

# BALTIC SEA ACTION GROUP'S MARITIME ACTIVITIES

Report on the results

17.8.2023

BSAG  
Baltic Sea Action Group



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# RESPONSIBLE SHIPPING FOR A CLEANER BALTIC SEA

Our world would grind to a halt without shipping. Yet it also affects the well-being of our seas in many ways. Baltic Sea Action Group is working with industry operators to find sustainable solutions that reduce the environmental impact of shipping. We are helping them reduce discharges and use ship waste as a raw material in the circular economy. In this report, we are describing our work in the field and summarising the findings of studies we've conducted aimed at filling knowledge gaps to enable action.

## Defining the problem

The Baltic Sea is one of the busiest sea areas in the world for shipping. Every day, over 2000 ships sail the Baltic Sea. Around half of the ships carry dry or general cargo either in bulk or packaged form. One fifth of the ships are tankers, which carry oil products, chemicals, or gas. Smaller ship segments include RoRo, container, service, and fishing vessels. Only around 5 percent of the ships are passenger ships, either RoPax or cruise vessels.

A typical feature of Baltic Sea shipping is the dense traffic between Baltic Sea ports. This applies both to RoPax ferries as well as dry cargo shipments. Tanker traffic is frequent especially in the Danish straits and the Gulf of Finland, where the routes cross with regular passenger ferries. Overall shipping activity is intense year-round, meaning that the ships sail in ice, darkness, and stormy waters.

It is estimated that around 25 000 seafarers sail on cargo ships any given day. A ship is their workplace and home, meaning that the ship generates waste whether or not it is carrying cargo. Same types of waste are generated onboard and in households onshore: sewage, grey waters, food waste, plastics, cardboard, glass, batteries etc.

The international convention for prevention of pollution from ships, MARPOL, regulates waste management onboard ships. Certain waste types cannot be discharged into the sea, but some waste types can be legally discharged into the sea under certain circumstances. Various Annexes regulate different waste types.

Under the MARPOL convention, the Baltic Sea has been declared a Special Area and a Particularly Sensitive Sea Area. Due to the special status, tighter regulations prevail under MARPOL Annex I (oil), Annex IV (sewage), Annex V (garbage) and Annex VI (Prevention of air pollution by ships).

Under Annex IV, any discharge of sewage from passenger ships in the Baltic Sea is allowed only for sewage processed through an especially advanced on-board sewage treatment plant which also reduces nitrogen and phosphorous concentrations to specified levels, according to the standards of MEPC.227(64).

For cargo ships, the regulations for sewage discharge are different. Cargo ships are allowed to discharge sewage when the distance from the nearest land is more than 12 nautical miles. If sewage has been comminuted and disinfected using an approved system, it may be discharged when the distance from the nearest land is longer than 3 nautical miles. According to MARPOL Annex IV, discharging from a sewage holding tank, the discharge must be at a moderate rate and the ship must be proceeding enroute at a minimum speed of 4 knots.

There are no regulations for grey water generated in showers, dishwashers, washing machines, kitchens etc. Grey water may be discharged into the sea from passenger and cargo ships without limitations. Similarly, discharges of food waste resulting from normal operations of the ship are allowed if food waste is comminuted or ground. According to MARPOL Annex V, food waste can be discharged when the distance to the nearest land is more than 12 nautical miles from the nearest land.

Eutrophication remains the major environmental threat to the Baltic Sea. Eutrophication is caused by an excessive input of nutrients – phosphorus and nitrogen – to the aquatic environment. The input of nutrients to the Baltic Sea originates from natural sources and from various human activities on land and at sea. Eutrophication results in intense algal growth and depletion of oxygen on the bottom of the sea, further leading to vast areas with anoxic or hypoxic conditions in the Baltic Sea. Eutrophication affects the entire ecosystem.

Environmentally sustainable sea-based activities have been defined as one of the four main goals of the Baltic Sea Action Plan. The objective is to minimize the input of nutrients, hazardous substances, and litter from sea-based activities. Several actions aim at minimizing pollution from ships. The work conducted by BSAG contributes to following actions:

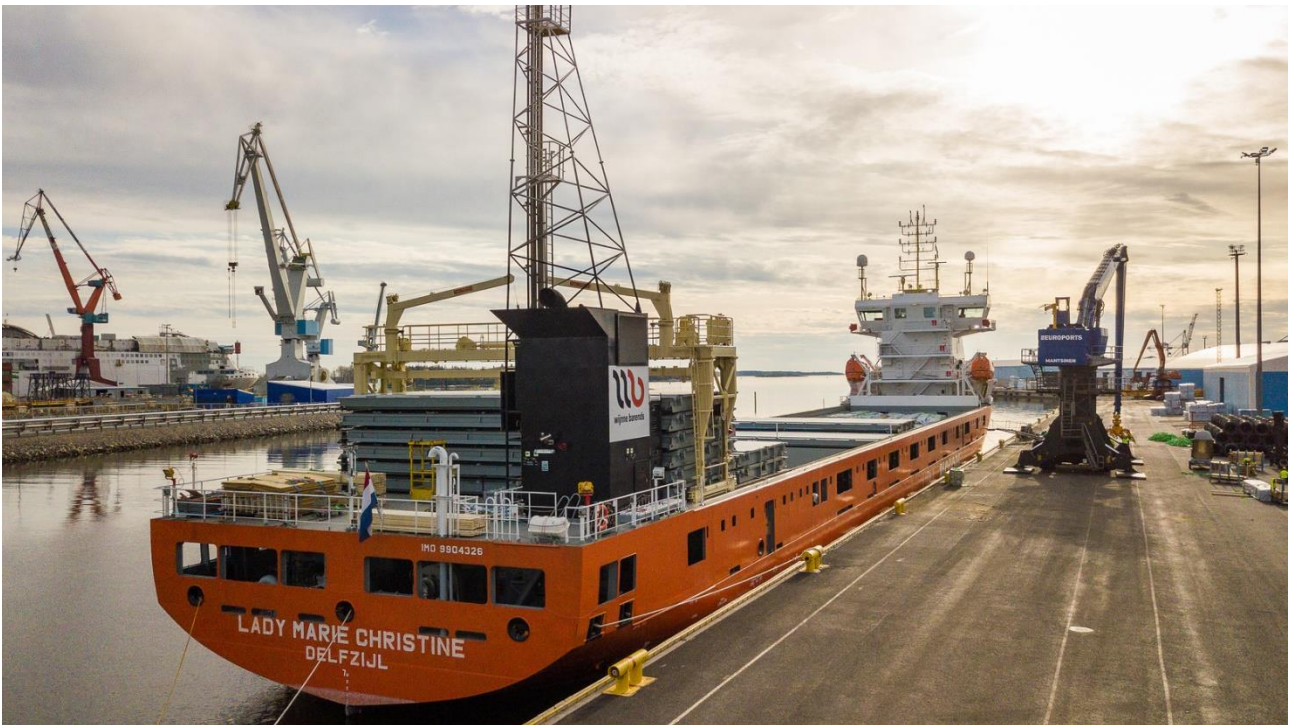
*S14 - Carry out a study and impact assessment by 2025, assessing the possible ways for cargo ships to deliver sewage to port reception facilities (PRF) or take treatment measures, using onboard treatment plants, before discharging it into the sea. Based on the results, take relevant action in making a decision by 2027 on whether to widen the scope of the Baltic Sea Special Area regulations under the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex IV to cover also sewage discharges from cargo ships.*

*S15 - Carry out a study and impact assessment by 2027, assessing the volume and potential harmful effects of grey water and the possibilities for ships to deliver it to port reception facilities or take treatment measures using onboard treatment plants, before discharging it into the sea. Based on the results, take relevant action in making a decision by 2029 on whether and how to manage grey water discharges from ships.*

*S18 - Develop a Roadmap to minimize the discharges of food waste into the Baltic Sea and subsequently develop by 2025 a HELCOM Recommendation to encourage voluntary agreements on delivering all food waste from ships to port reception facilities.*

*S19 - Enforce the requirements of the Baltic Sea Special Area under the International Convention for the Prevention of Pollution from Ships (MARPOL) Convention Annex IV and continuously ensure the availability of adequate port reception facilities in passenger ports in the Baltic Sea Area taking into account the “Technical Guidance for the handling of wastewater in Ports of the Baltic Sea Special Area under MARPOL Annex IV”.*

In the following sections, this report will describe the work and its results in more detail.



## COLLECTING DATA TO ENABLE ACTION

BSAG has gathered data on following topics:

- Waste management practises on ships calling at Finnish ports
- Waste management policies and pricing principles in Baltic Sea ports
- Sampling and analysis on sewage and grey waters

### Survey on ships calling at Finnish ports

BSAG arranged a survey of cargo ships calling in Finnish ports in 2020. Members of Shipbrokers Finland collected data from cargo ships using a Webropol questionnaire prepared by BSAG. The survey was conducted in the 12 busiest cargo ports in Finland between 1 July and 31 December 2020. Altogether 171 replies were collected and saved in the database.

The questionnaire covered following questions:

- Port of Call
- Ship's IMO identification number
- DWT summer
- Flag state
- Ship type
- Year when ship was built
- Number of crew members
- Previous port
- Distance from previous port of call

- Was the previous port in the Baltic Sea?
- Type of sewage treatment plant
- Holding tank capacity for sewage (grey/black/mixed)
- Did the vessel discharge any treated sewage or grey water or ground food waste into the sea enroute?
  - If yes, what was discharged?
  - If sewage was discharged, was the discharge options continuous or one-off?
- Did the ship discharge sewage or grey water to port reception facilities?
  - If yes, what was discharged?
- Does the ship hold an exemption certificate from mandatory delivery and notification of ship-generated waste, issued by Traficom?
- Did the No Special Fee system cover all the waste discharge costs (MARPOL Annex I, IV, V)?
- Was the ship aware of the No Special Fee system?

The data includes various ship types (dry cargo vessels, tankers, container ships and RoRo vessels) flying 25 different flags. Crew size varied between 6 and 26, average being 13. Average vessel and crew sizes varied by ship type. Average size of containerships was 26300 dwt (deadweight tonnage) with 19 crew members, tankers 20400 dwt with 17 crew members, dry cargo vessels 11200 dwt with 10 crew members, and RoRo vessels 15220 dwt with 17 crew members. The average age of ships was 13 years. Ships older than 20 years were mainly dry cargo ships. Around 30 percent of the ships were built before 2005.

Two thirds of ships arrived at Finnish ports from another Baltic Sea port, average distance being 211 nm, and one third of ships arrived from outside the Baltic Sea, average distance being 1310 nm. Overall, the average voyage distance was 900 nm, equal to a sailing distance of 2,5 days if ship sails at a speed of 15 knots.

Around 82 percent of the ships were equipped with a sewage treatment plant and remaining 18 per cent of the ships with a holding tank only. The average size of sewage tanks was 16 cbm (cubic meters), and grey water tanks 26 cbm. For ships storing sewage and grey water in the same tank, the average size was 40 cbm.

When asked if ships discharged sewage or grey water or food waste into the sea enroute to Finland, 64 percent of ships answered yes. The most common was a discharge of sewage mixed with grey water. Out of these vessels, more than half arrived from another Baltic Sea port, meaning that the discharge took place in the Baltic Sea. Only four vessels advised they had discharged sewage or grey water into port reception facilities. 66 percent of ships said they discharged food waste at ports.

When asked about the No Special Fee system, one third of ships advised they were not aware of it. Out of these vessels more than half were flying an EU-flag and were dry cargo ships. 75 percent of ships not aware of the NSF system sailed between Baltic Sea ports.



### Waste management policies and pricing principles in Baltic Sea ports

According to HELCOM Recommendation 28E/10 “the waste management fee imposed on a ship should be independent of the volume of the wastes delivered to the port reception facilities.” The so called No Special Fee system aims at encouraging ships to deliver waste ashore and to avoiding undesirable waste streams between ports, thereby encouraging a sound sharing of the waste burden. According to the No Special Fee recommendation ports charge ships a waste fee which ships pay irrespective if they leave any waste at ports or not. HELCOM agreed on the No Special Fee principle in 2007, and all Baltic Sea ports have been recommended to act accordingly.

Under the No Special Fee system the compulsory waste fee must cover certain waste types:

- Oily waste from machinery spaces (under MARPOL Annex I)
- Sewage (under MARPOL Annex IV)
- Garbage, domestic waste, food waste, plastics etc. (under Annex V).



Grey water is not regulated by MARPOL, meaning it does not fall under No Special Fee requirements. However, if grey water is mixed with sewage, the mixture is treated as sewage. The mixture of grey water and sewage can be discharged at ports under compulsory waste fee.

According to HELCOM recommendation, the waste management fee shall be fair, transparent, and non-discriminatory to all ships, i.e., the size of the waste management fee shall be visible to every ship even if it is included in the harbour fee. The waste management fee imposed on a ship should be independent of the volume of waste delivered to the port reception facilities.

BSAG has collected extensive data on pricing principles and waste management procedures in Baltic Sea ports. The study covered 30 ports in 8 countries, plus 18 Finnish ports. To receive comparable data, ports were approached with a request to provide disbursement accounts for six vessel types, typical in the Baltic Sea trade. Each vessel was assumed to discharge certain waste types at the port, typical for said vessel type. The ship types were as follows:

1. bulk vessel, DWT 5019, GT 3405,
2. bulk vessel, DWT 31754, GT 22622
3. oil tanker, DWT 53116, GT 29283,
4. passenger ship, DWT 7757, GT 71304
5. RoRo vessel, DWT 14500, GT 33816
6. Container ship, DWT 40000, GT 34882.

Each ship was expected to discharge oily waste, sewage, and food waste into port reception facilities.

**Waste fees vary considerably between Baltic Sea countries and ports.** Looking at the example vessels, the waste fee spread is as follows (EUR):

Ship type	Lowest (EUR)	Highest (EUR)	Average (EUR)
Bulk vessel	68,10	954,92	358,54
Bulk vessel	332,71	3.393,50	1.620,58
Oil tanker	311,01	4.960,20	1.689,81
Passenger ship	1.140,86	9.498,24	4.431,57
RoRo vessel	338,15	2.659,14	1.128,38
Container ship	414,15	4.534,53	2.076,02

It is worth noting that the **waste fees vary considerably not only between countries but between ports in the same country.** For same service, the waste fee can be three to four times higher in one port compared to another port in the same country.



When examining the data collected from 30 ports outside Finland, it is clear that a considerable number of ports do not follow HELCOM recommendation of No Special Fee. Below is a list of discrepancies observed:

- waste fee is different for ships in domestic and international traffic
- waste fees differ based on vessel's previous port
- there are limitations to what quantities of waste the fee covers
- waste fee increases along with the duration of the port stay
- sewage is included in the waste fee for passenger ships, but not for cargo ships
- ports advise that disposal of various waste types must be agreed directly with waste management companies, and the costs will be invoiced to shipping companies
- a part of the costs for sewage paid to waste management company will be refunded to the shipping company
- pricing lists refer to tariffs set by waste managers, waste management companies or local rules, which are however not accessible.

Regarding grey water and sewage, the most common discrepancy with HELCOM recommendation is the limitation on quantities. It is usual to limit the volume into 3-10 cbm per ship call which is a relatively small quantity. For example, a bulk vessel with 10 crew members sailing 2,5 days from the previous port generates about 7,5 cbm sewage during her voyage, and a container ship with 19 crew members about 14 cbm.

Another point causing confusion for ships and shipping companies is the vague role of ports in waste management. In many locations, ports advise their pricing principles, but do not specify for example maximum amounts, required pumping rates or time allowed for waste disposal operations. The cost for exceeding these limits remains unclear. When asked, ports direct ships to enquire prices from waste management companies. In some cases, ports reimburse the costs to shipping companies, either partly or completely, but the mechanism is very unclear.

The study conducted by BSAG shows how diverse and inconsistent the waste management policies and waste fee principles are. Too many Baltic Sea ports do not implement the HELCOM recommendation. The purpose of No Special Fee is to encourage ships to discharge waste at ports, but the incentive does not have the intended effect. The recommendation is not widely known, or even when known, it is not implemented, or when implemented, it is implemented incorrectly. The reasons for this should require further elaboration. It is obvious that the well-intended recommendation has not gained the effect HELCOM contracting parties hoped for.

It must be stated that good examples exist, too. Finnish ports have adopted No Special Fee principle in their pricing. Some minor limitations and exceptions still prevail, but all in all, the pricing schemes are rather consistent in Finnish ports. Around the Baltic Sea, ports have implemented voluntary incentives, too. Some examples of incentives on waste fees are listed below:

- ships receive a discount from waste fees if they discharge sewage, or mixture of sewage and grey water into port reception facilities
- a discount is granted to ships which have a "waste treatment system installed, operated and recognised by international certificates"
- a discount is granted in case the ship can prove their policy of reducing, reusing, and sorting waste.

Other incentives on port fees are mainly based on the index of ship's emissions (nitrogen oxides, sulphur oxides, carbon dioxide), for example Environmental Shipping Index (ESI), Clean Shipping Index (CSI), Green Award, and Blue Angel. Discounts are also given to ships using certain fuel types or onshore power supply.

## Sampling and analysis on sewage and grey waters

BSAG arranged sampling from ships' sewage and grey waters. A total of 47 samples were collected from ships calling at Finnish ports. 34 grey water samples were collected from cargo ships and 13 samples from passenger ships.

The grey water samples were analysed at certified laboratories (KymLab Ltd and MetropoliLab Ltd) for the following parameters:

- BOD (biochemical oxygen demand)
- COD (chemical oxygen demand)
- suspended solids (GF/A)
- chloride
- pH
- total nitrogen
- total phosphorus

The concentrations of the different parameters in the grey water of the cargo ships were generally greater than in the passenger ships. The concentrations varied a lot between samples, especially COD and BOD concentrations. The average BOD, COD and suspended solids concentrations in the cargo ship samples were almost double those of the passenger ship samples. The average nutrient concentrations were also greater in the cargo ship grey water than in that of the passenger ships. The bacterial concentrations in the samples were high, both for the cargo ships and passenger ships samples. The bacterial concentrations also varied greatly between samples.

The results must be interpreted with caution. Most of the samples were drawn by certified representatives of laboratory companies, but some samples by ships' crews. Although crews were instructed properly, there cannot be full certainty how representative the samples are. Some of the samples waited too long for analysis, which raised questions of the validity of the analysis. Results for these samples were deleted from the data.

## Samples

6 samples were also tested for additional parameters:

- microplastics
- pharmaceuticals
- drugs
- pesticides
- industrial compounds
- surfactants

Microplastics were analysed at ALS Global Ltd laboratories. Samples were tested for the number of particles with a diameter more than 40 µm, and the type of the particles. Five samples contained microplastics, and the number of particles ranged from 8 to 24 per 1000 ml. The particles were identified as polyurethane and polypropylene. One of the samples did not contain any microplastics. The results reflect usual levels of microplastics found in municipal wastewaters.

6 samples of grey water were sent to Institut Català de Recerca de l'Aigua located in Girona, Spain. ICRA is one of the research units participating in EMERGE project, led by the Finnish Meteorological Institute. Wide-scope target screening, conducted by ICRA, detected 25 pharmaceutical compounds, 10 compounds of phthalates and plasticizers, 3 compounds of flame retardants, 3 compounds of UV filters, 2 compounds of personal care products, plus one per/polyfluoroalkyl substance in grey water.

In the second phase, ICRA conducts suspect screening using a database of nearly 1600 compounds. The results will be available in mid-2023.

BSAG has arranged sampling and analysis of sewage discharged at the port of HaminaKotka. By end of March 2023, 22 sewage samples were analysed for following parameters:

- BOD (biochemical oxygen demand) 7-ATU, mg/l
- COD (chemical oxygen demand), Cr, mg/l
- suspended solids (GF/A 1,6 µm), mg/l
- pH
- alkalinity, mmol/l
- total nitrogen, mg N/l
- total phosphorus, mg P/l.

Common to all parameters is the large dispersion:

- BOD – min 63 – max 960, average 408
- COD (chemical oxygen demand – min 29 – max 2000 – average 940
- suspended solids (GF/A) - min 60 – max 1500 – average 416
- pH – min 4,5 – max 8,6 – average 7,6
- alkalinity – min 0,25 – max 22 – average 408
- total nitrogen – min 8 – max 680 – average 173
- total phosphorus – min 1 – max 93 – average 22.

The discharged volume of sewage per ship ranges from 0,6 cbm to 21,5 cbm, average being 10,7 cbm.

Further testing is needed to verify the amount of nutrients in sewage ending up to the Baltic Sea. More data is needed also on ships' on-board sewage treatment plants: do the parameters measured meet the specification of STPs? Sampling and analysis will continue in 2023, and the full data will be available in 2024.



## VALUE CHAIN IN WASTE MANAGEMENT

BSAG conducted pilot projects to chart how waste is managed all the way from ship to shore and whether it is used further for circular economy purposes. Similarly, the information flow between parties was examined. Three ports with different port profiles were chosen as pilot cases.

- Oulu, 450–500 port calls per year, tankers/dry cargo/RoRo representing each one third of the port calls
- Kokkola, 650–700 port calls per year, about 70 percent being dry bulk carriers both on CoA or spot basis
- Rauma, 950–1000 port calls per year, whereof about half regular traffic of container and RoRo vessels, another half dry bulk carriers

In the first phase, value chains were charted separately for each port. BSAG interviewed altogether around 70 persons from 40 different organizations, representing ports, shipping companies, ships' masters and chief engineers, shipbrokers, waste management companies, ship chandlers, transportation companies, shippers, industry associations as well as authorities from various governmental bodies. Based on the interviews, the chain of waste management and information flow could be mapped. Critical points of friction were identified. Each organization was asked about their own objectives and their willingness to commit to change.

In the second phase, BSAG arranged a separate workshop for each port. Findings of the interviews were presented and discussed. Already at this point, the main outcome could be seen: the organisations and the persons representing the same met for the first time to discuss matters of mutual interest. Each participant could better understand their own role in the value chain and get a complete picture of the process. It proved especially fruitful to bring together private companies and governmental bodies. The roles and responsibilities of various authorities got clarified, and the workshops provided an excellent platform for open discussion.

The outcome of three workshops was a list of concrete suggestions. Problems were discussed in a constructive manner, and the participants formulated practical steps to improve waste management both onboard and ashore. The suggestions were collected under three topics: waste waters, garbage, and information.

The third phase was an open workshop where BSAG invited representatives from the whole industry, not only from three pilot ports. A large number of participants from various roles attended the workshop to discuss improvement ideas suggested in the port specific workshops. The goal of the workshop was to decide on the most effective improvement ideas under three topics. The outcome was a list of concrete ideas, each identifying the parties needed to implement it. Examples of concrete improvement ideas and the responsible parties are listed below.



## Examples of concrete improvement

### Wastewaters

*Problem: Small batch sizes lead to small sewage quantities. It makes no sense to collect a few cbm of sewage by a tank truck with a capacity of 15 cbm.*

A solution would be a mobile trailer operated by the port. Sewage from ships would be collected in the trailer, and when full, disposed as per port procedures. Another solution would be to dispose sewage straight to drainage, which would require installing an additional pump facility at port. Responsible entities for these two actions would be ports, waste management companies, transportation companies.

*Problem: Cargo ships and shipping companies are not aware of port pricing principles and waste management procedures.*

A solution would be targeted campaign bringing information about No Special Fee directly to shipping companies and ships. A suitable tool for such campaigns would be the [Baltic Sea Waste Fee Info](#), a leaflet prepared by BSAG together with the Finnish maritime cluster. Responsible entities for these two actions would be ports and shipbrokers who are the experts on local practises and conditions.

*Problem: All parties must be made aware of the importance of waste management and the consequences of sewage discharges to the Baltic Sea.*

A solution would be increased sampling and analysis of wastewater, which would give further data to support both voluntary actions and regulatory work. Responsible entities for these actions would be shipping companies, producers of STPs, authorities, and BSAG.

*Problem: The content of wastewaters, especially cargo hold washing waters, is unknown to waste management companies, resulting in expensive and inefficient waste disposal.*

A solution would be a better procedure to predict the volume and contents of wastewaters. Correct information on cargo specifications, cleaning substances and anticipated volumes must reach the port or the waste management company as early as possible. Another suggestion is to question the need for washing operations. It seems that shippers or charterers require cleaning procedures only to be on the safe side, which can mean unnecessary washing operations. In case cargo hold washing can be replaced by thorough sweeping, both time and money can be saved. Responsible entities for these actions would be shipping companies, ships, and waste management companies.



## Garbage

*Problem: Ships' crews place waste types in wrong disposal units. The sorting principles differ between countries and ports.*

A solution would be to introduce colour codes or pictograms for different waste types of garbage. In any case, ports should ascertain that information is available in several languages, at least in English, at all waste stations. Waste management plans should be amended accordingly. Responsible entities would be ports and waste management companies, but input is needed from authorities, too.

*Problem: Ships' crews place waste types at quays or outside waste stations. This may also happen with garbage types which do not fall under port's standard waste fee, for example paints, hazardous waste, oily rags, ropes. Crews may work under tight schedules, and therefore a long way to waste stations increases the risk of abandoning waste at quays.*

A solution would be a front-end container with separate containers for the most usual garbage types. The container could be operated by a "waste caretaker" employed by the port, moving the container close to each arriving ship and coordinating the waste disposal procedures. Responsible entity would be the port in cooperation with waste management companies.

*Problem: Ships have problems with packaging materials due to limited storage space onboard. For example, ship chandlers deliver food, and technical service companies deliver spare parts, often in rich plastic and cardboard wrappings. The packaging waste remains onboard and poses problems to the ship.*

A solution would be to revise purchase criteria to include a requirement to reduce packaging waste. Responsible entities would be shipping companies, ship chandlers and suppliers of spare parts.

*Problem: food waste is not collected separately, and therefore its use for circular use is scarce. The problem of food waste concerns both passenger and cargo ships. Since the volumes of food waste, and the potential for circular use, are much larger in passenger traffic, the question is relevant especially in passenger ports.*

A solution would be separate collection of food waste and bio sludge, which should be processed further as feedstock for circular economy purposes. Responsible entities would be ports, waste management companies, energy companies, and authorities.

Another problem is the international catering waste, which must be stored and disposed separately from other food waste. The same applies to packaging materials of international catering waste. Due to the regulation on animal by-products, international catering waste must be incinerated. If possible, the national implementation of the regulation on animal by-products should be reviewed.



## Information flow

*Problem: Ships and shipping companies find it very difficult to find information on waste management procedures and pricing principles which differ between countries and ports. The pricing principles and discounts, and limitations on waste quantities or requirements on pumping speeds are not easily accessible or they remain unclear. The No Special Fee principle or other incentives to discharge waste into port reception facilities are not widely known.*

A solution would be to actively inform shipping companies and ships of the special status of the Baltic Sea and the No Special Fee principle. A useful tool would be the be [Baltic Sea Waste Fee Info](#), a leaflet prepared by BSAG together with the Finnish maritime cluster. Responsible entities would be ports, shipbrokers, waste management companies, authorities, and BSAG.

*Problem: Although a shipping company has issued guidelines for responsible waste management, the practises must be implemented onboard ships. Since the officers and crew change frequently, the implementation must be an ongoing process. Many shipping companies operate both owned/managed ships as well as time-chartered vessels. It seems to be straightforward to instruct owned tonnage, but shipping companies find it difficult to control time-chartered tonnage.*

A solution is to include separate clauses into the charter parties, stipulating a requirement for responsible waste management. This should not be a commercial dealbreaker, especially since discharging sewage, garbage or oily waste is included in the compulsory waste fee. Responsible entities are the shipping companies.

*Problem: Information on waste management does not flow efficiently in the value chain. Parties communicate by email or phone, and eventual changes do not get reported in time. Consequently, time and resources are wasted, and additional costs accrue.*

A solution would be to focus on communication tools and practises, both inside each organization and in the whole value chain. BSAG has contributed to solving the problem. We have brought together all parties in the value chain to learn about each other's role in the chain and enhancing cooperation. Another solution is an efficient way to use digital tools, for example Port Activity App, instead of emails and phone calls.

*Problem: Ports experience problems to control waste volumes discharged into port reception facilities, to issue waste receipts or to carry statistics on waste volumes. Lack of information leads to insufficient planning tools and possibly incorrect waste handling capacities, wrong pricing, or investment decisions.*

A solution would be to create more systematic data tools able to provide waste receipts and statistics. Responsible entities would be ports, IT developers, waste management companies, shipping companies and authorities.



## AWARENESS RAISING

BSAG arranged a survey of 171 cargo ships calling at 12 Finnish ports in 2020. The survey revealed that almost one third of the ships were not aware of No Special Fee system. This implies that **the HELCOM recommendation is not known well enough**. If the ships presume that they need to pay for all waste discharged into port reception facilities, they are tempted to discharge waste into the sea enroute. On the other hand, ports collect compulsory waste fees from all ships, also from ships which do not leave any waste at ports.

To minimize discharges into the sea and to encourage ships to discharge waste at ports, **BSAG together with the Finnish maritime cluster organized an information campaign**. The outcome **“Baltic Sea Waste Fee Info”** is a concise information package, listing present regulations and the No Special Fee principle. For ships and shipping companies it is vital to know what the compulsory waste fee covers at ports. It is also important to know which waste types ships need to pay extra for. Baltic Sea Waste Fee Info contains a recommendation to bring all waste to ports, especially waste types which can be legally discharged into the sea (sewage, grey water, food waste).

The information package was prepared in good cooperation with the Finnish maritime cluster, which shares the same concern for responsible shipping and the marine environment. Baltic Sea Waste Fee Info is **delivered via ports' web pages and direct messages from ships' agents (shipbrokers) to ships heading to Finnish ports**. It is also included in "Master's Guide" which Fintraffic (Vessel Traffic Services) **distributes to ships sailing in Finnish territorial waters**. Baltic Sea Waste Fee Info has proven to be a handy tool for all parties involved. Ports appreciate a general information package, including a link to port's web pages and pricing list. Ships and shipping companies receive concise information on waste fees and regulations in the Baltic Sea. Ships' agents can make use of the links to rules and regulations when providing information to ships sailing in the Baltic Sea.

BSAG has worked hard to get Baltic Sea Waste Fee Info implemented in other Baltic Sea countries and ports, too. Unfortunately, ports have been reluctant to make use of the leaflet. The main reason for this is that No Special Fee system is poorly known. **The purpose of No Special Fee is to encourage ships to discharge waste at ports, but the incentive does not have the intended effect. The recommendation is not widely known, or even when known, it is not implemented, or when implemented, it is implemented incorrectly.** The reasons for this should require further elaboration.

**Our findings call for action from various parties.**

**HELCOM** must take the following actions towards member states:

- communicate the importance of No Special Fee system
- emphasize that the cost of reception, handling, and disposal of ship-generated waste, originating from the normal operation of the ship, must be included in the harbour fee or otherwise charged to the ship irrespective of whether waste is delivered or not
- ensure that the fee covers the waste collecting, handling, and processing including infrastructure and shall be distributed among ships and collected as part of or in addition to the port dues
- demand that the waste management fee imposed on a ship should be independent of the volume of the waste delivered to the port reception facilities (Annex I, IV, V)
- remind that the tariffs must be set in a fair, transparent, and non-discriminatory way, where the size of the vessel (gross tonnage) is used as basis for pricing
- remind that the tariffs can take other aspects into account, too: type of the ship, and the number of crew members and/or passengers
- suggest incentivising management, processing, and minimization of waste onboard the ships, which can be used in scaling the waste management fee
- pursue a harmonized waste management fee system for the ports in the Baltic Sea
- ascertain that member states collect data on port reception facilities and pricing schemes.

**National authorities** must take the following actions towards ports:

- ascertain that ports are aware of No Special Fee system, and implement it as recommended by HELCOM
- emphasize the importance of fair, transparent, and non-discriminatory pricing principle
- remind that the waste management fee imposed on a ship should be independent of the volume of the wastes discharged to the port
- encourage ports to incentivise sustainable waste management onboard ships
- require ports to report waste management pricing schemes and volumes discharged at ports.

**Ports** must take the following actions:

- review pricing principles and align them with the HELCOM recommendation
- introduce incentives to reflect responsible management, processing, and minimization of waste onboard ships
- improve port reception facilities to meet requirements from ships
- adjust tariffs and income from waste management fees to meet investment and improvement needs
- introduce Baltic Sea Waste Fee Info and make it available on ports' websites
- advise shipbrokers to deliver Baltic Sea Waste Info to ships heading to the port
- collect data on waste types and volumes and report the same to authorities.

**Interest groups** (port organizations, shipbrokers, shipowners, other stakeholders) must take the following actions:

- inform ports, shipbrokers, shipping companies, and other stakeholders about the No Special Fee system
- encourage ports to improve their reception facilities and amend their pricing schemes
- encourage ships and shipping companies to require waste management services at ports according to the HELCOM recommendation
- take voluntary action to improve responsible waste management onboard and ashore by enhancing communication and information flow between parties
- report to GISIS database of any discrepancies regarding port reception facilities



## CIRCULAR ECONOMY

In 2022, BSAG launched an initiative called [Ship Waste Action](#). The idea of Ship Waste Action is to use ships' grey water and sewage for circular economy purposes. Wastewaters can be used as a raw material in production of biogas and district heating, or as process waters in paper industry.

BSAG's role in Ship Waste Action is two-fold. BSAG has launched the initiative and brings together parties which are needed to make the change. The first step is to study the value chain from ships to port and further to waste management and circular economy. Each port is different, and the value chains consist of different players at each port. The second step is to establish a connection between all parties and encourage them to work together in creating a smooth process. Thirdly, BSAG gathers information and feedback: how does the process work, what are the points of friction, and how they have been solved.

Ship Waste Action has strengthened cooperation between parties at ports. Various parties have examined their own processes and changed them, if needed. The dialogue between parties has increased and the process throughout the whole value chain has improved. Problems have been identified at local level and solved together. Each positive outcome has encouraged further steps. Ports have also been eager to share amongst them information on challenges experienced, technical solutions found, and lessons learned.



Ships' agents play an important, and sometimes an invisible role as an information hub between ship, shipping company, port, and service provider. Agents deliver information on responsible management of ship-generated waste and spread understanding of No Special Fee pricing and practical arrangements among ships sailing the Baltic Sea.

Another key player in the value chain is the shipper or the charterer of the goods. A good example is the [Finnish pulp and paper giant UPM](#), who committed to Ship Waste Action in 2022. Cargo ships carrying UPM's raw materials or finished products discharge their wastewaters into port reception facilities. Wastewaters are utilised in various circular economy solutions. The shipper/charterer has got considerable bargaining power when concluding contracts with shipping companies, ports, and other service providers. Setting a zero standard on wastewater discharges into the sea has wide-spread effects in the value chain. According to UPM, their commitment to Ship Waste Action has tightened contacts with shipping companies and ships. The decision to require responsible waste management from ships has evoked a positive response from their customers and the value chain.

Since Ship Waste Action was launched, the volume of wastewater discharged at Finnish ports has increased remarkably. Compared to figures in 2020, the quantities are two to three times larger in 2022. In some ports the change has been even greater. For example, out of roughly 2400 cargo ships calling at HaminaKotka in 2020, only 3 ships discharged sewage at port, whereas in 2022 the figure was almost 50. Out of the 15 biggest cargo ports, the quantities of wastewater discharged ashore increased in 13 cargo ports. There are only few cargo ports in Finland which did not receive any sewage or grey waters in 2022.

The most important consequence of Ship Waste Action is the change in attitudes and procedures. More and more shipping companies have changed or are in the process of changing their waste management manuals, instructing vessels not to discharge sewage or grey waters into the Baltic Sea. Awareness of the environmental aspects is increasing. Ports have updated their procedures and ascertained that required flanges and hoses are available at ports. Shipbrokers are actively providing ships and shipping companies with Baltic Sea Waste Fee Info, informing about local arrangements and requirements.

BSAG has been active in communicating Ship Waste Action on social media, in the press, and other media outlets. The initiative has gained worldwide attention. Articles on the topic have been published for example in the Philippines, Australia, India, and the USA. All communication has focused on the positive sides, highlighting good examples and voluntary, responsible action instead of blaming ports, shipping companies, or ships' crews. The key is to work on the whole chain: everyone must play their part to make the process as smooth as possible.

## MARITIME SCHOOLS

BSAG prepared [educational materials](#) to meet the demand from maritime training facilities. The curriculum of maritime students is based on qualification requirements set by international conventions and national regulations. The maritime training facilities have recognized a need to go beyond conventions and regulations. The students need more comprehensive education on environmental aspects of shipping and the Baltic Sea.

The materials prepared by BSAG give a concise overview on following topics:

- Baltic Sea – facts and figures
- Environmental burden of shipping
- Port Reception Facilities, EU Directive, and national legislation
- MARPOL Convention and special requirements in the Baltic Sea

The materials can also be used in other fields of study: logistics, energy and environmental technology, circular economy, environmental education, ship building etc. The aim is to provide teachers and students with a general view on maritime traffic and its effects on the Baltic Sea. The special features and regulations of the Baltic Sea are also highlighted.

Expanding the educational perspectives will give students a broader view on maritime transports. In addition, the students will get acquainted with requirements and regulations concerning waste management at ports. If the courses include environmental aspects as presented in the materials, students will be more aware of them when starting their working careers onboard or ashore. The new generation of seafarers will be more informed than before and will bring along new mentality to the ships and shipping companies.

The materials are available on an open platform, [Library of Open Educational Resources](#), where schools, educational facilities, and citizens can access them. Teachers can pick presentations from the platform and include them in course materials. BSAG can also assist teachers and schools with specific topics, produce additional materials, or support schools in form of lectures or workshops.

## INFORMING HELCOM

BSAG has presented results of maritime work at HELCOM meetings (MARITIME Working Group, Green Team, Cooperation Platform on Port Reception Facilities, Stakeholder Conference). The presentations and reports have gained much interest and received positive feedback. BSAG has been able to provide HELCOM member states with useful information:

- new data on ships and waste management procedures onboard
- data on port pricing principles and waste management procedures at ports
- degree of implementation of the No Special Fee principle
- concrete improvement ideas both on waste management and information flow
- awareness raising by introducing Baltic Sea Waste Fee Info
- importance of communication towards ships sailing the Baltic Sea
- analysis results of grey water and sewage
- concrete initiative, Ship Waste Action, where sewage is used for circular economy purposes
- power of cooperation between private and public entities

All the above contribute to actions of the Baltic Sea Action Plan, especially actions S14, S15, S18, S19 which are listed under sea-based activities of the BSAP.





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