



**OSPAR
COMMISSION**

*Protecting and conserving the
North-East Atlantic and its resources*

Background document on Improving the implementation of ISO standard 21070:2013 in relation to port reception facilities



OSPAR Convention

The Convention for the Protection of the Marine Environment of the North-East Atlantic (the “OSPAR Convention”) was opened for signature at the Ministerial Meeting of the former Oslo and Paris Commissions in Paris on 22 September 1992. The Convention entered into force on 25 March 1998. The Contracting Parties are Belgium, Denmark, the European Union, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Convention OSPAR

La Convention pour la protection du milieu marin de l'Atlantique du Nord-Est, dite Convention OSPAR, a été ouverte à la signature à la réunion ministérielle des anciennes Commissions d'Oslo et de Paris, à Paris le 22 septembre 1992. La Convention est entrée en vigueur le 25 mars 1998. Les Parties contractantes sont l'Allemagne, la Belgique, le Danemark, l'Espagne, la Finlande, la France, l'Irlande, l'Islande, le Luxembourg, la Norvège, les Pays-Bas, le Portugal, le Royaume-Uni de Grande Bretagne et d'Irlande du Nord, la Suède, la Suisse et l'Union européenne.

Background document on improving the Implementation of ISO standard 21070¹ in relation to port reception facilities within the OSPAR region

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¹ ISO standard 21070 is under revision at the moment. The revised standard will be finalised in 2016.

Executive Summary

In order to provide better facilities for the ships and to reduce (il-)legal discharges of ship generated waste into the marine environment the following background document investigates different ways on how to improve the implementation of the ISO standard 21070 in relation to port reception facilities within the OSPAR region.

Marine litter is widely recognised as a significant threat to the marine environment. It causes environmental and socio-economic damage on a global scale. Marine litter originates from land-based sources (*e.g.* micro plastics in cosmetics) as well as sea-based sources. Regardless the exact source, plastics make up a large proportion of marine litter, also due to its longevity and widely distributed use.

The amount of marine debris originating from sea-based sources is estimated somewhere between 20 and 40% of the total amount of the marine debris. The protection of the marine environment can therefore be greatly enhanced by reducing the discharges of ship generated waste and cargo residues into the sea.

Providing adequate port reception facilities² in ports and marinas encourages the delivery of ship generated waste and cargo residues ashore. Although it is generally possible to discharge ship generated waste in OSPAR-ports, it is not always possible to keep onboard segregated waste streams separate once delivered to a port reception facility. This might be perceived as being frustrating for ships. By providing reception facilities which are more aligned with the need of the ships entering the ports within a region, an additional incentive for the onshore delivery of onboard segregated waste will be created. Moreover, by keeping different waste streams segregated, the waste hierarchy principle³ is being respected and this behaviour is supposed to be in line with the principles of the EU's Waste Framework Directive.

In this background paper best practice policies to encourage advanced shipboard waste management (in line with EU and international legislation and Guidelines such as for instance the revised ISO 21070 standard) are outlined. This includes policies to facilitate and reward:

- Ship waste avoidance and minimization;
- Onboard waste separation.

The provided inventory of best practices does not pretend to be complete. However, it shows that several ports and governments facilitate and reward advanced onboard waste management. Moreover, the inventory clearly shows that there is a lot of diversity in the approaches adopted. A more coordinated approach in the OSPAR region on the basis of these best practices is perceived to be effective for ships operating in that area. In order to achieve this goal, it is proposed to:

- A. Encourage relevant maritime stakeholders to voluntarily facilitate and reward advanced waste management on-board;
- B. Encourage interested stakeholders to do this in an OSPAR coordinated way. OSPAR Contracting Parties would report regularly on the progress made.

² According to the requirements of MARPOL and the EU Directive EC/2000/59

³ Avoidance before re-use before recycling before incineration before landfill

Récapitulatif

Le document de fond suivant étudie différents moyens d'améliorer la mise en application de la norme ISO 21070 en ce qui concerne les installations de réception portuaires dans la région d'OSPAR, afin d'offrir de meilleures installations pour les navires et de réduire les rejets licites et illicites des déchets produits à bord des navires dans le milieu marin.

Les déchets marins sont largement reconnus comme une menace significative pour le milieu marin. Ils provoquent des dommages environnementaux et socio-économiques à l'échelle mondiale. Les déchets marins proviennent de sources terrestres (par exemple les microplastiques dans les cosmétiques) ainsi que de sources marines. Quelle que soit leur origine précise, les plastiques représentent une forte proportion des déchets marins, en raison aussi de leur longévité et de leur utilisation largement répandue.

La quantité de déchets marins provenant de sources marines est estimée dans la région de 20 % à 40 % de la quantité totale des déchets marins. On peut donc améliorer considérablement la protection du milieu marin en réduisant les rejets en mer de déchets produits par les navires et de résidus de cargaisons.

En offrant des installations de réception portuaires adéquates⁴ dans les ports et dans les marinas, on encourage l'évacuation à terre des déchets produits par les navires et des résidus de cargaisons. Bien qu'il soit généralement possible de rejeter les déchets produits par des navires dans des ports OSPAR, on ne peut pas toujours tenir séparés les différents flux de déchets produits à bord une fois que ceux-ci ont été évacués dans une installation de réception portuaire. Cette situation pourrait être perçue comme une source de frustration pour les navires. En fournissant des installations de réception correspondant mieux aux besoins des navires qui entrent dans les ports au sein d'une région, on créera une incitation supplémentaire pour l'évacuation à terre des différents déchets produits à bord. Qui plus est, en tenant séparés les différents flux de déchets, on respecte le principe de la hiérarchie des déchets⁵, un comportement jugé conforme aux principes de la Directive-cadre relative aux déchets de l'UE.

Ce document de fond présente les politiques correspondant aux meilleures pratiques en vue d'encourager une gestion avancée des déchets produits à bord des navires (en conformité avec la législation de l'UE et la législation internationale et des Lignes directrices telles que, par exemple, la norme ISO 21070 révisée). Il s'agit entre autres de politiques visant à faciliter et récompenser :

- La prévention et la minimisation de la production de déchets à bord des navires ;
- La séparation des déchets à bord.

L'inventaire des meilleures pratiques qui est présenté ici ne prétend pas être exhaustif. Il montre cependant que plusieurs ports et gouvernements facilitent et récompensent la gestion avancée des déchets à bord. Par ailleurs, l'inventaire illustre clairement la très grande diversité des approches adoptées. On considère qu'une approche plus coordonnée dans la région d'OSPAR, fondée sur ces meilleures pratiques, est efficace pour les navires en service dans cette zone. Dans ce but, on propose :

⁴Conformément aux exigences fixées dans MARPOL et dans la directive CE/2000/59 de l'UE

⁵Éviter de produire, puis réutilisation, puis recyclage, puis incinération, puis élimination dans les décharges

- A. D'encourager les parties prenantes concernées dans le secteur maritime à agir à titre volontaire de façon à faciliter et récompenser la gestion avancée des déchets à bord ;
- B. D'encourager les parties prenantes intéressées à agir ainsi selon une approche coordonnée par OSPAR. Les Parties contractantes d'OSPAR rendraient compte régulièrement des progrès accomplis.

1. Introduction

Action 34 is one of the collective actions in the OSPAR Regional Action Plan on Marine Litter and shall contribute to the main objective of the RAP to prevent and reduce marine litter in the North East Atlantic. This background document is aimed to identify an indirect approach to reduce the (il-)legal discharged of ship generated waste into the marine environment by investigating different ways on how to improve the implementation of the ISO standard 21070 in relation to port reception facilities within the OSPAR region.

Marine litter is widely recognised as a significant threat to the marine environment. It causes environmental and socio-economic damage on a global scale. Marine litter originates from land-based sources (*e.g.* micro plastics in cosmetics) as well as sea-based sources such as (il-)legal discharges from sea-going vessels, aquaculture and fisheries. Of all sources, plastics generally make up a large proportion of marine litter, also due to its longevity and widely distributed use.

The amount of marine debris originating from sea-based sources is estimated somewhere between 20 and 40% of the total amount of the marine debris. However, this figure is commonly based upon beach-survey data which, according to Eunomia (2016), suggest that sea-based sources might account for a higher proportion of marine debris. It should be noted that:

- the data collected are always estimates and vary significantly between marine regions;
- not all of the waste is intentionally being discharged as some are the result of accidental loss;
- in accordance with MARPOL regulations, the discharge of some types of waste into the sea is, under certain conditions, still allowed *e.g.* sewage.

The protection of the marine environment can be greatly enhanced by reducing the discharges of ship generated waste and cargo residues into the sea. One of the EU Commission's policy goals is achieving a zero-waste discharge. Providing adequate port reception facilities⁶ in ports and marinas makes a valuable contribution to the delivery of ship generated waste and cargo residues ashore. Moreover, providing reception facilities which are aligned with the needs of the ships entering the ports within a region is as an additional incentive for the on-shore delivery of onboard segregated waste. In addition, by keeping different waste streams segregated, the waste hierarchy principle⁷ is being respected and this behaviour is supposed to be in line with the principles of the EU's Waste Framework Directive.

Ship operators that apply environmental sound onboard waste management procedures (in line with the revised ISO standard 21070) with a focus on source reduction, waste minimization and the segregation of waste streams onboard contribute to environmental and economic goals. Separated delivered waste streams can be more easily recycled on land, thus adding value to waste and contributing towards realizing a circular economy. Waste reduction has positive effects on the available storage capacity for waste onboard and therefore reduces the risk of discharges to sea. This is further enhanced by growing awareness of ships' crew on the value of waste ("waste is too good to

⁶ According to the requirements of MARPOL and the EU Directive EC/2000/59

⁷ Avoidance before re-use before recycling before incineration before landfill

waste") and will make them more intrinsically motivated to comply with the discharge requirements under MARPOL Annex V.

A growing number of ships apply environmental sound onboard waste management procedures. It is crucial to encourage this important development. The willingness to separate waste is easily diminished if the separated waste streams are mixed after discharging them to a PRF. It is crucial that ships that separate waste onboard are facilitated appropriately by a growing number of PRFs in the OSPAR-region and ideally worldwide. Moreover, ship operators who want to avoid or minimize waste onboard depend on facilitation by parties in the port (e.g. port authorities, ship suppliers, PRFs).

The scope of environmental sound onboard waste management is restricted to waste avoidance, waste minimization and waste separation. Onboard waste incineration is not included as this is perceived to be less favorable than the aforementioned options. Furthermore, the use of shipboard incineration leads to waste of resources and to emissions to air due to not being equipped with exhaust gas cleaning systems. Therefore, preference is given to the delivery of waste streams to a PRF with a land based treatment plant being available to recycle the waste/material.

This document outlines best practice policies to encourage advanced onboard waste management (in line with the revised ISO 21070) and proposes the development of an OSPAR measure to tackle this issue.

2. OSPAR commitments: The Regional Action Plan on Marine Litter

OSPAR Ministers declared in 2010: *"We note that quantities of litter in many areas of the North-East Atlantic are unacceptable, and therefore we will continue to develop reduction measures and targets, taking into consideration an ambitious target resulting in a reduction in 2020"* (Bergen Statement).

The OSPAR objective with regard to marine litter, as laid down in the Strategy for the protection of the Marine Environment of the North-East Atlantic for the years 2010-2020, is *"to substantially reduce marine litter in the OSPAR maritime area to levels where properties and quantities do not cause harm to the marine environment"* (OSPAR 2010). The OSPAR objective, elaborated in the Regional Action Plan (RAP) (OSPAR 2014), is supportive of the Rio+20 global commitment to *"take action to, by 2025, based on collected scientific data, achieve significant reductions in marine debris to prevent harm to the coastal and marine environment"* (UN 2012) and with the 2013 United Nations General Assembly resolution A/RES/68/70 in which States noted concern on marine debris.

The OSPAR objective is also in line with the definition of Descriptor 10 of the Marine Strategy Framework Directive (European Commission, 2008), where Good Environmental Status can be seen to be achieved, when *"Properties and quantities of marine litter do not cause harm to the coastal and marine environment"* (EC 2008). It will also support the achievement of an EU-wide "quantitative reduction headline target" for marine litter, as agreed in the 7th Environment Action Programme (EP & Council 2013).

The sources of marine litter are diverse and ocean dynamics turn it into a transboundary issue requiring collective action. Therefore, OSPAR Regional Action Plan aim to implement the

commitments in the North-East Atlantic Environment Strategy as well as to coordinate actions to deliver Good Environmental Status across the MSFD descriptors. Moreover, the RAP is contributing to the UNEP GPA Global Partnership on Marine Litter, a global framework for prevention and management of marine debris, and the Honolulu Strategy developed at the 5th International Marine Debris Conference. In that sense, the RAP for prevention and management of marine litter can be seen as an exemplar for regional effort supporting multiple regional and global commitments.

The OSPAR Regional Action Plan for prevention and management of Marine Litter in the North-East Atlantic has been adopted by OSPAR Contracting Parties as an OSPAR Other Agreement. The Regional Action Plan is designed as a flexible tool providing a set of actions to address marine litter. It contains three types of actions:

- a. Common OSPAR actions: actions requiring collective activity within the framework of the OSPAR Commission through, where applicable, OSPAR measures (i.e. Decisions or Recommendations) and/or other agreements such as guidelines and background documents;
- b. Actions to raise with other international organization and competent authorities;
- c. Actions that Contracting Parties should consider in their national programmes of measures, including those under the Marine Strategy Framework Directive. The approach regarding these national actions is based around the core principle that the RAP allows Contracting Parties to identify which of the measures and actions listed they have already taken forward (e.g. as a result of existing or planned national or European legislation or other initiatives) and consider others needed to further combat marine litter. It therefore provides guidance to Contracting Parties and a framework for regional cooperation.

A Collective Action in the RAP Marine Litter which is dealing with waste management of the shipping sector is: Improve implementation of the ISO standard 21070:2013 in relation to port reception facilities.

3. Synopsis of Background Information

According to EMSA (2007) the special conditions on a vessel such as higher waste production per person and a relative limited storage capacity for waste make onboard waste management an important aspect of shipping operations. A strategy on:

- A. Avoidance at source;
- B. Waste minimization;
- C. Recycling, separate collection;
- D. Processing (incineration);
- E. Discharge (ashore).

is relevant for all ships and in particular for cruise ships, as they generate massive volumes of garbage. Other commercial vessels generate significantly lower amounts of waste, as the average crew is 19 compared to up to five thousand passengers plus crew onboard cruise ships.

Although strict discharge requirements for garbage are set in MARPOL Annex V, the way ships organize their onboard waste management is not prescribed in mandatory rules. However guidance can be found in the guidelines to MARPOL Annex V (Resolution MEPC.219(63)) and in the coming revised ISO standard 21070.

Ships that operate in line with the coming revised ISO standard 21070 will apply a waste management strategy concentrating on waste avoidance and waste segregation onboard. It is crucial that the efforts onboard are complemented by facilitating actions in the ports. According to the shipping sector there is room for improvement in several ports in that respect. If more ports align with the needs of the ships, an additional incentive for the onshore delivery of onboard segregated waste is created thereby indirectly contributing to reducing (il)legal discharges of ship generated waste into the marine environment. There are several best practices in that respect and these will be outlined in the paragraphs below.

3.1 Facilitation and rewarding waste avoidance and minimization

Due to limited onboard garbage storage capacity ship operators have an interest to avoid waste at source and to minimize waste onboard. Arrangements between ship owners and operators with ship suppliers should be designed to facilitate ship operators in that respect. Options are:

- A. Avoiding excessive packaging materials for ships' supplies and provisions;
- B. Using potable water instead of bottles;
- C. Using supplies that come in reusable or recycalable packaging and containers;
- D. Avoiding supplies that are packaged in plastic, unless a reusable or recyclable plastic is used;
- E. Discharging all packaging materials (originating from the delivered supplies) before leaving the port.

Furthermore it is relevant to note that the indirect waste fee does not encourage the onboard minimization of volumes of ship-generated waste. This is recognised by Directive 2000/59/EC. It provides the possibility of a reduced fee if the master of the ship can demonstrate that it produces reduced quantities of ship-generated waste. However, when such a reduced fee system for those ships is being developed, a regional coordinated approach is highly recommendable in order to provide transparency and clarity to ship owners and/or ship operators. Too many different requirements will nullify all efforts.

3.1.1 Best practices: facilitation avoidance and minimization

In the Netherlands a 'Green Deal' has been concluded on ship-generated waste in 2014. Green Deals are a rather new instrument in the Netherlands to promote green growth. Innovative initiatives from society (businesses, NGO's and civilian organizations) often meet barriers, for example in finding cooperation partners or in national (or international) legislation. In the Dutch Green Deal concept the

central government facilitates innovative initiatives from society by adapting regulation – if needed – or supporting entry into networks. Green Deals empower frontrunners by enabling new and ambitious developments that can contribute to green growth.

In the Green Deal on ship-generated waste all relevant maritime stakeholders (port authorities, PRF's, ship owners, ship suppliers, government, NGO) are committed to optimize the delivery of ship-generated waste at PRF's and to promote the separated delivery of plastic SGW. Actions are also formulated on waste avoidance. In the Green Deal ship-generated waste it has been agreed that:

- A. the process in the port should be organized in such a way, that after the delivery of supplies, ship-generated waste (including packaging waste) can be delivered at a PRF;
- B. the association of Dutch ship owners (KVNR) and the association of Dutch ship suppliers (NVVS) will make an inventory of the possibilities to prevent waste from delivery of supplies, including the reduced use of packaging materials and the use of more sustainable packaging materials;
- C. KVNR will prepare a manual on the application of the revised ISO standard 21070 and distribute it among its members.

3.1.2 Best practices: rewarding avoidance and minimization

The European Commission highlights in Directive 2000/59/EC that "ships producing reduced quantities of ship-generated waste should be treated more favorable in the cost recovery systems. Common criteria could facilitate the identification of such ships" (Preamble 15), and "fees may be reduced if the ship's environmental management, design, equipment and operation are such that the master of the ship can demonstrate that it produces reduced quantities of ship-generated waste" (Article 8 (c)). The option to reduce fees as mentioned in Article 8 (c) of directive 2000/59/EC has been implemented in national legislation of the member states. However, whether ports introduce reduced fees and the concrete interpretation is mostly left to the ports. Some initiatives have been taken throughout Union ports and best practices are listed below:

- A. The Norwegian law prescribes that the fee shall be reduced if the ship's environmental design, equipment or operation is such as to make a substantial contribution to reducing the quantity of waste delivered by the ship to the reception facilities. This is a compulsory requirement, whereas the EU Directive leaves it open as a possibility;
- B. In Belgian ports, ships sailing on LNG are granted a 50% reduction of the waste fee as they produce almost no MARPOL Annex I residues;
- C. Some Dutch ports implemented Article 8 (c) of directive 2000/59/EC by offering a reduced waste fee for ships that use MDO/MGO or LNG as fuel, which generate considerable less sludge (MARPOL Annex I) than conventional bunker fuel;
- D. Port of Gothenburg: vessels or shipping companies that take steps to minimize onboard waste can agree a special contract with the Port of Gothenburg which allows a discount on the charge related to the type of waste. It is unclear how many ships have applied for this discount;

- E. Port of Helsinki: The managers of the operative units may grant a discount on the waste management fee to vessels that use equipment, methods or fuel types that significantly reduce the amount of waste;
- F. Spanish ports: 20% reduction of the compulsory fixed fee established in Art. 132.10.a) of the Legislative Royal Decree 2/2011A based on the certifications by the Maritime Authorities (Harbour Master) in the case of reduced waste quantities (due to the eco-management of the vessel design etc.).

3.2 Facilitation and rewarding onboard waste segregation

Many shipping lines already separate waste onboard. However the current situation is both on shipside as well as on port side in many cases sub optimal. To start with the latter, an often heard complaint of the shipping sector is that in a lot of ports the operating PRF's are not equipped to collect (meaning: accept, transport and/or temporarily store) the different fractions separately in order to enable a high-quality recycling process. It is frustrating for ships to see their carefully segregated waste streams ending up in one garbage container.

In addition, the separation of wastes on board of ships can be improved. An important reference for waste separation onboard is the IMO Garbage Record Book. Ships generally separate according to the prescribed waste categories in the Garbage Record Book, for ease of facilitation of inspection of MAROL Annex V and of completion of the Garbage Record Book itself. The prescribed categories are however not distinct enough to separate wastes into streams that can be recycled. Illustrative in that respect is that glass, paper and metal are not distinct waste categories, but are covered by the broader category 'domestic waste'.

In order to address the observed issues advanced waste separation should be facilitated and rewarded.

With regard to facilitation it is important that PRF's are adequately equipped to collect the different waste streams separately to enable a high-quality recycling process. The number of ports in the OSPAR-area in which this is possible can be extended. It is however recognized that this might not be possible in all ports. Especially in smaller ports the physical space and a limited number of ship calls may prove to be obstacles to provide adequate facilities to receive separated waste streams.

Waste separation onboard can be rewarded in an appropriate and tailor-made financial cost recovery system. Ideally, such a system provides a financial incentive that reflects the higher economic value of segregated waste and its social benefits. Recycling of metal, paper/cardboard and glass is already an economically and ecologically attractive process (waste as a valuable resource, replacing raw materials).

Plastic waste segregation deserves particular attention. Plastic is the most pervasive litter category in the marine environment, and it is therefore strictly forbidden to discharge plastics at sea. In addition, plastics can be recycled relatively easily, on condition different types of plastics are not being mixed. Efforts of all parties are needed to close the gaps in the plastic cycle, hereby eliminating currently still existing leakages and losses of plastics into the (marine) environment. Ship operators can contribute by segregating plastics onboard in order to make it more suitable for recycling. In order to facilitate plastic recycling a good option might be to (financially) reward front runner ship operators who

segregate plastics from other waste streams onboard, on condition that the segregated plastics are not contaminated with chemical wastes or international food wastes. The latter is currently an important obstacle for recycling/reusing the waste stream, as international food waste is considered to be quarantine waste in Europe and possible other regions of the world. It has to be disposed of separately (through e.g. sterilization or incineration) for sanitation reasons and to avoid the possible introduction of exotic pests / spreading of diseases. National or regional requirements are likely to entail a prohibition for waste streams to be recycled/reused when contaminated with international catering waste.

3.2.1. Best practices: facilitation of segregation

Providing adequate port reception facilities, aligned with need of the ships entering the ports within a region is as an additional incentive for the on-shore delivery of onboard segregated waste. Moreover, by keeping different waste streams segregated, the waste hierarchy principle⁸ is being respected and this behaviour is supposed to be in line with the principles of the EU's Waste Framework Directive (Directive 2008/98/EC). Several EU Member States already have legislation in place which tries to align onboard procedures and shore-side waste collection processes:

- A. In Belgium and Spain, legislation prescribes that separately delivered dry ship-generated waste shall not be mixed, except in specific circumstances, where it is guaranteed that waste collectors segregate the waste after the collection of it;
- B. Netherlands: in the Green Deal on ship-generated waste (covenant concluded in C.2014 between national government and maritime stakeholders) it is agreed that PRFs shall be properly equipped to separately collect the onboard segregated plastic waste. Mixed waste shall be sorted out after collection. 100% of the clean plastics shall be recycled and/or reprocessed into an oil product again;
- C. Belgian and Dutch authorities and ports are investigating the possibility to implement compulsory quality standards for PRFs. One of the requirements would be to keep segregated waste streams separate during collection and further downstream waste management in such a way that the highest level of re-use or recycling can be achieved.

3.2.2 Best practices: rewarding of segregation

An additional measure can be to financially reward onboard segregation of ship generated waste. This stimulates onboard segregation and might also reflect the higher economic value or lower treatment costs of segregated waste streams on land. Some ports have already taken such initiatives:

- A. Port of Stockholm: A rebate (-5,51/pax) is granted to cruise ships in the case of source separated waste;
- B. Port of Turku: If a ship sorts its waste in a manner approved by the Port of Turku, the ship is granted a 10% reduction in the solid waste disposal charge. This reduction is granted under the condition that the ship furnishes a satisfactory waste sorting certificate to the Port of Turku;

⁸ Avoidance before re-use before recycling before incineration before landfill

- C. Norwegian law: The fee shall be compulsory reduced if the ship's environmental design, equipment or operation is such as to make a substantial contribution to reducing the costs of treating or disposing of the ship's waste ashore (*e.g.* through sorting). The amount of the reduction of the fee shall be decided by the port operator;
- D. Port of Oslo: offers a discount to (cruise?) ships that sort waste. Ships that sort 3 or more fractions (ex. paper/cardboard, glass and metal) in addition to mixed waste can get a 40% discount on waste reception fee;
- E. Port of Rotterdam: If a ship delivers waste separately to the PRF, the PRF receives a reduced payment from the indirect waste fee fund of the port authority because of the lower waste treatment costs;
- F. Ports of Rotterdam and Amsterdam: Ships can discharge clean plastics unlimited and for free to a PRF;
- G. Netherlands: In the Green Deal ship-generated waste it is agreed that parties will study possibilities for integrating onboard waste management (in line with ISO 21070) in existing environmental performance indexes, like the Clean Shipping Index. Shippers (cargo owners) could then provide a powerful incentive by offering their cargoes for shipment to front runners in waste management onboard.

4. Consequences and costs and benefits of facilitating advanced waste management onboard

The best practices described above are implemented by individual member states and/or port authorities and can serve as a basis for further investigation on the recommended way forward in order to encourage a more coordinated approach within the OSPAR region.

Focusing on private costs and benefits Ecorys (2014) concludes, in qualitative terms, that waste avoidance and minimization hardly implies any additional costs for the ship owner/charterer. On the contrary, avoidance and minimization of ship-generated waste may lead to reduced costs due to the use of less packaging materials and reduced costs for the waste reception, handling and treatment.

Ecorys (2014) also concludes that facilitating and rewarding onboard waste segregation does not necessarily require huge investments in hardware for the ship owner/operator, but rather requires another way of organising existing processes and procedures. Other factors that influence the costs and benefits of ships are the possible cost effects of PRF's that are passed on to ships and the incentives (rebates) provided:

- A. For the port reception facility, collecting segregated waste streams may, in the start-up phase, require some additional investments in hardware (additional waste reception containers, more logistical costs). But it can be expected that segregated waste streams leads to a more efficient waste treatment process (possible higher residual value as secondary material) and it might in the end take place at lower costs for the ship owner. For some fractions like metal, paper and glass the benefits outweigh already the costs;

- B. The benefits of an incentive based cost recovery system which promotes waste segregation depends on the way it is designed. An incentive (rebate) may reflect and can be financed by the higher residual value of the separated waste, but may also be even higher to give an additional incentive. This additional incentive then implies a financial transfer from ships which do not segregate their waste to ships that do, via the cost recovery system applicable in the port. Of course the more port calls are made in ports with incentive based schemes the higher the financial benefits for a ship with advanced onboard waste segregation.

The overall benefits of a more coordinated approach for ship operators that call in OSPAR ports are evident. A more coordinated approach will provide clarity in the way their onboard waste management and segregation is facilitated and rewarded. Waste management procedures onboard and in ports are then optimally linked to one another.

In addition to private costs and benefits as described above there are also social/environmental benefits. These consist of a decrease of marine litter and more efficient use of resources. According to Ecorys (2014) a decrease of marine litter from ships has several benefits. In addition to the avoided harm to marine ecosystems, it also leads to less waste washed on beaches. This has a positive impact on beach tourism and might result in lower beach cleaning costs. Finally less floating litter results in a decreased chance of damage to ship's screws.

5. Conclusions

In the synopsis section a non exhaustive inventory has been provided of best practices that facilitate and reward front runners with regard to onboard waste management. Key stakeholders are port authorities, PRF's, ship owners/operators and ship suppliers. The role of national governments is concentrating mainly on providing the legislative context. In the Dutch green deal approach there is furthermore a role for the national government to promote cooperation between maritime parties and to facilitate an integral approach that goes beyond the individual port borders.

The inventory shows that there is a lot of diversity in the way ships are facilitated and rewarded. A more coordinated approach in the OSPAR region on the basis of best practices would be favourable and more effective for ships operating in that area and would also optimize the interaction between onboard waste management and waste management operations in the ports.

6. Proposal

Areas where OSPAR could take further action in order to facilitate waste avoidance and onboard waste segregation and according delivery to port reception facilities include:

- a. encourage relevant maritime stakeholders to voluntarily facilitate and reward advanced waste management onboard; and
- b. encourage those stakeholders to do this in a coordinated way at an OSPAR wide scale by working together with interested stakeholders. The Green Deal approach of the Netherlands is an example that could be extended internationally.

It should be emphasized that the proposed actions are focusing on encouraging and creating the right conditions for the maritime industry. It is a voluntary approach for front runners and does not contain additional mandatory provisions in relation to those included in MARPOL Annex V and Directive 2000/59/EC.

Preferably the coordinated approach should contain the following elements:

- A. Facilitating waste minimization and avoidance: Exchange best practices and study results of projects to minimize the amount of waste onboard, without increasing the hazardousness of the waste stream or endangering the treatability of it according to the widely accepted waste hierarchy⁹;
- B. Rewarding waste minimization and avoidance: When rewarding waste minimization onboard, the total amount of waste as well as the hazardousness and further downstream waste management options should be taken into account. Common criteria for ships producing reduced quantities of waste are preferably developed by the EU and its Member States, with an active contribution from OSPAR;
- C. Facilitating onboard waste separation: PRF's should be equipped to receive separated ship-generated waste streams. The overall aim is to provide the shipping industry with a clear and uniform framework for the delivery of segregated waste, through possible quality standards such as those being developed in Dutch and Belgian ports. This will not only raise the crew's awareness but also facilitate the actual delivery of segregated waste;
- D. Rewarding onboard waste separation: reward ships that separate solid ship-generated waste a) in more fractions than the basic categories that are listed in the IMO Garbage Record Book and b) those fractions should be stored and treated to be most suitable for recycling. Plastics for example should not be contaminated with food waste or with small chemical waste.

⁹ Prevention/avoidance before re-use before recycling before incineration (on land) with energy recovery before incineration (on land) before disposal

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Definitions/Glossary

Directive 2000/59/EC: EU Directive on port reception facilities for ship-generated waste and cargo residues

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

ISO standard 21070: ISO standard on management and handling of shipboard garbage

MARPOL: International Convention for the Prevention of Pollution of Ships, 1973, as modified by the Protocol of 1978

SGW: Ship Generated Waste

MARPOL ANNEX V: Annex to the MARPOL Convention on regulations for the prevention of pollution by garbage from ships

PRF: Port Reception Facility = Any fixed, floating or mobile facility capable of receiving MARPOL residues/wastes from ships and fit for that purpose.



Victoria House
37-63 Southampton Row
London WC1B 4DA
United Kingdom

t: +44 (0)20 7430 5200
f: +44 (0)20 7242 3737
e: secretariat@ospar.org
www.ospar.org

**OSPAR's vision is of a clean, healthy and biologically diverse
North-East Atlantic used sustainably**

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