SHEBA

Sustainable Shipping and Environment of the Baltic Sea region

Brief of Stakeholder Meeting:

Considerations for the Baltic Sea Shipping Sector

Key Messages:

- Stakeholders expect environmental standards and requirements for the shipping sector to increase; especially with respect to air emissions and water pollution (i.e. ballast water pollution and waste discharge).
- Stakeholders perceive the EU to be in a key position to promote action to address environmental pressures from shipping, both at national and international level. This includes policies such as emission control areas, supporting the adoption and development of new technologies, improving knowledge and research on marine environmental pressures, promoting market-based instruments and strengthening enforcement mechanisms.
- Stakeholders also believe that innovative technologies, such as ballast water treatment and scrubbers, can play a major role in offsetting harmful emissions from the shipping sector; combining these with design changes to ships (i.e. incorporating onshore power supply outlets or alternative propulsion systems) would improve ships' environmental performance.
- Stakeholders deem policy action as necessary to remove barriers (e.g. lack of infrastructure, required advances in technology, etc.) to overcome slow sector changes and uptake, and support adoption of eco-friendly alternatives in the shipping sector.

Background

The shipping industry is an economically important and continuously growing sector, both globally and within the EU (UNCTAD, 2014). Recent decades have seen unprecedented growth in the shipping sector and its supporting industries, dominating over other modes of transport for the exchange of goods within and outside the EU (Douglas-Westwood Limited, 2005; EC, 2015). Within the commercial shipping sector, the Baltic Sea acts as a major trade route to export Russian petroleum, hosting around 2,000 ships at any given time with around 150—200 large oil tankers harboured in twenty ports around the sea daily (HELCOM, 2010). The Baltic Sea also has some of the highest passenger rates in the EU, hosting eight of the top twenty EU ports for passenger travel (Eurostat, 2015).[1]

High amounts of vessel traffic has resulted in increasing environmental pressures in the Baltic Sea region, including air pollution, water pollution and underwater noise (see Box 1).

[1] Eight Baltic ports in the top twenty for passengers embarking and disembarking: Helsingør (Elsinore), Rødby (Færgehavn), Puttgarden, Tallinn, Helsinki, Turku, Helsingborg, and Stockholm.

Box 1: Environmental Pressures of Shipping

Air Pollution: major pollutants include sulphur oxides (SO_X), nitrogen oxides (NO_X) and particulate matter (PM), which can lead to increased human mortality and morbidity, acidification and eutrophication of fresh and marine waters, etc.

Water Pollution: impacts water quality and biodiversity, and is linked to harmful algal blooms (HELCOM, 2013, 2010). Shipping is directly linked to the introduction of invasive alien species (IAS). An estimated thirteen new IAS were introduced to the Baltic region between 2000 and 2010, with nearly half of these species introduced from shipping activities (EEA, 2015). Ships also release contaminants/hazardous substances in their bilge water and sewage, which contain various stressors both from the waste itself as well as the waste treatment method (Stamper et al. 2008).

Underwater Noise: marine animals react to shipping-induced noise, sometimes with devastating results such as mammal death, but more often with strong avoidance reactions (Yang et al., 2008; Moore et al., 2012).

Current actions to address shipping pressures on the environment within the Baltic Sea stem from international, EU, regional and national policy. At the international level, almost all existing regulations for shipping-related activities are created and implemented through the International Maritime Organization (IMO). One critical piece of IMO legislation is the International Convention for the Prevention of Pollution from Ships (MARPOL), which sets forth regulations and mandates to govern shipping-related pollution. These regulations cover accidental spills, oil pollution, noxious liquid substances, treatment and disposal of shipping wastes and garbage, as well as air pollution. Within the remit of MARPOL, the Baltic Sea was designated as a Sulphur Emission Control Area (SECA) in 2005.

Within the EU, the Marine Strategy Framework Directive (MSFD) (2008/56/EC) aims to achieve Good Environmental Status (GES) of EU's marine waters and protect the resource base upon which marine-related economic and social activities depend. It requires Member States to develop programs with measures to protect and preserve their marine waters by 2020. In addition to the MSFD, the Marine Spatial Planning (MSP) Directive (2014/89/EU) requires Member States to generate plans for their marine waters. These plans must take into account existing laws and regulations set forth through competent institutions (such as the IMO).

Regional legislation mainly stems from HELCOM's Baltic Sea Action Plan (BSAP),[2] which aims to restore the Baltic marine environment to good ecological status by 2021. The BSAP was adopted by all Baltic coastal states and the EU in 2007, and provides a necessary stepping stone to ensure wider and more effective actions to address the continuing deterioration of the marine environment caused by human activities.

[2] http://helcom.fi/baltic-sea-action-plan

Approach

The BONUS project SHEBA (Sustainable Shipping and Environment in the Baltic Sea region) held a stakeholder workshop to elicit experiences and knowledge of stakeholders.[3] The workshop aimed to better understand the environmental pressures of shipping in the Baltic and how these impacts might change over time, as well as which policies and abatement technologies could be important in the future. The workshop was held 29-30 September 2015 in Hamburg, Germany, and gathered participants from various shipping-related sectors, including port authorities, shipping industry and leisure boating representatives, government officials, leisure boating representative, coastguard service, and academia. Using a World Café method the stakeholders discussed sets of questions regarding environmental impacts, shipping policy and technologies in the Baltic Sea. Sessions focused on the current policy mix, the future of shipping policy (mainly international and EU policy), and the future of shipping in general in the Baltic. Results of this consultation will be used to help to develop future scenarios of shipping in the Baltic, which will feed into model calculations and policy assessments of shipping emissions to air, water and underwater noise pollution. The sections below reflect the discussion of the main topics in this consultation.

Shipping Policy

Considering the existing policy landscape, stakeholders at the consultation workshop expressed views on the future of environmental regulations in the Baltic Sea region. Many stakeholders agreed that environmental regulations will become more stringent in the future, as the understanding of environmental impacts to the Baltic Sea and its marine resources become better known. Moreover, as the EU has pursued regional and EU-wide legislation (as illustrated with the MSP and MSF directives), stakeholders view the EU to be in a key position to pave the way for more stringent environmental standards for the shipping sector in the future and act as a driver for international action.

At the international level, stakeholders expect the adoption of the IMO's proposal for the *International Convention for the Control and Management of Ships' Ballast Water and Sediments*, to address IAS. In addition, serious consideration was given to the concept of "zero discharge," where stakeholders expect that ships will no longer be able to discharge any waste into marine waters by 2040. Stakeholders also expect the strengthening of scrubber and antifouling enforcement mechanisms to improve issues associated with air and water pollution. Participants expected the implementation of the EU Monitoring, Reporting and Verification (MRV) scheme for shipping-related CO_2 emissions by 2018 (a topic related to the climate talks at COP21), as well as the adoption of a Nitrogen Emissions Control Area (NECA) in the Baltic Sea. Overall, participants agreed that environmental regulations tend to be more successful when implemented and progressed at an international level, especially when ship operations are taken into account.

At the Member State level, national support, e.g. through subsidised port infrastructure, may lead to opportunities for improved environmental performance. An example of this is highlighted through the NO_X fund in Norway, which stimulates investments in clean technologies.

[3] Twelve stakeholders from Denmark, Germany, Poland, Sweden and Latvia attended the workshop.

Technologies and Design

As the shipping industry continues to grow, ship sizes also mirror this trend. This is especially true for cruise ships and merchant vessels, which are reaching ever larger sizes to accommodate more passengers and goods. However, the designs of future fleets must also take into account possible future regulations, such as those relating to environmental performance and safety standards.

Air pollution is a particular area in which stakeholders believe technology will become more important and more widely used. With the current SECA in the Baltic, vessels operating in the area are allowed to use fuels with a maximum sulphur content of 0.1%. With the expected adoption of a NECA, vessels will also have to meet new requirements to limit the amount of NO_X emissions. The use and availability of abatement technology allows ship operators a means to reach existing and possibly new targets. For example, scrubbers are used on ships to remove particulates and acid gases from exhaust gas. The use of scrubbers has shifted from being a temporal solution for existing fleets to a regular installation on new ships. Alternative practices (e.g. slow steaming) and alternative fuels (e.g. liquefied natural gas (LNG), methanol, hydrogen and biofuels) can also help meet air pollution requirements.

Changing the design of ships would also enable a reduction in shipping emissions. Building ships to allow for onshore power supply (OPS) would enable ships to access necessary electricity without requiring the running of auxiliary engines, saving both air emissions and fuel while idling at ports (see Figure 1). Alternative propulsion systems, such as hybrid, electric and wind, would allow multiple benefits in reducing shipping-induced pollution. However, perceived barriers to these technologies and design changes include lack of infrastructure, difficulties in storage, industry resistance, required advances in technology (i.e. batteries), and high costs of adoption.

Figure 1: Onshore Power Supply (OPS)

Source: TERASAKI, 2016

Pressures from shipping to water stem from various sources (e.g. including bilge water, grey and black water, ballast water, NO_X-, SO_X- and PM-deposition, antifouling, biofouling, stern tube oil, food waste and tank cleaning), many of which fall under existing regulations. However, not all regulations may be adequately enforced and not all waste sources are yet covered by legislation, especially with respect to ballast water. With the implementation of the IMO's Ballast Water Convention, existing ships would be required to install ballast water treatment technologies, and newly constructed ships to include such technologies into their design. Such technologies may also be complemented with improved management of ship waste water and waste collection at ports in the Baltic.

Lastly, regarding underwater noise, some stakeholders pointed out, that new vessels could incorporate noise pollution into ship designs, allowing for quieter ship operations and less underwater noise levels. However, most believed that this is more of a concern within port areas and with respect to above-water noise levels, responses to which would most likely come through regulations to shipping operations in ports and near harbours, where more people complain about noise levels near coastal residences rather than over concern for marine biodiversity.

Conclusions

It is clear that current shipping trends, both globally and within the Baltic Sea area, make shipping play an important part in environmental pressures such as air pollution, water pollution and underwater noise. Understanding these pressures and their wider impacts can aid policy makers in their efforts to achieve environmental policy objectives.

Stakeholder views elicited at the SHEBA workshop in Hamburg highlighted future expectations for the shipping sector, particularly in the Baltic Sea. Overall, there was consensus that environmental action will increase in the future, as ecological concerns take a larger stance in political and economic decision-making processes. This can already be seen in the EU's adoption of environmental policies such as the MSF Directive. While these regulations have an impact regionally, stakeholders believe efforts are also required at the international level to address the global nature of shipping.

These international efforts should include design changes and technical requirements to ships, as well as international conventions or treaties to ensure global adherence to environmental safety standards. Technologies such as ballast water treatments and scrubbers have great potential to reduce air and water pollution generated from ships. Design changes could include quieter engines better adapted to run on alternative fuels, such as LNG, and hook into OPS at ports. To adopt these new technologies and designs, stakeholders deem policy action as needed to overcome barriers related to technology uptake and infrastructure needs, as well as overcome slow sector changes within the shipping industry itself.

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More information about SHEBA can be found at: http://www.sheba-project.eu

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