



**MEDITERRANEAN ACTION PLAN (MAP)
REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE FOR THE
MEDITERRANEAN SEA (REMPEC)**

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Marine Pollution Emergency Response Centre
for the Mediterranean Sea (REMPEC)

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Agenda Item 9

**OPERATIONAL GUIDELINES ON THE PROVISION OF RECEPTION FACILITIES IN PORTS AND
THE DELIVERY OF SHIP-GENERATED WASTES IN THE MEDITERRANEAN**

Note by the Secretariat

SUMMARY

Executive Summary: This document presents the Operational Guidelines on the provision of reception facilities in ports and the delivery of ship-generated wastes in the Mediterranean, as prepared pursuant to the Marine Litter Regional Plan and the Regional Strategy (2016-2021).

Action to be taken: Paragraph 15

Related documents: UNEP(DEPI)/MED IG.21/9, UNEP(DEPI)/MED IG.22/28, UNEP(DEPI)/MED IG.23/23, UNEP/MED WG.452/6, UNEP/MED WG.466/6

Background

1 The Eighteenth Ordinary Meeting of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean ("the Barcelona Convention") and its Protocols (Istanbul, Turkey, 3-6 December 2013) adopted the Regional Plan on Marine Litter Management in the Mediterranean in the Framework of Article 15 of the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources and Activities (LBS Protocol) to the Barcelona Convention¹, hereinafter referred to as the Marine Litter Regional Plan.

2 According to Article 9(5) of the Marine Litter Regional Plan, in conformity with the objectives and principles thereof, the Contracting Parties to the Barcelona Convention shall, in accordance with Article 14 of the Protocol concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea ("the 2002 Prevention and Emergency Protocol") to the Barcelona Convention, take the necessary steps to provide ships using their ports with updated information relevant to the obligation arising from Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL) and from their legislation applicable in the field.

3 Furthermore, according to Article 14 of the Marine Litter Regional Plan, the MAP-Barcelona Convention Secretariat, in cooperation with relevant international and regional organisations, shall prepare specific guidelines taking into account where appropriate existing guidelines, to support and facilitate the implementation of measures provided for in articles 9 and 10 thereof. Subject to availability of external funds, these guidelines shall be published in different Mediterranean region languages.

¹ UNEP(DEPI)/MED IG.21/9, Decision IG.21/7.

4 The Nineteenth Ordinary Meeting of the Contracting Parties to the Barcelona Convention and its Protocols (Athens, Greece, 9-12 February 2016) adopted the Regional Strategy for Prevention of and Response to Marine Pollution from Ships (2016-2021)², hereinafter referred to as the Regional Strategy (2016-2021).

5 The Regional Strategy (2016-2021) addresses the issue of marine litter in Specific Objectives 5 (Provision of reception facilities in ports), 6 (Delivery of ship-generated wastes) and 9 (To reduce the pollution generated by pleasure craft activities). It also addresses the related issue of illicit ship pollution discharges in Specific Objectives 7 (Improved follow-up of pollution events as well as monitoring and surveillance of illicit discharges) and 8 (To improve the level of enforcement and the prosecution of discharge offenders). Therefore, reducing (illegal) discharges of ship generated waste features among the priority areas of work of the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC).

6 The Programme of Work and Budget for 2018-2019³ adopted by the Twentieth Ordinary Meeting of the Contracting Parties to the Barcelona Convention and its Protocols (Tirana, Albania, 17-20 December 2017) includes several activities addressing marine litter, including the implementation of the European Union (EU)-funded "Marine Litter-MED" Project that is aimed at supporting the Contracting Parties to the Barcelona Convention from Southern Mediterranean / European Neighbourhood to implement the Marine Litter Regional Plan.

7 The EU-funded "Marine Litter-MED" Project has specific outputs on the development of a set of technical guidelines within the framework of Article 14 of the Marine Litter Regional Plan. One of the components of the said project, which is coordinated by REMPEC, focuses on measures related to the better management of marine litter from sea-based sources in ports and marinas in the Mediterranean, in particular the application of charges at reasonable costs for the use of port reception facilities or, when applicable, application of No-Special-Fee System, as well as the provision of reception facilities and the delivery of ship-generated wastes in ports and marinas in the Mediterranean. One of the activities of this component is the preparation of draft operational guidelines on the provision of reception facilities in ports and the delivery of ship-generated wastes, hereinafter referred to as "the draft Operational Guidelines".

8 The main elements of the draft Operational Guidelines prepared by the Secretariat (REMPEC) were presented during the Regional Meeting on Marine Litter Best Practices (Izmir, Turkey, 9-10 October 2018), as set out in document UNEP/MED WG.452/6.

9 The first draft Operational Guidelines were prepared by the Secretariat in December 2018 and consultations were carried out with all Contracting Parties to the Barcelona Convention, through REMPEC Circular Letter No. 03/2019 dated 29 January 2019.

10 Revised draft Operational Guidelines were prepared by the Secretariat, taking into consideration the comments made by the Contracting Parties to the Barcelona Convention through the above-mentioned consultations, and were presented during the Second Regional Meeting on Marine Litter Best Practices (Seville, Spain, 8-10 April 2019), as set out in document UNEP/MED WG.466/6.

11 The Second Regional Meeting on Marine Litter Best Practices, jointly organised by the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UNEP), also referred to as UNEP/MAP, and its components, including REMPEC, with the MARLICE 2019 International Forum on Marine Litter and Circular Economy, was attended by over fifty (50) participants representing eighteen (18) Mediterranean coastal States, the European Union (EU), UNEP/MAP partners and other regional and international organisations. This was financed by the Mediterranean Trust Fund (MTF) as well as the EU-funded "Marine Litter-MED" Project and the funds available under the Cooperation Agreement between the Italian Ministry of Environment, Land and Sea (IMELS) and UNEP.

² UNEP(DEPI)/MED IG.22/28, Decision IG.22/4.

³ UNEP(DEPI)/MED IG.23/23, Decision IG.23/14.

12 Following review and consideration in a break-out group convened on 8 April 2019, the Second Regional Meeting on Marine Litter Best Practices recommended, amongst others, to address the following:

- .1 highlighting the issue of “marine litter” by introducing a sub-section specifically addressing the interlinkages between ship-generated waste and marine litter; and
- .2 reflecting the requirements of the newly adopted (on 9 April 2019) EU Directive on port reception facilities for the delivery of waste from ships, which apply to the EU Mediterranean coastal States, with regard to, for instance, adequacy of port reception facilities, incentives and enforcement.

13 The Second Regional Meeting on Marine Litter Best Practices agreed to submit the draft Operational Guidelines to the present meeting, after taking into consideration the proposed changes, as presented in the break-out group.

Next steps

14 In this context, the Secretariat prepared the Operational Guidelines on the provision of reception facilities in ports and the delivery of ship-generated wastes in the Mediterranean, hereinafter referred to as the “Operational Guidelines”, as presented in the **Appendix** to the present document, taking into consideration the comments made by the Contracting Parties to the Barcelona Convention at the Second Regional Meeting on Marine Litter Best Practices.

Actions requested by the Meeting

15 **The Meeting is invited to:**

- .1 **take note** of the information provided in the present document; and
- .2 **examine** and **agree upon** the Operational Guidelines, as set out in the **Appendix** to the present document, and **request** the Secretariat to submit them for approval by the next Meeting of the UNEP/MAP Focal Points.

APPENDIX

Operational Guidelines on the provision of reception facilities in ports and the delivery of ship-generated wastes in the Mediterranean

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List of Abbreviations / Acronyms

EU	European Union
IMO	International Maritime Organization
MAP	Mediterranean Action Plan
MARPOL	International Convention for the Prevention of Pollution from Ships
PoW	Programme of Work
REMPEC	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea
UN	United Nations

1 INTRODUCTION

1.1 Background

1. The Eighteenth Ordinary Meeting of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean ("the Barcelona Convention") and its Protocols, which was held in Istanbul, Turkey from 3 to 6 December 2013, adopted Decision IG.21/7 related to the Regional Plan on Marine Litter Management in the Mediterranean in the Framework of Article 15 of the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources and Activities (LBS Protocol) to the Barcelona Convention, hereinafter referred to as the Marine Litter Regional Plan (UNEP(DEPI)/MED IG.21/9).

2. According to Article 9(5) of the Marine Litter Regional Plan, in conformity with the objectives and principles thereof, the Contracting Parties to the Barcelona Convention shall, in accordance with Article 14 of the Protocol concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea ("the 2002 Prevention and Emergency Protocol") to the Barcelona Convention, take the necessary steps to provide ships using their ports with updated information relevant to the obligation arising from Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL) and from their legislation applicable in the field.

3. Furthermore, according to Article 14 of the Marine Litter Regional Plan, the MAP-Barcelona Convention Secretariat in cooperation with relevant international and regional organisations, shall prepare specific guidelines taking into account where appropriate existing guidelines, to support and facilitate the implementation of measures provided for in articles 9 and 10 thereof. Subject to availability of external funds these guidelines shall be published in different Mediterranean region languages.

4. The Nineteenth Ordinary Meeting of the Contracting Parties to the Barcelona Convention and its Protocols, which was convened in Athens, Greece from 9 to 12 February 2016, adopted Decision IG.22/4 related to the Regional Strategy for Prevention of and Response to Marine Pollution from Ships (2016-2021), hereinafter referred to as the Regional Strategy (2016-2021) (UNEP(DEPI)/MED IG.22/28).

5. The Regional Strategy (2016-2021), which aims at assisting the Contracting Parties to the Barcelona Convention to implement the 2002 Prevention and Emergency Protocol, addresses the issue of marine litter in Specific Objectives 5 (Provision of reception facilities in ports), 6 (Delivery of ship-generated wastes) and 9 (To reduce the pollution generated by pleasure craft activities). It also addresses the related issue of illicit ship pollution discharges in Specific Objectives 7 (Improved follow-up of pollution events as well as monitoring and surveillance of illicit discharges) and 8 (To improve the level of enforcement and the prosecution of discharge offenders). Therefore, reducing (illegal) discharges of ship generated waste features among the priority areas of work of the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) established within the framework of the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UNEP), also referred to as UNEP/MAP, with a view to coordinating the activities of the Mediterranean coastal States related to the implementation of the 2002 Prevention and Emergency Protocol.

6. The UNEP/MAP Programme of Work (PoW) 2018-2019 adopted by the Twentieth Ordinary Meeting of the Contracting Parties to the Barcelona Convention and its Protocols, which was held in Tirana, Albania, from 17 to 20 December 2017, includes several activities addressing marine litter, including the implementation of the EU-funded "Marine Litter-MED" Project that is aimed at supporting the Contracting Parties to the Barcelona Convention from Southern Mediterranean / European Neighbourhood to implement the Marine Litter Regional Plan.

7. The EU-funded "Marine Litter-MED" Project has specific outputs on the development of a set of technical guidelines within the framework of Article 14 of the Marine Litter Regional Plan and one of its components, which is coordinated by REMPEC, focuses on measures related to the better management of marine litter from sea-based sources in ports and marinas in the Mediterranean, in particular the application of charges at reasonable costs for the use of port reception facilities or, when applicable, application of No-Special-Fee System, as well as the provision of reception facilities and the delivery of ship-generated wastes in ports and marinas in the Mediterranean.

8. In this context, REMPEC prepared the present document entitled “Operational Guidelines on the provision of reception facilities in ports and the delivery of ship-generated wastes in the Mediterranean, hereinafter referred to as “the Operational Guidelines”.

1.2 Goal and scope of the Operational Guidelines

9. The Operational Guidelines look in detail at issues related to the provision of Port Reception Facilities (PRF), including the type and capacity for the different types of MARPOL wastes in the different types of ports, and the operational procedures related to the use of the PRF and the delivery of ship-generated waste. The Operational Guidelines focus on the practical steps that can help to achieve the provision of adequate PRF in ports and marinas in the Mediterranean Sea, from the point of view of the port authority.

10. It should be noted that also other wastes and residues from ships, such as ballast water sediments and residues from anti-fouling systems, can be relevant when assessing the need for PRF. However, as these types of wastes do not fall within the scope of MARPOL, wastes and residues regulated by the Ballast Water Management Convention, the Anti-Fouling Systems Convention and the London Protocol/London Convention are not covered in the present document.

1.3 Marine litter from sea-based sources

11. Marine litter in the oceans exerts numerous harmful effects on marine life and biodiversity, as well as negative impacts on human health. In addition, marine litter negatively impacts on activities such as tourism, fisheries and shipping, and material that has the potential to be brought back into the economy by means of reuse or recycling is lost once littered. There are several different categories of marine litter, with plastics being the most challenging due to its low degradability and likelihood to enter the human food chain.

12. Litter enters the marine environment through various means and from numerous different origins, including land-based and sea-based sources. The main land-based sources of marine litter include municipal landfills, riverine transport of waste from landfills and urban areas or other sources along rivers and other waterways, discharge of untreated municipal sewage, industrial facilities and tourism, particularly recreational visitors to the coast/beach.

13. The primary ocean-based sources of marine litter are merchant shipping, ferries and cruise liners, fishing vessels, particularly with respect to lost or abandoned fishing gear, military fleets and research vessels, pleasure craft, offshore oil and gas platforms, and aquaculture farms.

14. It is frequently cited that globally 80% of marine debris originates from land-based sources, and 20% from ocean-based sources, however the origins of this ratio are unclear (NOAA, 2009). Besides, the importance of these sources in terms of their contribution to the marine litter problem varies significantly regionally and locally depending on the scale of these activities in the area, as well as the policies regulating them. This means that there is significant variation in the amounts and types of debris arising from these sources regionally and locally, and indeed, seasonally¹.

15. The assessment of the trends in marine litter levels and its sources is crucial for identifying and adopting targeted measures for the different sources. In this respect, the monitoring actions in regional sea conventions, such as the OSPAR Convention, the Helsinki Convention and the Barcelona Convention, are very valuable. Monitoring is applied on uniform marine litter indicators and methods (like beach monitoring and fulmar and/or turtle stomach monitoring), which provide information on the trends in marine litter accumulation and effectiveness of measures. Furthermore, proper source identification is a key element in the monitoring programmes.

16. Although land-based sources are dominant in generating marine litter, sea-based sources actively contribute to the problem. Recent studies have shown that, although the majority of marine litter originates from land-based sources, a significant part comes from sea-based sources. This is

¹ Unger A., Harrison N., 2016, “*Fisheries as a source of marine debris on beaches in the United Kingdom*”, Marine Pollution Bulletin

notwithstanding the fact that garbage from ships, as listed in Annex V of MARPOL, is subject to strict rules and may not be discharged into the sea, with only few exceptions (e.g. food waste and non-harmful to the marine environment (HME) cargo residues). There is a strict ban on discharges of any plastic into the sea. Furthermore, Annex V requires that the loss of fishing gear is reported to the vessel's flag State and to the coastal State in whose waters the loss occurred.

17. Studies have indicated that in EU-waters sea-based activities, in particular shipping (e.g. lost containers) including fishing and yachting, but also offshore activities, are relevant sources of marine litter as they are responsible for an estimated EU average of 32% and values up to 50% for some sea basins². Recent studies have also indicated that among the sea-based contributors to the problem of marine litter, the fishing sector features quite dominantly, with the recreational sector also taking a significant share³. And although garbage delivered in ports has increased since the introduction of Directive 2000/59/EC, a significant delivery gap remains, estimated between 60,000 and 300,000 tons, i.e. 7% to 34% of the total to be delivered annually.

18. In some areas, such as in certain parts of the Pacific and the North Sea, sea-based sources even prevail over land-based sources. Mismanaged garbage, and old and derelict fishing gear, are among the most prevalent items of (plastic) marine litter from ships.

² European Commission (DG ENV) study "to support the development of measures to combat a range of marine litter resources" (Eunomia, 2016)

³ <http://www.fishingforlitter.org.uk/assets/file/Report%20FFL%202011%20-%202014.pdf>; Marine Pollution Bulletin 2016 Unger et al. (2016); UNEP OSPAR (2009); Marine Litter Distribution and Density in European Seas (2014); Eunomia (2016), p.95, 30% estimate share for the fishing sector, and 19% for the recreational sector; the balance of sea-based sources is provided by the merchant sector; Arcadis (2012) has estimated a share of 65% share for the fishing sector alone

2 REGULATORY FRAMEWORKS RELATED TO PORT RECEPTION FACILITIES

2.1 Introduction

19. As maritime and international shipping in general is a global industry, the majority of the legal and policy frameworks regarding maritime safety, pollution prevention and marine environmental protection are developed and maintained by international and intergovernmental bodies, such as the various UN agencies. However, as the origin of both the land- and sea-based legal and policy frameworks often differ from each other, also the resulting frameworks for the management of wastes that are generated onboard ships, on one hand, and requirements regarding the collection, delivery and processing of wastes generated in land-based facilities, on the other hand, also differ. In many cases, they may not even be compatible.

20. The legal and policy framework for the collection, the transport and management of wastes from ships often finds its origin in regulations that mainly focus on the collection, transport and disposal, including storage, of wastes generated at land-based sources. It is therefore more land-oriented and may not always be compatible with the legal and policy framework for operations at sea.

21. For maritime shipping the International Maritime Organization (IMO), as specialized agency of the United Nations, is the global standard-setting authority for the safety, security and environmental performance of international shipping. Its main role is to create an international regulatory framework for the shipping industry that is fair and effective, and universally adopted and implemented. It is therefore not a surprise that the majority of international rules and regulations regarding the environmental performance of shipping, including the onboard management of ship-generated wastes and the protection of the marine environment through the prevention of pollution by ships, originates from the IMO. Other international and regional regulatory and policy initiatives have been developed by the Basel Convention and the European Union.

22. The following table provides a visual overview of the legal framework regarding the management of ship-generated wastes and other ship-related residues at the international and regional level, in order to give an indication of the different conventions and the scope of their application.

Table 1: Overview of the legal framework at the international and regional level regarding the management of ship-generated wastes and residues

On board ships	At the sea-land interface	At land-based facilities
<ul style="list-style-type: none"> • United Nations Convention on the Law of the Sea (UNCLOS) • MARPOL Convention • Ballast Water Management Convention • Anti-Fouling Systems Convention • London Protocol and Convention 	<ul style="list-style-type: none"> • MARPOL Convention • Basel Convention • Directive (EU) 2019/XX 	<ul style="list-style-type: none"> • Basel Convention • EU Waste Framework Directive 2008/98/EC

2.2 International regulatory framework

2.2.1 MARPOL Convention

23. The International Convention for the Prevention of Pollution from Ships (1973 as modified by the 1978 and 1997 Protocols), hereinafter referred to as “MARPOL”, is one of the most important international conventions regulating the marine environment. It was developed by the IMO aiming to preserve the marine environment by fully eliminating pollution by operational discharges of oil and other harmful substances from ships, and to minimize accidental spillage of such substances.

24. Together with its six annexes covering pollution by oil, chemicals, harmful substances in packaged form, sewage, garbage and airborne emissions, MARPOL works as a whole: the articles mainly deal with jurisdiction, powers of enforcement and inspection, while more detailed anti-pollution regulations are contained in the annexes.

25. In general MARPOL contains provisions in order to regulate the availability of adequate Port Reception Facilities (PRF), which types of ship-generated wastes can (and as a consequence also which cannot) be legally discharged into the sea, onboard waste management, and enforcement and inspections. The MARPOL requirements regarding the availability of adequate PRF are contained in the following regulations:

- Regulation 38 of Annex I
- Regulation 18 of Annex II
- Regulations 12 and 13 (passenger ships in special areas) of Annex IV
- Regulation 8 of Annex V
- Regulation 17 of Annex VI

26. In addition to MARPOL (including its Annexes), the IMO has adopted several guidelines related to the management of ship-generated wastes, providing additional tools to all stakeholders (private and public) in order to provide good practices. These practices can be used by governments when establishing stricter national or regional requirements, but also by port authorities when organizing the collection of waste from ships.

27. Guidelines related to the management of MARPOL Annex V are:

- 2017 Guidelines for the implementation of MARPOL Annex V (Resolution MEPC.295(71))
- 2018 Consolidated guidance for port reception facility providers and users (MEPC.1/Circ.834/Rev.1)
- 2012 Guidelines for the development of Garbage Management Plans (Resolution MEPC.220(63))
- 2012 Guidelines for the development of a regional reception facilities plan (Resolution MEPC.221(63))
- 2000 Guidelines for ensuring the adequacy of port waste reception facilities (Resolution MEPC.83(44))
- 2016 IMO Manual "Port Reception Facilities – How To Do It"

2.2.2 IMO Special Areas

28. The possibility to legally discharge waste at sea is an element that can influence the delivery of ship's waste to PRF. Although MARPOL regulations have become stricter over the years, it is still allowed to – under specific conditions – discharge certain waste types at sea. These discharge criteria are included in the following regulations:

- MARPOL Annex I: Regulations 15 and 34
- MARPOL Annex II: Regulation 13
- MARPOL Annex IV: Regulation 11
- MARPOL Annex V: Regulations 4 and 6

29. Due to specific oceanographic, ecological and traffic characteristics of some sea areas, MARPOL defines certain sea areas as "Special Areas", in which the application of stricter measures for the protection of sea pollution is required. Under MARPOL, these special areas are provided with a higher level of protection than other areas of the sea.

30. It should be noted that the Mediterranean Sea is designated as a special area under MARPOL Annexes I and V. An up-to-date list of all the IMO Special Areas can be found on the IMO website (<http://www.imo.org> – click on Marine Environment, then Special Areas).

31. As the discharge criteria for ship-generated wastes are stricter in Special Areas, ships sailing in those areas might not meet these criteria and therefore be required to deliver their wastes to a PRF. States and port authorities should therefore take into consideration the importance of compliance in these special areas.

32. It should be noted that, outside special areas, MARPOL Annex V cargo residues that are not considered harmful to the marine environment (non-HME) can, under certain conditions, be legally discharged at sea. However, as the Mediterranean Sea is a special area under MARPOL Annex V, non-HME cargo residues (also contained in wash water) can only be discharged at sea if:

- a. both the port of departure and the next port of destination are within the special area and the ship will not transit outside the special area between these ports (regulation 6.1.2.2 of MARPOL Annex V); and
- b. if no adequate reception facilities are available at those ports (regulation 6.1.2.3 of MARPOL Annex V).

33. In order to protect the marine environment, it is therefore important that the governments of countries bordering the Mediterranean Sea ensure the availability of adequate PRF for the collection of MARPOL Annex V cargo residues, and notify the existence of these facilities in the IMO Global Integrated Shipping Information System database (GISIS, see also section 2.2.3).

Table 2: Summary of restrictions to the discharge of garbage into the sea under regulation 4, 5, and 6 of MARPOL Annex V and chapter 5 of part II-A of the Polar Code (source: IMO)

Garbage type ¹	All ships except platforms ⁴		Regulation 5 Offshore platforms located more than 12 nm from nearest land and ships when alongside or within 500 metres of such platforms ⁴
	Regulation 4 Outside special areas (Distances are from the nearest land)	Regulation 6 Within special areas (Distances are from nearest land or nearest ice-shelf)	
Food waste comminuted or ground ²	≥3 nm, en route and as far as practicable	≥12 nm, en route and as far as practicable ³	Discharge permitted
Food waste not comminuted or ground	≥12 nm, en route and as far as practicable	Discharge prohibited	Discharge prohibited
Cargo residues ^{5, 6} not contained in wash water	≥ 12 nm, en route and as far as practicable	Discharge prohibited	Discharge prohibited
Cargo residues ^{5, 6} contained in wash water		≥ 12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2 and paragraph 5.2.1.5 of part II-A of the Polar Code)	
Cleaning agents and additives ⁶ contained in cargo hold wash water	Discharge permitted	≥ 12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2 and paragraph 5.2.1.5 of part II-A of the Polar Code)	Discharge prohibited
Cleaning agents and additives ⁶ in deck and external surfaces wash water		Discharge permitted	

Garbage type ¹	All ships except platforms ⁴		Regulation 5 Offshore platforms located more than 12 nm from nearest land and ships when alongside or within 500 metres of such platforms ⁴
	Regulation 4 Outside special areas (Distances are from the nearest land)	Regulation 6 Within special areas (Distances are from nearest land or nearest ice-shelf)	
Animal Carcasses (should be split or otherwise treated to ensure the carcasses will sink immediately)	Must be en route and as far from the nearest land as possible. Should be >100 nm and maximum water depth	Discharge prohibited	Discharge prohibited
All other garbage including plastics, synthetic ropes, fishing gear, plastic garbage bags, incinerator ashes, clinkers, cooking oil, floating dunnage, lining and packing materials, paper, rags, glass, metal, bottles, crockery and similar refuse	Discharge prohibited	Discharge prohibited	Discharge prohibited

- 1 When garbage is mixed with or contaminated by other harmful substances prohibited from discharge or having different discharge requirements, the more stringent requirements shall apply.
- 2 Comminuted or ground food wastes must be able to pass through a screen with mesh no larger than 25 mm.
- 3 The discharge of introduced avian products in the Antarctic area is not permitted unless incinerated, autoclaved or otherwise treated to be made sterile.
- 4 Offshore platforms located 12 nm from nearest land and associated ships include all fixed or floating platforms engaged in exploration or exploitation or associated processing of seabed mineral resources, and all ships alongside or within 500 m of such platforms.
- 5 Cargo residues means only those cargo residues that cannot be recovered using commonly available methods for unloading.
- 6 These substances must not be harmful to the marine environment.

2.2.3 IMO's Global Integrated Shipping Information System (GISIS)

34. In order to facilitate the dissemination of information and promote public access to sets of data collection by the IMO Secretariat, the IMO has developed an internet-based database on information for shipping: the Global Integrated Shipping Information System⁴ (GISIS). This database contains both information open to the general public and a member's area section with more specific information only accessible to registered IMO users.

35. The GISIS Port Reception Facility Database (PRFD) provides data on facilities for the reception of all categories of ship-generated waste. While the public is allowed free access (following a simple initial registration) to all the information on a view-only basis, only the respective party States can update data for reception facilities via a login password. The database aims at improving the rate of reporting alleged inadequacies of reception facilities so that the problem can be tackled more effectively.

36. Parties to MARPOL are also required to communicate the information on available PRF's in their ports into the PRFD.

2.3 Regional regulatory framework: Directive (EU) 2019/XX on port reception facilities for the delivery of waste from ships

2.3.1 Introduction

37. In 2000 the European Union adopted a specific regulatory tool addressing the issue of preventing pollution of the marine environment by waste from ships. The purpose of Directive 2000/59/EC on port reception facilities for ship-generated waste and cargo residues is to reduce the discharges of ship-generated waste and cargo residues into the sea, especially illegal discharges, from ships using ports in the European Union, by improving the availability and use of port reception facilities for ship-generated waste and cargo residues, thereby enhancing the protection of the marine environment. Although the purpose of Directive 2000/59/EC is similar to the main goal of MARPOL, there are some differences regarding their key requirements (see overview in table 3). A new PRF Directive (EU) 2019/XX was adopted on 9th April 2019, which repeals Directive 2000/59/EC and puts in place some important regulatory changes.

38. The Directive (EU) 2019/XX applies to all ships (including fishing vessels and recreational craft but with the exception of any warship, naval auxiliary or other ship owned or operated by a State and used on government non-commercial service only), irrespective of their flag, calling at, or operating within, a port of an EU Member State, and to all ports of the EU Member States normally visited by these ships.

2.3.2 Key elements

39. Key requirements of Directive (EU) 2019/XX include:

- a) An obligation for the EU Member States to ensure the availability of PRF adequate to meet the needs of ships normally visiting the port, without causing undue delay. In order to allow the management of waste from ships in an environmentally sound manner and facilitate reuse and recycling, EU Member States are to ensure the separate collection of waste from ships, taking into account the waste categories defined in MARPOL;
- b) Ports have to develop and implement a Waste Reception and Handling Plan (WRHP), following consultation with all relevant parties, in particular the port users. These plans shall be evaluated and approved by the competent authority in the EU Member State;
- c) The master of a ship has to complete a waste notification form and forward it in due time (at least 24 hours prior to arrival), informing the port of call about the ship's intentions regarding the delivery of ship-generated waste and cargo residues;

⁴ <https://gisis.imo.org/Public/Default.aspx>

- d) Upon delivery the PRF-operator or the port authority is to issue a waste delivery receipt, the information of which needs to be electronically reported by the master of the ship;
- e) A mandatory delivery for all ship-generated waste. However, there is a possibility for the vessel not to deliver waste if it has sufficient dedicated waste storage capacity till the next port of delivery;
- f) The implementation of a cost recovery system applying the “polluter pays” principle through the application of a waste fee, providing an incentive to ships not to discharge ship-generated waste at sea. For ship’s garbage (MARPOL Annex V-waste, other than cargo residues) a 100% indirect fee system is required. In order to provide for a maximum incentive for the delivery of garbage, no direct fee shall be charged for such waste, in order to ensure a right of delivery without any additional charges based on the volume of waste delivered. The only exception is when the volume of waste delivered exceeds the maximum dedicated storage capacity, which is mentioned in the advance notification form: in that case an additional direct fee can be charged in order to ensure that the costs related to receiving this exceptional amount of waste do not cause a disproportionate burden on a port’s cost recovery system;
- g) The establishment of an enforcement scheme, by which EU Member States ensure that any ship may be subject to inspection. Each EU Member State is to carry out inspections of ships calling in its ports corresponding to at least 15% of the total number of individual ships calling its ports annually. A risk-based approach is to be applied for inspections, based on information from the advance waste notification and waste receipt which are electronically reported and exchanged.

40. The Directive (EU) 2019/XX also provides guidance on what is to be considered an “adequate” port reception facility:

“To achieve adequacy, the reception facilities shall be capable of receiving the types and quantities of ship-generated waste and cargo residues from ships normally using that port, taking into account the operational needs of the users of the port, the size and the geographical location of the port, the type of ships calling at that port and the exemptions provided for under Article 9.”

41. The Directive (EU) 2019/XX also contains five annexes:

- a) Annex 1 provides an overview of elements to be addressed in the port’s Waste Reception and Handling Plan;
- b) Annex 2 provides a standard format for the advance waste notification form for waste delivery to port reception facilities;
- c) Annex 3 provides a standard format for the waste delivery receipt;
- d) Annex 4 provides an overview of categories of costs and net revenues related to the operation and administration of port reception facilities
- e) Annex 5 provides a format for an exemption certificate pursuant to Article 9 (exemption for frequent callers).

Table 3: Overview of the main differences regarding PRF requirements between MARPOL and Directive (EU) 2019/XX:

	MARPOL	Directive (EU) 2019/XX
Definitions:	Although both MARPOL and Directive (EU) 2019/XX contain several definitions of wastes and residues there are no commonly used definitions, which sometimes leads towards different understanding.	
Provision of adequate PRF:	Required by MARPOL	Required by Directive (EU) 2019/XX
Ensure separate collection	No requirements in MARPOL	Required by Directive (EU) 2019/XX
Downstream processing and treatment:	No requirements in MARPOL	Treatment, recycling, energy recovery or disposal to be carried out in accordance with EU waste legislation
Port waste	Not required by MARPOL, although	To be developed and implemented for

	MARPOL	Directive (EU) 2019/XX
plans:	encouraged by IMO guidelines ⁵	each port. Required content of the plan is set out in Annex 1 of Directive (EU) 2019/XX
Mandatory delivery of ship's waste:	Not required by MARPOL, except for certain types of cargo residues and washing waters (MARPOL Annex II)	Mandatory delivery of all waste carried on board, except in case of sufficient dedicated storage capacity
Advance waste notification:	Not required by MARPOL, although encouraged by IMO guidelines ⁴	Required by Directive (EU) 2019/XX, incl. the use of standardised format (Annex 2)
Waste Delivery Receipt:	Not required by MARPOL, although encouraged by IMO guidelines ⁶	Required by Directive (EU) 2019/XX, incl. the use of standardized format (Annex 3)
Cost recovery systems:	Not required by MARPOL, although encouraged by IMO guidelines ⁷	Required by Directive (EU) 2019/XX: cost for PRF, incl. collection and treatment, is to be paid by a fee from ships. Cost recovery system is to provide incentive not to discharge at sea. In order to increase transparency, the fee is to be calculated based on the costs and revenues listed in Annex 4.
Exemptions for frequent callers:	Not provided by MARPOL	Provided by Directive (EU) 2019/XX for ships engaged in scheduled traffic with frequent and regular port calls, that have an arrangement to ensure the delivery of the waste and payment of the fees in a port along the ship's route (incl. the use of a standardized exemption certificate in Annex 5)

Table 4: Overview of the main amendments made in Directive (EU) 2019/XX (comparing with Directive 2000/59/EC).

Article	Subject	Amendment
2	Definitions	<ul style="list-style-type: none"> “waste from ships”: means all waste, including cargo residues, which is generated during the service of a ship or during loading, unloading and cleaning operations and falls under the scope of Annexes I, II, IV, V and VI to MARPOL and passively fished waste. “passively fished waste” means waste collected in nets during fishing operations “recreational craft” means a ship of any type, with a hull length of 2,5 metres or more, regardless of the means of propulsion, intended for sports or leisure purposes, and not engaged in trade
3	Scope	<p>The Directive (EU) 2019/XX shall apply to:</p> <p>(a) all ships, irrespective of their flag, calling at, or operating within, a port of an EU Member State, with the exception of ships engaged in port related services⁸, any warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on a government non-commercial basis;</p> <p>(b) all ports of the EU Member States normally visited by ships falling</p>

⁵ Consolidated guidance for PRF providers and users (MEPC.1/Circ.834/Rev.1).

⁶ 2017 guidelines for the implementation of MARPOL Annex V (MEPC.295(71)).

⁷ 2017 guidelines for the implementation of MARPOL Annex V (MEPC.295(71)).

⁸ As defined in Regulation (EU) 2017/352

Article	Subject	Amendment
		<p>under the scope of point (a). EU Member States may decide to exclude the requirements related to advance waste notification, delivery of ship's waste and cost recovery systems at anchorage areas.</p> <p>This article also includes derogations for land locked EU Member States.</p>
4	Provision of PRF	<p>EU Member States shall ensure the availability of adequate port reception facilities, taking into account the needs of the port users. PRF are to ensure separate collection of ship's waste in order to facilitate reuse and recycling. In order to facilitate this process, PRF may collect the separate waste fractions in accordance with waste categories defined in MARPOL and its guidelines.</p>
5	Waste reception and handling plans (WRHP)	<ul style="list-style-type: none"> • Appropriate WRHP's are to be in place and implemented for each port • The WRHP's are to be developed following ongoing consultations with the relevant parties, including in particular with port users or their representatives, and where appropriate local competent authorities, port reception facilities operators, and organisations implementing extended producer responsibility obligations and representatives of civil society. • Those consultations should be held both during the initial drafting of the plans and after their adoption, in particular when significant changes have taken place.
6	Notification	<p>Waste information shall be reported electronically in the EU's information, monitoring and enforcement system⁹</p>
7	Delivery of waste from ships	<p>The master of a ship calling an EU port shall, before leaving the port, deliver all its waste carried on board to a port reception facility in accordance with the relevant discharge norms laid down in the MARPOL Convention. This requirement shall not apply in small ports with unmanned facilities or that are remotely located (provided that the EU Member State where such ports are located has notified these ports electronically).</p> <p>Upon delivery, the PRF operator or the port authority where the waste was delivered shall complete a Waste Delivery Receipt (in Annex 3) and issue and provide it, without undue delay, to the ship.</p> <p>The operator, agent or master of a ship¹⁰ shall before departure, or as soon as this has been received, electronically report the information from the waste receipt in the EU's information, monitoring and enforcement system.</p> <p>In order to ensure uniform conditions for the implementation of the exception based on sufficient dedicated storage capacity, implementing powers shall be conferred on the Commission to define the methods to be used for the calculation of the sufficient dedicated storage capacity on board.</p> <p>If it cannot be established based on the available information, including information electronically available in the EU's information, monitoring</p>

⁹ SafeSeaNet

¹⁰ Falling within the scope of Directive 2002/59/EC

Article	Subject	Amendment
		and enforcement system or in GISIS, that adequate facilities are available in the next port of call, or this port is unknown, the EU Member State shall require the ship to deliver, before departure, all waste that cannot be adequately received and handled at the next port of call.
8	Cost recovery systems	<p>EU Member States shall ensure that the costs of operating port reception facilities for the reception and treatment of waste from ships, other than cargo residues, are covered through the collection of a fee from ships. These costs include the elements listed in Annex 4 (categories of costs and net revenues related to the operation and administration of PRF, incl. direct costs, indirect costs and net revenues)</p> <p>The cost recovery systems shall provide no incentive for ships to discharge their waste at sea. To this end, the EU Member States shall apply the following principles in the design and operation of the cost recovery systems in ports:</p> <ul style="list-style-type: none"> (a) ships shall pay an indirect fee, irrespective of delivery of waste to a port reception facility; (b) the indirect fee shall cover the indirect administrative costs, as well as a significant part of the direct operational costs, as determined in Annex 4. The significant part of the direct operational costs shall represent at least 30 % of the total direct costs for actual delivery of the waste during the previous year. Costs related to expected traffic volume for the coming year can also be taken into account; (c) in order to provide for a maximum incentive for the delivery of waste as defined in Annex V to the MARPOL Convention other than cargo residues, no direct fee shall be charged for this waste, in order to ensure a right of delivery without any additional charges based on volume of waste delivered, except when this volume of waste delivered exceeds the maximum dedicated storage capacity as mentioned in the form set out in Annex 2 to Directive (EU) 2019/XX. Passively fished waste shall be covered by this regime, including the right of delivery; (d) in order to avoid that the costs of collection and treatment of passively fished waste are borne exclusively by port users, EU Member States shall cover, where appropriate, those costs from the revenues generated by alternative financing systems, including waste management schemes and European, national or regional funding available; (e) in order to encourage the delivery of residues from tank washing containing high-viscosity persistent floating substances, EU Member States may provide for appropriate financial incentives for their delivery; (f) the indirect fee shall not include the waste from exhaust gas cleaning systems, the costs of which shall be covered on the basis of the types and quantities of waste delivered; <p>The part of the costs which is not covered by the fee referred to in subparagraph (b), if any, shall be covered on the basis of the types and quantities of waste actually delivered by the ship</p> <p>The fees may be differentiated on the following basis:</p> <ul style="list-style-type: none"> - the category, type and size of the ship; - the provision of services to ships outside normal operating hours in the port; or - the hazardous nature of the waste.

Article	Subject	Amendment
		<p>The fees shall be reduced on the following basis:</p> <ul style="list-style-type: none"> - the type of trade the ship is engaged in, in particular when a ship is engaged in short sea shipping trade; or - the ship's design, equipment and operation which demonstrate that the ship produces reduced quantities of waste, and manages its waste in a sustainable and environmentally sound manner.
9	Exemptions	<p>EU Member States may decide to exempt a ship calling their ports from the advance waste notification (art. 6), the mandatory waste delivery (art. 7) and the payment of the waste fee (art. 8), when the ship meets certain requirements related to the frequency and regularity of the port calls, the arrangement to ensure the delivery of the waste and the payment of a waste fee in a port along the ship's route.</p>
10	Inspections	<p>EU Member States shall ensure that any ship may be subject to an inspection in order to verify that it complies with the requirements of Directive (EU) 2019/XX.</p>
12	Inspection commitments	<p>EU Member States shall carry out inspections of ships calling in their ports corresponding to at least 15% of the total number of individual ships calling in the EU Member State annually. The total number of individual ships calling in an EU Member State shall be calculated as the average number of individual ships over the three previous years, as reported through the information, monitoring and enforcement system.</p> <p>EU Member States shall comply with the number of inspections by selecting ships on the basis of an EU risk-based targeting mechanism, facilitated by electronic reporting and exchange of information from the advance waste notification and the waste receipt.</p>

3 PLANNING AND PROVISION OF PORT RECEPTION FACILITIES

3.1 Introduction

42. In order to ensure the provision of adequate and cost-efficient port waste management infrastructure, be it for the collection, storage and/or treatment of the ship-generated waste, several planning and information assessment steps are to be considered. Although the planning of waste management infrastructure seems especially logic and useful in large and industrialized ports, it is however an equally important step to be applied for smaller ports, fishing ports and marinas.

43. The key elements to be addressed are:

- Planning of port waste infrastructure;
- Collection of data and information;
- Assessing the information; and
- Decisions regarding the type of PRF.

44. As the collection and treatment of ship-generated waste is preferably embedded in an ambitious and well-developed wider waste management strategy aiming at an environmentally sound waste management linked to a sustainable and circular economy, it is therefore crucial that also this aspect is thoroughly assessed.

3.2 Planning port waste management infrastructure, including the integration of ship-generated waste in a wider waste management strategy

3.2.1 Planning port waste management infrastructure

45. The proper planning of a cost-efficient waste management infrastructure is of crucial importance in order to facilitate the needs of the ships calling the port. In addition, this waste management infrastructure is preferably embedded in a strategy aiming at environmental sound waste management and linked to a sustainable and circular economy.

46. When planning waste management infrastructure in a port area in general or PRF for ship's waste specifically, it should be kept in mind that, due to an extensive set of variable characteristics, ports can be very different:

- Geographical location, incl. the impact of Special Areas (implying stricter discharge criteria at sea) and/or seasonal influences (such as increased tourism);
- Size of the port;
- Types of traffic (commercial, fishing, recreational, navy, offshore support, etc.);
- Types of cargo being handled in the port;
- Number of ships calling the port;
- Size of the ships calling the port;
- Port structure and governance;
- Presence of industrial clusters in the port;
- Existing capacity for waste collection, storage and treatment; and
- Presence of densely populated areas in the port or in the immediate vicinity.

47. Also the specific ship-related elements influencing the delivery of ship-generated wastes are to be taken into account. As indicated by the EMSA study on "the management of ship-generated waste types on-board ships"¹¹ ships can opt to treat waste on board and – when complying with the criteria – legally discharge the effluent at sea. Common examples are:

- The treatment of bilge water in an OWS and the subsequent discharge of the separated oil to a PRF and the water to the sea;
- Sewage is treated in different ways and if well treated can be disposed at sea;

¹¹ The management of ship-generated waste types on-board ships, 2017, CE Delft & CHEW, EMSA/OP/02/2016

- Food waste can be comminuted, shredded or passed through a grinder and afterwards disposed at sea or being collected in bins and delivered to PRF; and
- Wash water containing certain types of cargo residues are often discharged at sea.

48. It is therefore clear that the need for adequate PRF, including the downstream waste disposal facilities, is primarily determined by the port users' needs. And as their needs will be very different in differing ports, the provision of adequate PRF and the waste disposal options requires good planning and design.

49. Ports cannot provide adequate PRF for users without an accurate assessment of their needs. As a consequence, the development of a port waste assessment procedure or management plan is vital. Ships are customers of the port and meeting the needs of the ship while they are in port is simple "customer care".

50. It is generally agreed that port waste management planning is intended to identify common elements which all ports should consider when planning waste management infrastructure, regardless of the size and type of the port or the types of wastes received. Key elements during the planning phase are:

- Collection of data and information;
- Assessing these data; and
- Decisions regarding the type of port reception facility.

51. Each of these steps is explained more in detail in the following sections.

3.2.1.1 *Collection of data and information*

52. An essential first step in the planning phase of PRF is the collection of reliable data and information about the existing situation in the port, supplemented with an overview of the applicable regulatory framework. Key data and information to be collected should include:

- *Data/information regarding the port:*
 - Geographical characteristics;
 - Waterborne traffic;
 - Terminals and cargo flows;
 - Industrial clusters in the port;
 - Forecasts regarding the expected traffic in the near and mid-term future;
 - Safety requirements (e.g. LNG-terminals);
- *Ship-related data/information:*
 - Number and types of ships calling the port (commercial/non-commercial, chemical/oil tankers, passengers, fishing, recreational, etc.);
 - Forecast for the near and mid-term future;
 - Safety requirements (e.g. LNG);
- *Data/information regarding the types and quantities of ship-generated waste:*
 - An overview of the types and quantities of ship-generated wastes and residues currently received;
 - Estimates of the types and quantities of ship-generated wastes and residues that are expected to be delivered in the near and mid-term future, taking into account possible changes of traffic;
 - Waste streams in the port that are being generated through other activities (land-based industry, stevedoring and cargo handling, etc.);
- *Data/information regarding the waste handling:*
 - The options for disposal including temporary storage and (pre-)treatment for ship-generated wastes and residues that are already available in the port area and its vicinity;

- The possible need for additional waste storage, pre-treatment and disposal capacity and infrastructure;
- *Applicable regulatory framework:*
 - Overview of the applicable legal requirements (national and local) regarding waste management in general and ship-generated waste specifically;
 - Overview of the key elements of the overarching waste management strategy.

53. According to the IMO 2017 “Guidelines for the implementation of MARPOL Annex V (resolution MEPC.295(71))” ship, port and terminal operators should consider the following when determining quantities and types of garbage on a per ship basis:

- Types of garbage normally generated;
- Ship type and design;
- Ship operating route;
- Number of persons on board;
- Duration of voyage;
- Time spent in areas where discharge into the sea is prohibited or restricted; and
- Time spent in port.

54. Although there might be differences depending on the way ports are being organized (private/public), the data and information on port characteristics will most likely be available at the port authority or the competent governmental administration responsible for ports. Also, the data regarding the types of ships, traffic and cargo turnover should be available there.

55. Data regarding the types and quantities of ship-generated waste might also be available at the port authority, although not every port authority registers it.

56. In case an advance notification scheme for ship-generated waste is being applied in the port, the information about the types and volumes of wastes intended to be delivered by the ship to the PRF should be available at the stakeholder receiving the advance notification form from the ship (in many cases it is the agent forwarding the information to the harbour master’s office). In some ports, for logistical reasons, the providers of PRF may require advance notification from the ship of its intention to use the facilities¹². Providing advance notification to the reception facility of the type and quantity of MARPOL wastes on board and the type and quantity intended to be delivered will greatly assist the PRF operator in receiving the waste while minimizing any delay to the vessel’s normal port operation. A generally recommended practice is to provide the information at least 24 hours’ notice, although specific requirements may vary.

57. If a ship visits a port on a regular basis, a standing arrangement with the PRF may prove to be most efficient. Although in EU ports the mandatory notification format provided by Directive (EU) 2019/XX is required, outside the EU shipmasters are recommended to use the standardized IMO Advance Notification Form¹³. Port authorities, agents and facility operators are urged to accept the standardized format; however, some operators may require an alternate form.

58. In many cases also existing PRF and waste collectors should be a reliable source of information, not only on amounts and types of wastes that are already being collected¹⁴ but also regarding the existing infrastructure for collection, transport and disposal. Especially when a system with waste delivery receipts is being applied in the port, reliable data on delivered volumes and types of ship-generated wastes and residues should be available.

59. In case these data and information are not directly available, also the usage of questionnaires might be considered. However, a thorough consultation of stakeholders is in either case very much recommended.

¹² Further information on this requirement is provided in section 4 of the Guidelines for ensuring the adequacy of port waste reception facilities (resolution MEPC.83(44)).

¹³ Annex 2 of IMO Circular MEPC.1/Circ.834/Rev.1.

¹⁴ As in most cases the PRF will use a register to note incoming and outgoing waste streams.

3.2.1.2 Assessing the information

60. The goals of the assessment should be to firstly reveal shortcomings in existing practices, and secondly to suggest improvements. Also, the assessment should look into possible changes in the port's infrastructure (such as new terminals), operations (such as increased traffic) and management (such as introduction of new financial schemes).

61. Some of the key elements that should be addressed when assessing the information are:

Possible change:	Possible impact:	Possible response:
More ships calling (increased traffic)	More ships delivering waste	Additional collection and disposal capacity required
Other types of ships calling (new traffic)	Other types of waste being delivered	New types of receptacles required
Expansion of the port: new terminals in operation	More ships delivering waste, and other types of cargo residues and wash waters being delivered	Additional and specific types of receptacles/means of collection required
Introduction of financial schemes incentivising delivery (e.g. fee systems)	More ships delivering (more) waste	Additional collection and disposal capacity required

62. Other issues that are to be taken into consideration are:

- The expected investment and operational costs related to the new collection and treatment facilities;
- Means of transport (e.g. trucks, railway or ships) that may have to be commissioned and licensed;
- Agreements may be needed on who transports the waste;
- In case of a regional strategy, the international agreements that need to be prepared (such as the implications of transboundary movements of waste).

3.2.1.3 Decisions regarding the type of PRF

63. After the assessment of the data and information a decision will have to be taken whether additional and/or other types of PRF are needed in order to establish or maintain the necessary adequacy level, and whether additional waste management operations (such as storage and treatment) are required.

64. Choices will need to be made regarding, but not limited to:

- The type of port reception facilities required, including the necessary capacity for collection of ship-generated wastes and residues;
- Who will invest in and operate the reception facility as well as the downstream waste treatment infrastructure.

65. It should also be noted that the provision of additional PRF and/or waste processing and treatment infrastructure are preferably embedded in and complementary with an overarching waste management strategy, as mentioned in section 3.1.2 of the present document.

66. The selection of the type of reception facility that will be operated in the port is of key importance. While the disposal facilities for the ship-generated waste will always be located on shore, the equipment for the collection can either be mobile or shore-based at a strategic point. Options are to choose between different types of mobile and fixed port reception facilities, although in large ports both can be applied. Especially in case of fixed facilities, the choice of location for these facilities will be crucial. In that case a site selection assessment should be included.

67. Mobile PRF have the advantage that in general the investment cost is less than for fixed facilities, and that they can be put in operation rather quick and flexible. Possible disadvantages can

be their interference with other operations, such as loading/unloading of cargo, and a restricted or prohibited access for mobile facilities on jetties, such as those where oil products, liquefied gases, noxious liquid substances or packaged dangerous goods are being handled.

68. Fixed facilities on the other hand have the advantage that they might be able to collect more types of wastes (as they can be designed and equipped in a way that all ship-generated wastes can be collected), that they can have a larger capacity for collection and storage, and that they can combine the collection, incl. storage and treatment, of different waste types, also from land-based facilities. A substantial disadvantage is the higher investment cost for these facilities, and the fact that they are to be located at a strategic location that is easily accessible for ships.

69. More information about the types of PRF is provided in chapter 4 of the present document.

3.2.2 Development of integrated ship-generated waste management strategy

70. The development of a waste management strategy is a powerful tool to establish a coherent system of integrated waste management practices and facilities. A proper waste management strategy leads to an efficient and effective operating waste management system easing the transition towards a circular economy, and therefore it should facilitate the development of regulations, procedures and infrastructure that lead towards the environmentally sound management of both hazardous and non-hazardous wastes. It describes the objectives and goals, and it outlines the practical issues such as collection, transport and disposal, including storage.

71. Key stakeholders such as governments and local authorities, waste generators, waste collectors and transporters, dealers, brokers, waste disposal facilities and non-governmental organizations, all have a crucial role to play.

72. When developing a waste management strategy for ship-generated waste delivered in ports, it might be useful to consider the following elements:

- *Administrative, legislative and policy measures:*
 - Choose the optimal level to implement the different legislative and administrative measures;
 - Specific schemes for licensing and permitting for the collection and disposal of ship-generated wastes and residues;
 - Apply a ship's waste fee systems in order to incentivize a maximum delivery of ship-generated wastes and residues to port reception facilities, in order to get as much waste as possible from ship to shore and thus avoiding discharges at sea;
 - Incentivize the delivery of segregated waste streams rather than mixtures of wastes, as the recovery of segregated waste is usually much easier;
 - Embedding the management of ship-generated wastes in a general waste strategy, facilitating the circular economy;
- *Technology and facilities required:*
 - Provision of adequate port reception facilities, in order to meet the port users' needs and facilitate a smooth delivery from the ship without causing undue delay;
 - Introduce modern technology to be implemented by the waste management industry, in order to minimize the impact of waste management towards the environment, avoiding emissions to land, water and air;
- *Processes and coordination mechanisms:*
 - Stakeholder involvement both from the industry side as from competent authorities, in order to facilitate communication and exchange of information and practices;
 - Cooperation between ports;
 - Install a modern data and information system monitoring the delivery and management of the delivered ship-generated wastes and residues, such as web-based systems providing direct access to all stakeholders and enforcing authorities.

73. Some of these elements are described more in detail below:

3.2.2.1 Waste prevention and minimization:

74. As a priority, waste prevention and minimization are key elements of a waste management strategy. Unnecessary waste generation burdens on waste transport and disposal facilities, and should be avoided. Of course, it is not always possible to efficiently incentivize waste prevention and minimization on board ships by applying land-based regulations. Some ports therefore have implemented voluntary (financial) incentive schemes, such as a reduction of port fees or the (partial) reimbursement of waste fees for ships that have installed technology or apply management schemes that lead to reduced amounts of on-board generated waste.

3.2.2.2 Addressing both ship- and land-generated waste:

75. A basic principle when developing a waste management strategy for ship-generated wastes and residues that are being delivered to reception facilities in a port or terminal, is that these ship-generated wastes should not be seen separate from land-based wastes: after all, ship-generated waste systems within a port do not exist in isolation from the rest of the port operations, services and infrastructure, and becomes a part of the total waste stream of a port, once received on shore. As both ship-generated wastes and land-generated wastes in the port are to be managed in an environmentally sound manner, it is obvious that a proper waste management strategy should address the management of both ship-generated wastes and land-generated wastes, either from a domestic or industrial origin.

76. Especially in smaller ports such as local ports, fishing ports and marinas, the volumes of ship-generated wastes delivered to PRF might not be sufficient enough in order to develop a cost-efficient waste management. Still, when combining the ship-generated wastes with similar wastes generated by land-based industrial activities and municipal wastes, volumes might be sufficient enough in order to establish not only an economically viable business opportunity, but also facilitate environmentally sound waste management.

3.2.2.3 Cooperation between ports:

77. Increased cooperation between ports might also be a valuable and economically viable option. In this case the strategy would be that all ship-generated wastes can be received in all of the participating ports, but then subsequently are being transported to central disposal facilities. Such a strategy can be more cost-efficient and effective than the provision of disposal facilities in each of the participating ports.

78. An inter-port strategy may be applicable at a regional level, where ports in neighbouring countries cooperate, or on a subnational level, where ports in one country cooperate. In particular if ports are located in remote areas or in case of a cluster of small ports (e.g. located on several small islands), inter-port cooperation in the field of reception and treatment might be worthwhile to consider.

79. It can be noted that the IMO has already developed a specific framework and guidance for addressing the adequacy of port reception facilities on a regional and inter-port level:

- *2012 Resolution MEPC.216(63): Regional arrangements for port reception facilities under MARPOL Annexes I, II, IV and V;*
- *2012 Resolution MEPC.217(63): Regional arrangements for port reception facilities under MARPOL Annex VI (and Certification of marine diesel engines fitted with Selective Catalytic Reduction systems under the NOx Technical Code 2008);*
- *2012 Resolution MEPC.221(63): Guidelines for the development of a regional reception facilities plan.*

3.2.2.4 Circular economy:

80. Another important element is that an integrated approach to waste management incorporating the entire life cycle of waste, from the moment of generation until its disposal, may save considerable future expenses (the so-called “cradle-to-grave approach”). As ship-generated as well as land-generated wastes contain valuable materials, they might be recovered as a resource material for other

industrial activities. Final disposal of these wastes would be an inefficient use of resources, and recovery options should be explored (the so-called “cradle-to-cradle approach”).

4 TYPES OF PORT RECEPTION FACILITIES

4.1 Introduction to the types of PRF

81. When arranging the provision of reception facilities for each Annex of MARPOL, it is clear that port authorities and terminal operators should be aware of the needs of the ships calling their premises. Although ports should identify the ships' needs on a more individual basis, in general almost every port will need reception facilities for garbage (MARPOL Annex V). Other ports (bunkering ports, major traffic ports, oil terminals and refineries that load oil in bulk) will also need reception facilities for oily residues. Depending on the ports' characteristics, some ports will also need PRF for specific types of ship-generated wastes (e.g. fishing nets) and residues (e.g. wash waters containing Noxious Liquid Substances).

82. While the disposal facilities for ship-generated waste will be located on shore, the collection facilities can either be mobile or shore-based at a fixed point. Options are to choose between different types of mobile and fixed port reception facilities, although in large ports both can be applied. Especially in the case of fixed facilities, the choice of location will be crucial. In that case a site selection assessment is to be included.

83. According to the IMO "Guidelines for ensuring the adequacy of port reception facilities" (resolution MEPC.83(44)) waste reception facilities should be available in all ports where there is a need for ships to deliver wastes ashore. They should be easily accessible and be equipped to deal with the various waste streams and quantities that users deliver. Reception facilities must be able to deal with the range of wastes that is likely to arise from ships using the port. Where appropriate – depending on the type of traffic – the PRF should be capable of handling wastes resorting under one or more of the MARPOL Annexes I, II, IV, V and/or VI, although it is also possible to provide PRF for specific types of wastes only (e.g. liquid hazardous wastes such as wash waters containing certain chemicals).

84. It is necessary for ports to provide adequate reception facilities to cater for each type of waste delivered by the ships using their port, being both cargo residues and wastes generated through the normal operation of the ship. Following a consultation process (as also described in section 5.5 of the present document) the port will be in a better position to tailor the facilities it will need to provide in order to meet individual circumstances according to the port's normal traffic.

85. For various waste streams, where appropriate, port authorities may prefer ship operators or their agents to make their own arrangements with waste contractors. However, the port authority must retain responsibility for ensuring that the reception facilities provided are sufficient for the amounts and types of ship-generated wastes and residues received. The port authority can do this by exercising general oversight as part of its waste management plan.

86. Some authorities impose specific requirements regarding quarantine waste (such as food and catering waste) from international modes of transport. Therefore, this type of ship-generated waste may require separate receptacles, which should be clearly marked and sufficiently secured to prevent birds and animals from entering. The location of facilities for quarantine waste should not present an increased health risk to the people living in the vicinity of the site, nor during its transportation, treatment and final disposal. In addition, ports should ensure that specific national requirements relating to quarantine wastes are properly notified and communicated to the ship owners and operators, and their agents.

87. It can be noted that also the ISO International Standard 16304 relating to the "Arrangement and management of port reception facilities"¹⁵ provides guidance regarding the selection of types of port reception facilities.

¹⁵ The ISO Standard 16304 is available on the ISO website (www.iso.org).

4.2 Mobile port reception facilities

4.2.1 Floating reception facilities

88. When choosing for floating reception facilities for ship-generated waste, barges (either being towed or self-propelled) provide several advantages. As barges used for collecting liquid ship-generated wastes and cargo residues in most cases have limited draught requirements, they will present little difficulties in terms of adequate water depths. In some cases, barges can also be used for the simultaneous collection of both solid and liquid ship-generated wastes. A disadvantage of a combined collection, however, could be that on board of a tanker barge there might not be sufficient free space to provide for a segregated collection of the solid ship-generated waste (e.g. by using several skips on deck) in the case the ship wants to land segregated waste streams.

89. Also, sufficient calm weather berthing space and suitable docking facilities must be made available for the delivery of the wastes and residues that are being collected. Port reception facility barges can often use berthing facilities, which were built for other purposes. In ports where berths have become obsolete due to increased ship size, the old berths may be converted into docking port reception facilities for barges.

90. When using floating reception facilities, the ship-generated waste is off-loaded directly from the delivering ships to a collecting barge. For the collection of garbage, care should be taken that nets or other means of coverage are used to prevent garbage from ending up into the water. In case of collecting oily wastes, adequate spill remediation equipment is to be available on board.

91. When the ship-generated wastes and cargo residues are being collected by a barge or other floating collection device (e.g. a towed pontoon), the waste at some point needs to be off-loaded to shore to be hauled to a storage and/or disposal facility. Some provisions must be made for off-loading the waste barge either in the port at which the wastes and residues are being collected, at the disposal site (if it is accessible to the barge), or at another port if the wastes and residues are being transported by water to another port.

92. Some examples of floating reception facilities:



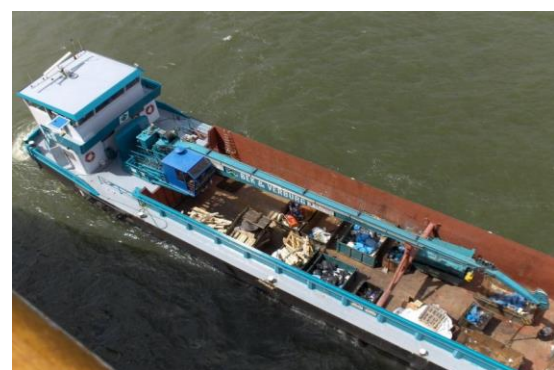
Barge collecting liquid oily waste
(Photo credits: MAC² Antwerp, Belgium)



Barge for the collection of garbage
(Photo credits: Martens Cleaning, Vlissingen NL)



Barge collecting garbage only
(Photo credits: Vlamo, Antwerp, Belgium)



Barge collecting segregated garbage
(Photo credits: Bek & Verburg, Rotterdam, NL)

4.2.2 Vehicles, trucks and skips

93. When land vehicles are used for the reception of ship-generated waste, a high flexibility can be achieved not only regarding the place of collection of the wastes, but sometimes it can also be combined with a shorter service waiting time as compared to barges. However, while vehicles share to a large extent the same advantages as floating PRF, there are certain aspects that need to be observed: the loading capacity of vehicles is usually smaller than the capacity of barges, and terrain and road surfacing in the port might not always be suitable for a safe and swift transport.

94. Trucks or other vehicles that are used to collect solid ship-generated waste (such as garbage) by off-loading directly from ships, require easy access to get close to the ships, which requires a good road system within the port area and terminals. Good logistics will be required to coordinate the waste collection. As with collecting barges, care should be taken during off-loading for garbage not being blown into the water. In the case of the collection of segregated waste streams it might also be necessary to order more than one vehicle, in order to prevent the residues getting mixed (e.g. hazardous with non-hazardous solid waste).

95. It can be noted that also receptacles such as skips and containers can easily be transported to a berthing area where ships intend to deliver solid wastes (e.g. garbage). An advantage is that in those cases a truck can transport the receptacle to the berthing place in the port, leave it there for the period of time the ship needs for delivering the waste, and return afterwards for collection when the receptacles are filled with the garbage. However, in that case a good communication between the ship and the port reception facility is necessary in order to prevent that the receptacles being used have sufficient collection capacity and are adequate (e.g. in case of delivery of food waste) for the ship's use.

96. Some examples of vehicles and skips being used as reception facilities:



Tank truck collecting oily waste
(Photo credits: Kayak Maritime Services,
Antwerp, Belgium)



Receptacles for garbage from ships
(Photo credits: Veolia)

4.3 Fixed port reception facilities

97. An alternative for the mobile collection of ship-generated waste is to have one or more centrally located fixed shore-based waste reception facilities, or fixed collection points with containers or skips. For smaller ports this might be a suitable option, especially when the collection is organized on a strategic place in the port (e.g. a lock providing the main access to the port).

98. A specific advantage of a fixed PRF is that its operations can be extended and combined with waste (pre-)treatment. For large ports the main disadvantage of a fixed reception facility is that in order to deliver wastes and residues, a ship might have to shift berths if the reception of the ship-generated waste is located at a fixed place somewhere else in the port. Shifting berths is a very time-consuming and expensive operation, which may lead to undue delay or ships not being keen to use the PRF. If PRF are located in a less suitable place, delays, congestion and an increased risk of

accidents and collisions will result. Appropriate sites for fixed garbage receptacles therefore include wharves adjacent to moorages, access points to docks, fuel stations and boat launching ramps.

99. Depending on the size of the port, stationary receptacles can be placed either in one central location or at multiple sites within the port area. The space required depends on the number and type of receptacles to be placed together, and on the types and volumes of ship-generated waste to be collected at a single site. For example, some countries have strict requirements regarding the collection and disposal of international catering waste, often referred to as quarantine waste. In these cases, waste contractors have to provide separate bins in order to collect the ship-generated waste concerned.

100. In smaller ports such as fishing ports and marinas, limited types of fixed reception facilities can be applied, in cases when:

- a) Only limited amounts of ship-generated wastes will be delivered in those ports; and
- b) Although they can be specific (e.g. fishing nets, synthetic fishing gear, etc.), also limited types of ship-generated waste (mainly household wastes and garbage) will be delivered.

101. In marinas it is not always necessary to provide large and differentiated reception facilities. As in these ports the main type of ship-generated waste delivered will be garbage and household waste, general receptacles designed for the collection of the most common fractions of household waste will be sufficient. However, depending on the size of the port (e.g. facilitating large motor yachts) and the number and type of the ships calling, it might be useful to equip the facility with a pumping station for the collection of bilge water (oily water mixture, mainly consisting of water) and/or waste from chemical toilets.

102. For reception of oily residues and other liquid ship-generated wastes such as sewage, the construction of pipelines to each berth might be a feasible option, especially if the reception is combined with a tank cleaning facility, e.g. at an oil terminal.

103. If receptacles are placed at a designated site for the collection of ship-generated wastes and cargo residues, they can be placed in a compound or environmental shelter, which is used to physically and visually shield the containers, to discourage use by non-port users, and to prevent the ship-generated wastes from blowing away.

104. Some examples of fixed PRF:



Fixed reception and treatment facility
(Photo credits: MAC² Antwerp, Belgium)



Receptacles for collecting ship-generated waste
at a designated and covered area
(Photo credits: Peter Van den dries)



Containers for garbage, strategically located at an entrance lock in the port
(Photo credits: Peter Van den dries)



5 COLLECTION AND STORAGE OF SHIP-GENERATED WASTES

105. The effectiveness of ships to comply with the MARPOL discharge requirements, especially within Special Areas, largely depends upon the availability of adequate PRF. Hence, the provision of adequate reception facilities at ports and terminals for the reception of ship-generated wastes and cargo residues is essential. As final treatment facilities, incl. facilities for recycling and disposal, not necessarily have to be located within the port area, also storage infrastructure is to be developed.

106. When designing and developing adequate PRF for ship-generated wastes, criteria are in general based on the required collection capacity (the amount that can be received from a ship, without causing undue delay) and the further disposal and storage capacity for these waste streams (choice of disposal options). When specifically looking at the requirements for temporary storage in order to ensure an environmentally sound waste management, it should be noted that also the need for segregated storage of certain waste streams is to be taken into consideration, in order to facilitate the recovery of wastes. Especially when certain MARPOL Annex V wastes and residues already have been segregated on board the ship, the port reception facility should be able to receive and store the different waste streams separately. This facilitates the disposal of the wastes according to the waste management hierarchy. Appropriate and designated storage capacity and equipment is therefore indispensable. Also for hazardous wastes some general requirements for appropriate collection and storage should be taken into account, such as:

- Receptacles used for the storage of hazardous wastes are to be made of material that is compatible with the waste (e.g. for corrosive wastes polyethylene containers are better than metal drums);
- Containers must be leak proof;
- For specific hazardous wastes secondary containment might be necessary;
- Receptacles should be properly labelled;
- Incompatible hazardous wastes are to be kept separate; and
- Receptacles for hazardous wastes should be kept closed and out of the weather.

107. As the alternatives for the collection, storage and transportation of ship-generated waste largely depend on the type (and amount) of the waste, the options for collection and storage presented in this section will use the categorization applied in the different MARPOL Annexes.

5.1 Options for the collection and storage of MARPOL Annex I wastes

108. Liquid oily wastes generated on board ships are in general mixtures of oil, water and sediments. The exact composition between these components can differ significantly, depending on the place where the oily mixture is generated on board the ship, such as oily bilge water, oil residues (sludge), oily tank washings (slops), dirty ballast water, or scale and sludge from tank cleaning.

109. Oily residues consist mainly of oil that might be contaminated with water, whereas oily tank washings, bilge water and dirty ballast water consist mainly of water contaminated with a limited amount of oil. For collection purposes sludge is in general considered to be a separate category, because of its higher solids content, the fact that in some cases sludge is not easily pumpable, and contains a considerable amount of oil (50-75 %).

110. As after collection liquid oily waste will be only temporarily stored on the barge, it might not be advisable to use on-board oil/water separators. After proper chemical analysis, separation of oily-water mixtures is preferably performed in land-based waste treatment facilities. In addition, barges usually do not have sufficient space for installation of a separation unit. Furthermore, in many ports the effluent discharge from a barge into the dock water might be prohibited due to local water quality regulations.

111. On shore collection can be done using tank trucks or at a central fixed collection facility. In these cases, storage tanks with pumping facilities for the oily residues will be needed, to which the ships, collection barges or collection vehicles (depending on which system is used for collection) can discharge their (collected) oily residues.

5.2 Options for the collection and storage of MARPOL Annex II wastes

112. Depending on the categorization of the MARPOL Annex II noxious liquid substances in one of the sub-categories X, Y, Z or "other", tank cleaning is to be carried out. And as certain cargo residues and washing waters from cargo holds contain substances that are not allowed to be discharged at sea, they therefore need to be delivered to a PRF suitable for the collection and temporary storage in port of substantial amounts of wash waters.

113. Tanks for chemical cargoes are usually cleaned using hot or cold water in which cleaning additives might be added. Some noxious liquids cannot be cleaned with water only, and specific cleaning agents are required for proper tank cleaning. The main concern for a PRF collecting MARPOL Annex II residues is that the received cargo residues in wash water can contain a wide variety of noxious liquid substances, each with their own special chemical characteristics and toxicity. Therefore, also temporary storage facilities will have to be capable to deal with a large variety of residues.

114. MARPOL Annex II wash water containing residues to be categorized as noxious liquid substances usually result from mandatory prewashes and commercial tank cleaning activities and therefore the option exists to combine tank cleaning facilities with PRF. As the volumes of these wash waters in most cases will be substantial, the collection will require efficient pumping devices and relatively large storage tanks. Both barges and trucks certified for the carriage of dangerous goods can be used, but also fixed PRF that can combine the collection of wash waters containing noxious liquid substances with the cleaning activity itself.

115. Still, as it is common for chemical tankers to wash their own tanks leading to situations that ships calling a port already have large amounts of washing water on board which they might want to deliver to a reception facility, pumping devices and storage tanks might be required at a central place in the port. As the amount of this type of waste may be substantial and the variety of the possible residues big, it is advisable to consult with the relevant cargo handling companies in order to get a good insight of the amounts and types of washing waters to expect

116. As these wash waters containing noxious liquid substance are in many cases to be considered to be hazardous according to land-based waste catalogues, their handling requires strict safety measures. The most important safety aspect for the reception of MARPOL Annex II wastes is to see to it that they are not mixed, as this may create risky situations for both the environment and human health.

5.3 Options for the collection and storage of MARPOL Annex IV wastes

117. Sewage from ships consists of so-called "black water" (sewage from toilets and urinals) and grey water (generated from activities such as laundry, dishwashing and bathing). In most cases black and grey water are mixed. In some cases, sewage also includes mixtures with oil and other substances. It should be noted that also residues from on board sewage treatment systems, such as sewage sludge and bio-residues fall within the scope of MARPOL Annex IV.

118. For the collection of sewage its significant volumes that can be delivered to a PRF are to be taken into account. As trucks have limited capacity, their use may lead to an unnecessary delay for the delivering ship.

119. Reception of sewage can be organized either by temporary storage in tanks, or by pumping the sewage directly into the municipal sewage system or a sewage treatment facility. Regulation 10 of MARPOL Annex IV provides specified standard dimensions of flanges for sewage discharge connections to enable pipes of port reception facilities to be connected with the ships' discharge pipeline.

120. In passenger/cruise ports it might be an efficient option to provide the possibility to pump the ship's sewage directly into the municipal sewer system. Especially where ships always call at the same terminal (such as passenger or cruise terminals), the cost for building the piping system might be reasonable.

5.4 Options for the collection and storage of MARPOL Annex V wastes

121. When establishing a system of environmentally sound management of ship-generated wastes it is not only required to provide PRF that are adequate to meet the needs of the ships, but it is also of key importance that during the collection and storage phase the recycling or final disposal is being facilitated. Therefore, equipment used for the storage of the ship-generated garbage should be suitable for the separate storage of the main waste types that are being delivered.

122. According to the IMO 2017 "Guidelines for the implementation of MARPOL Annex V" (resolution MEPC.295(71)), it is recommended that the following garbage types are to be kept separate on board of ships:

- Non-recyclable plastics and plastics mixed with non-plastic garbage;
- Rags;
- Recyclable material:
 - cooking oil;
 - glass;
 - aluminium cans;
 - paper, cardboard, corrugated board;
 - wood;
 - metal;
 - plastics (including styrofoam or other similar plastic material);
- E-waste generated on board (e.g. electronic cards, gadgets, instruments, equipment, computers, printer cartridges, etc.); and
- Garbage that might present a hazard to the ship or crew (e.g. oily rags, light bulbs, acids, chemicals, batteries, etc.).

123. Equipment for handling ship-generated garbage in a port should basically facilitate the collection, temporary storage and subsequent transport of the segregated types of ship-generated garbage delivered by the ship. A large variety of containers and bins can be used for collecting ship-generated garbage, but basically the applied receptacles need to be safe, functional and easy to use.

124. When evaluating the different options for selecting receptacles for the collection and storage of MARPOL Annex V wastes, the following elements need to be considered:

- a) Capacity of the receptacles should at any time match the demand by the users, not only in terms of their individual size and capacity, but also the number of receptacles that is required;
- b) Ship types influence the required capacity, e.g.:
 - a. cruise ships generate more garbage than commercial ships;
 - b. fishing vessels need specific collection and storage capacity for fishing nets;
 - c. in marinas seasonal fluctuations might have an impact on the delivery of garbage;
- c) When selecting the differing types of garbage to be collected and stored separately, the increased interest and value in the recycling of wastes as a potential source of raw materials should be considered;
- d) In case more stringent standards are applicable for specific types of wastes (e.g. food or medical waste) the reception facilities might need to meet specific standards (e.g. sealed and/or leak proof containers). Especially for medical waste specific containers are to be used in order to ensure hygienic and safe handling;
- e) For hazardous wastes specific types of receptacles are to be applied, ensuring that compatible material is used for the receptacles, that they are leak proof, etc.;
- f) Receptacles should be constructed of durable materials and equipped with lids to control vermin, to prevent litter spreading on the quayside and to prevent offensive odours;
- g) In order to reduce the volume of the garbage to be transported, compactors or baling equipment may be used, leading to cost savings. However, the use of compactors should not impede the reuse or recycling possibilities.

125. Hazardous wastes are not to be mixed with non-hazardous waste, and are to be handled in accordance with the appropriate procedures and requirements (e.g. a signature should be kept for the records). Another specific consideration when selecting the type of receptacle is the compatibility of

the receptacle, in terms of unloaded weight, maximum load and size, with the available means of transport and other handling equipment such as forklifts and cranes.

5.5 Options for the collection and storage of MARPOL Annex VI wastes

126. MARPOL Annex VI regulates the impact of air pollution from ships. Regarding the issue of PRF, there are two relevant types of wastes and residues classified under MARPOL Annex VI, being Ozone-Depleting Substances (ODS) contained in certain equipment, such as refrigeration, air conditioning and fire extinguishing equipment, and residues from systems used for exhaust gas cleaning.

127. Although MARPOL Annex VI entered into force in 2005, including the requirement for the provision of reception facilities in ports for ozone-depleting substances (and equipment containing them) and residues from exhaust gas cleaning systems, not much information is available yet on the amounts and characteristics of MARPOL Annex VI residues to be expected, nor on collection practices.

128. Depending on the type of scrubbers, the generated wastes and residues are different:

- a) Scrubbers in open loop use sea water for the cleaning of the ship's exhaust emissions. The scrubber water that contains sulphur, soot and various metals ends up into the sea, so in principle there is no delivery to a PRF;
- b) Scrubbers in closed loop use fresh water stored on board and an agent for cleaning the exhaust. There is then an extra step that treats the first scrubber water stream. Sludge containing the soot and metals is generated, which needs to be delivered to a PRF, as it is not allowed to incinerate scrubber sludge on board. Still, a yellowish water containing sulphur is discharged into the water;
- c) There are also so-called hybrid scrubbers, which can be used in either open or closed loop. The residues generated are similar to these generated by open and closed loop scrubbers, depending on the mode the system is being operated in;
- d) Dry scrubbers generate a gypsum-like residue. As these types of scrubbers are currently not generally being used, not much information about the residues is available.

129. Not much information is currently available on the volumes of wastes that are generated by different types of scrubbers. However, some producers report that the amount of sludge generated is approximately 0,1 to 0,4 kg/MWh, while others indicate a sludge generation of 0,2 kg/MWh from a seawater scrubber.

130. It can be noted that the storage of equipment containing ODS from ships is very similar with practices on land. As these types of wastes are to be considered as hazardous wastes, also their storage should meet the appropriate requirements. Receptacles should be watertight and sheltered, in order to avoid drainage of possible contaminants to water and/or soil.

131. Disposable equipment on board containing ODS, such as broken refrigerators and expired fire-extinguishers, can be collected and stored in different ways. The most appropriate way of temporary storage of these wastes is under a shelter on an impervious floor. In addition, the period of storage should be kept as short as possible, especially when the equipment is broken and when there is a substantial risk of leakage of ODS into the atmosphere. Although the temporary storage can be inside the port area, the treatment in most cases will not. This again depends on the port area and its degree of industrialization. The disposal of the equipment will take place in highly specialized treatment plants by trained personnel.

5.6 Options for the collection and storage of passively fished waste

132. During their fishing operations fishermen are often confronted with waste that is collected in their nets (passively fished waste). Therefore, some international NGO's have developed the scheme known as "Fishing for Litter". The idea behind it is quite simple: instead of throwing the waste back into sea, the fishermen are encouraged to collect it on-board and deliver it free of charge to a PRF when returning to port. By doing so they reduce the amount of marine litter in our seas by physically removing it. In addition, it also highlights the importance of good waste management amongst the fishing fleet.

133. Fishing for Litter measures have been included in several Regional Action Plans (RAP) on Marine Litter, for example the RAP's adopted by the Barcelona Convention (UNEP/MAP) for the Mediterranean Sea, by the OSPAR Commission for the North-East Atlantic, and by the Helsinki Commission (HELCOM) for the Baltic Sea. It should be noted that, within the scope of the Marine Litter Regional Action Plan in the Mediterranean, Fishing For Litter Guidelines have been adopted (decision IG.22/10).

134. Also Directive (EU) 2019/XX has included requirements related to the management of passively fished waste:

- “passively fished waste” has been included in the definition of “waste from ships”;
- as EU Member States are required to ensure the provision of adequate PRF capable of providing the service of receiving the “waste from ships”, this also includes the provision of PRF for passively fished waste;
- for garbage the Directive (EU) 2019/XX includes, after payment of the waste fee, a right of delivery without any additional charges based on the volume of waste delivered¹⁶: this is also the case for passively fished waste. However, in order to avoid that the costs of collection and treatment of passively fished waste are born exclusively by port users, EU Member States shall cover, where appropriate, those costs from the revenues generated by alternative financing systems, including by waste management schemes (e.g. EPR) and by EU, national or regional funding available.

135. Several countries have already implemented this measure, and have set up schemes for the reception of passively fished waste. Also in the Mediterranean Sea fishermen are involved in cleaning the sea. A good example is the Fishing For Litter scheme deployed in the countries surrounding the Adriatic where, between 2014 and 2016, 124 vessels located in 15 ports between Italy, Slovenia, Croatia, Montenegro and Greece removed 122 tons of waste, mainly plastic, from the sea (this project was linked to the implementation of pilot projects for Fishing for Litter of the DeFishGear European project¹⁷).

136. In cooperation with regional and/or national stakeholders, participating vessels are given hardwearing bags to collect marine litter that is caught in their nets during their normal fishing activities. Filled bags are deposited in participating ports on the quayside where they are moved by port staff to a dedicated skip or bin for disposal. Operational or galley waste generated on board, and hence the responsibility of the vessel, continues to go through established port waste management systems.



Big bag used for the on-board collection of passively fished waste in UK
(Photo credit: KIMO)



Big bag used for the on-board collection of passively fished waste in NL
(Photo credit: KIMO)

¹⁶ Except where the volume of waste delivered exceeds the ships' maximum dedicated storage capacity

¹⁷ “Fishing for Litter in the Adriatic-Ionian macroregion (Mediterranean Sea): Strengths, weaknesses, opportunities and threats”, Ronchi et al, 2018

137. Reception facilities are being provided in fishing ports where the fishermen can deliver their passively fished waste. As the passively fished waste is in general quite similar to ship-generated garbage, also the PRF for this type of waste is similar.



Collection of passively fished waste in port
(Photo credit: KIMO)



Reception container for passively fished waste
(Photo credit: KIMO)

138. It can be noted that in order to avoid that the costs for the provision of the PRF (incl. the treatment of the passively fished waste) are to be fully borne by the fishermen, leading to a disincentive for fishermen to participate in such schemes, several governments apply alternative financing systems or funding, including national and/or international funding. Therefore, in general it are also the national coordinating bodies responsible for the Fishing For Litter schemes that provide the bags free of charge to the fishermen, and cover all costs for collection and treatment of the passively fished waste.

6 ENSURING THE ADEQUACY OF DIFFERENT TYPES OF PRF

6.1 The “adequacy” issue

139. Both the Annexes I, II, IV, V and VI of MARPOL and Directive (EU) 2019/XX require the provision of adequate PRF, which are to meet the needs of ships normally visiting the port without causing undue delay. When implementing this requirement, some governments opt to shift the responsibility to provide these adequate PRF to local authorities such as municipalities or port authorities, or to private stakeholders (e.g. terminal operators). In addition, the interpretation of “adequacy” is left to the port State and the port’s users (being the ships visiting the ports).

140. As the competent authority, which can resort under either a maritime, port or environmental department, should ensure that the requirements regarding “adequacy” are brought into practice, it must consequently be made clear, both for the enforcing authority as for the stakeholder that is required to provide the PRF, how “adequacy” is to be defined. However, determination of adequacy has been proven quite difficult.

6.1.1 “Adequacy” guidance according to the IMO:

141. In order to give guidance regarding the determination of adequacy, also the IMO has adopted several guidelines:

- a) In the “Guidelines for ensuring the adequacy of port waste reception facilities” (resolution MEPC.83(44)) “adequate” is being described as: *“To achieve adequacy the port should have regard to the operational needs of users and provide reception facilities for the types and quantities of wastes from ships normally visiting the port.”*
- b) In addition, “adequate facilities” are being described as those which:
 - mariners use;
 - fully meet the need of ships regularly using them;
 - do not provide mariners with a disincentive to use them; and
 - contribute to the improvement of the marine environment.
- c) Furthermore, the provided PRF must “meet the needs of the ships normally using the port” and “allow for the ultimate disposal of ship-generated wastes and residues to take place in an environmentally appropriate way”.
- d) According to the “2017 Guidelines for the implementation of MARPOL Annex V” (resolution MEPC.295(71)) the methodology for determining the adequacy of a reception facility should be based on the number and types of ships that will call at the port, the waste management requirements of each type of ship as well as the size and location of a port. Emphasis should also be placed on calculating the quantities of garbage, including recyclable material, which is not discharged into the sea, in accordance with the provisions of MARPOL Annex V. Due to differences in port reception procedures and additional treatment among ports, PRF may require the separation on board of:
 - Food wastes (e.g. animal derived products and by-products because of risk of animal diseases);
 - Cooking oil (animal derived products and by-products because of risk of animal diseases);
 - Plastics;
 - Domestic waste, operational waste and recyclable or reusable material;
 - Special items like medical waste, outdated pyrotechnics and fumigation remnants;
 - Animal wastes, including used bedding from the transport of live animals (due to risk of disease) but excluding drainage from spaces containing living animals;
 - Cargo residues; and
 - E-waste such as electronic cards, gadgets, equipment, computers, printer cartridges, etc.

142. When ship operators, ports and terminals assess the expected quantities and types of ship-generated wastes on a per ship basis, the following issues should be considered:

- Types of garbage normally generated;

- Ship type and design;
- Type of main fuel used by the ship (as cleaner fuel such as diesel/gasoline generates less sludge);
- The ship's speed (as fuel consumption can indicate sludge production);
- The ship's operating route;
- Number of persons on board (both crew and passengers);
- Duration of the voyage;
- Time spent in areas where discharge into the sea is prohibited or restricted; and
- Time spent in port.

143. As a minimum, the capacity of reception facilities at cargo unloading, loading, and repair ports and terminals should be capable of receiving those residues and mixtures which are normally handled within that port and which ships intend to deliver to port reception facilities. All ports, including marinas and fishing ports regardless of their size, need to provide adequate facilities to receive garbage and oil residues from engines, etc. Larger ports, with more and various types of ships calling, will need to provide more extensive reception capacity (e.g. for cargo residues, bilge water, quarantine waste, etc.).

144. The receiving capacity should be at least appropriate in time and availability to respond to the continuing needs of the ships normally using the port. Arrangements needed to facilitate the discharge of residues, mixtures and all types of ship-generated wastes without causing undue delay to ships, such as prior notification of types and quantities of wastes and residues expected to be delivered, piping or equipment required for discharge etc. are to be made timely between the ship and the PRF.

145. When assessing the adequacy of reception facilities, the competent (port) authorities should also consider the technological challenges related to the management and discharge of ship-generated wastes. When doing so, it is recommended that relevant international standards be considered as it helps ensuring that the management of the ship-generated wastes and residues is environmentally sound.

146. When selecting the most appropriate type of reception facility for a particular port, attention should be given to alternative methods available: mobile facilities, such as trucks, can enhance a cost-efficient way of collecting ship-generated wastes. Or even floating facilities, such as barges, might be considered more effective, in particular where access by road is not practicable.

147. It should also be noted that due to additional treatment processes, especially when the principles of environmentally sound management are being applied, PRF might promote or (financially) incentivize the on-board separation of:

- Non-recyclable plastics and plastics mixed with non-plastic garbage;
- Rags;
- Recyclable wastes:
 - Cooking oil;
 - Glass;
 - Aluminium cans;
 - Paper, cardboard, corrugated board;
 - Wood;
 - Metal;
 - Plastics (including styrofoam or other similar plastic material)
- E-wastes such as electronic cards, equipment, computers, printer cartridges, etc.
- Garbage that might present a hazard to the ship or crew (e.g. oily rags, light bulbs, acids, chemicals, batteries, etc.);

148. Undue delay may arise when the time spent in port for the delivery of residues, mixtures or wastes goes beyond the normal turnaround time of the ship in that port, unless the delay is caused by fault of the ship, its master, its owner or his authorized representatives, specific safety requirements in place or the normal port procedures. In order to provide maximum flexibility for the ship to deliver wastes while avoiding undue delay, in major ports the availability of reception facilities on a 24/7 basis might be considered.

6.1.2 “Adequacy” guidance according to the EU:

149. In Article 4 of Directive (EU) 2019/XX it is stated that PRF are to be adequate “to meet the need of the ships normally using the port without causing undue delay to ships”. Furthermore, the same article additionally requires that:

- the PRF have the capacity to receive the types and quantities of waste from ships normally using that port, taking into account:
 - the operational needs of the port users;
 - the size and geographical location of that port;
 - the type of ships calling at that port; and
 - the exemptions provided under art. 9
- the formalities and practical arrangements relating to the use of the PRF are simple and expeditious to avoid undue delay to ships;
- the fees charged for delivery do not create a disincentive for ships to use the PRF; and
- the PRF allow for the management of the waste from ships in an environmentally sound manner¹⁸.

150. The adequacy relates to operational conditions on the one side, i.e. to meet the needs of ships normally visiting the ports and not to create obstacles to ships using the PRF, as well as the environmental management of the PRF.

151. As regards the necessary operational conditions, the European Commission underlines that the mere provision of PRF does not necessarily mean these facilities are adequate. Poor location, complicated procedures, restricted availability and unreasonably high costs for the service provided are all factors which may deter the use of reception facilities. For a PRF to be considered adequate, the facility should be available during a ship's visit to the port, be conveniently located and easy to use, cater for all types of waste streams usually entering the port and not cost so much as to present a disincentive to users. At the same time, the European Commission emphasizes that both the size and geographical location of the port may limit what can technically and reasonably be provided in terms of reception and handling of the waste.

152. The PRF must allow for the ultimate disposal of ship-generated waste to take place in an environmentally appropriate way. According to Directive (EU) 2019/XX, the EU Member States shall ensure separate collection to facilitate reuse and recycling of waste from ships in ports. In order to facilitate this process, PRF may collect the separate waste fractions in accordance with the waste categories defined in MARPOL, taking into account the guidelines thereof. In this respect it should be mentioned that, although not required by MARPOL, more and more ship operators segregate their waste onboard: the subsequent separate collection of these wastes by PRF should not only be considered as an appropriate service towards the ship, but will definitely facilitate reuse and recycling operations.

153. A key element to ensure the adequacy of PRF is the development, implementation and re-assessment of the port's waste reception and handling plan, based on the consultation of all relevant parties. For practical and organizational reasons, this plan can be jointly developed by neighbouring ports in the same geographical region, with the appropriate involvement of each port and provided that the need for and availability of PRF are specified for each port.

6.2 Options for cooperation on a regional/sub-regional/national/sub-national level

154. When ships can deliver their wastes and washing waters containing cargo residues only in a few ports in a region, this will either mean that these ports carry the burden for the whole region (i.e. receiving ship-generated waste that should have been delivered to a PRF in other ports) or (even more likely) that ships are more inclined to discharge their waste illegally. If the area is designated as a Special Area, a lack of adequate PRF even has greater implications.

155. It is fair to acknowledge that some of the requirements on providing adequate reception facilities can raise concerns, in particular for Small Island Developing States (SIDS). In that respect,

¹⁸ in accordance with Directive 2008/98/EC and other relevant EU and national waste law

reference can be made to regulation 8.3 of MARPOL Annex V, which provides that Small Island Developing States may satisfy the requirements of reception facilities through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements.

156. For the implementation of regional arrangements, the IMO has developed the 2012 "Guidelines for the development of a Regional Reception Facilities Plan (resolution MEPC.221(63))" to provide guidance for the development of a Regional Reception Facilities Plan (RRFP), to assist governments and port authorities in specific geographic regions of the world with the appropriate and effective implementation requirements of MARPOL.

7 PROCEDURES RELATED TO THE OPERATION OF PORT RECEPTION FACILITIES

7.1 Tools for information management and monitoring

157. Even though the provision of adequate PRF, the development of waste management plans and installing coordinated waste delivery procedures are important prerequisites in order to facilitate the reception and environmentally sound management of ship-generated wastes, information management and monitoring mechanisms are even so indispensable.

158. Modern information and data management in combination with proper monitoring can help to facilitate efficient collection and treatment of ship-generated waste. However, this is not always easy to accomplish, particularly when some of the key stakeholders operate at sea. Still, a substantial set of documents, data and information regarding ship-generated wastes is available during the process from generation to delivery, such as:

- Waste notification by ships;
- Waste delivery receipts;
- Recording waste levels delivered in port;
- Information in Oil Record Book, Garbage Record Book and Cargo Record Book; and
- Licenses granted to the involved stakeholders.

159. Furthermore, the application of the information and data in an automated ICT system will facilitate the information management and monitoring, will allow cross-referencing, and reduce bureaucracy.

7.1.1 Advance notification schemes

160. Ports may need to comply with varying local requirements for specialized handling of certain types of ship-generated wastes. Therefore, ship operators should check with local agents, port authorities, harbour masters or PRF providers for port-specific requirements prior to arrival in order to plan for and accommodate any special handling requirements for that particular port, including additional segregation that may need to take place on board well in advance of arrival. This information should be incorporated into the company's environmental management plan and should be taken into consideration in voyage planning. In many ports, either for logistical or policy reasons, the port authority and/or PRF providers requires an advance notification from the ship indicating its intention to use the reception facilities.

161. Providing advance notification to the PRF of the type and quantity of ship-generated wastes on board and the type and quantity intended to be delivered, will also greatly assist the PRF operator in receiving the waste while minimizing any delay to the ship's normal port operations. A general recommended practice is to provide at least 24 hours' notice, although specific requirements may vary by port or PRF.

162. Many port authorities require shipmasters to use the standardized Advance Notification Form as developed by the IMO in the appendix 2 of the "Consolidated guidance for port reception facility providers and users" (MEPC.1/Circ.834/Rev.1)). Other port authorities, agents and facility operators are urged to accept the standardized format, although in some other cases they require an alternate form.

163. It can be noted that in EU ports Directive (EU) 2019/XX already requires the mandatory use of the advance notification format in its Annex 2. The use of this advance notification form, which is in line with the format of the revised MARPOL Annex V and the IMO Circular MEPC.1/Circ.834/Rev.1, strengthens the implementation and enforcement of Directive (EU) 2019/XX by requiring the provision on the format of accurate information on the types and quantities of wastes actually delivered.

164. The advance waste notification can be sent by the ship or its port representative to the port authority or directly to the PRF. If a ship visits a port on a regular basis, a standing arrangement with the port reception facility may prove to be most efficient.

7.1.2 Waste Delivery Receipt

165. Following delivery of its ship-generated waste, the master of a ship should request a Waste Delivery Receipt to document the type and quantity of MARPOL wastes actually received by the facility. The IMO has standardized the format of this document to facilitate its use and application and in order to provide uniformity of records throughout the world (Appendix 3 of the Consolidated Guidance in MEPC.1/Circ.834/Rev.1). The ships' master or responsible officer and the receiver both sign the document, and a copy is made available as proof of the legal discharge.

166. In EU ports Directive (EU) 2019/XX requires the use of the waste delivery receipt: upon delivery, the PRF operator or the authority of the port where the waste was delivered is to complete truly and accurately the form provided in the Annex 3 (waste delivery receipt) to Directive (EU) 2019/XX, and issue and provide it, without undue delay, to the master of the ship. Furthermore the information in the waste delivery receipt needs to be electronically reported to SafeSeaNet by the operator, agent or master of the ship.

167. Corresponding records, receipts or certificates of the delivery are also to be kept, for a minimum of two years, in the appropriate Garbage Record Book, the Oil Record Book (part I for all ship types and part II for oil tankers), or the Cargo Record Book for chemical tankers.

168. Systematic usage of the waste delivery receipt can also be a useful tool for a port authority to follow the waste from delivery to final disposal.

7.1.3 Reporting of alleged inadequacies of PRF

169. In cases when ships want to deliver their ship-generated waste and/or cargo residues in port but they cannot because of absence or possible non-adequacy of the available reception facility, the ship's master can use the format for reporting alleged inadequacies of PRF that is provided by Appendix 1 of the IMO Circular MEPC.1/Circ.834/Rev.1.

170. Flag States are requested to distribute this format to ships and urge masters to use this format to report alleged inadequacies of PRF to the maritime administration of the flag State and, if possible, to the authorities of the port State. It is the obligation of the flag State to notify IMO and to inform the Parties concerned of any case where facilities are alleged to be inadequate. Port States should ensure the provision of proper arrangements to consider and respond appropriately and effectively to reports of alleged inadequacies, informing IMO and the reporting flag State of the outcome of their investigation.

171. Also, the PRF database in GISIS contains information regarding reported alleged inadequacies.

7.1.4 Licensing as a tool for monitoring wastes

172. Licenses are used by authorities to allow an activity that otherwise might be forbidden. It may require proving a capability, but may also serve to keep the authorities informed on a type of activity, and to give them the opportunity to set conditions and limitations. Licensing is one of the principal tools by which authorities can exercise regulatory controls of the reception, storage, treatment and disposal of wastes.

173. Especially when installing procedures to ensure the delivery of ship-generated wastes, it is necessary to track these wastes from delivery by the ship to the moment of collection at the PRF. Even proof of final disposal can be established by applying a system of notification and tracking documents.

174. These documents, that are to accompany the waste transport, should contain particulars regarding the type and quantity of the waste in question, the means of transport and details regarding the producer, carrier and PRF. In this way the waste routing becomes transparent both for the competent authorities and for the companies involved, as these documents link (e.g. through a tracking system) the different activities.

175. Several port authorities have adopted a tracking system to document the delivery, collection and transport of ship-generated wastes. The documents accompany the waste shipments and provide a record of movement from the producer of the waste through each intermediate stakeholder. Every time the waste changes hands, the responsible person(s) sign(s) the allocated document.

7.1.5 Port waste information and monitoring systems

176. Combining differing types of data and information from different sources is not always a straightforward task, and requires the use of modern IT information and data warehousing technology. As the usage of web-based applications nowadays is not extremely expensive, an internet-based data and information management system can already provide a lot of advantages when implementing monitoring tools in order to establish or move towards an environmentally sound management of ship-generated wastes. In addition, most ports already have an individual port communication system based on internet communication, to which additional tools for the monitoring of ship-generated wastes can be added relatively easily.

177. Installing a proper port information and data management system for ship-generated wastes will not only provide a comprehensive overview and deliver reliable statistics during the different steps in the process of ship-generated waste – from collection over treatment to final disposal – that can easily be monitored and audited, but it will also facilitate efficient and effective enforcement.

178. Therefore, it is recommended that port authorities develop an ICT-supported data management system including procedures that can handle the following issues:

- Waste notification by ships;
- Recording waste levels delivered in port;
- Information in Oil Record Book, Garbage Record Book and Cargo Record Book;
- Waste delivery receipts;
- Exemption certificates (in order to allow the monitoring of the arrangements for waste delivery);
- Evaluation and calculation of annual waste statistics;
- Waste fee system (when applicable); and
- Facilitating enforcement (e.g. risk-based targeting).

179. A proper monitoring and information system for ship-generated wastes can be developed on the port level and be operated and managed by the port authority, or on a national level, combining the data that is being provided by the individual ports. It is also preferable that all stakeholders involved, both private (such as private PRF and ship agents) and public (such as enforcing authorities) have direct access to the system in order to facilitate a swift transfer of reliable data (real time information), to reduce bureaucracy (no paperwork) and to increase transparency. Not every stakeholder should be granted access to the whole system, but only to the fields that are relevant for that particular stakeholder.

7.2 Waste delivery procedures: incentivizing the delivery of segregated waste

180. Procedures for collecting and storing garbage generated on board should be based on the consideration of: what is permitted and what is not permitted to be discharged into the sea while *en route*; and whether a particular garbage type can be discharged to PRF for recycling or reuse. Still, in order to reduce or avoid the need for extra sorting after the garbage has been delivered to a PRF and to facilitate reuse and recycling, it is preferable that the waste is directly segregated on board according to the recommendations of the IMO 2017 “Guidelines for the implementation of MARPOL Annex V” (resolution MEPC.295(71)), which recommends that garbage is being segregated (also see paragraph 120).

181. As this is only a recommendation and not a MARPOL-requirement, ships can still decide to deliver mixtures of wastes and residues. However, taking into account the principles of environmentally sound waste management, the PRF must allow for the ultimate disposal of ship-generated waste to take place in an environmentally appropriate way.

182. In EU this principle has been included in Directive (EU) 2019/XX: EU Member States shall ensure separate collection to facilitate reuse and recycling of waste from ships in ports. In order to facilitate this process, PRF may collect the separate waste fractions in accordance with the waste categories defined in MARPOL, taking into account the guidelines thereof.

183. Sometimes the shipping industry indicates that even when ship-generated garbage is being segregated on board according to the recommendations of the IMO guidelines, PRF still collect all wastes in one receptacle and thus mixing everything again. An option therefore could be to address this issue in port regulations in a way that segregated ship-generated wastes that are delivered to a PRF are in principle to be accepted that way by the PRF and are to be kept segregated for further processing, in order to maximize their potential for recycling.

184. Some port authorities and terminal operators decided to incentivize the delivery of certain types of segregated ship-generated wastes. A certain practice that already is being applied in several ports is to grant ships that deliver segregated wastes a reduction on the port dues and/or waste fee. The Directive (EU) 2019/XX includes a mandatory “green ship” rebate scheme for the cases where it can be demonstrated that the ship’s design, equipment and operation results in the production of reduced quantities of waste, and the ship manages its waste in a sustainable and environmentally sound manner.

7.3 Downstream waste management

185. MARPOL as such does not contain any specific requirements for the downstream management of ship-generated wastes and cargo residues received in a port, as it only requires for the provision of adequate PRF and the proper reception of the ship-generated wastes.

186. Still, once the ship-generated wastes and cargo residues are offloaded from a ship, they must be managed in an environmentally sound manner in accordance with the provisions of the national waste management regulatory framework, and – when applicable – the provisions of the overarching waste strategy. Also, on the international level, the Basel Convention and the EU Waste Framework Directive contain specific requirements regarding the recycling, treatment and final disposal of wastes. And according to the IMO “Guidelines for ensuring the adequacy of port waste reception facilities” (resolution MEPC.83(44)) the PRF must “allow for the ultimate disposal of ship-generated wastes and residues to take place in an environmentally appropriate way”.

187. Although port authorities are in general not directly involved with the provision and operation downstream waste management infrastructure, the availability of adequate treatment options (e.g. recycling, incineration, landfill) in the vicinity of the port area can be an important advantage when establishing infrastructure for the reception of ship-generated waste and cargo residues, as this might have an impact on both the capacity and costs for the collection.

188. As in principle there is no big difference between the treatment of ship-generated wastes and wastes originating from land-based operations, it is also recommended that ship-generated wastes should not be seen separate from land-based wastes: after all, ship-generated waste systems within a port do not exist in isolation from the rest of the port operations, services and infrastructure, and becomes a part of the total waste stream of a port, once received on shore.

189. Especially in smaller ports such as local ports, fishing ports and marinas, the volumes of ship-generated wastes delivered to PRF might not be sufficient enough in order to develop a cost-efficient waste management. Still, when combining the ship-generated wastes with similar wastes generated by land-based industrial activities and municipal wastes, volumes might be sufficient enough in order to establish not only an economically viable business opportunity, but also facilitate environmentally sound waste management.

7.4 Port waste management plans

190. Although the development of port waste management plans (PWMP) falls outside the scope of MARPOL, it is generally acknowledged that an up-to-date PWMP, when established in consultation with all relevant parties, will not only improve the adequacy of PRF but also provide a detailed coordinated compendium of all processes related to the delivery of ship-generated wastes and residues.

191. A PWMP should preferably be a public and legally binding document, that not only can be used as a compilation of all applicable relevant requirements related to the management of ship-generated wastes, but also as a guidance manual for port users and other stakeholders. The PWMP should – when applicable – also consider the requirements and goals of the national waste

management strategy, translating the goals regarding the environmental sound management of waste into practical processes and procedures, and the port waste strategy.

192. The PWMP should be developed by the port authority, in close consultation with all port users such as ship owners, ship agents, waste collectors, possible port-based disposal facilities, and relevant competent authorities such as port State control, environmental agencies and maritime authorities. However, in some cases it might be useful that also independently managed areas in the ports, such as fishing ports, oil terminals and chemical plants, draft their own plans and are responsible for managing their services on reception of wastes and residues from ships as part of their operations.

193. When drafting a PWMP, and specifically when assessing the adequacy of existing PRF and analysing the need for additional reception capacity, it is important that this assessment is done based on reliable and detailed information on types and quantities of ship-generated wastes. The plan should also consider the characteristics of the port, and of its users.

194. The PWMP should include all relevant information on, but not limited to, the following key elements:

- An overview of the relevant applicable legislation on waste management, including the responsibilities under national waste laws of the relevant parties involved in the port;
- A list of existing port reception facilities, including location, type (fixed/mobile), capacity and the types of wastes they collect;
- An assessment of the need for additional port reception facilities, taking into account possible changes in traffic in the upcoming years;
- An overview of type and quantities of ship-generated waste received and handled;
- A description of the procedures for the reception and collection of ship-generated waste;
- A description of the charging system (when applicable);
- Procedures for how to report and take action on alleged inadequacies of reception facilities;
- Procedures on notification and reporting of ship-generated waste;
- Procedures for consultations with local stakeholders; and
- Enforcement measures.

195. Ports within a region may also choose to develop a common PWMP and to apply a similar waste collection and cost recovery system. If the reception facilities also serve more than one port, care should be taken that these mobile port reception facilities may be able to serve the ships without undue delay in all ports involved.

196. It should be noted that Directive (EU) 2019/XX makes the development of the PWMP mandatory and contains in its Annex 1 the detailed requirements for the development and content of these PWMP. According to Directive (EU) 2019/XX these PWMP can, when required for reasons of efficiency, be developed in a regional context with the appropriate involvement of each port, provided that the need for, and availability of, reception facilities are specified for each individual port. EU Member States must evaluate and approve the waste reception and handling plan, monitor its implementation and ensure its re-approval at least every five years and after significant changes in the operation of the port.

197. It should be noted that, according to Article 5.2 of Directive (EU) 2019/XX, EU ports are required to communicate information from the PWMP related to the availability of PRF to all port users, being:

- Location of PRF applicable to each berth and, where relevant, their opening hours;
- List of waste from ships normally managed by the port;
- List of contact points, the PRF operators and the services offered;
- Description of procedures for delivery of the waste;
- Description of the cost recovery system, including waste management schemes and funds as referred to in Annex 4, where applicable.

198. This can be done through flyers or publication on the port's website. For EU ports this information is also to be reported electronically into SafeSeaNet, and kept up-to-date.

7.5 Consultation of stakeholders

199. The large variety of issues that need to be addressed in order to establish an environmentally sound management of ship-generated wastes, the many different stakeholders from both the private and public sectors that are involved at different levels and the diverse technological, financial and legal input that needs to be provided, all require a thorough coordination process at different levels and at varying moments in time. Good alignment of port and ship requirements is important in order to enable a fast and a safe disposal procedure for ship-generated wastes, and to avoid undue delay.

200. This will also help in determining the appropriate levels of service for each waste stream, actual and potential, and identify ways to improve service and reduce disruptions. Furthermore, consultation with governing bodies and local authorities is required to ensure that compliance with local and national legislation or regulations is achieved and maintained.

201. Also during the development of a proper PWMP the consultation of stakeholders is an essential element. When determining the appropriate level of service for the management of ship-generated wastes, it is important to thoroughly consult all port users to assess their needs with respect to the provision of PRF. Extensive consultation will also identify ways to improve practices.

202. Article 5.1 of Directive (EU) 2019/XX contains specific requirements related to the organization of the different consultations related to the Waste Reception and Handling Plan (WRHP), and the stakeholders that should take part in it: EU Member States are to ensure that an appropriate WRHP has been implemented for each port following ongoing consultations with the relevant parties, including in particular with port users or their representatives, and, where appropriate, local competent authorities, PRF operators, organizations implementing extended producer responsibility obligations and representatives of civil society. Such consultations are to be held both during the initial drafting of the WRHP and after its adoption, in particular when significant changes have taken place in the operations of the port.

203. The methodology for consultation can differ and may depend on the size and type of the port, the way local stakeholders are organized through associations, and take into account the port's institutional framework (private or public port). Consultation can be done in the form of informative meetings, using workshops, or through an official consultation procedure where the draft plan is made public and every interested party can submit their comments within a certain timeframe.

204. To guard that the stakeholders' consultation process is ensured and transparent, it can be useful that the procedures for public consultation of PWMP are implemented in national and/or local environmental and port regulations.

8 GUIDANCE RELATED TO THE PROVISION OF PRF IN THE MEDITERRANEAN

8.1 Impact of the Mediterranean Sea being a Special Area for MARPOL Annex I and MARPOL Annex V

205. As already indicated in section 2.2.2 of the present document, the IMO has identified and designated several seas as so-called “Special Areas”. When a particular sea area is designated as a Special Area for one or more Annexes of MARPOL, the discharge requirements for ships in that area are more stringent than outside Special Areas. Ships sailing in those areas might not meet these discharge criteria, and are therefore required to deliver their waste to a PRF.

206. This also means that the governments of countries bordering a Special Area have a special responsibility to ensure the provision of adequate reception facilities in all ports that receive ship-generated wastes and cargo residues. The Special Area status cannot come into effect until there are adequate PRF in ports bordering that area. States and port authorities should therefore take into consideration the importance of compliance in these special areas.

207. It should be noted that the Mediterranean Sea is designated as a special area under MARPOL Annexes I (oily residues) and V. The discharge of certain wash waters and cargo residues contained in MARPOL Annex V is subject to the controls specified within Regulations 4 and 6 of that Annex. In essence the discharge of MARPOL Annex V cargo residues contained in wash water is governed by the following criteria:

- a) No discharge of cargo residues should occur less than 12 nautical miles from the nearest land, or the nearest ice shelf.
- b) No discharge of cargo residues should occur within the six MARPOL defined “Special Areas” (the Mediterranean, the “Gulfs” area, the wider Caribbean including the Gulf of Mexico, the Baltic Sea, the North Sea and the Antarctic). The discharge of cargo residues contained in wash water is only permitted if both the destination and departure ports are within the Special Area and the ship will not transit outside the Special Area between these ports, and only provided that no adequate PRF exist. In such instances discharge of non-recoverable, non-HME (harmful to the marine environment) cargo residues in hold wash water should take place as far out to sea as is practicable and, in any event, no less than 12 nautical miles from the nearest land or the nearest ice shelf.
- c) No discharge of any cargo residues specified as HME. Hold wash water should be discharged to a suitable reception facility.

208. Specific attention should be given to the impact of the revised MARPOL Annex V on the provision of PRF for HME-cargo residues: as mentioned in point b) of the above paragraph, it is still possible to legally discharge HME-cargo residues, even in special areas such as the Mediterranean Sea, when there are no PRF in both the destination and departure ports and the ship will not transit outside the Special Area between these ports. In order to achieve maximum protection of the marine environment, it is therefore important that all countries bordering the Mediterranean Sea ensure the provision of adequate PRF for the collection of these HME-cargo residues in their ports.

8.2 Who is to provide the PRF?

209. Both in MARPOL and Directive (EU) 2019/XX the requirement of ensuring the provision of adequate PRF is with the MARPOL-Party or EU Member State. This leaves the Party or EU Member State with a certain degree of flexibility in order to decide which body is responsible for providing the PRF, from a legal as well as a practical perspective. As both the MARPOL and Directive (EU) 2019/XX are to be implemented in national law, there is a possibility to add additional legal requirements, and/or clarify certain issues more in detail.

210. In EU ports the legal responsibility to provide the provision of PRF is with the EU Member State, but many have delegated it to sub-national or local authorities. For major ports this can be the port authority, although through the approval of the port waste management plans (in which the provision of PRF should be clearly addressed) also the relevant ministries (e.g. the competent environmental departments) are still involved. For smaller ports this can be the municipality or port administrator.

211. In several cases the port authorities do not provide the PRF themselves, but they prefer to appoint a private waste contractor. Especially in ports where there is a substantial volume of ship-generated waste being delivered, this often provides a business case for private operations and port authorities will not have to invest in PRF infrastructure themselves. In smaller ports such as small fishing ports and marinas, the PRF can be provided by implementing the reception of the ship-generated waste in the municipal waste collection system.

8.3 Key elements regarding the provision of PRF

212. As already mentioned in section 3 of the present document, ports can differ substantially regarding size, type and amount of traffic, availability of industrial clusters, geographical location (incl. the impact of IMO Special Areas), types of cargo being handled in the port, existing capacity for waste collection, storage and treatment, etc. As a consequence, also the requirements regarding the provision of adequate PRF can differ.

213. Still, there are several key elements that can be identified when considering the provision of PRF. To summarize, the following considerations are important when selecting a PRF, either as a fixed or mobile PRF and/or pre-treatment or temporary storage site:

- Regarding the general operation of the PRF:
 - Other port operations, such as cargo loading/unloading or bunkering, should not be hindered;
 - The risks for ship-generated wastes and cargo residues eventually to end up in the water should be minimized;
 - Necessary equipment to clean or prevent spills from contaminating the whole port area should be easily available at the facility;
 - Fixed PRF or fixed places where ship-generated waste can be delivered should be built at strategically chosen places, that are easily accessible both for the ships and for port personnel and vehicles;
 - The PRF sites should have sufficient lighting, to allow for and encourage ship-generated waste collection 24 hours a day;
 - Reception areas need to be clearly marked and easily located, especially when waste streams are to be collected in a segregated way;
 - Reception areas must be secure to prevent abuse or misuse and to ensure the safety of seafarers and port personnel using them;
 - The impact of the collection and/or temporary storage of the ship-generated waste on the surrounding community should be minimized, especially with respect to noise, odour and outer appearance;
 - The facilities must comply with national, local and other applicable legislation on the collection and processing of ship-generated wastes and cargo residues;

- Regarding ensuring adequacy:
 - The operational needs of the users of the port are to be considered;
 - Facilities should be capable of receiving the types and quantities of wastes from ships normally visiting the port;
 - Adequate facilities are those which:
 - mariners use;
 - fully meet the need of ships regularly using them;
 - do not provide mariners with a disincentive to use them;
 - contribute to the improvement of the marine environment
 - Allow for the ultimate disposal of ship-generated wastes and residues to take place in an environmentally appropriate way.

8.4 Guidance related to the provision of PRF in merchant seaports, cruise/passenger ports, fishing ports and marinas

214. In this section some additional guidance is given regarding the provision of PRF in specific types of ports, including examples of PRF that have turned out to be very efficient. Distinction is being made between merchant seaports, passenger/cruise ports, fishing ports and marinas.

8.4.1 Merchant seaports

215. Due to the generally larger volumes of ship-generated wastes and cargo residues (either contained in wash waters or not) delivered, in merchant seaports in general a larger variety of PRF can be provided and operated. Both mobile (trucks as well as barges) and fixed facilities can be cost efficient.

216. Still, when providing fixed facilities, the choice of location is to be well chosen as ships might need to shift berths which is not only a time-consuming and expensive operation, but this may also lead to undue delay or ships not being keen to use the PRF. Appropriate sites for fixed garbage receptacles therefore include wharves adjacent to moorages, access points to docks, fuel stations and boat launching ramps.

217. For reception of oily residues and other liquid ship-generated wastes such as sewage, the construction of pipelines to each berth might be a feasible option, especially if the reception is combined with a tank cleaning facility, e.g. at an oil terminal.

218. If receptacles are placed at a designated site for the collection of ship-generated wastes and cargo residues, they can be placed in a compound or environmental shelter, which is used to physically and visually shield the containers, to discourage use by non-port users, and to prevent the ship-generated wastes from blowing away.



Collecting barge in port of Montréal (Canada)
(Photo credits: port de Montréal)



Collecting barge in port of Rotterdam (NL)
(Photo credits: port of Rotterdam)

219. In order to provide maximum flexibility for the ship to deliver wastes while avoiding undue delay, in major ports the availability of reception facilities on a 24/7 basis might be considered.



Mobile collection in port of Piraeus (Greece)
(Photo credits: Antipollution)



Fixed PRF in port of Antwerp (Belgium)
(Photo credits: MAC²)

8.4.2 Passenger/cruise ports

220. In passenger/cruise ports in general the same type of PRF can be applied as in merchant seaports, although seasonal traffic and increased tourism can have a substantial impact on the volumes of ship-generated waste delivered.



Container for garbage from a cruise ship
(Photo credits: Peter Van den dries)



Tank truck collecting liquid waste from a cruise ship
(Photo credits: Peter Van den dries)

221. In passenger ports, where the same vessels often call on a frequent and regular basis, specific facilities can be provided in order to facilitate the swift collection of liquid wastes, such as sewage, using standardized pipe connections.



Sewage collection in Trelleborg port (Sweden)
(Photo credits: Clean Baltic Sea Shipping)



Sewage collection in port of Helsinki (Finland)
(Photo credits: Clean Baltic Sea Shipping)

8.4.3 Fishing ports

222. In smaller ports such as fishing ports and marinas, although the use of mobile collection facilities can be efficient, limited types of fixed reception facilities can be applied, in cases when:

- Only limited amounts of ship-generated wastes will be delivered in those ports; and
- Although they can be specific (e.g. fishing nets, synthetic fishing gear, etc.), also limited types of ship-generated waste (mainly household wastes and garbage) will be delivered.

223. Due to the limited types of ship-generated wastes that are being delivered by fishing vessels, in general fishing ports can focus on the collection of MARPOL Annex I (bilge water and waste oil) and MARPOL Annex V (garbage, including fishing gear). As a consequence, the collection of waste from fishing vessels can be organized relatively easily using tanker trucks (for the bilge water) and containers and skips (for the garbage and fishing gear).



Receptacles for garbage in Tromsø (Norway)
(Photo credits: Peter Van den dries)



Receptacles for garbage in Sicily (Italy)
(Photo credits: Peter Van den dries)



Receptacles for garbage in Ostend (Belgium)
(Photo credits: Peter Van den dries)



Receptacles for garbage in a Dutch port
(Photo credits: unknown)

8.4.4 Marinas

224. In marinas it is not always necessary to provide large and differentiated reception facilities. By far the largest volume of ship-generated waste to be delivered to a PRF in a marina will be garbage, mainly of a domestic type. As in these ports the main type of ship-generated waste delivered will be garbage and household waste, general receptacles designed for the collection of the most common fractions of household waste will be sufficient. Plastic, paper and cardboard wrapping materials, steel, tin and aluminum food and drink cans, glass and plastic bottles, etc. will all need to be accepted by a marina's PRF.



Receptacle for oil in Marseille marina (France)
(Photo credits: Peter Van den dries)



Combined reception facility for bilge water and garbage in a marina in Belgium
(Photo credits: Peter Van den dries)

225. Depending on the size of the port (e.g. facilitating large motor yachts) and the number and type of the ships calling, it might be useful to equip the facility with a pumping station for the collection of bilge water (oily water mixture, mainly consisting of water) and/or waste from chemical toilets.



Receptacles for garbage in Nieuwpoort marina (Belgium)
(Photo credits: Peter Van den dries)



Receptacles for garbage in Marina di Ragusa (Italy)
(Photo credits: Peter Van den dries)