ green (coastal) tourism due to **cost-efficiency** problems. Additionally there are concerns how vessels ordered today will be affected by the regulations of tomorrow.

2. The **overcapacity in tonnage** (especially container ships) **and sea port terminal capacity** in Northern Europe are named by the seaside actors very frequently as main concerns. A critical capacity oversupply in container shipping segment will to be reached in the near future. There are strong concerns that the intensifying fights for (container) volumes by decreasing freight/charter rates pushing smaller shipping lines out of the market, which will result in oligopoly markets on the container transport supply side. High **price pressure** is a result of that.

Also named by one interviewee was the **loss of diversity in ports** (universal port concept) and the focus on container traffic.

3. Especially because of the financial crises there are concerns relating to **financing** issues. Some interviewees feel that the retrenchment of banks results in a lack of availability of credits and/or bad conditions (high interest rates), which results in:
 - The lack of financing in new technologies.
 - Difficulties for operators and owners to get ship finance.

Furthermore concerns are that investment decisions are made for the short term only. Partly because of short term profit intentions which results out of the Anglo-Saxon model.

Some interviewees are concerned about the **market development in an integral view point** because of the actual European problems (crises). If the European consumer markets begin to suffer, then the maritime industry will feel it very rapidly.

High **fuel costs**¹ do bother some interviewees too, as well as the concern that a **high volatility of maritime- and hinterland traffic** is very likely in future and must be expected (partly already today a problem).

One interviewee has concerns about **existing market protection** and the lack of innovation within regulators, unions and industry related to the shipping.

Main concerns regarding today's market development

Answers by questionnaires

Confirmed by

Seaside perspective

Sustainable development

- Environmental rules and regulations having impact on the ordinary business
- Overcoming technical aspects
 - Ballast water treatment
 - Scrubber technology
- Cost Efficiency

	Ship Owners, ship brokers and -agents	Port authorities	Seaport terminal operator	Shipbuilding and ship repairer	Sector Associations/Organisations	Workshops	Telephone or 1:1 interviews
10	2	2	1		1	X	
						X	
	1						2
	1						1
	1	1				X	

Overcapacity in tonnage

- Price pressure
- Loss of diversity in ports

10	2	1	1		1		4
	1		1		2		3
		1					

Financing

- Lack of available credits and/or bad conditions
- Lack of financing in new technologies
- Difficulties for operators to get ship finance
- Investment decisions are made on short term only (Anglo-Saxon business model)

7							2
	1		1				
	1		1				
	1				1		
					1		1

Market development in an integral view point; actual European problems (crises).

- High fuel costs
- High volatility of maritime- and hinterland traffic
- Existing market protection

5	4	1					2
1	1						3
1		1					2
1					1		

Figure 1 - Main concerns regarding today's market development, separated by sectors (seaside)

¹ Each growth rate compares Rotterdam prices from 9th Feb. 2012 with prices from 17th Feb. 2012: IFO 380 Cst. + 16 % // IFO 180 Cst. + 16 % // MDO + 6 % ; source: DYNALINER weekly 07/2012, 17th Feb. 2012, p.8.

Landside's perspective

Turning the view point to the landside sector much more diverse answers were given concerning the main concerns regarding today's market development.

Nevertheless one aspect emerges more frequently and has to be seen more complex wide. One interviewee sums it up by saying:

"The main issue is the survival of the smaller and medium companies (outside urban areas)!"

This reflects very well several congruent answers dealing with the main connected concerns about overcapacity of tonnage, low prices, high competition in the hinterland market and financial/refunding problems the sector is facing.

The described seaside overcapacity and the related high **price pressure** (some are speaking of "rate war") penetrate modal operators active in the hinterland transportation business too. Especially during contracting phases prices gain more importance than quality or efficiency. This concern is strengthened by the fact that e.g. rising fuel prices, ISPS related costs, etc. are additionally decreasing profits. At the same time it is hardly possible to increase freight rates because of the market power of bigger companies, both sea- and landside (this aspect was named during telephone interviews).

A connected concern to this issue is that the price pressures and lack of financing power will probably cause a **delay in the market development** as stated by two interviewees. They especially see a **lack of financing in new technologies**. One interviewee supports this by saying:

"The focus on surviving in today's poor market, keeps us off to invest in sustainability!"

One interviewee expressed its concern related to the fact that **environmental issues are not seen as an added value** and owners are not interested in it at the moment (technical solutions for decreasing pollutants).

More diverse concerns have been received for the following issues:

- **Infrastructure bottlenecks** are a concern especially by interviewees operating in Germany, they stated that:
 - o A growing congestion (especially rail) is leading to a reduced accessibility of some areas in the hinterland
 - o Infrastructure gaps and capacity constraints in the hinterland transport chain have to be overcome
- Market protection, **lack of innovation within regulators**, unions and shipping industry
- Monopoly position on some trades
- To achieve industrial **consensus between port-hinterland stakeholders** (streamlining of investments, processes and approaches)
- **Short term goals versus long term sustainability**. Too fast too big, attempts to curb the environment to economic benefits.

During the workshops and interviews **missing standardisation and harmonisation** on at least an European level was expressed frequently (land- and seaside). There are strong concerns about too many standards are or that even no investments are made because of a missing standard. It is highly claimed that one standard shall be declared and supported by the European Union to have a reliable basis for further investments.

Main concerns regarding today's market development

Landside

Survival of the smaller and medium companies
Overcapacity of tonnage
Low prices/price pressure
High competition in the hinterland market
Financial/refunding problems

Delay in the market development
Lack of financing in new technologies
Environmental issues are not seen as an added value

Infrastructure bottlenecks
Market protection, lack of innovation within regulators
Monopoly position on some trades
Achieve industrial consensus between port-hinterland stakeholders
Short term goals versus long term sustainability
Financial crises

Missing standardisation and harmonisation (both: land and and seaside)

Answers by questionnaires Confirmed by

	Hinterland terminal operators and Dry Ports	Forwarding agents	Rail- and barge operators	Cargo owners	Sector Associations/ Organisations	Workshops	Telephone or 1:1 interviews
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23	3	1	1	1			
	1	2					2
	2	2	1	2	1		2
	1	1	1		1		3
	1	1					

3				1			
				1			
				1		X	

3	2				1		4
1					1		
1				1			
1					1	X	
3	1			1	1		
1			1				

						X	6
--	--	--	--	--	--	---	---

Figure 2 - Main concerns regarding today's market development, separated by sectors (landside)

3.2. Hot Topics

Following figures visualise the hot topics identified by the questionnaires. Results were separated by actors operating at the seaside or landside (in each case by descending order of times mentioned).

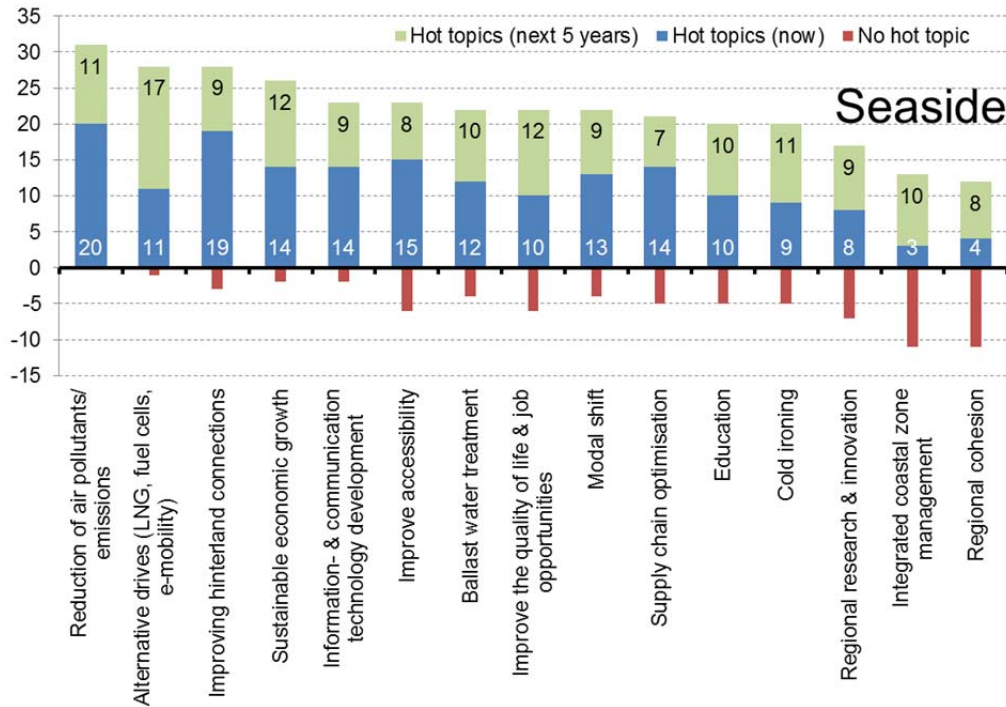


Figure 2 - Hot topics from the seaside perspective (by questionnaires)

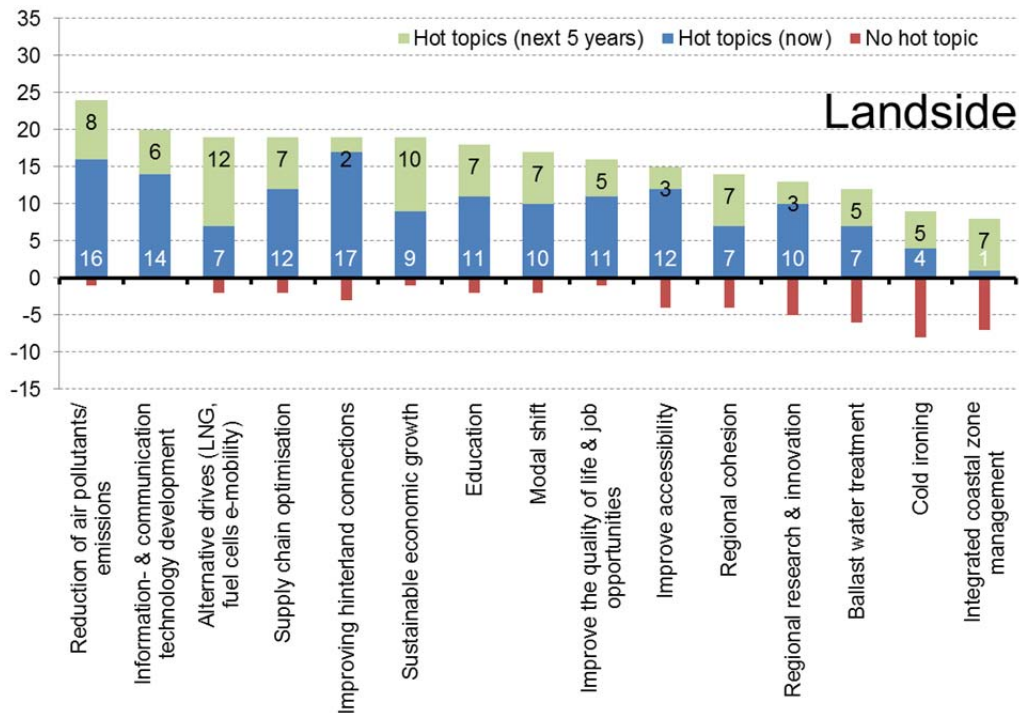


Figure 3 - Hot topics from the landside perspective (by questionnaires)

Hot Topics

Answers by questionnaires

Confirmed by

Seaside perspective

- Reduction of air pollutants/ emissions
- Alternative drives (LNG, fuel cells, e-mobility)
- Improving hinterland connections
- Sustainable economic growth
- Information- & communication technology development
- Improve accessibility
- Ballast water treatment
- Improve the quality of life & job opportunities
- Modal shift
- Supply chain optimisation
- Education
- Cold ironing
- Regional research & innovation
- Integrated coastal zone management
- Regional cohesion

	Ship Owners, ship brokers and -agents				Port authorities				Seaport terminal operator				Shibuilding and ship repairer				Sector Associations/ Organisations				Workshops Telephone or 1:1 interviews	
	Total	Now	Next 5	No hot topic	Total	Now	Next 5	No hot topic	Total	Now	Next 5	No hot topic	Total	Now	Next 5	No hot topic	Total	Now	Next 5	No hot topic		
31	9	7	2	0	6	3	3	0	7	4	3	0	1	1	0	0	8	5	3	0	X	3
28	9	4	5	0	6	3	3	1	5	0	5	0	1	0	1	0	7	4	3	0	X	6
28	5	5	0	2	7	4	3	0	7	5	2	0	1	0	1	0	8	5	3	1	X	4
26	5	3	2	2	5	2	3	0	7	5	2	0	1	0	1	0	8	4	4	0	X	
23	5	4	1	0	6	3	3	1	3	2	1	1	1	1	0	0	8	4	4	0	X	4
23	4	4	0	3	5	3	2	2	6	4	2	0	1	1	0	0	7	3	4	1	X	
22	7	4	3	1	5	2	3	0	2	1	1	3	1	1	0	0	7	4	3	0		
22	5	3	2	2	4	1	3	2	3	0	3	2	1	1	0	0	9	5	4	0	X	
22	6	4	2	0	3	2	1	2	6	4	2	0	0	0	0	1	7	3	4	1	X	3
21	4	4	0	2	6	2	4	1	3	3	0	1	1	1	0	0	7	4	3	1	X	2
20	4	2	2	2	3	1	2	2	3	1	2	1	1	1	0	0	9	5	4	0	X	4
20	6	4	2	1	4	2	2	1	4	1	3	2	1	0	1	0	5	2	3	1	X	
17	2	2	0	4	3	1	2	1	4	1	3	1	1	1	0	0	7	3	4	1		
13	2	0	2	4	1	0	1	3	2	0	2	3	1	0	1	0	7	3	4	1		
12	4	1	3	3	0	0	0	4	2	0	2	2	1	1	0	0	5	2	3	2		

Figure 4 - Hot topics from the seaside perspective (by questionnaires and business sector)

Hot Topics

Answers by questionnaires

Confirmed by

Landside perspective

- Reduction of air pollutants/ emissions
- Information- & communication technology development
- Alternative drives (LNG, fuel cells, e-mobility)
- Supply chain optimisation
- Improving hinterland connections
- Sustainable economic growth
- Education
- Modal shift
- Improve the quality of life & job opportunities
- Improve accessibility
- Regional cohesion
- Regional research & innovation
- Ballast water treatment
- Cold ironing
- Integrated coastal zone management

	Hinterland terminal operators and Dry Ports				Forwarding agents				Rail- and barge operators				Cargo owners				Sector Associations/ Organisations				Workshops Telephone or 1:1 interviews	
	Total	Now	Next 5 Years	No hot topic	Total	Now	Next 5 Years	No hot topic	Total	Now	Next 5 Years	No hot topic	Total	Now	Next 5 Years	No hot topic	Total	Now	Next 5 Years	No hot topic		
24	5	1	4	0	6	5	1	0	3	3	0	1	5	3	2	0	5	4	1	0	X	2
20	7	3	4	0	3	3	0	0	4	3	1	0	2	1	1	0	4	4	0	0	X	3
19	3	1	2	0	6	2	4	0	2	1	1	2	5	2	3	0	3	1	2	0	X	1
19	4	2	2	0	5	4	1	1	4	3	1	0	4	2	2	0	2	1	1	1	X	2
19	6	4	2	0	5	5	0	1	4	4	0	0	3	3	0	1	1	1	0	1	X	2
19	4	2	2	0	5	2	3	1	4	4	0	0	2	0	2	0	4	1	3	0	X	
18	3	1	2	0	4	2	2	1	2	2	0	1	4	2	2	0	5	4	1	0	X	3
17	6	3	3	0	4	3	1	0	4	4	0	0	2	0	2	1	1	0	1	1	X	5
16	2	1	1	1	6	3	3	0	3	3	0	0	2	1	1	0	3	3	0	0	X	
15	5	3	2	0	4	3	1	2	3	3	0	1	1	1	0	1	2	2	0	1		
14	1	0	1	2	4	1	3	1	3	2	1	0	3	2	1	0	3	2	1	1		
13	2	1	1	1	3	2	1	2	3	3	0	0	1	1	0	1	4	3	1	1		
12	0	0	0	2	4	2	2	1	1	1	0	3	3	1	2	0	4	3	1	0		
9	0	0	0	2	4	2	2	1	1	0	1	3	2	1	1	1	2	1	1	1		
8	0	0	0	2	1	0	1	3	3	0	3	0	1	0	1	1	3	1	2	1		

Figure 5 - Hot topics from the landside perspective (by questionnaires and business sector)

Having a look at the different sectors hot topics (“now” plus “next 5 years”) it is obvious that the first five of the seaside perspective can be found again within the first six of the landside perspective (only the order differs).

Hot topic (now + next 5 years)	Ranking SEASIDE	Ranking LANDSIDE
Reduction of air pollutants/emissions	1	1
Alternative drives (LNG, fuel cells, e-mobility)	2	3
Improving hinterland connections	3	5
Sustainable economic growth	4	6
ICT development	5	2
Supply chain optimisation	10	4

Figure 6 - Comparison of the seaside- and landside hot topics, based on the questionnaires

While separating between the “hot topics (now)” and the “hot topics (next 5 years)” it is evident that respective orders change slightly. Additionally the seaside perspective is sometimes diverse from the landside perspective. The following analysis is based on the consolidation of the questionnaires, interviews and workshops.

The landside sees it as actual hot topic (now: 17x ticked, next 5 years: 2x ticked) to **improve hinterland connections**, whereas the seaside feels it will be still a hot topic in the next five years (now: 19x ticked, next 5 years: 9x ticked). Especially sea port terminal operators and port authorities (acting as operator too) see future needs to improve, having in mind the forecasted increase of cargo volumes² which has to be transported to the hinterland of the ports, as stated during telephone interviews. As vessels become larger and volumes to be handled at the same time increase, there is a pressure on sea port terminal operators to increase their productivity accordingly. During telephone interviews it was confirmed that actors in Germany and Sweden try to overcome this pressure by e.g. dry ports as extensions to their existing sea port areas. Whereas e.g. in the UK and Norway the dry port concept has been overtaken by port centric logistics strategies where goods are stored and distributed at or near the port, as findings from the workshops highlight. Another aspect (especially German actors, both land- and seaside) are faced with, is the shortage of infrastructure due to increasing freight volumes, both on a national and international stage. Infrastructure projects take too long and space for green field projects becomes rare in Germany as stated by 4 interviewees during telephone interviews.

Furthermore the issue of imbalances was placed during one workshop and confirmed by telephone interviews. According to the replies it is still a topic how to overcome Imbalances especially as transshipment costs are high.

While analysing the questionnaires the **ICT development** seems to be an actual hot topic too (seaside: 23x ticked, landside: 20x ticked). During the interviews and workshops diverse opinions were

² The available tonnage of the world container ship fleet is growing faster than the forecasted increase of cargo. Due to that described concerns about freight rate development, over capacity, etc. are still valid.

placed, which are depending very much on the view point to this issue. Following a short aggregation of the main points highlighted:

- What is needed (also in the future) are solutions **to overcome the lack of information/flow of information** between partners in the transport chains (issue was placed during the Bergen workshop, confirmed by telephone interviews (4) as well as in 4 questionnaires).³ In detail following aspects were named:
 - o An (earlier) **data transfer from sea (terminal) side to hinterland** enabling better interconnectivity/ mode choices.
 - o Port community systems exist, but there are difficulties to transfer data to inland systems. This need is expressed by landside actors.
 - o Just in time still is an issue, especially if it comes to delivery/pickup of goods at the terminal side

The both last named ICT issues might be also seen in connection with the hot topic **supply chain optimisation**. This issue is more important on the landside perspective (ranking 4), then on the seaside (ranking 10). During the workshops too many different standards (data transfer) as well as bad data quality are named as problems. Additionally it should be kept in mind that the data needed by a terminal operator is not necessary the same as for hinterland actors (stated during two telephone interviews and workshop).

Another aspect which was placed during the workshop is, that most firms look at their ICT needs internally (tracking systems, documentation systems, etc.), however a collaboration might be possible to find solutions to overcome gaps concerning the flow of information/interfaces.

- Future need is seen by the seaside actors if it comes to **e-navigation** (e.g. Galileo based applications). This issue was named in two questionnaires and was mentioned by a telephone interview too.

Besides some needs of improvement related to ICT as measures for a **supply chain optimisation**, a **better coordination** of the **clearance** through all modes of transport was expressed. **Reliable forecast data for transport volumes and corridors** is required by sea- as well as landside actors to back up infrastructure projects, to steer good flows in advance and to hold out sufficient capacity as the need arises (2x ticked in the questionnaires, 2 replies by telephone interviews). Pre-notice to drivers, pre-gate-, and pre parking solutions have been mentioned by the landside actors too (3 times mentioned by telephone interviews).

A major point which contains different hot topics is **sustainability**. Besides the catchwords reduction of air pollutants/emissions, alternative drives, the modal shift plays a role too, in order to reach the

³ The **NS Frits project** (Interreg IV B) is focusing on a multi-lingual electronic communications and data capture system for the road freight sector to provide information to end users - drivers, transport managers. This system is e.g. linkable to terminal- and road management systems.

core aim of sustainability. All named aspects were frequently named by the participants. Some named ballast water treatment, ICZM, renewables, noise reduction measures and recycling of ships to be a hot topic:

- The **reduction of air pollutants/emissions**⁴ is seen as a priority hot topic right now, by both seaside- (31x ticked) and landside actors (24x ticked). The EU is pushing forward initiatives to reduce emissions and has sets up high targets like recorded in the EU Whitepaper. Measures to meet the new regulations are an actual hot topic along all actors within the maritime business environment as stated during the workshops and telephone interviews. Nevertheless cost of implementing new technology or choosing alternative modes is a significant factor and has very massive impact on the cost efficiency and therefore competitiveness of companies, which was highlighted during the workshop in Bergen and telephone interviews. Related to that cost efficiency transparency for implementing emission reduction technology was highlighted to be problem (especially by ship owners) during the workshop.

One possibility to scope with stricter regulations on emissions are **alternative drives**. It is already a hot topic ranking the first places in the landside's view point and will even reach more importance in the future (all together 19x ticked). E-mobility and fuel cell technology are strong driving forces for future drive technology and known in the whole sector. Since the earlier past the shipping industry is faced with this the topic "alternative drives" too (especially LNG as stated during workshops and telephone interviews) and expect it to be a strong hot topics also in future (all together 28x ticked). Telephone interviewees as well as workshop participants (seaside sector) see actual and future needs especially in the field of:

- Developing EU wide rules and regulations, incl. standards (e.g. right now passenger ferries are not allowed to be filled while passengers are on board)
- Setting up infrastructure in big ports in parallel (not one after the other)
- Incentives for using LNG by adapt existing taxation of ships (LNG needs more bunkering space)

Same with the **cold ironing** issue within the shipping industry (20x ticked), standing for on-shore power supply for vessels in ports. It still is an issue but especially in the cruise sector, as stated by participants of the workshops.

- The **modal shift** to more sustainable transport can support the high environmental goals of the EU (22x ticked by seaside actors and 17x ticked by landside actors). Modal shift and SSS are still on the agenda but comparing the mode of transport used in SSS/coastal shipping/IWT with rail- and road freight sector the level playing field is not the same, was remarked frequently during the workshops and telephone interviews. This results in an unbalanced market. Other strong impacts on the choice of a mode are transport costs and reliability of the transport modes according to participants of the workshops and telephone interviews.⁵

⁴ The CNSS project (Interreg IV B) is showing what is available, what is in testing and what is in implementation phase concerning emission and greenhouse gas reduction measures from ships and recommends future solutions to the EU.

The iTransfer project (Interreg IV B) develops innovative, sustainable solutions to improve regional accessibility by water-based public transport in the NSR.

⁵ The StratMoS project (Interreg IV B) is focusing on promote and facilitate the shift of cargo from road to sea based inter-modal transport.

The LO-PINOD project (Interreg IV B) is focusing on enhance multi-modal accessibility and interconnectivity of ports of regional importance

The Food Port project (Interreg IV B) aims to develop the NSR as the best food cluster and hub in Europe for food products delivered via efficient and sustainable transport systems.

- Participants at the UK/Norway workshop stated that the **ballast water treatment** is an issue for some operators but it is not perceived to be a major problem. Having a look into the replies out of the questionnaires the answer seems to be more complex (22x ticked by the seaside). Especially ports as well as ship-owners associations still see need for actions.⁶ One interviewee stated in the questionnaire very concretely that the ballast water treatment legislation is in place but **it is unclear how vessels will be monitored and tested** to ensure that their equipment is compliant.⁷
- The **integrated coastal zone management** was mentioned by some interviewees (13x ticked by the seaside and 8x by the landside) to be a hot topic in the next five years.⁸
- Workshop participants mentioned **renewable energies** to be a hot topic.⁹ Especially offshore wind parks, wave and tidal machines. During the UK workshop it was mentioned that many European shipbuilders are moving into renewables. Connected to the construction offshore wind parks the **impact by under-water noise** was mentioned by two interviewees in the questionnaire. They stated that this topic is not yet that widely recognised, even though it can lead to substantial damage of animal functioning (both in functional behaviour and as to physiological responses) throughout the animal kingdom.
- Three German telephone interviewees also stated that **noise reduction measures** (especially rail/road) will be on the future agenda (1x mentioned in a questionnaire).
- The North Sea Foundation (NL) claimed that the **recycling of ships** is a hot topic: Producer responsibility (one of the EU's cornerstones) for ships is important, since 80 % of all vessels end up on a beach to be dismantled under dangerous and polluting circumstances. Recycling processes in general were additionally mentioned in two questionnaires.
- Finally the **sustainable economic growth** was highlighted in the questionnaires frequently (26x ticked by the seaside and 19x ticked by the landside) with a clear tendency to become even more important in the next five years. On the one hand implementation measures for being more sustainable (green) in general seem to be mirrored. On the other hand it is conjecturable that a more steadily growth in a market with a healthy competitive environment is desired (derived from the concerns related to the survival of SME mentioned in chapter 3.1).

The **improvement of quality of live & job opportunities** was mentioned to be a hot topic by both seaside (22x ticked) and landside actors (16x ticked). Especially in the seaside's perspective it will become even more important in the future (12x ticked as being important in the next five years). Besides the lack of qualified employees (frequently named during the workshops and telephone interviews: mariner and truck driver), work conditions (negative influence on health of the workers was mentioned in two replies within the questionnaires) are focus areas. A problem highlighted during the

⁶ The [Ballast Water Opportunity project](#) (Interreg IV B) is focusing on the facilitating the ratification of the Ballast Water Management Convention.

⁷ The answers in figure 3 (hot topic from landside perspective) related to ballast water belong to intermodal companies which are also active in shipping.

⁸ The [BLAST project](#) (Interreg IV B) aims to improve integrated coastal zone management and planning and maritime safety by contributing to harmonising terrestrial and sea geographical data.

The [SUSCOD project](#) (Interreg IV B) develops an application of integrated coastal zone management through an innovative ICZM 'assistant' web tool.

⁹ The [E-Harbour project](#) (Interreg IV B) aims to create a lasting change towards sustainable energy logistics for NSR harbour cities

Bergen workshop is the poor working condition for mariners and truck drivers, e.g. being not home for long time.¹⁰ Additionally the De Ruyter' Maritime Institute (NL) stated in the questionnaire:

“... that there is hardly no education nor awareness with regard to environment in the leisure industry. Also in Marina's much can be improved.”

A big majority of telephone interviewees and workshop participants claimed a **missing harmonisation of rules and regulations** as well as a **missing standardisation** within the European Union. This topic was brought up by 7 replies in the questionnaires related to specific suggestions concerning future priorities in terms of maritime transport policy. While same rules and regulations for all players in the EU market were named 6 times in the questionnaires, following individual opinions regarding homogenisation could be extracted:

- Homogenisation of European port documentation
- Homogenisation of legislation of all countries within the North Sea area would greatly assist coastal operators
- Homogenisation of training of VTS operators as well as European sea staff

During the Bergen workshop the strong need to have only one valid standard and not several, was expressed. Furthermore it was wished that this standard has to be set unalterable by European authorities. This will guaranty the business sectors that investments as well as R&D in measures using this standard are not lost in the end.

Same applies to the wish to have harmonised rules and regulations valid at least EU wide to have the same competition conditions (for example the SECA implementation was mentioned by workshop participants and telephone interviewees).

During the interviews and especially during the workshops it figured out that the different NSR countries are faced partly with diverse problems. A hot topic which is valid for some countries in the NSR is not obligatory a hot topic for all NSR countries. This is due to the fact that the NSR countries combine different cultures and different socio-economic conditions (e.g. density of population, infrastructure needs, transit country, etc.). This results in a **need of adaptive measures and/or more open (not to stringent focused) programmes**, so that each country has a chance to overcome its individual problem too and not be outdistanced by the others. This has to be considered while discussing findings further.

¹⁰ The NMU Project (Interreg IV B) aims to common and lasting transnational network of universities that will directly address the needs of the maritime industry

The following figure summarises the findings and visualises the identified hot topics from the maritime business sector's perspective in the NSR.

Hot topics from the maritime business sector's perspective in the North Sea Region

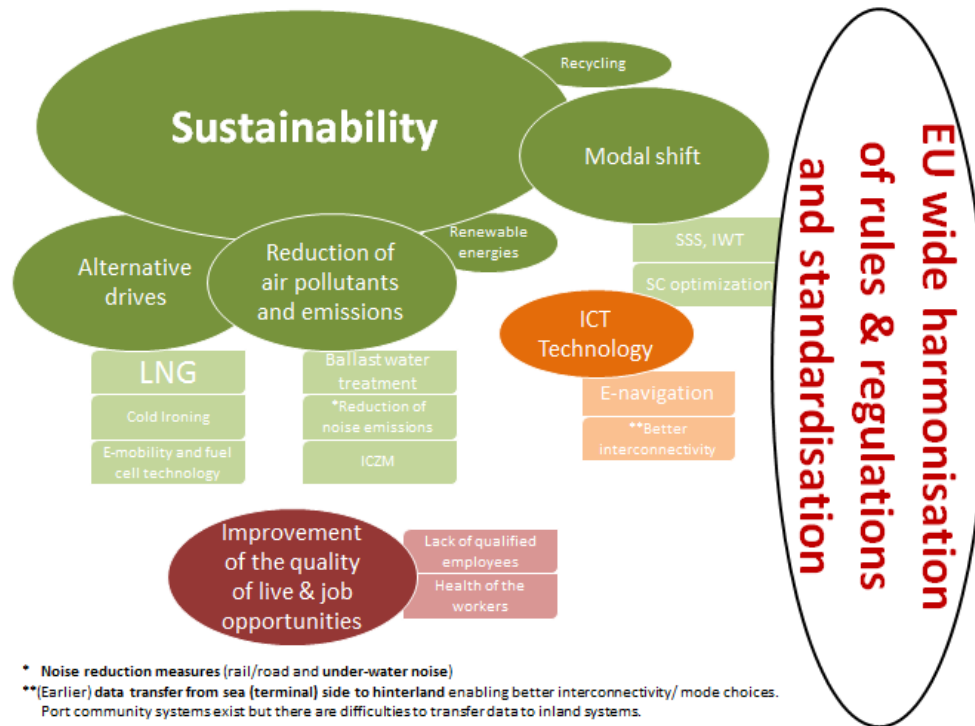


Figure 7 - Hot topics identified (land- and seaside)

3.3. Current maritime transport research gaps and future needs to encounter them

The following figures visualise the top ten research needs identified by the questionnaires. Results were separated by actors operating at the seaside or landside (in each case by descending order of times mentioned).

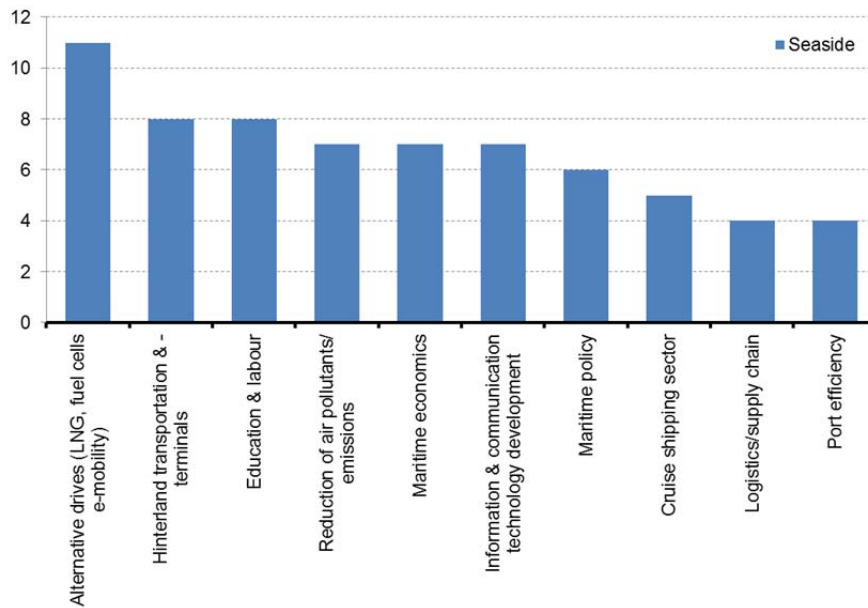


Figure 8 – Research gaps from the seaside perspective (top 10)

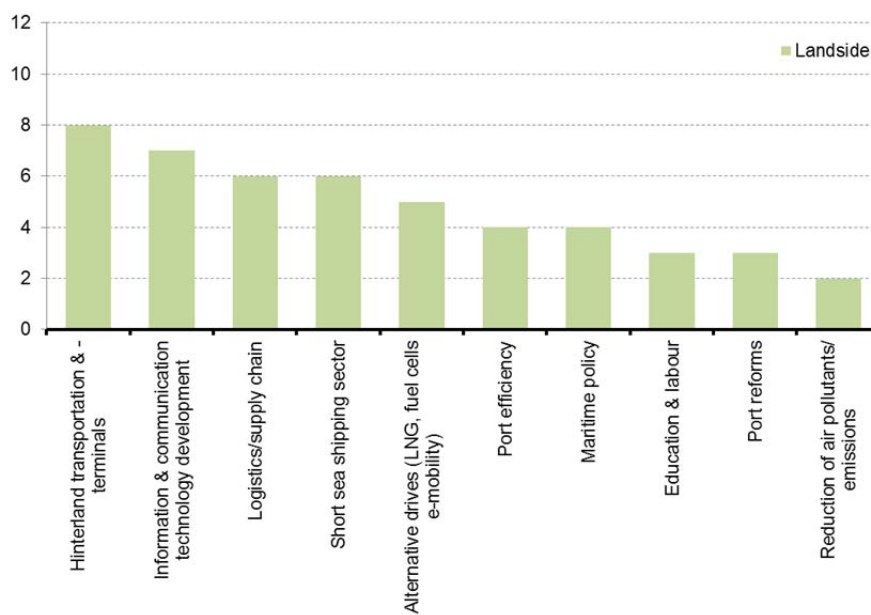


Figure 9 - Research gaps from the landside perspective (top 10)

The “**reduction of air pollutants/emissions**” is the main headline which contains different topics where research is wished (seaside ticked headlines connected to this issue 24 times, landside 9 times). Turning the attention to the seaside perspective, one of the urgent maritime transport research gaps to overcome are **alternative drives (LNG)**, ticked 13 times. This was confirmed by the Bergen workshop and telephone interviews. Especially research in alternative fuels for the future and a better environmental performance (fuel efficiency) for now is wished by the seaside (mentioned 5 times in the questionnaire and confirmed during two telephone interviews). While these topics seem to be already pushed forward in the past on the landside perspective (e-mobility- and fuel cell technology) the seaside seems to be lagging behind.

Some seaside actors (3 replies during telephone interviews) still see necessary research activities related to scrubber technology. Both sea- as well as the landside actors see further research needed for a better cost-efficiency factor of solutions, as well as an improvement of (existing) solutions for the future. This was indicated mainly via the telephone interviews and during the workshop in Bergen. Another topic the shipping sector is faced with is a better cost efficiency transparency for implementing emission reduction technology. This issue was brought up by two sectoral organisations in the questionnaires and was confirmed during one workshop as well as during telephone interviews. To improve mitigation technology is named by one interviewee in the questionnaire.

Findings extracted from the questionnaires show that research in **information and communication technology** still is a topic, both on land- and seaside (all together 24 times ticked). The workshops as well as telephone interviews allowed a more detail picture: On the landside, solutions for an (earlier) data transfer from sea (terminal) side to the hinterland to enable better interconnectivity/mode choices are wished. There is still a need to overcome the lack of information/flow of information between partners in the transportation chain. This is no problem for big ocean carriers having their own logistics department in house with connected IT systems.

Reliable forecast data for transport volumes and corridors will be required by sea- as well as landside to back up infrastructure projects, to steer good flows in advance and to hold out sufficient capacity as the need arises. This was brought up by in three questionnaires and confirmed by telephone interviews.

Additionally e-navigation should be researched in detail mentioned in two questionnaires and confirmed in telephone interviews.

The need of research in **hinterland transportation and –terminals** (in each case 10 replies by sea-/landside connected to this headline) is based especially on solutions for performable hinterland links and better solutions for transport concepts (confirmed by workshop). The German question is how to overcome bottlenecks on infrastructure which was placed 3 times in the questionnaire. Another problem many countries are faced with is how to overcome imbalances in good flows and repositioning of empty equipment (highlighted in workshops as well as telephone interviews).

The environmental impact of noise (especially **under water noise**, integrating shipping patterns with scientific understanding of animal migratory patterns and specific vulnerable aspects such as seasonal, reproduction-related) is a topic where research is needed too and was placed by two interviewees in the questionnaires. During telephone interviews this issue was confirmed as being a future topic which requires more research.

Individual answers (questionnaires) from interviewees are highlighting additional need in research in the following fields:

- Extensive modelling of lifecycle costs of vessels accounting for proposed legislative changes. This should include the effects of slow steaming and installation of dual fuel engines.
- Ballast water free vessels.
- Sustainable use of resources, biodiversity, green coastal tourism and innovative technologies in leisure boats

Generally it was mentioned very frequently during the Workshop in Bergen, during personal interviews, as well as by 4 answers out of the questionnaires that there is a lot of research but too little implementations take place (the innovation part). There is the feeling that Brussels is piled with reports, due to initiatives from research institutions, but little effect coming out of this. During the workshops and telephone interviewed, it was figured out that the feeling of having too much research and too little implementation adheres more about people/knowledge management:

Many innovative concepts and knowledge is available, but most **concepts are not shared** widely (also due to a fear of competition). Practical evaluations, especially of projects that did not work, are not available. Nevertheless it is important to know why projects/prototypes did not full fill expectations to overcome problems and to avoid making the same again. Research should focus on gathering and distributing information for others.¹¹ Already indicated in the questionnaires received (6 replies) the wish to have an **EU (maritime) transport “think tank” and coordination centre** was expressed during the workshop in Bergen and telephone interviews in the end quite often. This is seen as a solution to make research and outcomes more available for a wider range of stakeholders. At the same time it was clearly stated that there should be only one centre which consolidates research results¹² and offering e.g. a web based application to find/filter outcomes by themes, problems, etc.

Another aspect named during the workshop in Bergen and during telephone interviews is the **lack of application** out of research/science which **satisfying industry's needs**. The business sector should be more included in research as it can highlight practical problems and needs which might be forgotten otherwise. Participants support fundamental research projects, but the chain from fundamental research into the market introduction should stay in place. **A platform to try new technology and research results on an EU wide basis** was expressed, as well as better funding possibilities for e.g. prototypes¹³. While in Germany prototype projects exist it is not the case in Norway.

Research agendas on a country basis might help bundling and focusing on different topics. There is the feeling that there is no coordination on research (e.g. the NL focusing on clean ship developments and smart ports). This last aspect was expressed in two questionnaires and was highlighted in a workshop too.

¹¹ Some participants stated that transporters look too much at their profitability and are not willing to invest in costly new technology.

¹² Suggested was to have one representative office by each country which observes the local market, consolidates results out of the market and has to report to an EU main office/institute. The main office/institute should also act as point of entry for all other stakeholders.

¹³ The ROI of these projects are very often unclear which embarrasses investments.

Current maritime transport research gaps and future needs to encounter them	Answers by questionnaire Seaside perspective						Answers by questionnaire Landside perspective						Confirmed by		
	Ship Owners, ship brokers and -agents	Port authorities	Seaport terminal operator	Shibuilding and ship repairer	Sector Associations/Organisations	Workshops	Workshops	Telephone or 1:1 Interviews	Hinterland terminal operators and Dry	Forwarding agents	Rail- and barge operators	Cargo owners	Sector Associations/Organisations	Workshops	Telephone or 1:1 Interviews
Reduction of air pollutants/emissions Alternative Drives (e.g. LNG) Better fuel efficiency/environmental performance Scrubber technology	24	1 2 1	1 3 2	1 1 2	3 6 2	X		9	1 3 3		1		X		
Environmental impact of (under water) noise and reduction measures	2	1			1			1				1			
Better cost efficiency transparency for implementing new technology	1				2	X		0							
Improved mitigation technologies	1	1						0							
Information and communication technology (Earlier) data transfer from sea (terminal) side to the hinterland to enable better interconnectivity/mode choices / Overcoming the lack of information/flow of information between partners in the transport chain Reliable forecast data for transport volumes and corridors E-navigation	11	2 1 1	1 2 1	2 1 1	2	X		13	3 2 1	1 2 1	1	1		3 2	
Hinterland transportation and –terminals Solutions for performable hinterland links/better solutions for transport concepts How to overcome bottlenecks on infrastructure Imbalances/Repositioning of empty equipment	10	1 1 1	3 1 1	1 1 1	3	X		10	1 1 2	2 2 2	2 2 1		X X		
Logistics/supply chain	4	2			2			6	1 2	1 1	2				
Education and labour	7	2	1	1	3	X		3		1	1	1	X		
EU (maritime) transport “think tank” and coordination centre Coordination on research	6 4	1 1	2 1	1 1	2 2	X X		0 1					X X	1 2	

Figure 10 - Current maritime research gaps and future needs to encounter them (by questionnaires and business sector)

3.4. Specific suggestions concerning future priorities in terms of maritime transport policy

To push forward the **harmonisation of rules and regulations** as well as **standardisation** in the European Union is a major request interviewees have (7 replies in the questionnaires, confirmed by workshops and telephone interviews). There is the strong need to have only one valid standard and not several was stated during the Bergen workshop. This standard has to be set unalterable by European authorities. This will guaranty the business sector that investments as well as R&D in measures using this standard are not lost in the end. Additionally programmes for supporting implementation of standards and programmes for prototype testing should be reconsidered, was stated at the Bergen workshop.

Same applies to the wish to have harmonised rules and regulations valid at least EU wide to have the same competition conditions (for example the SECA implementation was mentioned by workshop participants and telephone interviewees).

Furthermore it was highlighted by 4 seaside actors during telephone interviews that a close link to IMO rules and regulations is favoured. Individual replies received in the questionnaires and telephone interviews covering following facts: the EU should push forward one worldwide policy for emission control, ballast water treatment and other environmental issues.

A homogenisation and standardisation process is also requested if it comes to documentation and other bureaucracy formalities (3x mentioned in the questionnaires and confirmed during the Bergen workshop). A **simplification of administrative processes** connected to maritime transport is favoured e.g. customs on sea- and landside. If new regulations and rules apply there is often a **lack of guidance and support** how to implement them. It was figured out that an on-going cooperation between policy and industry as a measure to reach new goals is missing. Following examples were named during the workshops:

- SEEMP implementation (lack on guidance on how companies should construct it)¹⁴
- Safe return to port (lack of guidance on how vessels should implement it)¹⁵
- SOx and NOx regulation
- Ballast water convention it is unclear how vessels will be monitored and tested

To have one **EU (maritime) transport “think tank” and coordination centre** was brought up via two questionnaires and strongly confirmed during the Bergen workshop as well as during telephone interviews. This is seen as a solution to make research and outcomes more available for a wider range of stakeholders in the whole European Union.¹⁶ At the same time projects dealing with the same issues and do not know each other might be avoided:

- On the one hand the danger of having the same results was named

¹⁴ Ship Emergency Efficient Management Plan (SEEMP) is intended to assist the industry in managing the environmental performance of ships and being a practical means for improving operational efficiencies.

¹⁵ The new SOLAS regulations are a pro-active action of the International Maritime Organization (IMO) regarding the increasing size of passenger ships and the difficulties in safely evacuation of passengers. The Safe Return to Port regulations will imply a change of the design process for designers, ship builders, classification societies and Flag State Administration.

¹⁶ Suggested was to have one representative office by each country which observes the local market, consolidates results out of the market and has to report to the EU headquarter. The EU headquarter should be the point of entry for all stakeholders.

- On the other hand similar projects in different parts of the EU might enrich findings by highlighting different influencing factors and circumstances for implementation of new technology, if they exchange with each other.

This centre might also be function as information platform for politicians, as stated by workshop participants. They also see the need to initiate a **closer consultation of policy makers (EU, national, regional) with all stakeholders involved** (this is supported by two replies out of the questionnaires). Very often a lack of knowledge or connection between policy makers and the industry was remarked which results in insufficient and/or not accomplishable regulations.

If it comes to **sustainability** the **alternative drives** are one of the most important topics. Pushing forward alternative drives means (as per workshop participants) to support and find solutions to related consequences:

- Especially in shipping the setting up of a **LNG supply chain** has to be brought forward (incl. bunkering infrastructure development).
- Additionally named was a further development of **renewable energies** like offshore wind parks, wave and tidal machines.
- The impact by **under-water noise** is not yet that widely recognised and should be set on the EU agenda (additionally remarked in two questionnaires).
- Develop a more integrated understanding of **how ships can affect ecosystem functionality** and develop a generic strategy for integrating such understanding in maritime policy process (additionally remarked in one questionnaire).
- Recycling processes are of importance (additionally remarked in two questionnaires)
- A **new taxing system** has to be introduced **based on environmental aspects** to support the introducing of cleaner technologies (the Environment Ship Index is a first step). This implicates that:
 - o A strong incentive vs. punishment tax system has to be established
 - o All transport modes should be indexed the same way on e.g. CO₂ (e.g. shipping index, which still has to be harmonised)
 - o The internalisation of external costs will be the logical extension.

The **integrated coastal zone management** seems to be on the agenda in the future but no significant opinions were collected. This might be because stakeholders interviewed were not involved in this topic so far. Nevertheless they agreed (questionnaires) it will be a hot topic in future.

Having a look to the issue **supply chain** and **modal shift** following aspects demonstrating a prioritisation, highlighted by workshop participants:

- The level playing field for SSS and IWT is still not the same compared with the rail and road sector (also mentioned in three questionnaires).
- Relaunching the MoS concept well integrated in an intermodal port-hinterland approach is wished (also stated in one questionnaire and supported by telephone interviews)
- Stronger focus on the hinterland traffic by rail and the development of the infrastructure and terminals is needed as well as a promotion of European hinterland rail corridors.
- Bundling of good flows from seaside to landside transport centres
- Better interconnectivity of information flows by ICT solutions to overcome information gaps, especially between transoceanic- and continental traffic (also highlighted in 5 questionnaires).
- Pre-notice notifications to truck drivers (just in time collection and pick-up of goods).

UK participants of the workshop mentioned that the **maritime transport sector lacks attention by the federal and European administration. Maritime activity is not lobbied in the same way rail and road is.** It is not an issue for voters, and is only in the media when there is a disaster.

Some minority of replies see future priorities in the following fields of action:

- Education and training: Overcoming the (future) lack of qualified workers (especially mariners and truck drivers) as well as overcoming poor work conditions in some fields (negative influence on health of the workers), was mentioned by some workshop participants. One reply in the questionnaire highlighted the need of a modernisation of dock labour organisations/structure in ports. .
- Infrastructure: two replies in the questionnaires highlight a need for a solution for a **better allocation of infrastructure subsidies**. They should be shared according to real market needs and not according to the best lobbying activities (partly confirmed by workshop participants). Additionally a **faster decision and implementation** on infrastructure projects are wished (especially mentioned by three German telephone interviewees).
- Shipping: One reply in the questionnaire is dealing with overcome the gap that there is no clear connection between registered flag and nationality of the ship owner. As a result of that large flag states (like Panama, Liberia) have too much political power at the IMO to the way international shipping is governed (one interviewee).

4. Summary

The main **concerns regarding today's market development** on the seaside's perspective are:

- An increasing competition due to overcapacity in tonnage and terminal capacity (North West Europe) which results in very low prices and a hard cutthroat competition, enabling only big players to survive.
- Overcoming technical aspects and implementation costs to meet stricter environmental regulations.
- The danger in near future of collapsing markets in an integral viewpoint.

Turning the viewpoint to the landside sector the main issues are:

- Securing the survival of the smaller and medium companies in consideration of the market power big leading ocean carriers and logistic players occupy if it comes to price negotiations, also in relation to the market problems (overcapacity, increasing competition) they are faced with.
- Lack of financing power

Both sectors are claiming the lack of financing power to invest in new technology/business due to the hard competition, the financial crises, and rising costs. There is a big imbalance regarding short term goals versus long term sustainability where sustainability is debilitated.

Following figure summarises the findings and visualises the **identified hot topics** from the maritime business sector's perspective in the NSR.

Hot topics from the maritime business sector's perspective in the North Sea Region

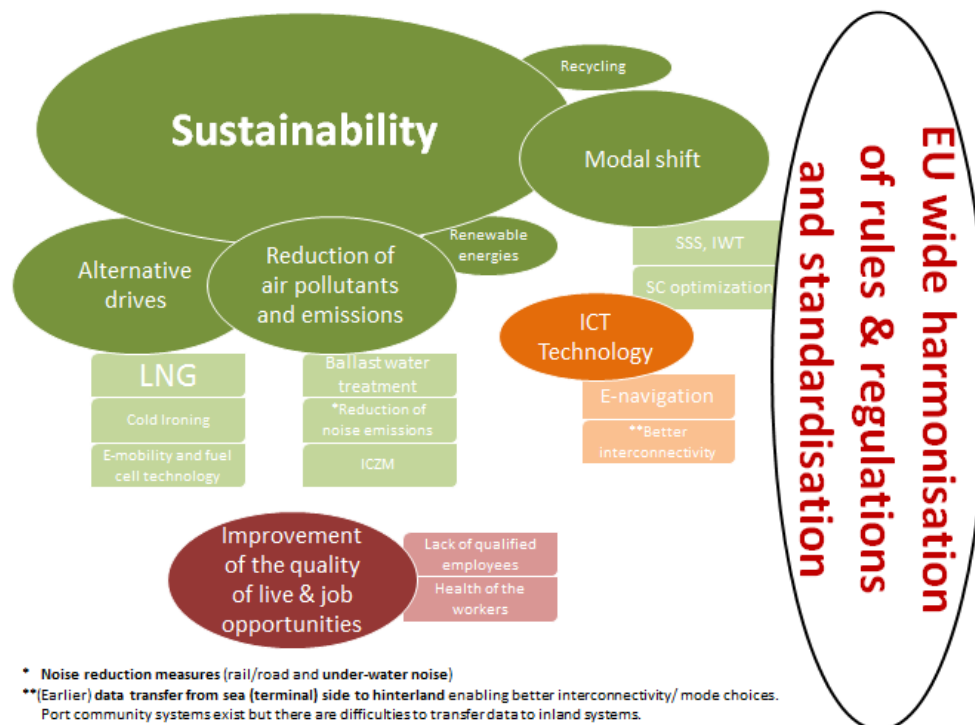


Figure 11 - Hot topics identified (land- and seaside)

Having the focus on the current **maritime transport research gaps** and future needs to encounter them following results have been spotted out:

- Research in alternative fuels and fuel efficiency
- Research to increase interconnectivity between ICT solutions to overcome information gaps between stakeholders in a transport chain (standards)
- Reliable forecast data for transport volumes and corridors
- Under water noise and its effects to the animal kingdom as well as understanding of animal migratory patterns and specific vulnerable aspects
- Modeling of life cycle costs

Future needs to encounter

- An EU maritime transport “think tank” and coordination center is favored
- Better integration of the business sector in research activities to deal with the real needs of the sectors
- A platform to try new technology and research results on an EU wide basis
- Research agendas on a country basis to bundle and focus on different topics (coordinated by the EU)

Specific **suggestions concerning future priorities in terms of maritime transport policy** are:

- Developing a strong vision concerning EU maritime policy and a stronger communication concerning the high value of the maritime sector - creating a better image
- A high level of harmonization of rules and regulations and standardization
- A simplification of administrative processes
- Better guidance and support of the political area if it comes to implementation of new regulations
- Installation of one EU (maritime) transport “think tank” and coordination center which is also actively involved in a closer consultation between maritime stakeholders and policy makers to avoid insufficient and/or not accomplishable regulations
- Pushing forward alternative drives with all its consequences, like a new taxing system supporting the use of new and more environmental friendly technology. Same environmental index and rules for all modes of transport
- Integrated coastal zone management
- Supporting SSS and IWT and overcoming the imbalance between subsidies concerning other modes
- Support and investment in infrastructure to bundle good flows from seaside to landside traffic centers
- Better allocation of infrastructure subsidies (real market needs vs. lobbying)