

SPECIAL ISSUE ON THE FUTURE OF THE MARITIME SECTOR IN THE BALTIC SEA REGION

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Introduction to SmartComp – Smart Competitiveness for the Central Baltic region

By Eini Laaksonen

The maritime clusters in the Baltic Sea region are facing new challenges in the global shipbuilding industry. Far Eastern maritime clusters, led by China, compete for the position of the greatest shipbuilding nation in the world. Their competitive advantage lies in producing series of standardized vessels at low costs, whereas the European shipyards with their subcontractors and suppliers provide high-class quality, specialized solutions and technologies. For the European maritime clusters, keeping one step ahead of the fast-growing Asian competitors is not an easy task, particularly when the local environment is facing various changes that affect also shipping companies, ports and port operators. For instance, the tightening environmental regulations as well as rising cost levels are currently shaping the maritime clusters' business environment in the Baltic Sea region. In addition, the political decision-makers and various interest groups and associations strongly affect the maritime actors' playground. All these developments have their impact on cluster competitiveness – how is the future outlook for the competitiveness of the maritime clusters in the midst of the rapidly changing business environment?

SmartComp – Smart Competitiveness for the Central Baltic region is a Central Baltic INTERREG IV A Programme 2007–2013 financed project which aims to support smart, environmentally sustainable development, growth, competition and cooperation between maritime clusters, cities and universities in the Central Baltic region (CBR), i.e. in Estonia, Finland, Latvia and Sweden. The partners involved in the project include Union of the Baltic Cities, Commission on Environment Secretariat (Lead Partner, Finland), University of Turku/Centre for Maritime Studies (Finland), University of Turku/Turku School of Economics (Finland), Centrum Balticum Foundation (Finland), Åbo Akademi University (Finland), Tallinn University of Technology (Estonia), University of Tallinn (Estonia), Riga International School of Economics and Business Administration (Latvia), and Latvian Maritime Academy (Latvia). Through triple helix cooperation, the project consortium seeks new opportunities for the maritime clusters in the Central Baltic region. **This review of Baltic Rim Economies, Special Issue on the Future of the Maritime Sector in the Baltic Sea Region, is the first project output, comprising columns from invited experts.** Because of the differing backgrounds of the writers, this review brings to discussion various points and perspectives on the maritime sector's future.

Regarding the following project outputs, the SmartComp research consortium will publish the first SmartComp research report *Maritime cluster analysis in the Central Baltic region* at the end of December 2012. Based on the findings of the coming report, it can be concluded that the maritime clusters of the Central Baltic region have several factors in common, but are still separate and often compete with each other. However, in the future they should find ways to combine their strengths in order to increase the competitiveness of the region's maritime sector. The risk of accidents, such as oil catastrophes, concerns all coastal states, and boosts the investments in technologies and processes aimed at increasing the safety of navigation. The legal framework for vessel traffic in the Baltic Sea is also tightening, the sulphur emission regulations giving the most recent example. The maritime clusters in the Central Baltic region have to make remarkable investments in finding and implementing new solutions to meet the regulations. Although challenging, the

tightening environmental regulations could turn into an opportunity as well, making CBR countries forerunners in environmental-friendly technologies, life-cycle solutions and fuel efficiency.

However, at the same time also the rising cost levels threaten the profitability of the maritime industry, and the global competition is tightening as particularly Asian clusters are competing with lower production costs. Instead of prices, the Central Baltic region maritime clusters could compete with quality and specialization, which, however, requires financial and scientific resources for innovation activities. Availability of qualified workforce is also a common problem in the maritime sector, both due to aging population and shifting of experts to other industries. This challenge has to be met by guaranteeing the sufficiency and quality of education and creating an appealing image for the maritime sector. Common branding and communication activities could improve the image of the maritime sector and increase awareness of its importance for the CBR countries.

The main common feature of the Central Baltic maritime clusters is the proximity to Russia and, thus, a high transit traffic flow is taking place in these neighbouring countries. Russia is, however, investing heavily in developing its own port and land infrastructure with the aim of taking larger control over the transports. Nevertheless, the development of the Russian ports can increase the material flows in the region, and the other clusters have to make sure they are involved and make most of the business opportunities related to the gigantic development projects of the Russian maritime cluster.

The CBR clusters are still small in a global scale and are facing common challenges which could be better answered with coordinated solutions. The cluster companies should not only strengthen their internal cooperation networks but also establish connections to other clusters abroad in order to increase their business opportunities, knowledge flows and joint research and development (R&D). Encouraging this, however, requires government support for SME internationalisation and innovation activities as well as new mechanisms to finance investments. However, the cluster competitiveness ultimately stems from companies and their efforts for continuous development. By joining their forces around the Baltic Sea, the maritime clusters in CBR could better tackle their common challenges and compete with their large Asian counterparts.

To download the first SmartComp report with detailed conclusions and for more information about the forthcoming SmartComp publications and events, please visit the project website at www.cb-smartcomp.eu.

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Factors for safer shipping in the Baltic Sea

By René Sirol

Maritime affairs have long-term traditions and shipping has played an important role through centuries. Today shipping is a global business characterised by fierce economic competition.

Maritime affairs are governed and regulated by numerous conventions, codes, laws and regulations to make seagoing safe and environmentally friendly. In the shipping today the rules are getting tougher. There is a constant flow of new obligations to consider, legalize and adopt as regulations for shipping companies to follow and administrations to inspect.

International standards and regulations in this field are the responsibility of the International Maritime Organisation (IMO). In the course of its existence, IMO has developed number of conventions, codes, resolutions and circular letters. In addition to this, there are number of EU and Flag States regional requirements.

One of the priorities of the EU is safe shipping. Its goal is maximum safety together with protection of marine environment in its waters. For this purpose, the requirements regarding marine safety measures are being worked out and improved which in its turn, through the conformity of measures shows the way to the world that the ships not complying with the required standard are not welcome in EU ports.

At the same time one of EU strategy is to reroute cargo flow from motorways to rail and waterways. Special attention has been devoted to the implementation of short-sea shipping.

In the shipping context, safe and environmentally friendly shipping is definitely the most significant aim in present day shipping. There are a number of criteria or requirements introduced, the fulfilment or non-fulfilment of which forms the basis for safety assessment and a variety of measures introduced to inspect the fulfilment of the requirements, such as Port State Control, Flag State Control, etc., and sanctions applied. At the same time, this requires considerable investment and accompanies extra expenses for shipowners, to comply with all the standards.

The area of the Baltic Sea is special. It is small, a little over 415000 km² in size (incl. the Danish straits). Predominantly shallow waters with the average depth of 55m, the fairways in some places are quite narrow, and the marine environment most sensitive to pollution. The weather is changeable, from rough and stormy seas to rain, snow and fog. Another characteristic feature is ice, mostly in the northern and eastern part of the sea. In the coming decades the ice-breaker fleets of many countries is in need of renewal offering possibilities to develop and promote new technological solutions in ice-breaking.

The Baltic Sea has always been an important sea route connecting the Nordic countries and Russia to continental Europe. Surrounded by nine countries, it also has some of the busiest maritime traffic in the world with nearly 2000 ships operating at any given moment.

During recent decades, there has been a significant increase in maritime traffic, the sizes of vessels are growing and the nature of the traffic has changed rapidly. The passenger ships traffic, incl. high speed craft, is very intense. The oil traffic in the east-west direction, especially in the Gulf of Finland, is very busy. Next to cargo and passenger carriers there is also active fishing fleet.

In comparison with some other sea areas in the world, the Baltic Sea already has a relatively high maritime safety and security level and thus the question is not how to change the poor safety and/or security level into a good one, but rather how to maintain the current level and to ensure a continuous positive development.

Shipping has never before been so regulated, inspected and certificated as today. Technical equipment, demand and know-how are on the rise. New equipment with high expectations to meet the safety demand is being installed. Also, the quantity of the equipment is growing.

Despite of all efforts made, there are still many marine accidents and most of them are caused by the human factor. In 2011, there were 121 ship accidents in the HELCOM area. The

accidents in 2010 and 2009 comprised 124 and 105. Collisions and groundings are the most frequent types of accidents. In 2011 35% of accidents were collisions and 25% were groundings.

How can we further improve maritime safety? We need to consider more to cross-border co-operation, to share knowledge, experiences and best practice. More attention needs to be paid to harmonised interpretation and implementation of safety codes, standards and regulations which are reflected as increased co-operation between maritime administrations, more stringent sanctioning and increased awareness and responsibility of maritime safety and security issues in the maritime industry.

The scale of commitments for the present day masters and mates is exorbitant. He/she is committed to act as medical expert, radio officer, has to know the ship, have the know-how of the merchandise, be an expert in handling the sophisticated machinery and equipment, manage the paperwork, filling-in checklists and performing other routine procedures prescribed by the ISM/ISPS, act as an expert in legal matters, pass relevant training on board, have knowledge in relevant conventions, and eventually beside all of that to fulfil the duties of the navigator of a ship.

Crossings as a rule are very short in Short Sea Shipping. Cargo handling is often limited to a few hours due to efficiency making berthing time minimal. Nevertheless there is a need for specified cargo works, loading and unloading operations, cleaning the holds, to order products and equipment, meet frequent inspections and audits, meet various demands, etc. And therefore there might be a little time for rest.

When working out and establishing new requirements, it is of utmost importance to consider the ability of the crew to carry out their duties. Analyses must be conducted to find out what might happen if overloaded crew members are committed to fulfil additional duties. To consider carefully all the for and against arguments, and analyse if in real life situation is it feasible to load the crew, which is already minimised to maximum, with more duties and this way to ensure safe shipping or do we get the opposite effect and put the safety of navigation at risk? We seem to misunderstand that the primary duty of the officer in watch is safe navigation between destinations.

When adding additional responsibilities to the crew, should we also look through the requirements for minimum manning? Crew fatigue has posed a serious problem where various rules bring about additional duties and ships with limited crew may, on the contrary, diminish the shipping safety. There is so called "to be awake" system developed, where the crew member on watch should push a certain button over fixed time period, to guarantee that he is awake. Is this the solution to the problem?

It is important to find more possibilities to use the potentials of shore for creating the conditions to ensure safe navigation through the shore based services. We already have some good examples in Baltic Sea area such as the Gulf of Finland Ship Reporting System (GOFREP) or Baltic Icebreaking Management (BIM). The purpose of such shore based assistance should not be only gathering information for the Coastal States but it shall assist the master and the crew in a way as to minimise the load on the crew.

Safety at sea depends on the fulfilment of the set standards and requirements, but we should not forget the peoples who working everyday on board of ship - SEAFARERS.

René Sirol

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Baltic maritime transport – tense relationship between logistics and environmental regulations

By Karl-Heinz Breitzmann

Importance and growth of Baltic maritime transport

With more than 600 million tons annually, transport over the Mare Balticum is very important for internationalisation and globalisation of Baltic Sea countries' economy (see table 1). For Finland and Sweden, for instance, the maritime share in transport of foreign trade is over 90 per cent. As nearly all branches of exporting and importing industries are relying on shipping, maritime transport is fundamental for competitiveness, prosperity and growth.

In the years from 2000 up to the recession in 2009 Baltic maritime transport was growing very strongly. Container shipping had the highest growth rates (14 per cent) followed by ro/ro goods and liquid cargoes (7 per cent), cargo handling of ports from 2000 to 2007 showed an overall annual growth rate of 4,7 per cent.

Russia became the main driver of transport growth. The developed market economies – Sweden, Finland, Denmark, Germany – were showing relatively low increases of cargo handling (0,3 per cent from 1995 to 2011), but the new market economies – the three Baltic countries Estonia, Latvia, Lithuania – as well as Poland and Russia went up by 6,2 per cent annually. The new market economies increased their share in cargo handling of all Baltic ports from 33 per cent in 2000 to 51 per cent in 2011.

The Baltic Sea as a model for clean shipping

Although shipping is a relatively clean mode of transport and is not among the most important polluters in the Baltic Sea Region, it is nevertheless challenged and obliged to improve its sustainability. The negative impacts of shipping mainly can be found in the following fields:

- Contribution to climate change and global warming
- Accidental and illegal discharges of oil
- Air pollution from ships
- Emission of hazardous and noxious substances
- Introduction of alien organisms via ships' ballast waters and hulls.

In order to reduce those negative impacts, on different levels significant measures are under way. On the global level the International Maritime Organisation (IMO) is very active by means of international agreements. Central is the MARPOL Convention (International Convention on the Prevention of Pollution from Ships), which in its 6 annexes is regulating a broad variety of emissions.

On the macro-regional level the Helsinki Commission (Baltic Marine Environment Protection Commission) is aiming to take all relevant measures to prevent and eliminate pollution in order to promote the ecological restoration of the Baltic Sea Area. In its comprehensive Baltic Sea Action Plan from 2007 one of the 4 main segments is driving towards a Baltic Sea with environmental friendly maritime activities.

Additionally the European Union's Strategy for the Baltic Sea Region and its Action Plan declared the ambitious aim, that the Baltic Sea should become a model region for clean shipping by reducing pollutions from ships. In several projects efforts of authorities and private stakeholders are concentrated, in order to find solutions for the elimination of sewage from ships and to organize port reception facilities, for establishing the port infrastructure

for LNG as fuel for ships, to promote efficient solutions for shoreside electricity for ships or to develop models for differentiated port dues giving incentives for low-emission ships etc.

Impact of environmental regulations for shipping on logistics costs and economy – the SOx example

In the meantime it has to be seen, that some of these actions very deeply influence the functioning of the shipping and logistics sector and they may diminish the competitive position of exporting and importing industries, if they are not prepared carefully enough and with a sense of proportion. That clearly can be seen from the SOx case.

In order to reduce the negative effect of sulphur dioxide on human health and environment, the IMO in Annex VI of the mentioned MARPOL convention ruled, that the sulphur content in ships' fuels has to go down. In world shipping this content in 2012 had to be reduced from 4,5 per cent to 3,5 per cent and for 2020 (or 2025) a further reduction to 0,5 per cent is planned. The Baltic Sea as well as North Sea/English Channel were designated as Sulphur Emission Control Area (SECA) where much stricter limits are applied. Here the sulphur content in 2010 had to go down from 1,5 per cent to 1,0 per cent and from 2015 only 0,1 per cent will be allowed.

Among shipping companies, ports and exporting industries this regulation is hotly debated. They argue that shipping cost will increase, because ships in the SECA have to switch from Heavy Fuel Oil to high quality Marine Gas Oil bringing up the fuel costs by 60 to 80 per cent and the freight rates by 30 to 50 per cent. So for exporting and importing industries in Baltic Sea countries logistics cost will increase, that could result in weakened competitive positions of those industries on world markets. As in the Baltic Sea Region maritime transport is in competition with other transport modes, higher freight rates in shipping, furthermore, would result in modal shift from maritime transport towards road traffic. A study from the Institute of Shipping Economics and Logistics in Bremen concluded, for instance, that in the Baltic Sea Region 600.000 trailer movements and 630.000 container (TEU) would be shifted to land routes or to routes with shorter sea distances.

Unfortunately there was no impact assessment before the IMO decision was taken, all the mentioned repercussions were not considered.

According to the MARPOL regulation it is also possible, to reduce the sulphur oxide emissions by other means. One is exhaust gas cleaning by so-called scrubbers. But until now this technology is not fully mature for practical use.

Another solution would be to switch to alternative fuels, especially to LNG (liquefied natural petroleum) as fuel for ships. That would reduce emissions considerably. But that also is not a short-term solution and it is not an alternative for most of the existing ships. All that means, for 2015 only the switch to high-price Marine Gas Oil is realistic.

In order to avoid the mentioned negative impacts, it is urgent to come to adjusted regulations. For that it is important to note that ships in ports for their auxiliary engines have to use fuel with 0,1 per cent sulphur since 2010, what diminished the emission of sulphur oxid and its

impact on human health already, especially in populated port areas.

I think that a solution would be right, which is normal for many IMO conventions: to differentiate between new ships and ships already in existence. The strict regulation should apply to new ships, for already existing ships a moratorium from, for instance, 5 years should allow to further develop technical innovations and to improve their efficiency.

I really hope that our governments end the actual deadlock in the SOx-case and find the spirit and the courage for a reasonable solution.

Furthermore from the SOx-case a general conclusion has to be drawn: Shipping has to contribute to reduce pollution for the impaired and endangered Baltic Sea environment. But important decisions have to be prepared

by complex impact assessments which take on board also the experiences and views of stakeholders.

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Table 1 Structure of Baltic maritime transport 2010 according to type of cargo *

Type of cargo	Total		Baltic external transport		Baltic internal transport	
	mill. tons	share (%)	mill. tons	share (%)	mill. tons	share (%)
Liquids	257	44,0	191	74,3	66	25,7
Dry bulk	144	24,7	106	73,6	38	26,4
Ro-Ro	65	11,1	10	15,4	55	84,6
Container	58	9,9	52	89,7	6	10,3
Break bulk/ other cargo	60	10,3	46	76,7	14	23,3
total	584	100	405	69,3	179	30,7

* Transport between ports with at least 1 mill. tons cargo handling annually

Source: Baltic Institute Rostock using data from EUROSTAT and Russian ports

Increasing marine traffic challenges the Baltic Sea

By Pentti Kujala

Background

There are more than 2000 vessels trafficking in the Baltic Sea. The amount of oil transported via the largest oil terminals in the Baltic Sea exceeded 250 million tons in 2008. Changes in Baltic Sea shipping in the coming years which will have an impact on safety includes:

- Growing volumes and changing routes (e.g. in oil transportation, number of containers, cruise ships, short sea shipping, leisure boating), and hence growing risk of collisions and groundings.
- Climate change, leading to large variations in ice conditions and increasing the likelihood of extreme weather events occurring at a shorter interval in the future.
- Increasing use of international crews.
- New technology for cargo tracking and further development of new means for electronic traffic monitoring, service and reporting such as VTS, AIS, VTS and eNavigation as well as services and systems such as vessel traffic services (VTS)

While the pollution sources on land are being extensively regulated through various national, European and global legislation, environmental impact of shipping is still an area which can be addressed in a cost-efficient way. Due to its global character, shipping is regulated on international level by the International Maritime Organization and some new legislation has been developed and/or enforced recently to address e.g. ship emissions, bilge water, transfer of alien species through ballast water and sediments, TBT-containing antifouling on ships. The discussions on regulating GHG emissions from ships has not progressed equally well, and measures, backed-up with scientific evidence and workable solutions are needed.

According to HELCOM statistics, collisions and groundings are the most frequent accident types in the Baltic Sea, occurring mainly in confined waters, with around 50 grounding accidents and 50 collisions every year. These accidents can cause serious human and economical loss together with environmental and ecological damage. The traffic growth increases the risk of accidents, unless improved safety and environmental risk reduction procedures are set in place. At the core of the required procedural improvements are traffic organization measures, which involve e.g. the monitoring of ship movements, with the aim of preventing the development of dangerous situations.

Serious risks to the environment arise from the possibility of accidental spill of hazardous substances or illegal discharges into the sea such as oils and chemicals. In a semi-enclosed sea, the impacts of hazardous spills are long-lasting and can concern large areas. Further actions are still needed in the Baltic Sea aimed at improving cooperation, coordination and, at times, even the coherence of maritime safety, maritime security, surveillance agencies and disaster response.

Future research needed

At the moment there are a number of EU-funded research project in which marine traffic safety will be studied such as CAFE, MIMEC and SAFEWIN. Traditionally the safety of marine traffic has been improved by developing various analytical methods and practices to identify and control the risks. **Multidisciplinary risk analysis, cross-sectorial and cross-border risk management** is the most important tool, which enable the modeling of all the risks with their occurrence frequencies and consequences and finally the risk control options are studied in relation to the costs and benefits. Climate change with increasing likelihood of extreme weather events occurring at shorter intervals can remarkably increase the risks levels of marine traffic if the possible preventive actions have not been studied thoroughly in advance. Ice conditions also greatly increase risks in winter navigation. Climate

change will challenge to maintain the expertise needed to operate ships in harsh weather conditions. For example while there is a growing concern about mariners not having experience on ice navigation and thus losing the knowledge for this skill, the rare extreme winters are even more demanding to navigators and create dangerous navigational situations. There is lack of scientific research related to the risk modeling of the navigation in ice.

Nowadays it is understood that accident occurrence is typically a result of multiple causes having complex interrelations. **Human element** has roots deeper in the organizations and prevailing safety cultures. The accident causation cannot be thought as just a single erroneous action made by the navigator. The error may be induced by fatigue, lack of information, knowledge or procedures or poor safety culture. In addition to the large number of variables with complicated dependencies, accident causation involves uncertainty due to lack of knowledge of the phenomenon and of suitable input data. Every maritime traffic accident includes a unique set of reasons and a suitable risk model should be able to capture this variability in the underlying factors as well. A challenge in modeling accident causation within a probabilistic risk assessment is that the model should include all the variables relevant to the problem and whose effects on accident risks one wants to analyze. The human and environmental impact of marine accidents in the Baltic Sea Region can be further reduced by synergies and better coordination of training, needs assessment, planning and operations between all stakeholders. This should be reflected in the training and certification of seafarers and appropriate labour conditions for those working on board ships and personnel working with international gas and oil grids in the sea.

Clean shipping is facing a number of challenges in the future due to more stringent international requirements for reducing harmful environmental impacts such as atmospheric emissions as well noise on and to the water. There is a high demand for scientific research related to the alternative fuels (LNG, bio-fuels, hydrogen...), application of new technologies for clean shipping and changing infrastructure. First of all, **shipping should be studied as a part of marine socio-economical and biological marine system**. Means to decrease ship exhaust gases, including renewable fuels and its consequences on ship operations need urgent holistic views, as well as environmental operations of vessels, including waste water and solid waste management and alternatives with a close co-operation with the inland facilities located on the coast line and along the rivers. Wind and wave power research is developing fast and the wind power stations in sea might act as artificial reefs and possibilities exist to combined wind power with ecological environmentally safe fishing and/or aqua cultures as an alternative to traditional fishing methods that cause damage on sea bottom. Economic modelling for creation of incentives for eco-technological development enable increased sorting and resource utilisation from the sea.

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Marine nature does not have an owner – reflections on the future of the Baltic maritime sector

By Monika Stankiewicz

What kind of future for the maritime sector in the Baltic Sea do we want? With no doubt, the answer is, 'a prosperous one'. There is an additional term I would like to use – 'sustainable' or, 'environmentally friendly'. However, how to combine these two into the future scenario, of the green and blue growth? The starting point is to realize that there is no possibility for unlimited or endless growth, simply as there are thresholds in the marine environment that should not be exceeded. Otherwise the ecosystem and the services it provides will collapse.

As endorsed by global leaders and implemented regionally by HELCOM, an approach where the cumulative impacts from human activities should be kept within certain limits is called the ecosystem approach. In other words, all human activities are allowed as long as we can reach and maintain a good environmental status of the marine environment.

If trade-off is to be made between the economic growth and the quality of the environment beyond its capacity to recover, it should be an informed and collective decision where also the civil society is involved.

HELCOM holds the information about the environment of the entire Baltic Sea and its thresholds and have the responsibility to share and communicate this knowledge to decision-makers and stakeholders, so it can be taken into account in all policies affecting the state of the Baltic Sea.

The Baltic Sea environment is in a bad shape and for this reason, all sectors with negative environmental impact, including shipping, should recognize their "share" of the problem and contribute to solving it.

I believe that people living around the Baltic Sea more and more value the good basic things like access to clean water and beaches, healthy food, and fresh air. Nature is a hideaway from the hassle and bustle of our busy everyday lives. However, marine nature does not have an owner - it is a public good. Therefore, the governments have the responsibility to listen to the voices of both the civil society, who demands that the action is taken to save the sea, and of the interest groups, who raise their concerns about the new environmental requirements and costs associated with them/it.

Especially where knowledge and clean technology exist, we should invest with ambition as it will pay off in the future. This might not sound popular at the present, when the region's economy is still experiencing hard times. However, there are more and more encouraging examples of applications of best available technology, such as the recent adoption in Estonia of new legislation imposing HELCOM's standards for treatment of municipal sewage, going beyond the respective EU requirements. Many cities in other countries are already applying HELCOM's more strict treatment standards. Another bold move was to designate the Baltic Sea as a Special Area for sewage discharges from passenger ships under the international MARPOL Convention.

The key to wider application of the ecosystem approach and cross-sectoral integration lies in the valuation of the ecosystem services and integration of these values into the national planning and accounting. Currently, the cost of a lost habitat, the benefit of non-eutrophied sea or the benefit of keeping the spawning waters for fish undeveloped, is not taken into account when investing, resulting in severe underestimating of the real costs. To put monetary value to ecosystem services is challenging but it is possible.

The precautionary approach should also not be forgotten. It is a very wise principle on preventive measures, rooted in the international law including the Helsinki Convention, which provides the legal basis to HELCOM. This approach is not only to secure that we do not delay preventive measures to protect the environment and act right even in the absence of scientific certainty - but it certainly also can save some costs.

As it is the consumer who pays the price of a product or service at the end, sustainable consumption is important. The environmentally-savvy consumer has been highlighted at the Rio+20 Summit outcome posing as a real driver for change. Schemes for certification and labeling give possibility for the consumer to make the choice. Studies conducted within the Baltic Stern demonstrate that society is willing to pay extra for healthier marine environment.

Within HELCOM, with strong participation of stakeholders representing shipping, ports, NGOs, and other interests groups, we will continue looking into and supporting future solutions to environmental problems related to shipping and maritime activities in general. Clean technology is developing rapidly, and the use of alternative fuels, including Liquefied Natural Gas (LNG), safer navigation and reduction of nitrogen emissions from ships, can all be achieved.

Major events next year, the summit of heads of governments in the spring in St. Petersburg, as well as HELCOM Ministerial Meeting in October, provide opportunities to accommodate these clean solutions on their agenda and support long-term thinking and sustainable future for the maritime sector in the Baltic Sea region.

Monika Stankiewicz

Executive Secretary

*HELCOM
(Baltic Sea Marine
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Commission)*



The future of vessel traffic safety in the Baltic Sea

By Jerzy Hajduk

The Baltic Sea is a special area, both in terms of geophysical and hydrometeorological conditions and applicable legal regulations. One problem is that regulations based on the EU law cannot be applied to the whole sea area. This results from the fact that the Russian Federation, a coastal state, has access to the sea. The problem is essential as long as a vast majority of ships laden with large quantities of dangerous goods call at Russia.

The Baltic Sea imposes draft restriction up to 15.3 metres on ingoing vessels, due to natural depths occurring in the western region of the sea. In relation to safety of navigation, the restriction is viewed positively because the Baltic is a relatively small and confined sea. However, each marine disaster, of a tanker in particular, may cause irreversible changes in the ecosystem. At the same time for economical reasons shipowners are interested in operating ships of maximum size for the given area. The draft in the case of the Baltic is the restriction for the maximum size vessels. If we assume that the idea to deepen selected shipping routes to allow vessels drawing up to 17 metres is unrealistic and economically unprofitable, there still remain propositions to build 'Baltimax' vessels. This refers mainly to tankers and bulk carriers. Concepts to build such vessels have already been presented, and whether they will be put into service depends only on profitability. For coastal states it is not good news. Accidents at sea happened in the past, happen at present and will happen in the future despite technological advancements enhancing navigational safety. According to statistics, the human factor is of primary significance at sea and should be decisive in the future when additional safety criteria are formulated for the Baltic.

The coastal states face risks created by seaborne transport resulting mainly from the type of cargo carried. The fuel in ships' double bottom tanks is a smaller, although important problem. A potential ecological disaster is a black scenario that has to be taken into consideration. If an accident occurs, the disaster will be a direct consequence of the type of cargo carried and its quantity. Actions taken to prevent ecological disasters should focus in a given area on maximum size ships carrying cargoes that may threaten the environment. Therefore, increasing the size of Baltimax vessels by allowing greater overall parameters: length and breadth, is very risky in the long run. LNG, liquefied natural gas, is an example of a new cargo that generates new types of threats. Danger is also hidden in cargoes carried by large container ships. The latest case of spontaneous ignition and consequent fire combined with an explosion of a container in the middle of the Atlantic Ocean (MSC Flaminia, July 2012) confirms the claim that the problem of improper declarations of cargo contents in sealed containers has not been solved to date.

The safety of navigation can be enhanced by passive methods, including establishment of new traffic separation schemes and shipping routes. This goes in line with spatial planning at sea implemented by the EU. It is obvious in the long run that the exploration and exploitation of submarine resources or the construction of offshore wind farms should not cause any restrictions for navigation. One ought to bear in mind that large vessels have limited manoeuvrability and cannot move in a zigzag fashion. In the future the term 'freedom of navigation', understood as an unrestricted

choice of a route by the ship's captain, will go down in history in confined areas such as the Baltic. Apart from main transit routes, a number of locally important routes will be established in the Baltic Sea.

Active methods of increasing the safety of navigation go in conjunction with technological progress. It is important to stimulate its implementation in maritime shipping that, traditionally, has been very conservative. A number of engineering solutions that are being implemented into the marine sector were smoothly introduced in airborne navigation before. Technological advancements at sea, consisting in using new equipment and systems, may cause information noise. As mentioned earlier, the human being continues to be the weakest link at sea. Research institutes, manufacturers and international bodies capable of affecting the legal status should follow the idea that equipment and systems supporting navigator's decisions should be given priority. These systems should analyze situations and in a simplified manner propose optimal solutions, protecting the human from being overburdened with information that is often processed under time pressure. A number of such solutions are now being developed, and their implementation in areas such as the Baltic Sea may in the future prevent black scenarios of marine disasters from coming real. In this context the Baltic may be used as a pilot area.

Apart from actions directed at ships, new solutions must also be introduced by coastal states. First of all this refers to the supervision of vessel traffic and providing assistance if need arises. First steps have been made. Coastal states have been obliged to indicate places of refuge. National systems of marine safety continue to be expanded. In the near future efforts should be focused on the actual functioning of the existing solutions. In the long perspective, it is necessary to introduce safety management systems in marine areas. Such systems, apart for solving current problems in real time, will be used for analyzing events and generating long-term solutions eliminating potentially dangerous situations.

If we take for granted that the human is the weakest link of the system - future actions should address other issues beside technical support for the navigator. Questions to be answered today refer to specific training courses offering qualifications for specific sea areas. Are they needed and effective? To what degree can traditional pilotage be replaced by remote pilotage? The questions are vital and answers must be searched for and found. All participants of the transport process must be involved. Inhabitants of the Baltic region want to have the feeling of safety and be sure that their respective governments as well as the European Union properly understand arising problems and can effectively solve them.

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Sea transportation of oil in the Baltic Sea – enhancing safety and security

By Robert Aps

It is stated by the Helsinki Commission (HELCOM)¹ that during the last decade shipping has steadily increased, reflecting intensifying co-operation and economic prosperity around the Baltic Sea region. According to the HELCOM AIS (Automatic Identification System), there are about 2,000 ships in the Baltic marine area at any given moment, including 200 tankers carrying oil or other potentially harmful products. The HELCOM Maritime Group (HELCOM MARITIME) works to prevent any pollution from ships – including deliberate operational discharges as well as accidental pollution. The HELCOM Response Group (HELCOM RESPONSE)² is working: 1) to ensure swift national and international response to maritime pollution incidents, 2) to ensure that in case of an accident the right equipment is available and routines are in place to respond immediately in co-operation with neighboring states, 3) to analyze developments in maritime transportation around the Baltic and investigate possible impacts on international cooperation with regard to pollution response, and 4) to coordinate the aerial surveillance of maritime shipping routes to provide a complete picture of sea-based pollution around the Baltic, and to help identify suspected polluters.

In recent years geographical information systems (GIS) have been increasingly used worldwide in conjunction with oil spill modeling tools as a means of integration and visualization of the oil spill response decision support related information. Numerous GIS applications have been used to inform the oil spill response decision making and to raise the public awareness in a case of the latest Gulf of Mexico disastrous oil spill in 2010.

GIS system MARIS³ (Maritime Accident Response Information System for Baltic Sea) developed by the Finnish Environment Institute (SYKE) and financed by the Nordic Council of Ministers is used to view different, oil spill risk and response related datasets over a common background map and in different combinations. MARIS is implemented using ESRI ArcView system, meaning that the datasets are in the form of shape-files and layers and with this program it is possible to edit, analyze, visualize and query the datasets in a multitude of ways. The web version, ESRI ArcIMS, is also available. Intended users of MARIS are mainly the competent oil pollution response authorities of the Baltic Sea states, the Nordic Council of Ministers and the HELCOM secretariat.

GIS for oil spill response application BORIS⁴ (Baltic Oil Response Information System) hosted by SYKE has been operational since 2006. However, building on recent rapid progress of the GIS technologies it was decided to develop the new application BORIS2 “Situation awareness system for environmental emergency response”. BORIS2 system was successfully tested during the Balex Delta 2012⁵ exercise in Finland in August 2012.

Seatrack Web 2.0 - a drift forecasting system developed for emergency purposes by the Swedish Meteorological and Hydrological Institute and the Royal Danish Administration of Navigation and Hydrography – has the status of official HELCOM oil drift forecasting system and is freely available to authorities of all countries around the Baltic Sea. The HELCOM Seatrack Web⁶ oil drift forecasting system with integrated information from AIS proved to be a really effective

tool substantially increasing the possibilities to identify ships suspected of illegally discharging oil into the sea.

The Central Baltic INTERREG IVA Program Project OILRISK⁷ “Applications of ecological knowledge in managing oil spill risk” has developed two applications: OILRISK Web and OILRISK Map. The OILRISK Web application is the interactive analytical toolbox for oil spill related ecological risk assessment and management. In assessing the ecological risk the OILRISK Web is used to integrate information from Seatrack Web simulations and the ecological sensitivity map layers developed by the Finnish and Estonian scientists. Oil spill response related data can be used through the OILRISK Map application, which is developed for both desktops and mobile tablets and phones. In addition, relevant parts of the data will be integrated into the OILRISK Web and the Finnish BORIS2 system thus ensuring the continuity of the projects’ results.

The OILRISK approach is building on a concept of the Net Environmental Benefit Analysis (NEBA)⁸ with aim to determine the most appropriate response option(s) in order to minimize the overall environmental impact of an oil spill. With the state of the oil spill appraised, using all kinds of the oil spill surveillance data, an assessment of the situation is next conducted, which among other aspects involves assessing 1) expected drift, behavior and fate of the spilled oil, 2) can the oil spill be combated at sea, and 3) the level of threat it poses to sensitive environment. The oil spill response decision maker is now in a position to weight the appropriateness of alternate courses of oil combat action and decide upon one - and the cycle starts again.

The Central Baltic INTERREG IVA Program Project MIMIC⁹ “Minimizing risks of maritime oil transportation by holistic safety strategies” is developing the SmartResponse Web application with aim to integrate the oil transportation safety and security related operational information. The objective is to identify the safety and security critical components and/or services of the Baltic Sea maritime traffic control system whose failure 1) could do us immediate, direct harm and/or 2) whose failure could enable, or increase the ability of, others to harm us. Finally, the MIMIC project is going to develop a comprehensive view of the effectiveness of control methods concerning maritime safety and security of the sea transportation of oil in the Baltic Sea.

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¹ http://www.helcom.fi/groups/maritime/en_GB/main/

² http://www.helcom.fi/GIS/en_GB/HelcomGIS/

³ http://www.helcom.fi/GIS/maris/en_GB/main/

⁴ <http://www.ymparisto.fi/default.asp?contentid=411922&lan=EN>

⁵ <http://www.environment.fi/default.asp?contentid=419325&lan=EN>

⁶ http://www.helcom.fi/projects/Archive/en_GB/STW_AIS_SAT/

⁷ <http://www.merikotka.fi/uk/OILRISK.php>

⁸ IPIECA. 2000. Choosing spill response options to minimize damage – Net Environmental Benefit Analysis. IPIECA Report Series, Volume 10, International Petroleum Industry Environmental Conservation Association, London, 20 p.

⁹ <http://www.merikotka.fi/mimic/index.php/en/mimic>

Enhancing logistics competitiveness on a regional scale

By Juhani Talvela

In an ever increasing business competition, logistics companies in the Baltic Sea Region need to address performance and productivity issues in a timely and efficient manner. Reactive business models of the past have been replaced by pro- and interactive methods. Everlasting and reliable client relations of the past have now become vague. Well established local production facilities that used to provide a static flow of goods for logistics operators to handle, have been replaced with turmoil of profitable plants being shut-down and relocations of production to new regions and markets. These cumbersome effects of globalization have slowly unveiled one after another, as a great surprise to nations, regions and businesses.

In addition to such challenging changes in the business structure, pressure from the political realm adds to uncertainties. Global and EU policymakers seek to regulate energy price formation, environmental requirements, and rules of competition on open market. The EU sulphur directive, for one, decreasing the allowed sulphur content in ship fuel from 1% to 0,1%, leads to an increase in maritime logistics fuel cost by 80%, and the overall logistics costs by some 30-50%. For Finland, the consequences are turning out to become dramatic, as over 80% of her foreign trade is transported by ships.

Regions of business – business of regions

National and regional policies define the development and maintenance of the local infrastructure. National budgets being under pressure in all of Europe, Finland is also limiting new construction projects, and the maintenance resources for road and rail infrastructure. Regions are eager to promote planning for areas providing new jobs. Logistics hubs, harbors, road and rail connections, areas of service and commerce are lucrative for regional decision makers due to their potential of new jobs. Their main concern is to identify those investments that most probably will generate expected business and traffic volumes, and ensure the interest of prominent and well known businesses to enter and get involved in the project.

It is by no mean an easy task to find and select right tools for regional planning and development. Should one focus on attracting one or a few business sectors to the region, or keep the door open to any business? What will happen to current employers and their business? Can we nurture or attract new employers to the region?

A clear focus and strong emphasis should be placed on a limited number of selected business sectors in order to gain momentum for better results. But focusing, means at the same time limiting resources available to those not within that focus group. And no-one wants to close doors in front of future growth businesses. So, regions need to figure out what kind of businesses structure will bring them the best results, and then support building of that.

Whereas the administrators have a hard time to figure out what kind of business structure they should seek for their regions, the companies are agile and always on seek for a better market position. For them, changes in value chains, business networks, operating environment, legislative demands, and availability of resources are common. They need to be followed and actions taken accordingly. But even for companies, the vision towards

future is seldom clear, limiting investments to ones that are repaid well within the timescale of the visible horizon. Uncertainty is the main force inhibiting bold investments and future building visionary acts among companies and administrators, alike.

Looking into futures

A new form of collaboration between the regional authorities, business leaders, and researcher institutes is required to enhance regional planning and base it on realistic possibilities and opportunities. In the Kymenlaakso University of Applied Sciences, a process of new collaboration has been initiated and piloted, using Futures Research tools and methodology.

Futures research provides a methodology to produce, process, and evaluate a multitude of possible paths to the future as well as future scenarios. In 2010-2012 we tested and evaluated a number of futures research methods. 15 most prominent ones were selected and a methodology framework was created for academia catalyzed regional collaboration.

In parallel, a set of ten workshops in three Finnish regions – Varsinais-Suomi, Kanta-Häme and Kymenlaakso was organized. In the workshops, regional decision makers, company representatives, and academia brainstormed and drew out the current state, identified challenges, regional strengths, and future paths and scenarios in the field of logistics. Some 150 participants from companies, authorities, academia and the 3rd sector participated in the workshop process gaining foresight into logistics future development, and eventually, selecting for each region the most prominent “wanted” future scenario as a shared endeavor.

The process was seen by authorities as a way to introduce views of companies and other stake holders for improved regional planning. For companies the process would open a window for future thinking, a privilege in a hectic flow of business days.

Future logistics

The outcome and findings of the workshops were that, by 2030, three main topics will have become key elements in the logistics business paradigm change:

- Digital technologies, including but not limited to the ICT, are finding their ways to logistics business value chains on many levels. Process automation, interactive information sharing, multiparty information platforms, security and safety monitoring, ITS, and 3D printing being some fields of development, to mention but a few.
- Challenges in regional planning are likely to guide authorities to identify regional strengths and opportunities with increased determination, and make more focused development plans accordingly. This will lead to regional business profiles becoming unique and focused, thus attracting investments in the selected fields.
- The nature of logistics as a simultaneous global and local service will add to reshuffling of value networks. Cost of logistics is on rise, resulting in its role becoming more important in selection of production locations. Logistics services will become

more integrated on a global level. Branded services and logistics routes, brand-wide information networks, and global brand management seek to gain global coverage and strong presence on all major markets.

There were plenty of other findings in the workshops, too, suggesting challenges and opportunities for each of the regions, or wider landscapes. Regional co-operation in planning and building of logistics hubs was one of the additional topics seen important for the Finnish logistics corridor.

Conclusions

Foreseeing the future before it is unfold, is something that none of us can do. But future, as it is not in forehand defined, can be aspired and made happen. A decisive mind may achieve great deeds, and change the world to his liking, replacing the path of faith with a vision and a strategy towards it. For the logistics companies, and the regional administrators pursuing a foresight vision means in fact seeking and setting shared goals for regional planning and development of the logistics industry.

Providing means and setting for use of futures research tools and methods the academia may enable administrators and companies to work in a productive process to generate new knowledge, awareness and shared will towards joint benefits. The futures process

recognizes current strengths and weaknesses in the region and the scanned businesses. It identifies trends and change forces, and produces one or a few targets to work on. A shared vision and a strategy to reach that vision, is the ultimate outcome of the process.

The futures research process is a new and powerful way to enable out-of-the-box thinking and allows participants to elevate their awareness to new levels. These experiences are found useful in other scopes and fields, too.

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This article is based on findings of the ELLO-project (2009-2012) to enhance the competitiveness of the South-Finland logistics corridor.

Maritime technology industry – to fit for the green future

By Rima Mickeviciene

Since the declaration on Green Growth by Council of Organization for Economic Co-operation and Development (OECD) was adopted in June 2009, the world has been focusing on clean and energy efficient life. Europe Union (EU) has sustained the initiative widely so it is no wonder if the Strategy EUROPE 2020 aims to develop low-carbon economy. White Paper – a long term strategy on overall transport policy towards 2050 - covers a wide range of issues regarding the reduction of greenhouse gas emissions. Maritime industry and shipping as a part of European industry must turn to energy efficient and low environmental impact way, as well. Why does shipping as heavily regulated industry come to environment protectors' hands again?

All-known, shipping meets more than 85% of global demand on transport. During years since 1995 to 2008, world seaborne trade has doubled to more than 8 billion tons and be trebled in 2030. Within mentioned period, CO₂ emissions from ships increased and presently amounts 3% of world total. In 2020, business-as-usual shipping should overtake and surpass land based sources. Also maritime transport is responsible for about 7-13% of NO_x and 4-6% of SO_x emissions out of the estimated total global atmospheric emissions. According to IMO Second GHG study, Green House Gas emissions from international shipping will rise to 3,595 Mt in 2050, and then shipping contributes between 12 and 18% of CO₂. This has been threatening Europe therefore European Commission (EC) is calling for the global maritime sector to reduce emissions by 20% by 2020 compared to 2005. EC also considers that GHG emissions from EU shipping sector should be reduced by 40% (50% if feasible) by 2050 compared to 2005.

Due to unique structure of the shipping industry, International Maritime Organization (IMO) regulates shipping with measures applied to all ships. Current key environmental regulations address emissions of SO_x, NO_x, particular matter and greenhouse gases (mainly CO₂), as well as ballast water treatment (BWT).

IMO regulation for existing fleet includes gradual reduction of SO_x: in 2010, SO_x<1,0% in ECA; in 2015, SO_x< 0,1% in ECA; in 2020, SO_x< 0,5%. The limits for the sulphur content of marine fuels used in designated SO₂ Emission Control Areas (SECAs) is 1% until 31 December 2014 and will be 0,1% as from 1 January 2015. The new ships since 2011 must comply NO_x Tier 2 (global) requirements and since 2016 - NO_x Tier 3 (for ECAs). The Tier III standards require an 80% NO_x emission reduction.

To meet new limits for SO_x emission, sulphur content in the fuel should be reduced. That increases fuel price and operation costs. Experts observe world refinery capacities should be enhanced to meet increased consuming. An exhaust gas cleaning is considered an equivalent measure. As an instance, engine is driven by heavy fuel oil (HFO) with a scrubber or use distillate fuels or liquefied natural gas (LNG), or other kinds of fuel such as hydrogen, bio fuel, etc. But scrubbers make extra CO₂ emissions and cools down exhaust gases. Also some technical issues still need to be solved, for instant, only scrubber for all equipment driven by HFO. To reduce NO_x shipping can apply following solutions: tuning, selective catalytic reduction (SCR), humid air motor (HAM), water emulsion, and exhaust gas recirculation (EGR), LNG, other fuels. But majority of mentioned technologies have side effects. For example, SCR increases CO₂ emissions; also this technology is sensitive to SO_x.

There are known two ways to comply with CO₂ requirements for diesel engines: to reduce fuel consumption by

reduction of ship resistance, increase in propulsive efficiency and in power production efficiency, and reduce in auxiliary consumption. Or it is another choice - to shift to LNG. Reducing resistance means new ship hulls design. LNG as fuel today couldn't be used widely because of lack of infrastructure. The liquid hydrogen fuelled vessel become economically attractive when prices increase beyond 2000 \$/t.

Since 2012, shipping world keeps the track whether the ballast water treatment requirements come into force. The industry proposes a wide range BWT systems approved by classification societies. But on board systems can be costly to install and operate (almost twice more expensive is installing during refitting than during new building). As an alternative designers propose "No ballast", "Zero discharge", "Ballast free", and "Continuous flow" solutions. The most radical design involves with novel hull forms or substantial features that cannot be retrofitted to existing ships. The simplest design comprises use of potable water from onboard water maker or shore side supplier. Continuous flow methods include both new hull design and retrofitting solutions where BW volume becomes fully exchanged within 10 to 500 nautical miles.

Despite of the many types of equipment offering today by suppliers, many questions have no answers: how to assess the efficiency and performance of BWT systems without long-term experience? How to make decision on which type of BWT system for which type of vessel to install? Also, there is lack of instructions for onboard compliance analysis, rapid protocol forms from sample to result.

How does new regulatory affect European maritime industry?

As European shipping controls 41% of the global merchant fleet, doubtless coming stricter requirements will touch EU shipping companies significantly, even till the loss of the competitiveness against other transport modes, especially in ECAs.

From the other point of view, retrofitting options and environmental upgrades of existing vessels are expected to form an increasingly significant component of additional work for repair shipyards. European shipyards must be ready to propose completed solutions for different types and sizes of ships. At the same time, ship repair industry is harmed by the lack of clear criteria for best available techniques. To facilitate the solution of the problem, EC co-funds a medium-scale focused research project Eco-REFITEC (www.eco-refitec.eu) that intends to support the repair operation of shipyards, and encourage ship operators to retrofit existing fleets through technological developments and new tools.

Needless to say, there are no precise answers to the questions discussed above. It is clear that the European maritime technology industry is under serious transformation and must keep a fit for a green future.

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Baltic Sea cargo volumes at their highest in 2011

By Elisa Holma

All Baltic Sea region countries experienced growth in their maritime cargo volumes in 2011, with the exception of Poland and Sweden witnessing a slight decline in volumes. During the last six years, cargo volume growth has concentrated to the eastern Baltic Sea ports, while declining volumes are more commonly found among the western coast ports. Also the future outlook on cargo volume development is brightest for the eastern part of the Baltic Sea.

Growth trend in the eastern Baltic Sea

The Baltic Sea region ports handled in total 839.0 million tonnes of cargo in 2011, of which 91.4 per cent in international traffic. Despite the slowdown and precarious times in the European economy, volumes increased by 3.7 per cent compared to 2010. During six consecutive years of follow-up, the Centre for Maritime Studies recorded the total amount of cargo reach its all-time high in 2011. The cargo level of 2007, i.e. the level before the economic crisis and consequent plunge of cargo volumes in 2008-2009, was exceeded by 1.6 per cent. During recent years, the growth has been more apparent in imports, which compared to 2007 increased by 3.9 per cent, whereas in exports a modest growth of 0.8 per cent was witnessed.

Maritime traffic in the Baltic Sea is dominated by export: in 2011, exports accounted for 61.3 per cent of the international traffic and imports 38.7 per cent. In 2011, 40 per cent of the total international cargo volume comprised of liquid bulk, mostly crude oil, which has during the last six years shown a rather stable and subtle volume growth trend at the Baltic Sea level. The growth in liquid bulk traffic is a result of increasing Russian export traffic, either through its own ports or transit via Estonia and Lithuania. Dry bulk cargo constituted approximately 27 per cent and other dry cargo appr. 34 percent of international cargo volumes. As a result of nearly doubled cargo volumes in Ust-Luga in 2011, it rose in ranking to be the ninth biggest port in the Baltic Sea. Half of the 10 biggest Baltic Sea ports are now located in the Gulf of Finland. Growth in Ust-Luga has been even stronger this year, and more Russian oil is transported through its new oil terminal rather than through transit countries.

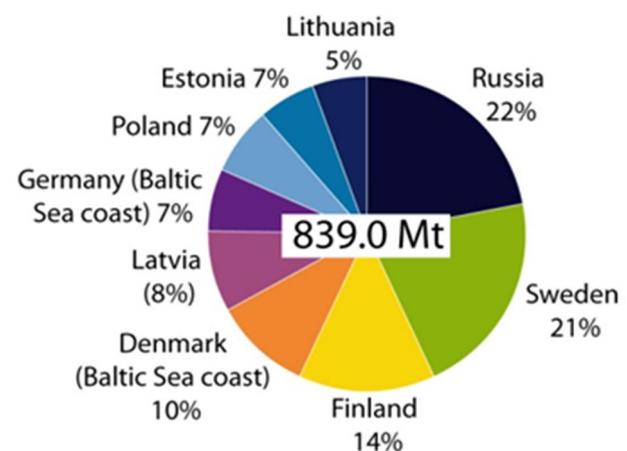
During 2006-2011, the development trends in maritime cargo volumes vary between the Baltic Sea region countries. On the western coasts of the Baltic Sea – in Sweden and the Baltic Sea coasts of Denmark and Germany – the highest maritime cargo volumes were reached either in 2007 or 2008. In Finland, the total cargo volumes were at their highest in 2011, due to temporary growth in domestic traffic induced by construction works of gas pipes laid from Russia to Germany, whereas international cargo volumes have not reached the level of 2007. Instead, on the eastern Baltic Sea except for Estonia, cargo volumes have been growing. In Russia, Latvia and Lithuania, the amounts of cargo were at their highest in 2011. Russian transit cargo volumes directed through the Estonian port of Tallinn, entailing predominantly coal and oil, have recently been strongly affected by the notable investments in Ust-Luga. In relation to the maritime cargo volumes transported through the individual Baltic Sea countries, the growth trend has been most dynamic in Lithuania, Russia and Latvia. On the other hand,

weakening cargo volume trends are found on the Baltic Sea coasts of Denmark and Germany, and in Sweden.

Figure 1 Ten biggest ports on the Baltic Sea coast in 2011



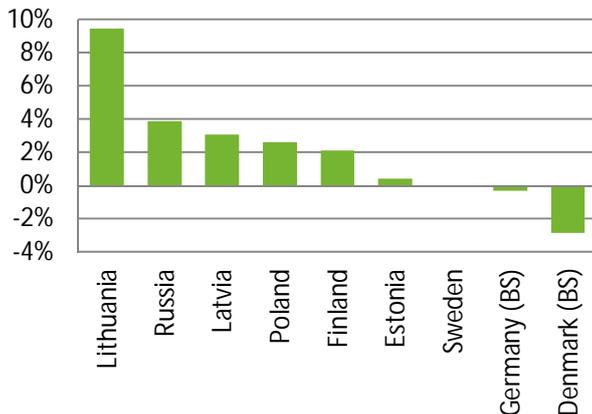
Figure 2 Shares of Baltic Sea maritime cargo volume by country in 2011



Economic and cargo volume development are generally closely intertwined. However, transit traffic, consisting mainly of oil and coal, but also of growing number containers, has a significant effect on cargo volumes

especially in the Baltic States and Poland. For this reason, cargo volume development in aforementioned countries does not in that degree reflect the development of national economies. Thereof the double figure GDP drops among the Baltic States in 2009 did not cause as dramatic declines in cargo volumes as in several other countries, with less negative GDP development.

Figure 3 Average annual growth in maritime cargo volumes by country 2007–2011



Expectations for 2012 and 2013 remain sluggish, yet positive

This year, the economic situation in Europe has remained just about as weak and uncertain as last autumn. Nevertheless, in October 2012 IMF forecast an average 2.1 per cent GDP growth for the BSR countries in 2012. However, the forecasts range from the most sluggish GDP growth of 0.2 per cent in Finland to the most promising growth of 4.5 per cent in Latvia. In general, the projections for the countries located on the eastern coasts of the Baltic Sea are clearly more optimistic than for those on the western and northern coasts of the Baltic Sea.

In the first half of 2012, declining maritime transport volumes were seen in all Baltic Sea countries other than Latvia (major ports +17%), Germany and Russia. The most noteworthy fall took place in Poland (-13%), where the drop was a result of waning Russian transit oil volumes through Gdansk. Most of the major ports along the Baltic Sea coast faced a decline in cargo volumes in the first half of the year. However, the disparity between ports was remarkable.

Despite the fact that a decline was seen in majority of the biggest ports, the total volume handled by the 20 biggest ports (based on 2011 volume, excluding Brofjorden), in fact increased by 7 per cent in H1 2012, mostly supported by the more than doubled cargo volumes in Ust-Luga. In general, volume shrinkages in H1 were more apparent in dry and liquid bulk cargo, whereas growth in container traffic has continued.

Baltic Port Barometer 2012 results indicate somewhat similar level of confidence in the Baltic Sea region economic development as last year. Ports' cargo volume growth expectations in 2012 are cautiously positive, although they have clearly come down from what they were for this year in 2011. Of the Barometer respondents 42 per cent expect either some or strong growth in their ports' cargo volumes in 2012. The most positive views are found among the ports located on the eastern coast of the Baltic Sea, where also the economic outlook appears the brightest.

Ports remain cautiously optimistic in their cargo volume growth expectations for 2013. The majority (62%) of the Barometer respondents foresee growth to take place in their ports in 2013. The anticipations are similar to those of last year. The most positive views are again found among the ports located on the eastern coast of the Baltic Sea. A total of 53 seaport authorities around the Baltic Sea participated in the Barometer survey conducted in July-August 2012.

The article is based on Baltic Sea port market reviews, published by the Centre for Maritime Studies at the University of Turku. The package includes three publications: Baltic Port List, Baltic Port Insight and Baltic Port Barometer. Read more at www.balticportlist.com or <http://mkk.utu.fi/en>.

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Recent developments in the Estonian maritime cluster

By Eva Branten and Alari Purju

An economic cluster is a group of companies where the internal connections are stronger than the connections of this group of companies with the external environment. The concept of cluster has a regional aspect because the geographical location and proximity of companies are an important factor in clustering. The geographical factor emphasizes the competitive position of regions in providing high quality living and business environment. The Estonian maritime cluster has three large components: infrastructure (ports), operating services (shipping and cargo treatment), and shipbuilding and repair. These large groups of activities are supported by different (public) services like legal framework, safety and security related services, marine education, research and development.

The sector of ports provides mainly port operation services and use of fairways. The Port of Tallinn (Tallinna Sadama AS) is the largest company which consists of three harbours in Tallinn area (Muuga being the biggest cargo shipping port and Tallinn Old City Harbour the biggest passenger transportation harbour), Paldiski South Harbour, and Saaremaa Harbour. The company handles approximately 70% of the total volume of products transported through Estonian ports. The second largest company in the sector is the Port of Sillamäe, located in eastern Estonia close to Russian border with Estonia. Other independent ports outside Tallinn or Harju county are the Port of Pärnu (concentrating on transportation of timber and wood products), The Port of Kunda (belongs to Kunda Nordic Cement AS, which is part of international Heidelberg Cement Group, and is used first of all for exporting cement and limestone rubble). The other ports in Tallinn and Harju county, which do not belong to the Port of Tallinn are Paldiski North Port, Vene-Balti Port (belongs to the Baltic Ship Repair Group), Miiduranna Port and Bekker Port in Tallinn. According to the estimate of the Port of Tallinn, the total cargo volume operated on the eastern coast of the Baltic Sea has been around 400 million tons of which 14% was operated by Estonian ports in 2011. The market share of Russian ports (Primorsk specializing on oil products, Ust-Luga concentrating on liquid oil and coal, Vyssotski and St. Petersburg ports transporting more containers with different manufacturing goods and food products) was 53%; Latvian ports (Riga and Ventspils Ports) transported 16% and Lithuanian ports (the largest is Klaipeda Port) 13% of the cargo in this area.

Tallink Group AS is the biggest **shipping company providing passenger services** but also ro-ro cargo services on the Baltic Sea. The group carried in 2011 58% of passengers and 49% of ro-ro cargo on the route between Tallinn and Helsinki and 55% of the passengers and 34% of cargo between Finland and Sweden and was the only provider of daily passenger transportation between Estonia and Sweden and between Riga and Stockholm. The group has a diversified corporate structure and provides various services from retailing, catering and conference facilities on board to accommodation and transportation services on the coast of destination markets. The group has hotels in Tallinn and Riga and uses services of other hotel chains in Helsinki and Stockholm. There are several big companies like Baltic Sea AS, Tschudi Lines Baltic Sea and Tschudi Lines Nordic Sea operating freight transportation. Shipping companies are using services related to technical maintenance (instruments and appliances for measuring, testing and navigation, safety equipment), services related to transportation (bunkering), operating services (like pilot or ice braking in winter) and cargo handling.

Cargo handling companies are providing services on the territory of different ports. The largest share of products transported via Estonian ports has been petroleum products with 61% of total turnover in 2011. The petroleum products were transported dominantly from East to West and that determined also the dominating position of outgoing transit in Estonian marine transport. The growth of transported product flow, as it can be read in the Port of Tallinn annual report, has been coming from other areas like containers and fertilizers. Different product flows, however, demand different services and when containers

transportation increases that will have an effect also on the network of companies which provide this type of transportation services.

In the sector of shipbuilding and ship repairs and maintenance the largest company in the area is the Baltic Ship Repair Company (BLRT). The BLRT Group AS had the turnover of 347 million EUR in 2011, which is approximately 75% of the total turnover of the sector of shipbuilding and ship-repair in Estonia. The group had 4004 employees, 1843 of them were working in Estonia. The group's activities include shipbuilding, ship repair, production of large-scale metal constructions, metal processing, machine building, medical and technical gases. The group has shipyards in Tallinn and in Klaipeda and it operates in Estonia, Lithuania, Norway and Finland. The joint venture formed together with Norwegian Fiskerstrand Verft shipyard produces barges for the fish farming industry. The group has produced equipment for offshore wind farms builders, for Stockholm metro. The group has a port on its territory in Tallinn, on the Kopli peninsula (the Russian-Baltic port). Another large ship building company is the Baltic Workboats AS in Saaremaa, which produces aluminum boats, for example, aluminum pilot boats for Estonian, Latvian and Lithuanian pilot services. Other companies located in Saaremaa build pleasure and leisure boats. The AS Luksusjaht is renovating and building yachts and AS Saare Paat is building small fishing boats. Saaremaa has become a location for a small cluster of companies building small ships and boats for fishing.

The Estonia's marine cluster reflects not only ex post efforts of companies to create business connections, but also has an ex ante dimension as a policy tool. The big groups like BLRT and Tallink Group AS have complicated corporate governance structures that include a long list of companies providing different services. The vertically integrated structure comprising these activities has made these groups relatively independent from outside services. More sophisticated technologies, as well as a more complicated and strict regulatory framework (in environmental area, for example) could create a need for wider cooperation with respective technology companies. These big groups are at the same time in high demand as partners and clients for SME-s in very different sectors of production and services. The aim of the clustering policy is to promote contacts between companies and to initiate new activities that create closer connections between companies or make the already existing integration closer and more efficient.

Enterprise Estonia, the government agency in the governance area of the Ministry of Economic Affairs and Communication, started the clusters program in 2008 and continued until end of 2012. Among the full stage projects were, for example, a project coordinated by the *Estonian Logistics and Transit Association* "Development of Estonia's Logistics Cluster", where the partners were Tallinn airport, ports of Tallinn, Paldiski and Sillamäe, Estonian Railway, AS Smarten Logistics, Tallinn University of Technology and several cargo and logistics services companies. The EU Interreg Smartcomp project is targeting these aims in the Central Baltic Sea Region.

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The current state and future of the Finnish maritime cluster

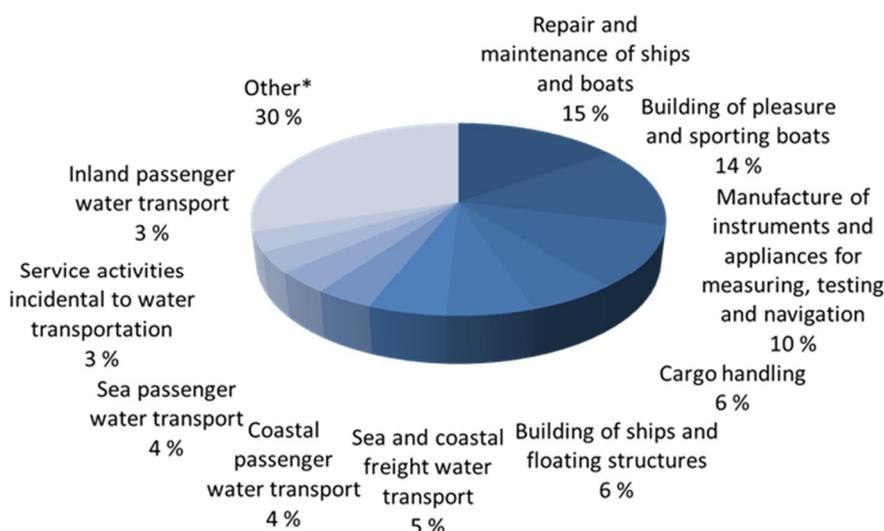
By Hanna Mäkinen

The closeness of the sea has always shaped the living conditions in Finland. The sea, long coastline and extensive inland waterways have enabled the development of seaborne traffic and trade. Shipbuilding industry has long traditions in Finland, and war reparations payments to the Soviet Union after the Second World War fostered the industry's rapid development. Indeed, due to the long and extensive experience, the Finnish shipbuilding competence has reached the high levels of today and made Finland one of the key hubs of special maritime know-how in the Baltic Sea region. Sea traffic and ports have also retained their significance for the Finnish economy and well-being.

The Finnish maritime cluster has significant economic and employment effects. According to the latest available study covering the whole maritime cluster¹, the total turnover of companies' activities related to the marine sector is over EUR 13 billion. The cluster employs directly some 45 000 people whereas the indirect employment effects of the cluster concern half a million people in Finland. Due to geographical conditions, sea traffic and ports also play an important role – for instance, approximately 90% of Finnish exports and 80% of Finnish imports are transported by sea.² Thus, the maritime cluster is of great significance for the Finnish national economy and the society as a whole.

The Finnish maritime cluster consists of 2000–3000 companies depending on the definition and the methods used in company data gathering. The cluster comprises companies with a wide range of fields of operation and the competence regarding various fields is extensive. The ten largest fields of operation in terms of the number of companies are illustrated in Figure 1.

Figure 1 The Finnish maritime cluster



*includes the other fields of operation that fall outside the ten largest ones

Source: Fonecta company database; Author's calculations.

¹ Karvonen T., J. Vaiste, and H. Hernesniemi: Suomen meriklusteri 2008. Tekesin katsaus 226/2008. Helsinki.

² National Board of Customs 2012.

Specialization and know-how in e.g. design, engineering, Arctic solutions, and other advanced technologies are among the key strengths of the Finnish maritime cluster. The Finnish maritime companies are also known for reliability, excellent quality, and keeping up with schedules. The specialization in several narrow areas of expertise has given a positive label for the whole cluster as a locus of special know-how. For instance, the demands of climatic conditions have created cumulated Arctic know-how in the Finnish maritime sector.

However, during the recent years, the state of uncertainty has overshadowed the Finnish maritime cluster. Shipyards have suffered from poor profitability and breaks in order books, and their subcontractors have been forced to look for business opportunities elsewhere. Production costs, particularly labour costs, have risen to a level that undermines the competitiveness of Finnish industries. Furthermore, the shipping companies and ports have both been affected by the economic crisis and are still struggling with profitability. On the other hand, the maritime sector is suffering from the lack of qualified workforce – during layoffs experts have shifted to other industries and the image of the sector does not appear appealing to students.

The Finnish maritime cluster is facing various challenges also in the coming years. Competition in shipbuilding at a global scale is constantly increasing, as for instance Asian companies are catching up in know-how. Their competitive advantage lays in low costs, whereas the Finnish companies cannot make it in price competition due to high production and labour costs, and specialization in small niches with good quality. Thus, finding a balance between costs, quality and effectiveness and providing something that customers are willing to pay for is a real challenge for the competitiveness of the Finnish maritime cluster.

In addition, keeping up with the pace of technological development requires maintaining the sufficient financial and scientific resources for innovation activities.

Nevertheless, maintaining the position at the forefront of the global innovation development is not easy for the Finnish maritime cluster, particularly when the local environment is also facing various challenges. The sulphur directive, which will decrease the limit for sulphur emissions of ships from the current 1 % to 0.1 % by 2015 in the Baltic Sea region, is estimated to increase freight costs significantly and cause great challenges for the shipping companies. The competition between the Baltic Sea ports is also

intensifying, particularly in the Gulf of Finland, as Russia is investing heavily in the development of its ports. Thus, constant development is needed in order to maintain the competitiveness of the Finnish maritime cluster.

The Finnish maritime cluster comprises a large variety of companies of different sizes, operating in various fields of business. Although the Finnish maritime companies clearly form a cluster in which the various actors are

integrated and mutually dependent, the existence of the cluster is not always taken sufficiently advantage of. For instance, internationalization forms a challenge for the maritime SMEs as they often have inadequate resources and skills for it. They also lack the international contacts and references to succeed in foreign markets and have difficulties in winning bids in large-scale projects. Facilitating the networking among companies and combining their resources could increase their competitiveness and improve their chances to penetrate international markets. With a larger base of potential partners, companies could better make it in large project bidding competitions. Furthermore, through well-functioning networks, the inter-cluster flow of new ideas could support the innovation development and common challenges often require coordinated solutions. The companies could gain from a change in attitude – viewing the other companies less as competitors and more as cooperative partners. The same concerns the maritime clusters of the Baltic Sea region – by reinforcing both the internal and international

networks the clusters could better respond to the common challenges and increase the competitiveness of the whole region.

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Finnish foreign trade will find new transport routes

By Ulla Tapaninen

When looking at Finnish economics and - in particular - the competitiveness of Finnish industry, one never forgets to mention the geographical situation of Finland. Finland is located at the far end of Europe, far away from the main European market areas. Even though it is connected mainland Europe by its borders with Norway, Sweden and Russia, the fastest and in practice the only possible way from Finland to Europe is by sea. In 2011 84% of Finnish foreign trade went through Finnish sea ports.

Finnish GDP very dependent on foreign trade, the share of export in Finnish GDP is 40% - and the share of import approximately the same 40%. It is no wonder that transport and logistics costs are monitored closely. In 2011 the logistics costs of Finnish manufacturing and trading firms were on average 12.1% of sales while European studies come to figures almost half of that. Due to geography Finnish industry is always in worse position in the Central European markets compared to its European competitors.

The situation is by no means getting easier. The transport costs are going to increase both at sea and on land. In addition to constantly increasing fuel prices, in 2015 the so-called sulphur regulation at sea will increase the costs of transportation for Finnish shippers by 30-50%; and thereafter there are more and more regulations coming for energy consumption and CO2 emission etc. The time of cheap transport is over.

Finland has committed itself to reducing its greenhouse gases of transport. This requirement together with the increasing costs of transport means that the transport flows of Finnish foreign trade will need restructuring. In the last 30 years the Finnish foreign trade of unitized cargo has relied sea transport. The fast and reliable sea transport consumes huge amounts of bunker and creates loads of environmental emissions.

To be able to reduce the environmental load and energy consumption of Finnish foreign trade various technological innovations are being developed. In addition, the alternative cross-border corridors for transport flows need to be investigated. The requirements of the Finnish cross-border cargoes differ and consequently the solutions will differ as well. Exports from Northern Finland will look solutions at the Arctic Sea. For others at the South of Finland, the easiest way to reduce the environmental load and bunker consumption at sea is to reduce the speed of

the vessels. This is best suited for low-cost bulk products, e.g. coal and oil products; and even for some industrial goods. However, the consumer goods or high-value industrial goods, carried usually as unitized cargo, require speed and flexibility.

The European Union has for decades already developed a concept of Trans-European network linking its member states. Today, the concept of corridors includes also environmental requirements, i.e. so called green corridors. Finland is connected to Europe by three core network corridors: Stockholm-Turku-St. Petersburg - corridor, Rail Baltica and Bothnian Corridor in addition to Motorways of the Sea.

Rail Baltica Growth Corridor project aims to promote modern railway infrastructure in the Eastern Baltic Sea Region and to ensure the best possible interaction of railways with other modes of transport along the Rail Baltica route (Estonia - Latvia - Lithuania - Poland - Germany). For Finland the Rail Baltica project offers a new environmentally friendly solution that will link Finland to Central and Eastern Europe, both for passengers and unitized cargo.

There are still multiple challenges along the way, questions concerning with spatial planning, infrastructure development and finding solutions for logistics service providers. Particularly, for Finland the focus is on how to link Southern Finland to Estonia and to the Rail Baltica. What will be the transport unit and the suitable mode of transport in Finland? There are lot of questions that require actions and decisions not only from the private sector but also from national and local level policy makers.

Rail Baltica Growth Corridor is a project that will also change geography. The substantial shortening of transportation time from Finland to Central Europe will increase the competitiveness of Finnish foreign trade in an environmentally friendly way.

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Finnish maritime industry – innovating the future

By Mervi Pitkänen and Juha Valtanen

An innovation can be defined as the processes where new ideas are implemented within an organization. Innovation is the establishment of new concepts, procedures or technologies in an organization. Innovation processes are commonly non-linear by nature and require accordingly flexible and adaptive tools. Maritime industry comprises innovative and also evolutionary elements. Evolutionary approaches stress the effect of the past in future development, and emphasizes the never-ending change or development. Development is a continuum of the same progressive procedural and historic nature without a final, pre-defined or ideal goal. In evolutionary process the question is to change ideas into technological, social, institutional assumptions that blend in with normal practice, processes or products.

Maritime industry is also global business. In the future even more, when companies are more involved in the global value chains. However even though SME's are still more directly involved within the local and regional markets, the value chains of large companies are global and therefore affecting the whole network. The global affects, industrial, economic and social are coming more and more local also. The product itself is not enough in the global markets and features serving more for example added value such as services are required. This leads to the fact that development required in companies business change also. Moving more from specific technical product development towards business development is inevitable. This encourages seeking cooperation across the geographical borders.

Public sector actors are developing novel means of supporting mechanisms especially for research and development activities. The central objectives should be aimed at enhancing and renewing the competence based competitiveness of trade and industry, national economy and regions through a broad-based innovation policies. The EU Maritime Policy states that the oceans and seas to be approached in a holistic way, and this creates the vital discussion for the change of the mindset from the traditional sectorial approach among the maritime clusters more towards reformed value creation. Value creation that takes an overall view for economic and sustainable development aspects of the oceans and seas, including the marine environment is the key novel approach for future competitiveness.

One tool of EU Maritime Policy to strengthen the maritime competitiveness is the LeaderSHIP initiative. It was prepared by the shipbuilding industry in 2002 and endorsed by the Commission in 2003. Because of the global competition it became obvious that the review and update of the LeaderSHIP strategy is needed. European maritime industry as a whole with its strong innovation and design capacity has a strategic role to play in addressing major challenges such as climate change and energy efficiency. Building on the LeaderSHIP2020 strategy and after identifying and taking into account the main challenges and opportunities that occurred following the crisis, a vision will be developed for the further development of a competitive EU maritime industry which contributes to sustainable, secure and safe sea-borne transport and advances into marine resource use and energy generation.

The Maritime Clusters serve as a strong link both regionally and nationally as well as internationally between research and business actors in the maritime and shipping industry. Regional innovation ecosystems are the core blocks for innovation creation activities. Clusters offer companies a triple-helix cooperation model, forums and contacts for the joint development of new products and business ideas together with universities and other educational institutions, public administration bodies and investors. The public sector the funding and resources testing platforms when academia creates scientific knowledge and intellectual properties and educates competent employees for private companies.

New models for transnational and multi-regional cooperation platforms should be developed in order not only to improve the

competitiveness of the maritime value chains but also increase the cooperation between companies and universities.

In 2011 Southwest Finland Region cities decided together with universities, development agencies and Maritime Cluster Program to establish a new development tool and innovation hub; Maritime Innovation Platform.

This platform should aim;

- To form a functional model and management to increase macro-regional multidisciplinary scientific research and development as well as education within the maritime and offshore industry
- To build internationally acknowledged innovation hubs, world class innovation and re-search networks
- To facilitate the emergence and development of innovative, globally competitive and effective transnational innovation and research platforms for creating new competencies and business opportunities

Innovation environments and ecosystems are concentrating on macro-regional and transnational innovation hubs and business concentrations for renewal and growth. Due to the global structural and economical changes, the efforts are to be directed in strengthening the competitiveness and in promoting the growth-oriented business possibilities. Public sector, regions, universities and individual companies are facing also challenges to find new strategic methods for triple-helix cooperation to address the changes in the environment.

November 2012, the City of Turku, Aalto University, the University of Turku and Turku University of Applied Sciences signed an agreement on Marine technology research cooperation for 2013 to 2015. The research cooperation agreement aims to consolidate, not only for Turku region but also the whole of Finland, the strategically important maritime industry and its requirements as defined by the Turku-based marine technology research group Meridim. This unique research unit serves maritime sector companies in their R&D –activities and projects on the local and national level by developing the best possible physical operational environment for the shipbuilding and offshore industry and developing the educational and research systems to secure world-class expertise, know-how and skilled labor for maritime technology and production. Research group Meridim is taking the challenge of developing the innovative and global maritime industry.

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EU-project develops skills and increases safety capital of maritime domain

By Jukka Seppänen and Mirva Salokorpi

Safety knowledge and skills of shipping companies are intellectual capital, but are as necessary as the “real capital”. This intellectual capital is for example safety management practices - they need to work in everyday-life and they have to be continuously developed. An increasingly area of safety capital is internal and external relatives of a shipping company: competitive advantage by safety is possible only if both authorities and clients trust company’s operations. Human safety equity is growing same time with safety structure of the company and it is personnel’s safety knowledge and values; the safety rules are not followed because of the fear of being caught or respect for the law, although it is also important. The strongest safety equity is using the right practices just for the case, so, that the principles guiding the action could be make general laws.

Competitive Advantage by Safety (CAFE) project funded by European Union and managed by Kotka Maritime Research Centre aims to fill the gaps in safety knowledge and skills by mapping and spreading the information of maritime safety expertise and research. Kymenlaakso University of Applied Sciences is creating maritime safety material that will be published during the next year both paper and electronic version. The availability of safety information is tried to make it easier by the publication: findings and recommendations found both in safety studies and accident investigations will be presented understandably in the material. It is possible to develop safety knowledge and attitudes with the material.

Another important way to get and spread safety related information is quantitative and qualitative improving of reporting of hazardous situations. Reaching the aim is supported by creating teaching material of safety reporting for maritime schools and shipping companies. The meaning of reporting has not yet been fully understood in the maritime domain, and hazardous situations or incidents are often considered completely normal that belongs to the field’s work. On the other hand, especially our own errors are hard to tell. Too often hazardous situations are treated in the same manner: they are not considered to be necessary to tell others or they do not dare to talk about. The fear of loss of reputation should get broken, so that maritime domain could go on trust-based safety culture. Instead of declaration and requiring them it should openly share information about the incident that had or could have been affected to the safety of operation. By reporting incidents and analyzing these reports in shipping companies, it’s possible to shift from reactive safety culture to proactive level, where safety is managed by anticipating and where predicting of risks and safety development are known.

Reporting promotes safety skills

Students’s theses are one way to collect background information for the projects. One student studied in his bachelor’s thesis about workload of different kind of reporting in Finnish merchant ships. Although reports are made for different reasons, based on the results of the thesis, workload of making reports is reasonable and it looks like that the it does not prevent to make safety or incident reports. However, there is a big difference in time used for reporting depending on shipping companies, vessels and their traffic areas, and in some situations especially workload of ship officers can increase to high. The problems of the companies found in the study were lack of resources, the poor quality of reporting, small size of volumes of the reports and continuous learning

and developing work due to a freshness of reporting systems and culture.

The benefits of reporting believed to depend on the ability of shore personnel to handle and utilize the reports. According to another bachelor thesis, both Designated Persons (DP) and ship’s crew thought that getting feedback from reports is very important. Based on the interviews, it came into light a suspicion that some shipping companies do not handle some reports at all. At least no information about is not showed to the crew. There is also room for improving in reporting from shipping companies to the national authorities, because companies do not report incidents to the ForeSea databank, even if they consider the common databank is a good thing.

According to the Safety First! Incident reporting brochure published by CAFE project (Navigator magazine, May/2012) the benefits of incident reporting are considerable, that is, the working time spent for it in vessels and companies will certainly be paid back. It is possible to decrease number of accidents and incidents as well as increase safety awareness, job satisfaction and interaction in the company by developing continuously reports, their analysis, reporting practices, and culture. Same time increases whole the positive safety imago of maritime domain.

Shipping companies are responsible

Corporate social responsibility that is also studied in the CAFE project includes financial and legislative, as well as ethical and volunteer responsibility. Financial responsibility of a shipping company is that the company can produce transport services needed by society at least so profitably that the activity may be maintained in the future. Preventing accidents is eminently taking responsibility: every accident cause gaps to the services providing and further, losses of income. Legislative responsibility includes compliance with international and domestic laws. Based on safety related ethical responsibility, shipping companies can be divided into two groups: these that do not take the responsibility and those that because of their own values develop safety, that is, are pioneers and bellwethers. Volunteer responsibility is at discretion of a company, too. This kind of responsibility is for example safety improving and non-profit donation to the outside of own company.

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Uncharted waters

By Lan Le, Nina Luostarinen and Timo Parkkola

The craving for more creativity and innovations needs no explanation. It is inevitable that works requiring less expertise escape from the countries with expensive labor and the highly developed countries cannot afford to lose their position as pioneers. If you can't stand the heat, get out of the kitchen.

Innovation is often considered to be something entirely new and amazing, but is it just making new combinations of existing things? What kind of expertise is needed for spotting these new nodal points?

Cruise ships do not only carry people from one place to another but are in fact a part of the final destination. Their success in the travel market is dependent on how well they are able to foresee the constantly changing cultural needs of the consumers. For example, outdoor decks on cruise ships for the persistently growing Asian markets might serve the audience better as gardens with facilities to practice tai chi or play mahjong rather than sun-bathing areas.

Continuing with the outdoor decks, Kaleidoskooppi Project recently organized a nationwide KaleidosCup competition for university students in different fields to innovate year-round usage for ferry outdoor decks in the Baltic Sea. The jury consisting of representatives from STX Finland, The Federation of Finnish Technology Industries, Deltamarin and Painting DB rewarded the first prize to a trio of cultural management students with less technical and commercial qualifications. Their proposal stood out with an original and executable service concept that aims to create user experiences rather than complex constructions. This indicates that cultural knowhow is not indifferent in the maritime industry.

A successful innovation requires full understanding of the target group and a functional user interface. E.g. the average passenger of a cruise ship is scarcely interested in "the better welding seam" or "the changes in the cathodic protection of the vessel". However, from the maintenance point of view this could be essentially important. Both perspectives should be equally significant to the ship owner, because more usage of services means more revenues and less detrition means fewer expenses. For example, TallinkSilja has recognized that its restaurant sale has significantly increased after sending mobile notifications of buffet discounts to the passengers without pre-booked dinner tickets. Also, Zinaltec has realized that in order to sell more anodes it has to offer a novel solution that adds value to the ship owner: re-designing anodes for tunnel propellers could reduce cavitation and thus expedite the overhaul time of the vessel. In addition, a smooth travel without extra vibration and disturbance is more pleasant for the passenger.

In order to get full value of the user understanding, three types of reasons for adopting a solution should be observed: the acceptable reason, the sensible reason and the *real* reason. For cruise passengers, the acceptable reason to choose a cruise over city hopping by plane could be for example that sea travel is more ecological than air travel, the sensible reason could be saving time and money for not having to plan the program and book hotels and flights separately, but the *real* reason is most likely to experience the famous floating city with its luxurious lifestyle and memorable services and getting to brag about it on their Facebook status update. For welders, on the other hand, to apply a new tool, the acceptable argument could be nature-friendliness and the sensible argument saving the company's money, but the *real* argument for them to accept a change in their routines and learn a new working method is full understanding of the company's operational strategy and commitment to it. For employees to commit to the common decision they should perceive themselves as a significant part of the entity and feel appreciated for their opinions and development suggestions.

A case example of making the staff commit to the company's plan of action is an experiment called "Meriaura News" by cargo shipping company Meriaura Group in co-operation with Kaleidoskooppi project and film production company Hallava Filmi. The challenge is to have the different units to communicate and co-operate fluently. Instead of giving the staff a traditional paperback blueprint and expect them to adopt the rules written, the pilot project aims to increase commitment by utilizing film making methods that encourage the staff to participate in creating the common objectives and operational models. The employees are commissioned to collect and exchange information about different units and functions inside the company, compile the data and create the manuscript for a newscast. In the future film compilations as such could possibly replace written manuals or at least complement them as training material.

Creative knowhow can contribute to creating new innovations, but how to find this expertise and apply it? As production-oriented economies are on their way transforming into solution-centered service economies, technical and commercial expertise need to be complemented with human and culture understanding. However, finding these specialists and applying their knowhow demands an intermediary to narrow the gap and lower the language barrier between industry and creative sector.

Cultural managers, also known as producers, are generally well-equipped with networking and management skills combined with wide knowledge of the cultural field. Their work is to find the nodal points between demand and supply (also the ones unrecognized by the main parties), join the right specialists, and make multidisciplinary co-operation possible. Kaleidoskooppi Project is currently studying this work model between the maritime industry and the creative sector. It also aims to find novel pilot cases that utilize cultural content production and creative methods.

The future of the maritime industry in the Baltic Sea Region demands a new and more human-centered approach. Hence, the main questions are: Can we increase the competitiveness of the maritime industry in the Baltic Sea Region by partly switching away from the main expertise of the maritime industry? And can we afford not to survey the uncharted waters?

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