EN 2025

06

Special report

EU actions tackling sea pollution by ships

Not yet out of troubled waters

EUROPEAN
COURT
OF AUDITORS

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I A healthy marine ecosystem is crucial for biodiversity, fish stocks and absorbing CO_2 emissions. Pollution at sea caused by human activities remains a major problem for marine waters of the European Union (EU). The EU's 8th environmental action programme, which entered into force in 2022, established a zero pollution ambition for water by 2030.

II This report focuses on ship-source pollution, which is one of the key sources contributing to contaminating seawater. At a global level, the United Nations, through the International Maritime Organization, have developed conventions for the safety of ships and the prevention of pollution. The EU has adopted rules pursuing the same objectives. It funded projects aiming at tackling ship-source pollution with over €216 million during 2014-2023, mostly on improving port waste reception facilities, but also on the collection of fishing nets and on research.

III We carried out this audit because of public and stakeholders' interest in pollution of EU seas, with the aim of contributing to the anticipated revision of the Marine Strategy Framework Directive and to improvements in EU maritime pollution checks and data. We examined whether EU actions tackling ship-source pollution were well designed, implemented, enforced and monitored. Our audit covered the period from January 2014 to September 2024.

IV Overall, we conclude that the EU rules addressing ship-source pollution were improving, but that implementation and enforcement had weaknesses and that data was insufficient to measure results.

V We found that EU legislation incorporates international rules and the Commission is acting to fill gaps on pollution risks. The European Maritime Safety Agency provided member states with useful tools to tackle ship-source pollution, but member states did not use them to their full potential. Our analysis indicates as well that the implementation and enforcement of EU rules on control and prevention of pollution from ships still have shortcomings. Member states often failed to meet their mandatory target rates for ship inspections. Taken together, these weaknesses hinder the effectiveness of the actions undertaken to address pollution.

VI Neither the Commission nor the member states we visited could fully identify the EU funds being used to tackle seawater pollution. They did not have an overview of the results achieved or of how they could be used on a larger scale. At the same time, our audit revealed that the EU marine strategy framework has limitations in monitoring ship-source pollution, especially in linking marine contamination and litter to its source.

VII We recommend that the Commission should:

- improve the monitoring and effectiveness of pollution alert tools;
- strengthen the monitoring of member states' mandatory checks;
- follow up scaling-up issues in EU-funded projects;
- enhance reporting and monitoring on the environmental status of marine waters.

Introduction

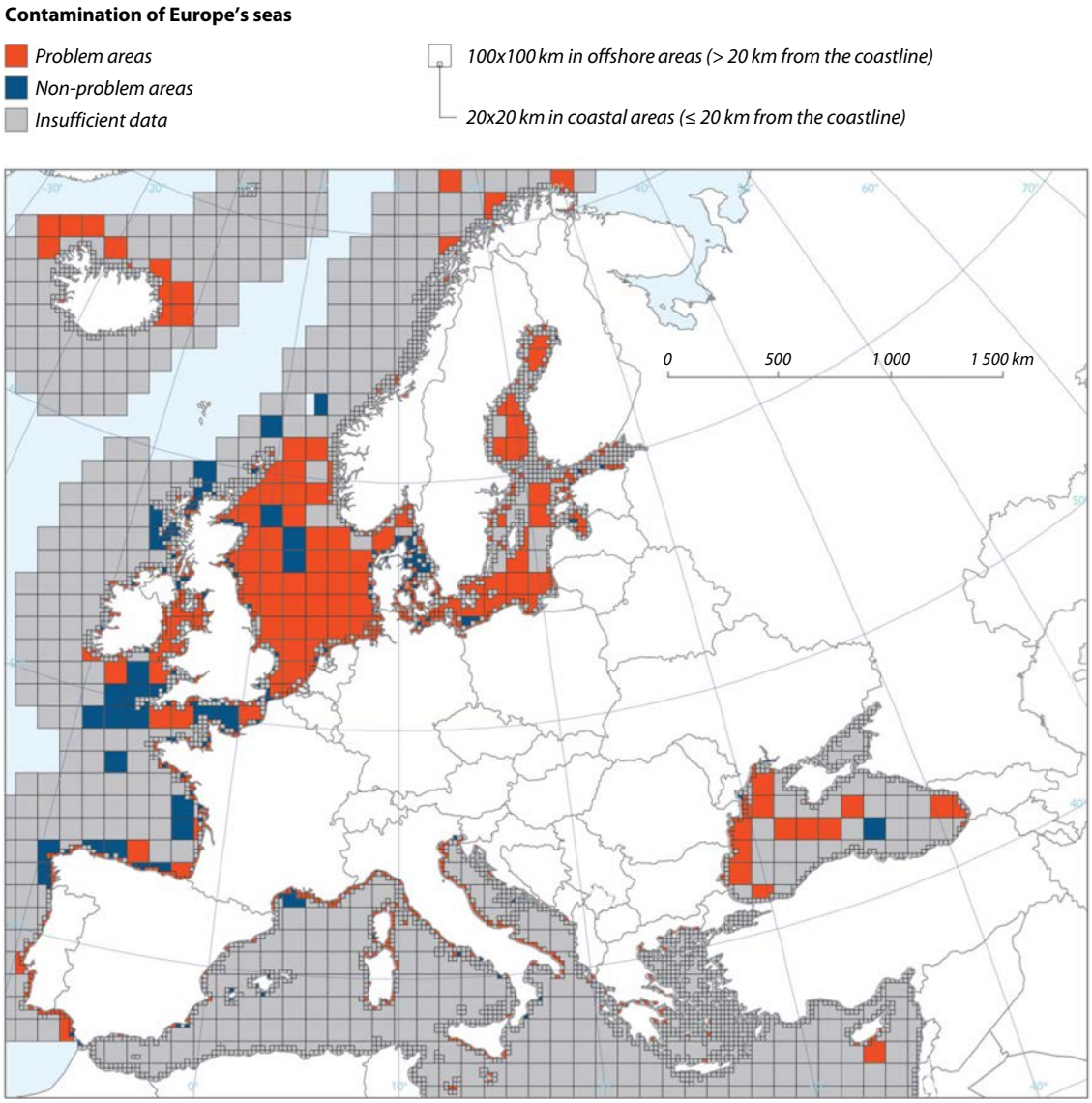
Ship-source pollution of EU seas

01 A healthy marine ecosystem is crucial for biodiversity, fish stocks and absorbing CO_2 emissions. Pollution at sea caused by human activity remains a major problem for EU marine waters.

02 In 2008, the EU adopted the Marine Strategy Framework Directive (MSFD) with the aim of achieving or maintaining "good environmental status" of EU seas by 2020. The EU's 8th environmental action programme, which entered into force in 2022, established a zero pollution ambition for water by 2030. At international level, the EU is committed to United Nations (UN) Sustainable Development Goal 14.1 that aims to prevent and significantly reduce marine pollution of all kinds by 2025.

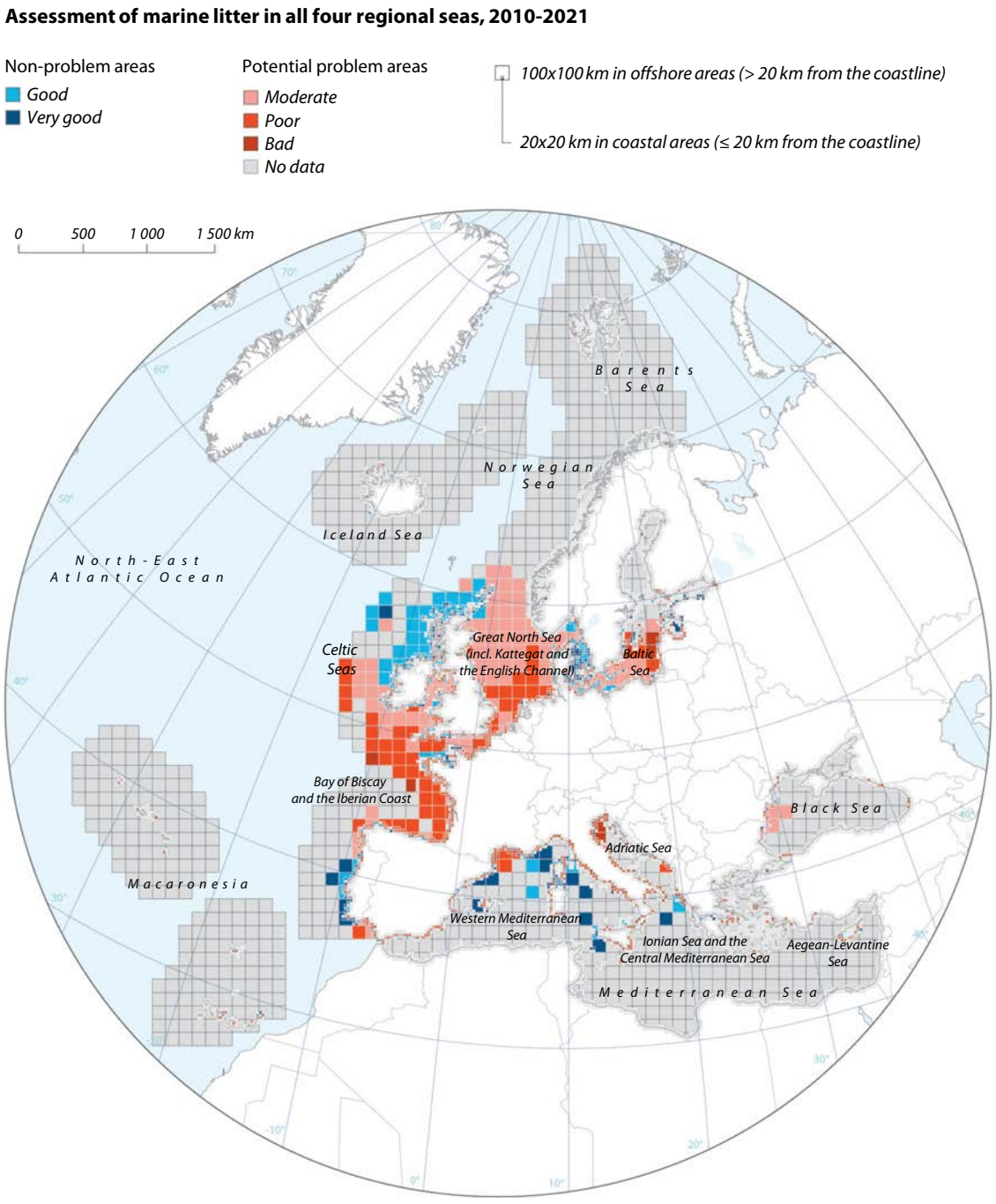
03 The EU monitors seawater quality by assessing the condition of the marine environment using eleven indicators (i.e. "descriptors" under the MSFD). In a report published in 2019, the European Environment Agency (EEA) found that 80 % of EU sea waters were "problem areas" in terms of contaminants, see ***Figure 1***, while around 75 % were polluted by marine litter, as shown in ***Figure 2***. We have published a number of reports on pollution originating from land (see ***Annex I***). This report focuses on ship-source pollution.

Figure 1 – Contamination of Europe's seas



© EEA, Contamination of Europe's seas, published in 2019 with data mainly from 2008 to 2017, but also using older data, accessed 21 November 2024. (Map modified by the ECA).

Figure 2 – Marine litter in Europe



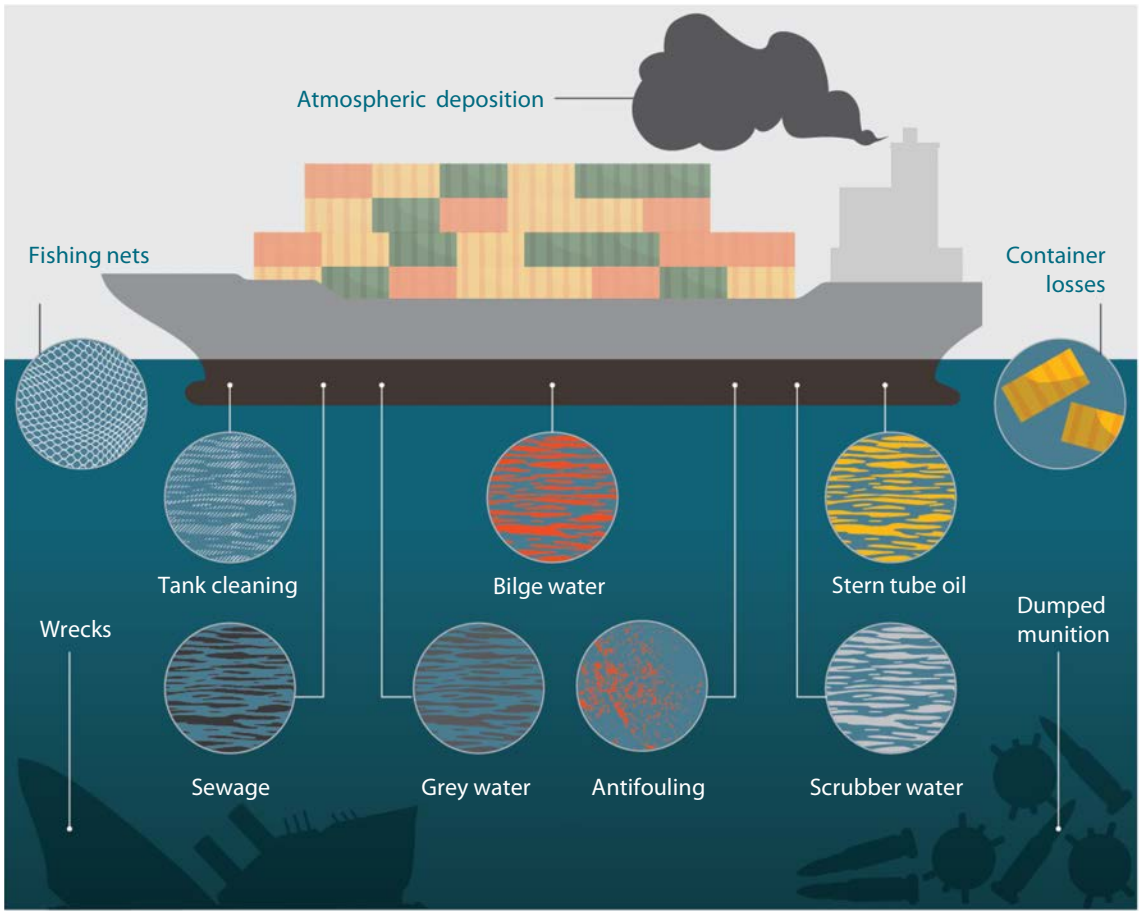
© EEA, Assessment of marine litter in all four regional seas, 2010-2021, published in 2023, accessed 21 November 2024. (Map modified by the ECA).

04 Ships such as cargo vessels, cruise ships, passenger ferries, fishing vessels, recreational craft, and others are noteworthy sources of marine pollution. As shown in ***Figure 3***, ships contribute to marine litter, including plastic waste and abandoned, lost or discarded fishing gear. They may also pollute seas with contaminants like oil,

organic compounds, heavy metals and hazardous substances originating from sources such as:

- accidental spills, or operational discharges (e.g. from bilges, stern tubes and tank cleaning);
- discharge of sewage and "grey" water (from sinks, showers and washing machines);
- leak of toxic compounds from anti-fouling paints (ship hull coatings to prevent the accumulation of marine organisms);
- release of harmful substances from ship dismantling, shipping container losses, shipwrecks, and submerged munitions;
- discharge of polluted water and residues from "scrubbers" (exhaust gas cleaning systems).

Figure 3 – Subsystems on ships that cause marine pollution



Source: ECA.

05 The EU and its member states, 22 of which have coastlines, address ship-source pollution in several ways:

- adhering to international rules, and adopting EU and national legislation;
- monitoring and reporting illegal discharges;
- inspecting ships to ensure that they comply with regulations, and imposing penalties for non-compliance;
- EU-funded projects aiming to improve seawater quality;
- assessing the environmental status of marine waters and reporting on the results regularly.

Legal framework

06 The United Nations Convention on the Law of the Sea sets out the legal framework for all activities in the seas and oceans. This includes provisions to prevent, reduce, and control pollution of the marine environment from any source, including vessels.

07 The International Maritime Organization (IMO) is the UN agency for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships. In this role, the IMO developed its International Convention for the Prevention of Pollution from Ships (MARPOL). In separate annexes, the MARPOL Convention provides rules to determine the type and quantity of pollutants a ship is allowed to dispose of at sea, and sets out what constitutes an illegal discharge. Other IMO conventions tackle specific aspects of ship-source pollution, such as the dumping of waste at sea (including munitions), anti-fouling paints, shipwrecks, and ship recycling (see ***Annex II***).

08 EU legislation aims to protect the marine environment from ship-source pollution. It includes several directives and regulations (see ***Annex III***). The three main directives are:

- Directive 2005/35/EC on ship-source pollution (SSP), which requires member states to define enforcement measures and penalties against illegal discharges of pollutants;

- Directive 2009/16/EC on port state control (PSC), which sets out common criteria for control of ships by the port state and lays down harmonised procedures on inspection and detention;

- Directive (EU) 2019/883 on port reception facilities (PRF), which requires member states to establish port reception facilities for the different types of waste generated by ships, ensure ships are subject to inspections, and fix the penalties where there are infringements.

09 In June 2023, the Commission presented the maritime safety package, including legislative proposals to amend the SSP and PSC Directives. In November 2024, the Council adopted the two amended directives.

Roles and responsibilities

10 The European Commission is responsible for developing the EU legal framework, monitoring its implementation at national level, supervising EU-funded projects directly or under shared management with member states, and promoting the collection of harmonised data on marine pollution. Several Commission directorates-general are involved with policies and measures related to ship-source pollution, including the Directorate-General for Environment, the Directorate-General for Mobility and Transport, the Directorate-General for Maritime Affairs and Fisheries, and the Directorate-General for European Civil Protection and Humanitarian Aid Operations.

11 Three EU agencies also contribute to fighting ship-source pollution.

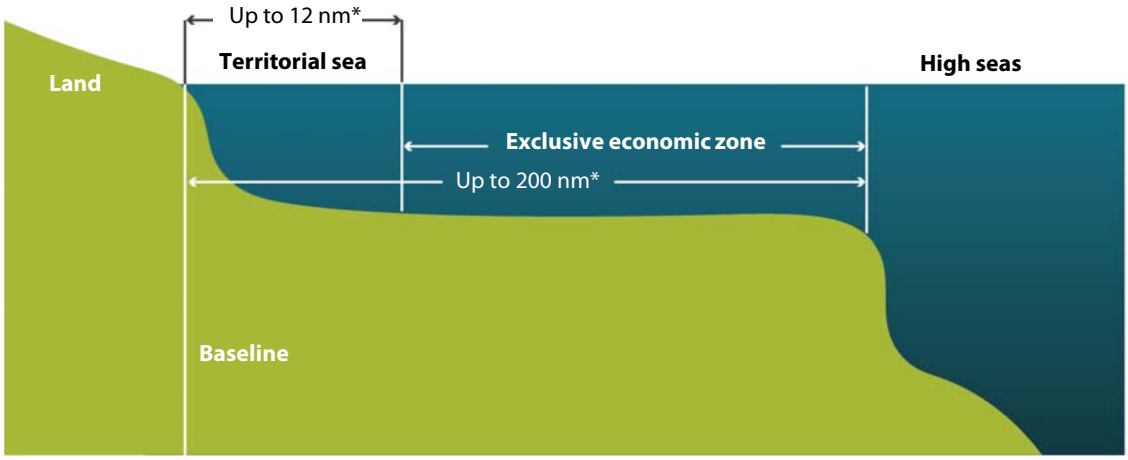
- The European Maritime Safety Agency assists the Commission in the implementation of EU legislation on maritime safety and on the prevention of ship-source pollution. It also provides technical and operational support to the member states, such as satellite-based surveillance systems (CleanSeaNet), to identify possible ship-source pollution.

- The European Fisheries Control Agency coordinates certain member states' control and inspection of fishing vessels, including obligations for masters to retrieve lost fishing gear.

- The European Environment Agency collects marine data and presents thematic assessments on the pollution of EU seas.

12 Member states are responsible for the implementation of EU legislation and IMO conventions to which they are contracting parties. They must transpose EU directives, report to the Commission on their implementation and enforcement, and assess the results achieved. Member states exercise their jurisdiction in their territorial sea and exclusive economic zone, as shown in ***Figure 4***.

Figure 4 – Maritime zones



* *nautical mile*

Source: ECA.

13 EU member states and non-EU countries have established multilateral cooperation mechanisms for tackling ship-source pollution. These include regional sea conventions and multilateral agreements, and all are shown in ***Annex IV***. The EU is a contracting party to most of those conventions and agreements.

Audit scope and approach

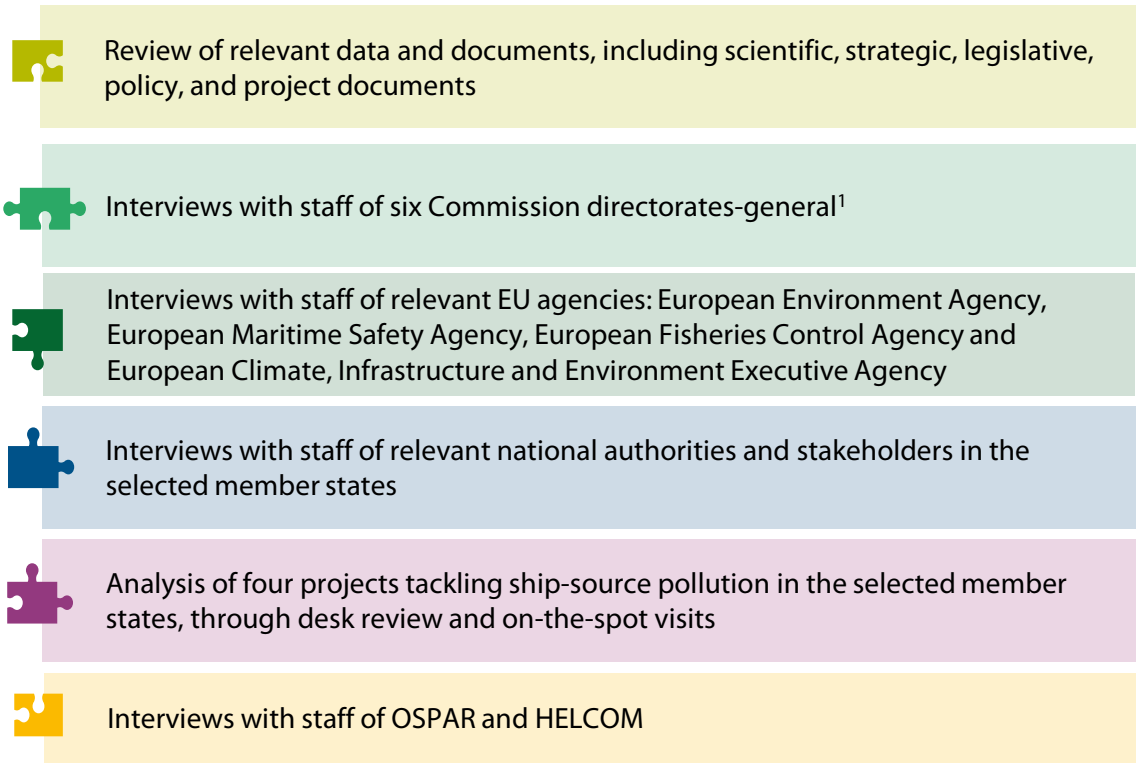
14 Our audit objective was to assess whether EU actions tackling ship-source pollution were well designed, implemented, enforced and monitored. We examined whether:

- EU legislation incorporated IMO rules and the Commission was acting to fill remaining gaps on pollution risks;
- the Commission and member states implemented and enforced effective policies and measures;
- the Commission and member states monitored the results achieved.

15 We carried out this audit because of public and stakeholders' interest in pollution of EU seas, with the aim of contributing to the anticipated revision of the Marine Strategy Framework Directive and to improvements in EU maritime pollution checks and data.

16 We reviewed rules, policies, funding, data and reporting from the Commission and the member states on ship-source pollution. We also examined four projects tackling ship-source pollution (see ***Figure 5***). Our audit covered the period from January 2014 to September 2024.

Figure 5 – Our audit approach: work carried out



[1] European Civil Protection and Humanitarian Aid Operations, Environment, Joint Research Centre, Maritime Affairs and Fisheries, Mobility and Transport, Regional and Urban Policy.

Source: ECA.

17 We decided to visit France and Germany so that we could cover:

- two marine subregions (Greater North Sea and Baltic Sea) that include the Northern Range, which is the second busiest shipping lane worldwide and a problematic area relating to the degree of contamination, marine litter and container losses;
- all relevant types of vessel;
- two of the busiest European ports by the gross weight of goods and the number of containers handled (Hamburg and Le Havre); and
- two regional sea conventions (the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) and the Baltic Marine Environment Protection Commission (HELCOM)).

Observations

EU rules addressing ship-source pollution are improving

18 We examined the current EU legal framework on maritime safety to assess whether it included coherent rules to help tackle ship-source pollution. We assessed whether the Commission:

- ensured that the EU legal framework incorporated relevant IMO rules;
- was acting to fill remaining gaps on ship-source pollution risks.

EU legislation incorporates IMO rules

19 IMO conventions outline the international rules regarding ship-source marine pollution. All EU member states are IMO members and parties to MARPOL (paragraph ***07***), but some of them have not yet ratified all relevant IMO conventions (see ***Annex V***).

20 EU legislation incorporates IMO rules, as shown in ***Figure 6***. This contributes to the proper enforcement of those rules, regardless of whether or not member states are parties to the IMO conventions.

Figure 6 – EU legislation incorporates IMO rules

IMO Rules Year of adoption / Year of entry into force Ship-source pollution covered	EU legislation in force	Changes introduced in 2024 by the maritime safety package
MARPOL – Annex I 1973 / 1983 Oil	PRF/PSC/SSP Directives	SSP Directive
MARPOL – Annex II 1973 / 1987 Noxious liquid substances (HNS)	PRF/PSC/SSP Directives	SSP Directive
MARPOL – Annex V 1973 / 1988 Garbage, including fishing gears	PRF/PSC Directives	SSP Directive
MARPOL – Annex III 1973 / 1992 Harmful substances	PSC Directive	SSP Directive
MARPOL – Annex IV 1973 / 2003 Sewage	PRF/PSC Directives	SSP Directive
Safety of Life at Sea Convention 1974 / 1980 Accidents	Directives 2002/59 and 2009/18	✕
MARPOL – Annex VI 1997 / 2005 Air pollution	Sulphur and PRF/PSC Directives	SSP Directive
Anti-fouling Systems for Ships Convention 2001 / 2008 Organotin compounds	PSC Directive/ Regulation (EC) No 782/2003	✕
Nairobi Convention 2007 / 2015 Wrecks, including containers	✕	PSC Directive
Hong Kong Convention 2009 / 2025 Recycling of ships	Regulation (EU) No 1257/2013	PSC Directive

Source: ECA.

21 The purpose of the two amended SSP and PSC Directives (paragraph *09*) is to modernise the EU rules on maritime safety and prevent seawater pollution from ships (see *Box 1*).

Box 1

New amendments of ship-source pollution and port state control directives

The amended ship-source pollution Directive further aligns EU rules with international regulations. It extends the scope of EU rules to cover a wider range of polluting substances, such as harmful substances in packaged form, sewage and garbage, plus discharge water and certain residues from exhaust gas cleaning systems ("scrubbers").

That amendment also sets out minimum criteria for applying administrative penalties, such as the severity of the offence, the impact on the environment or the financial strength of the entity responsible.

The amendment of the port state control Directive extends its scope to cover additional international rules, such as the Nairobi Convention on the removal of wrecks and the Hong Kong Convention on the recycling of ships.

The Commission is filling gaps on ship-source pollution risks

22 We reviewed:

- the EU legislative framework to check whether it covered the main sources of pollution from ships;
- the Commission's actions to fill remaining gaps for related risks.

This section presents our findings on ship dismantling, lost containers, shipwrecks, munitions, and exhaust gas cleaning systems.

Ship dismantling and recycling

23 At international level, the 2009 Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships will enter into force in June 2025. It covers the operation of ship recycling facilities and the establishment of an enforcement mechanism for ship recycling, incorporating both certification and reporting requirements. As at 30 September 2024, the Convention had been ratified by 10 coastal and 1 non-coastal EU member states.

24 At EU level, Regulation (EU) No 1257/2013 on ship recycling applies to EU-flagged ships and already implements the Hong Kong Convention, although with stricter

requirements. From 31 December 2018, EU-flagged commercial vessels from 500 gross tonnage must be recycled in ship recycling facilities approved by the EU.

25 However, shipowners can circumvent this obligation by swapping their EU flag for a non-EU flag before dismantling their ship. In 2022, 14.2 % of the world fleet were flying EU flags, but only 6.1 % of end-of-life ships were under EU flags. In recent years, certain German shipowners have been under investigation for suspected infringements against ship-recycling obligations.

26 In 2017, the Commission published a report "on the feasibility of a financial instrument that would facilitate safe and sound ship recycling". It concluded that further analysis was needed. The Commission is reassessing that option and has also launched an evaluation of the ship recycling regulation which it plans to complete by the end of 2024.

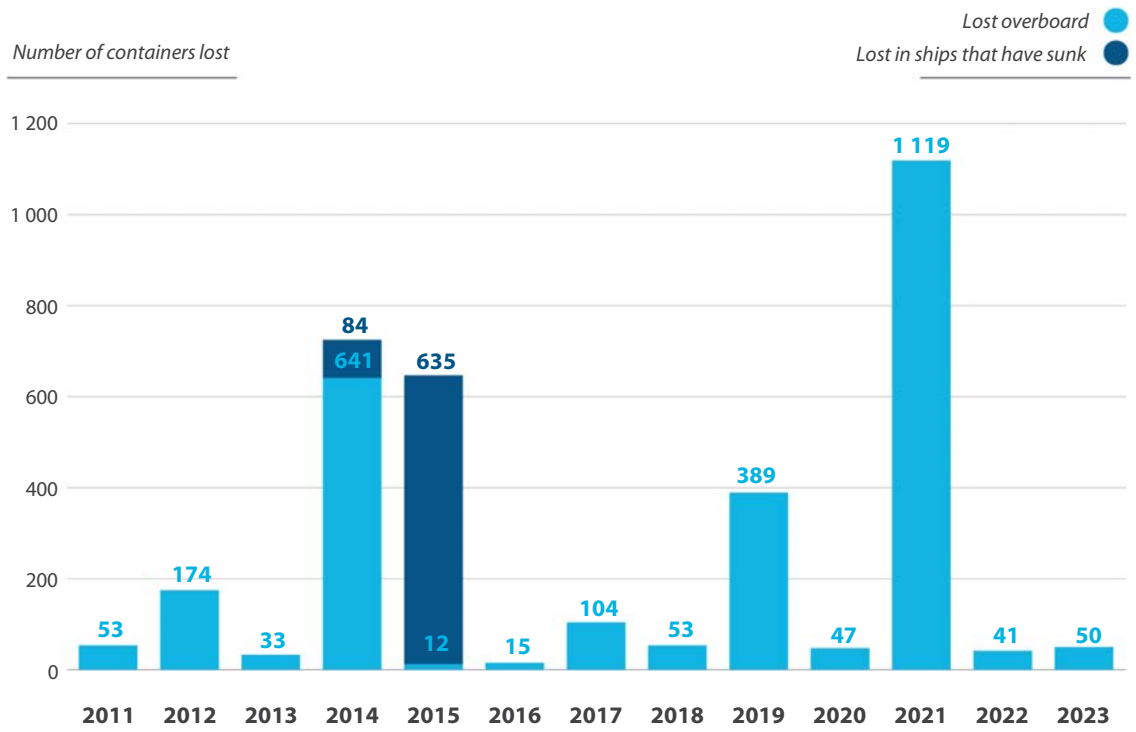
Containers lost at sea

27 Shipping containers may be lost at sea during transport, as a result of inadequate storage, accidents or adverse weather conditions. Once lost, they may be a source of pollution, for example, if they release hazardous substances or plastic pellets into the sea. Lost containers may also cause other accidents resulting in further seawater pollution.

28 At international level, the 1973 MARPOL Convention and the 1974 International Convention for the Safety of Life at Sea require the master of a ship to report to the nearest coastal state the loss overboard of containers transporting dangerous goods or substances. In June 2024, the IMO adopted amendments to its Safety of Life at Sea regulations and will require mandatory reporting of all containers lost at sea from January 2026. The IMO is also currently working on the prevention of container losses.

29 At EU level, Directive 2002/59/EC requires member states to ensure that the master of a ship immediately reports lost containers to the relevant coastal state. In addition, according to Directive 2009/18/EC, member states must record in the European Marine Casualty Information Platform containers lost at sea in their waters or from ships flying their flag. There is, however, no guarantee that all losses are declared. Data on this platform shows that the number of containers lost in EU seas (including those on board ships that have sunk) varies significantly from year to year, as shown in ***Figure 7***.

Figure 7 – Number of containers lost at sea in the EU, 2011-2023



Source: ECA, based on Commission data.

30 Only a few of the lost containers are recovered. The French authorities estimated that out of the 1 200 containers lost in the Atlantic and Channel/North Sea areas between 2003 and 2014, only 49 were recovered, which represents approximately 4 %.

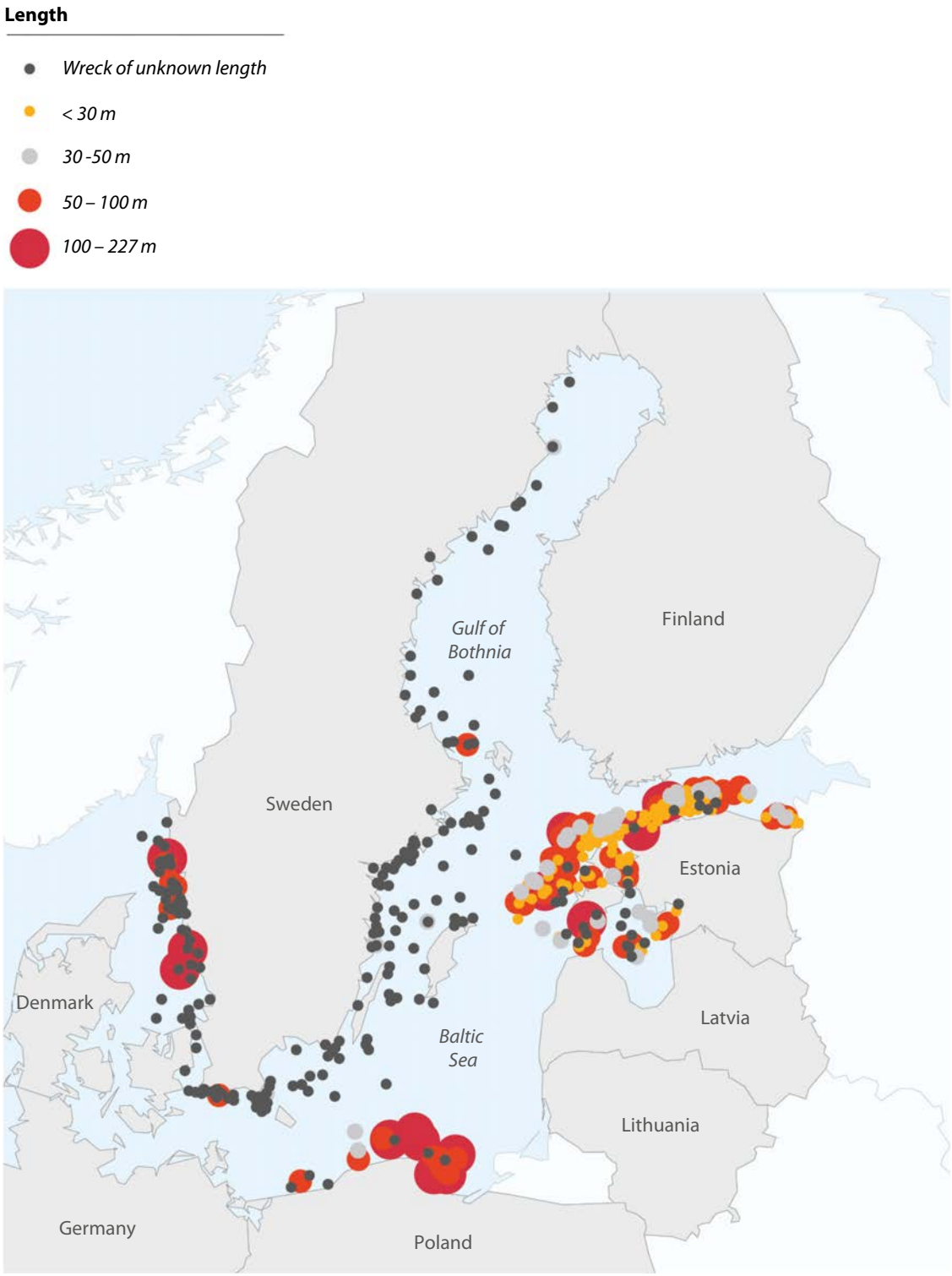
31 According to the Commission's impact assessment on microplastic pollution, plastic pellets lost at sea or on land constitute the third largest source of microplastics unintentionally released into the EU environment. In 2019 and 2020, two shipments of plastic pellets were lost and resulted in, respectively, 550 million pellets (11 tonnes) and 650 million pellets (13 tonnes) being released into the North Sea. In March 2024, the IMO Maritime Safety Committee approved recommendations for the carriage of plastic pellets by sea. A Commission proposal for a regulation to prevent plastic pellet losses is currently undergoing the legislative process.

Shipwrecks

32 Wrecks in EU seas, such as wrecked warships, cargo ships, oil tankers, chemical tankers, or fishing boats, are all potential sources of pollution. They contain chemicals and heavy fuel oil which may gradually be released into the marine environment. Based on HELCOM sources, scientists from the MARE foundation estimate that at least 100 out of the 8 000 to 10 000 wrecks in the Baltic Sea are unsafe because they

contain fuel or hazardous substances and because they are fewer than 10 nautical miles from the coastline (see ***Figure 8***).

Figure 8 – Hazardous wrecks in the sea off Estonia, Poland and Sweden



© HELCOM Map and data service. Dataset: hazardous wrecks in the Baltic Sea, last updated on 22 June 2023.

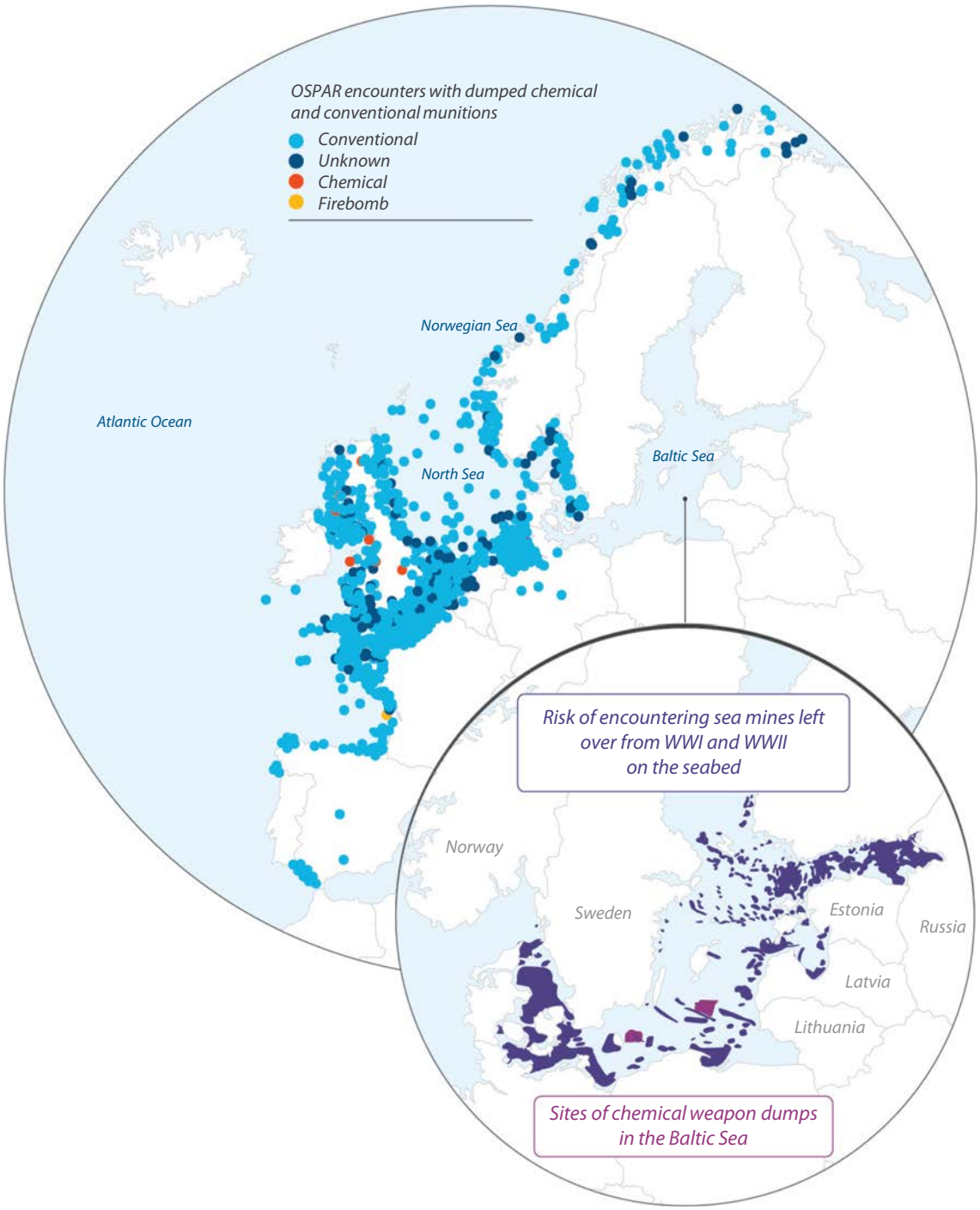
33 The German authorities estimate that there are around 1 000 wrecks in the German North Sea and 500 in the German Baltic Sea. The German authorities are not aware of the nature of the shipwreck cargo. In France, the French naval hydrographic and oceanographic service (SHOM) has a list of 4 700 wrecks of over 40 metres long which were put into service after 1914 and are located in the exclusive economic zone of mainland and overseas France.

34 At international level, the 2007 Nairobi Convention lays down rules on the removal of wrecks which may affect adversely the marine environment. As at 30 September 2024, the Convention had been ratified by 14 coastal EU member states and 1 non-coastal EU member state. The PSC Directive amended in November 2024 incorporates the Nairobi Convention in the EU legal framework.

Munitions

35 Submerged munitions may release toxic substances as corrosion progresses. OSPAR collects reports of encounters with submerged munitions in the North-East Atlantic. Approximately 900 encounters are reported each year. Of these, more than 50 % are due to entanglement with fishing nets. HELCOM estimates that since 1946, 40 000 tonnes of chemical munitions have been dumped into the Baltic Sea (see ***Figure 9***). The German authorities estimate that 1.6 million tonnes of conventional munitions and around 5 100 tonnes of chemical munitions are in German seas.

Figure 9 – Encounters with conventional, chemical or unknown munitions in the OSPAR maritime area and chemical weapon dumps and possible mines in the Baltic Sea



36 At international level, the 1972 London Convention generally prohibits the dumping into the sea of waste, including chemical weapons. This regime is also fully incorporated in the 1996 London Protocol. As at 30 September 2024, the Convention had been ratified by 18 coastal EU member states and 2 non-coastal EU member states, and the Protocol by 13 coastal and 1 non-coastal EU member state.

37 At EU level, neither the Convention nor the Protocol has been integrated into EU law. The 2014 EU Maritime Security Strategy identified dumped chemical munitions and unexploded ordnance as a maritime security threat. Of the 130 actions in its subsequent detailed action plan, 3 related to munitions. The 2020 report on the implementation of the revised EU Maritime Security Strategy Action Plan mentioned actions such as awareness-raising events, and triggered cooperation plus two research projects. However, no specific result in terms of quantities of munitions retrieval was mentioned.

Exhaust gas cleaning systems

38 IMO regulations have successively set restrictive thresholds for sulphur in ship fuel to reduce air pollution. The limits defined in Directive (EU) 2016/802 on reducing sulphur content in certain liquid fuels are aligned with IMO regulations. The most stringent sulphur standard for ships (0.1 %) remains 100 times less stringent than the sulphur standard for road diesel and petrol (0.001 %) which has been in force in the EU since 2009.

39 To meet sulphur standards, ships can use cleaner fuel or install exhaust gas cleaning systems known as “scrubbers”. These devices capture sulphur oxide from exhaust gases using water, but this turns into contaminated scrubber water and ships often discharge it into the sea.

40 Scrubbers are allowed on EU seas, although some member states restrict their use. The non-binding 2021 IMO Guidelines for Exhaust Gas Cleaning Systems provide discharge criteria and concentration limits for harmful exhaust gas substances in scrubber water. Under the updated EU legislation on ship-source pollution (see ***Box 1***), a discharge ban applies to sulphur scrubber waters that do not meet the discharge criteria for harmful substances set out by the IMO.

Implementation and enforcement of EU rules addressing ship-source pollution have weaknesses

41 We examined whether the policies and measures implemented by the Commission and member states helped tackle ship-source pollution and whether they were properly enforced. We checked whether:

- the Commission and the European Maritime Safety Agency (EMSA) provided member states with effective tools to detect and tackle ship-source pollution, and if member states made use of them;
- the Commission and member states carried out checks and inspections to ensure compliance with EU legislation, and adopted penalties for infringements;
- member states ensured the timely implementation of EU legislation on fishing gear;
- EU-funded projects provided added value.

EMSA tools and maritime services have certain limitations and member states have underused them

42 EMSA supports member states by providing satellite surveillance of ships, an experimental drone for detecting high emissions and response vessels.

Satellite surveillance

43 Estimates of oil entering the marine environment each year vary from 1 to 4.5 million tonnes worldwide, depending on the source of information, the methodology applied and the scope[1]. The Commission's 2023 impact assessment on amending the ship-source pollution Directive reported that although maritime accidents were a prominent source of ship-source pollution, the majority of oil spill pollution came from deliberate discharges, such as tank-cleaning operations and waste discharges. The impact assessment also pointed to large gaps in information on ship-source oil pollution across the EU.

[1] Oiling the oceans, in 2014 world ocean review, ESA publication on oil pollution, Dispersants as an oil spill clean-up technique in the marine environment, ITOPF Oil Tanker Spill Statistics 2023.

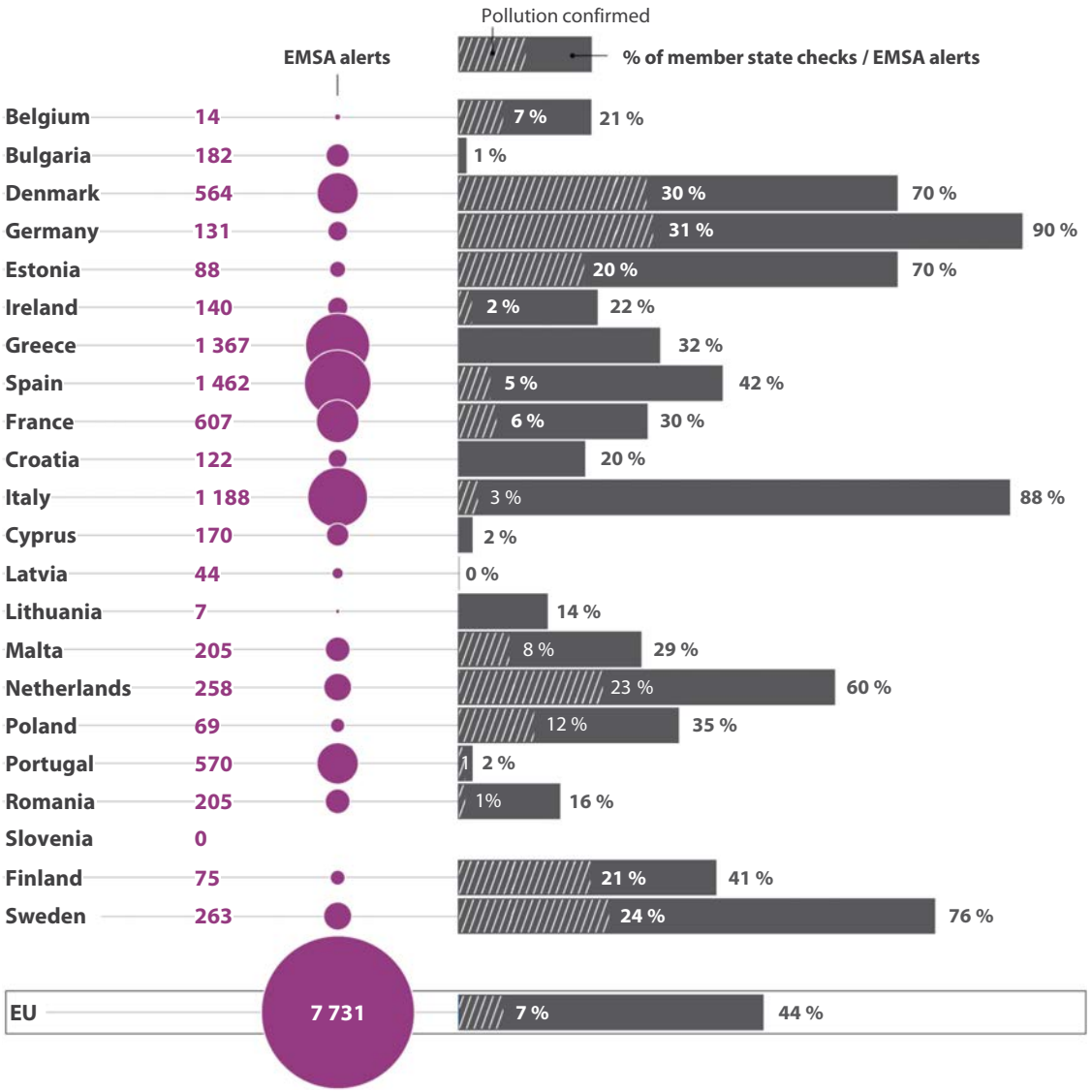
44 Since 2007, EMSA has run the European Satellite Oil Monitoring Service (CleanSeaNet) for surveillance and early detection of possible pollution incidents, and identification of the ship which might be responsible. The system depends on the availability of satellite images. Satellites only capture images of the areas they are passing over. They may also malfunction as was the case in Germany in 2022, when 13 % of images due from one particular satellite were not received.

45 CleanSeaNet aims to detect possible oil spills, but it may show other pollutants (e.g. sewage, garbage) or naturally occurring features, such as algae or ice. Chemical pollutants are more difficult to detect, as they are often invisible. EMSA created a network of experts (Marine Intervention in Chemical Emergencies Network (MAR-ICE)), which provides information and advice on chemicals involved in maritime emergencies. The amended SSP Directive aims to enhance CleanSeaNet and include information on the additional pollutants.

46 CleanSeaNet provides high-resolution satellite images to 22 coastal EU member states. In 2023, it identified a total of 5 088 possible spills within the indicative exclusive economic zones. Member states are responsible for on-site checks and enforcement.

47 Our analysis of 2022-2023 EMSA data (see ***Figure 10***) shows that member states checked fewer than half of the CleanSeaNet alerts and confirmed the pollution in only 7 % of cases. The percentage of CleanSeaNet pollution alerts confirmed by member states varies quite considerably. While Denmark and Germany confirmed pollution in 30 % or more of alerts, Italy very rarely confirmed pollution detected by CleanSeaNet, despite carrying out the highest number of on-site checks (1 046 out of a total of 1 188). According to the final version of the Commission's 2023 impact assessment on amending the SSP Directive, the chances of confirming the pollution depend on the interval between the satellite image being taken and the pollution being checked by a member state.

Figure 10 – CleanSeaNet possible pollution incidents detected in EU coastal states and follow-up actions, 2022-2023



Source: ECA, based on EMSA data.

48 Once pollution is confirmed, it should be traced back to the polluter and enforcement action taken. However, the aforementioned impact assessment concluded that the SSP Directive had not fully ensured that those responsible for illegally discharging polluting substances were subject to penalties, and that legal follow-up and penalties by member states remained relatively low.

Drone detection

49 Since 2019, EMSA has made a drone available to member states equipped with a sniffer-type sensor which can measure sulphur oxide and nitrogen oxide emissions from ships, as shown in ***Figure 11***. This airborne pollution often ends up in the sea. In France and Germany, we found that the results of the drone needed to be confirmed by other checks. Overall, very few infringements of the Directive on sulphur content of ship fuels were found in these countries using this technology (one infringement was confirmed in France during a 3-month campaign and none in Germany over similar period).

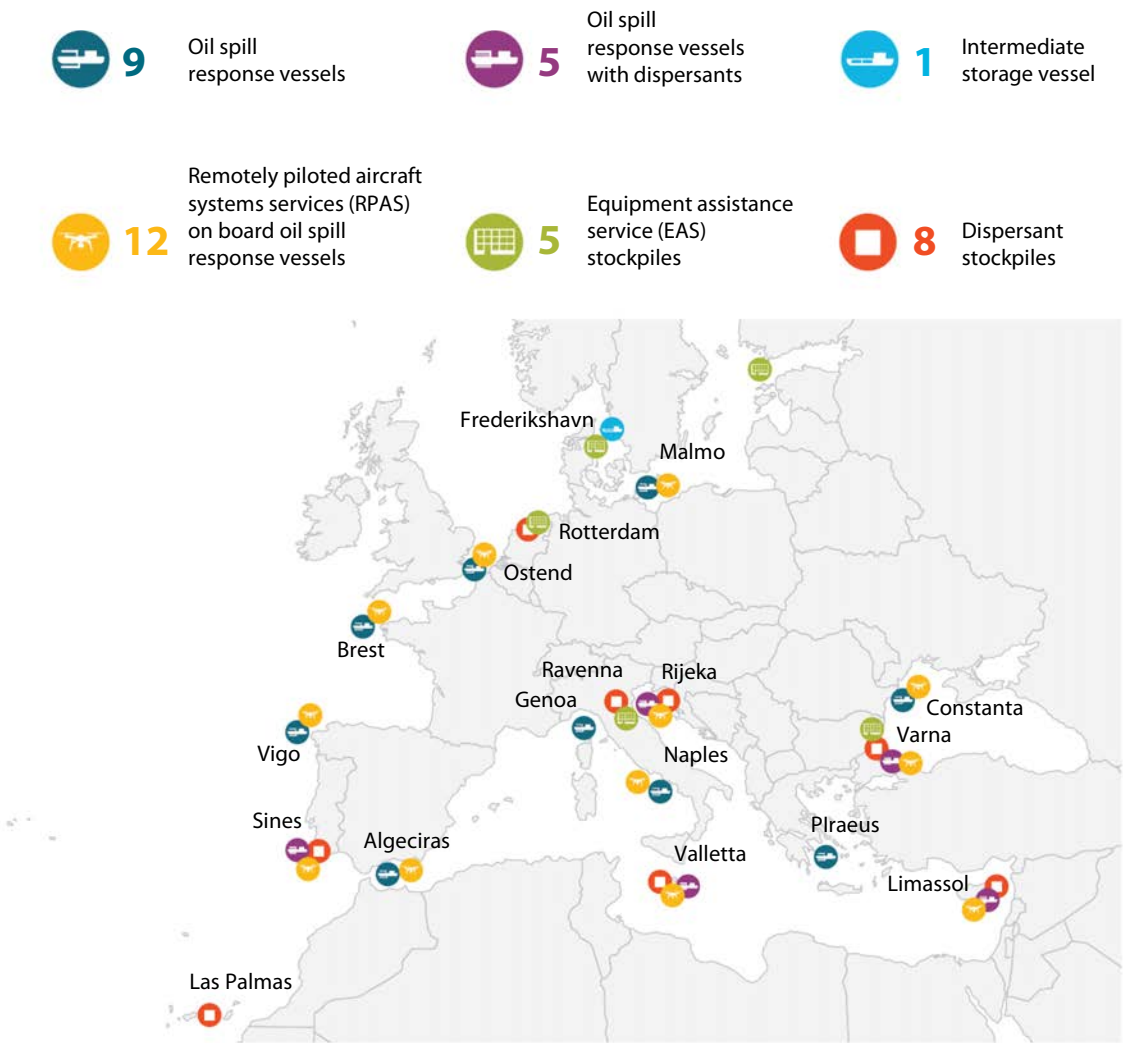
Figure 11 – Image from a drone approaching a vessel to measure the sulphur content of dense fumes

© EMSA (2023) RPAS services delivered to the French authorities. (Picture added by the ECA in the right bottom).

Response vessels

50 In addition to their national tools to monitor marine pollution incidents, member states can use an EMSA network of stand-by oil spill response vessels and equipment, as shown in ***Figure 12***. EMSA has positioned its vessels according to member states' requests which have been approved by EMSA's Administrative Board. EMSA, together with the member states, is currently reviewing its operational pollution response services to make sure they are fit for purpose in the future.

Figure 12 – EMSA tools to respond to ship-source pollution



© EMSA, planned operational services by the end of 2024.

51 Since 2017, the European Fisheries Control Agency has also been in a position to contribute to anti-pollution efforts at sea. Currently three offshore patrol vessels chartered by the agency are equipped with oil spill response equipment from EMSA. They have not yet been used to tackle any pollution event, as member states used in priority their own means.

Checks and inspections of ships are not sufficient, and penalties for illegal discharges vary across the EU

EMSA checks on the implementation of EU legislation

52 At the Commission's request, EMSA conducts visits to members states to monitor whether they are effectively implementing and enforcing EU law on maritime safety

and pollution prevention. At the end of each visit, EMSA has to draw up a report and send it to the Commission and the member states concerned.

53 EMSA publishes on its website the lists of its visits and inspections in all EU member states over a number of years in the form of cycles related to different relevant pieces of legislation. Between 2012 and 2022, the Commission asked EMSA to focus on the port state control Directive and inspect each EU coastal member state twice over the period. However, EMSA did not carry out visits regarding the ship-source pollution Directive. In 2024 EMSA started a cycle of checks regarding the port reception facilities Directive.

Port reception facilities

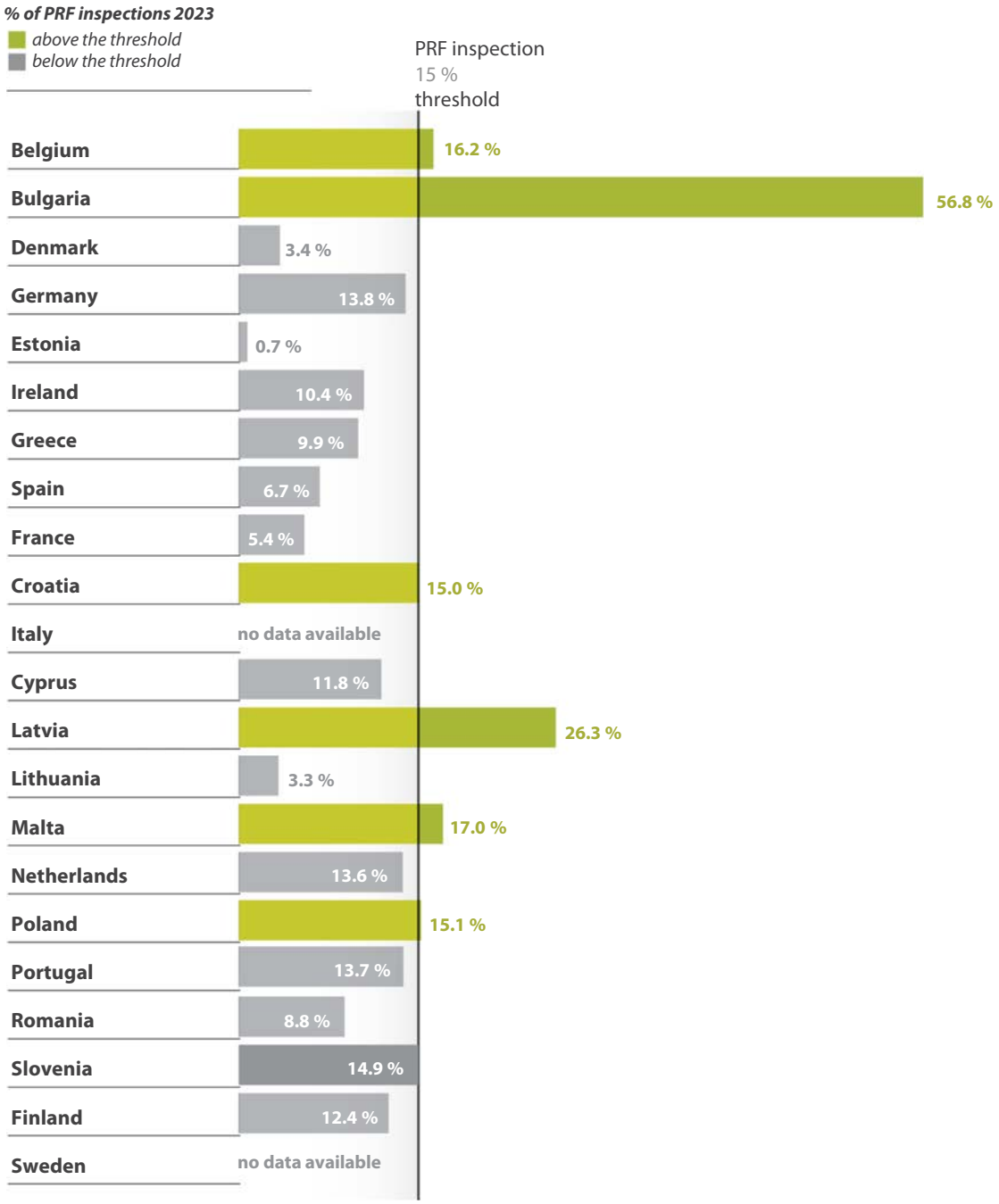
54 The PRF Directive requires member states to establish adequate port reception facilities for different types of waste generated by ships. Ships must dispose of all waste before leaving port, unless there is sufficient specific storage capacity for them to reach the next port of call.

55 There were shortcomings in the implementation and enforcement of the PRF Directive in the member states we visited. In 2020, the French authorities reported that port reception facilities did not correspond to how waste was sorted on board. In Germany, a 2023 study found significant shortcomings regarding ports in different federal states, such as insufficient information regarding past and planned disposals.

56 Since 2022, the PRF Directive has required member states to inspect 15 % of all ships calling at their ports. Inspections check that ships are adhering to rules regarding waste management, including proper notification, reporting, and actual use of port reception facilities for waste disposal.

57 Member states are required to collect data on inspections carried out, including the number of inspections, the types of ships inspected, and the outcomes of the inspections. They must keep the data up to date and report it to EMSA. Our analysis of EMSA data shows that six member states complied with the 15 % target in 2023 (see ***Figure 13***). Two member states did not report data and five did not reach half the target.

Figure 13 – Compliance with the 15 % PRF ship inspection target in 2023



Source: ECA calculations, based on EMSA data.

58 The German authorities explained that the target had not been met mainly because of staffing problems and a lack of clarity about the number of inspections at regional level. We found that the French authorities had not carried out any ship inspections under the PRF Directive in 2022, due to the late transposition of this directive. The Commission informed us that it had also noted shortcomings in the reporting (inspections not reaching the 15 % threshold or under-reporting).

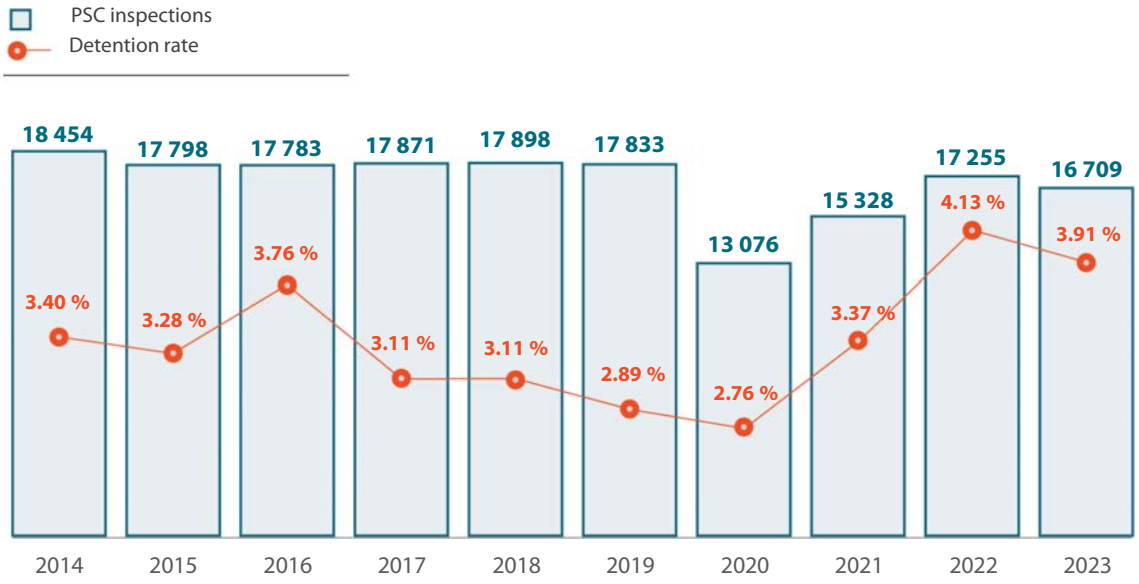
Port state control

59 The PSC Directive sets out common criteria for the inspection of foreign ships in national ports and lays down harmonised procedures on inspection and detention. Ships are selected for PSC inspection by taking into account their risk profile and other priorities. We found that 11 member states did not achieve their inspection targets in 2023.

60 We analysed EMSA data on deficiencies detected during PSC inspections at member state level since 2014. Problems relating to garbage management plans, shipboard working arrangements, and onboard sewage treatment plants were among the most common infringements. Overall, from 2014 to 2023, member states detected nearly 16 000 such deficiencies. The total number of deficiencies rose by more than 40 % between 2019 and 2023.

61 Member states can decide to keep ships in port until major shortcomings detected during PSC inspections have been addressed and remedied. This is known as "detention". ***Figure 14*** shows that the detention rate following PSC inspections lies between 3 % to 4 %.

Figure 14 – PSC inspections compared with detentions in EU ports, 2014 to 2023



Source: ECA analysis, based on EMSA data.

Penalties on illegal discharges

62 The SSP Directive requires those responsible for discharging polluting substances illegally to be subject to penalties. In its 2023 impact assessment which accompanied the proposal to amend the SSP Directive, the Commission reported that interpretation of the Directive varies from one member state to the other. Since there is no common definition of what constitutes "major" or "minor" pollution cases, pollution discharges of a similar nature may be treated differently across member states. The Commission study also reported a wide variety of practices regarding the possible sanctions and the legal procedures followed.

63 Overall, the Commission report stressed that ships which illegally discharge polluting substances into the sea rarely face effective or dissuasive penalties, and that prosecution is rare. The revised SSP Directive introduces a mandatory tool where member states have to report the penalties applied. However, it does not introduce a harmonised EU penalty system.

National level implementation of recent EU legislation on fishing gear is not yet completed

64 Abandoned, lost or discarded fishing gear, which we will refer to simply as "lost fishing gear" in this report, is a source of plastic pollution from fishing vessels. Regulation (EC) No 1224/2009 on fisheries control[2] makes it mandatory for the master of EU fishing vessels which have lost gear, or part thereof, to attempt to retrieve it as soon as possible. Member states must report infringements related to retrieval of lost fishing gear to the Commission.

65 However, the Commission informed us that only a limited number of member states reported infringements. The Commission 2021 synopsis report on the application of the 2009 Fisheries Control Regulation from 2015 to 2019 contained some information on the number of infringements detected in relation to the retrieval of lost fishing gear. Out of 93 such infringements, 86 were reported by Spain and no such infringement was reported for either France or Germany.

66 Under the new Regulation (EU) 2023/2842, which amends the previous Fisheries Control Regulation, fishing vessel logbooks must include information on fishing gear and data on lost fishing gear. Member states must then collect, record and provide

[2] Article 48, Regulation (EC) No 1224/2009 on fisheries control.

information on lost gear to the Commission or to the European Fisheries Control Agency upon request. New provisions include checking gear retrieval equipment during fishery inspections and making the illegal disposal of fishing gear at sea a serious infringement. Member states are currently in the initial phase of implementing the new Regulation.

67 Before the revision of the PRF Directive in 2019, ports were able to charge fishers for bringing retrieved abandoned, lost or discarded fishing gear ashore. The PRF Directive removed this disincentive by introducing an indirect fee, irrespective of delivery of waste to a port reception facility.

68 Under Directive (EU) 2019/904 on single-use plastics, extended producer responsibility schemes should have been in place by 31 December 2024. This means that producers are now financially responsible for the collection, transport and treatment of waste fishing gear containing plastic. This will help cover the cost of managing fishing gear plastic once it is landed by fishers.

69 We found that the member states we visited had not yet fully implemented extended producer responsibility schemes for fishing gear producers (see ***Box 2***).

Box 2

Extended responsibility for fishing gear producers

In Germany, a public-law contract between public authorities, producers of plastic fishing gear, an NGO, and operators of certain ports set up an extended producer responsibility scheme in 2021. The NGO collects end-of-life fishing gear in the participating ports, ensures proper and non-harmful disposal thereof, and carries out awareness-raising activities. Out of the seven largest fishing ports in Germany, four are parties to the contract.

In France, the association Coopération maritime has been working with fishing gear producers since 2019 to implement the extended producer responsibility scheme under a voluntary agreement. The French authorities aim to conclude an agreement by 31 December 2024. Otherwise, they intend to enforce the extended producer responsibility scheme by regulatory means.

70 The Directive on single-use plastics also requires member states to report to the Commission for each calendar year, and within 18 months of the end of the year for which it was collected, data on fishing gear containing plastic placed on the market, and waste fishing gear collected at sea in that member state. The first reporting period

was the calendar year 2022. Consolidated 2022 market data which member states should have reported to the Commission by 30 June 2024 was finally available by November 2024.

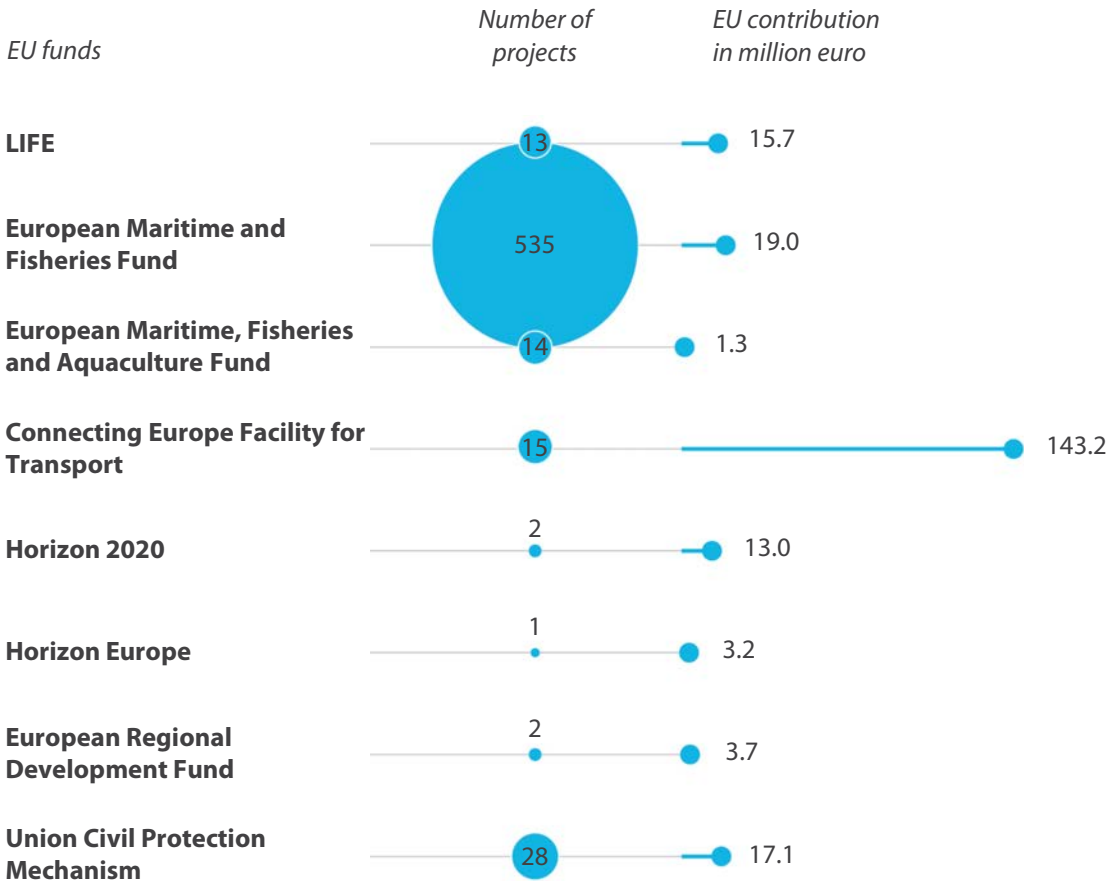
EU funds supported relevant projects but faced difficulties scaling up the results

71 Several EU instruments can be used to finance projects tackling ship-source pollution, as listed below.

- The LIFE Programme, which is an EU funding instrument that supports environmental projects.
- The European Maritime and Fisheries Fund in the 2014-2020 budgetary period, and its successor the European Maritime, Fisheries and Aquaculture Fund in the 2021-2027 budgetary period, which support the implementation of the common fisheries policy and the EU integrated maritime policy.
- The Connecting Europe Facility, which supports three sets of trans-European infrastructures – energy, transport and digital.
- The European Regional Development Fund, which promotes regional cooperation and development across different EU member states and neighbouring countries. It addresses, for example, the issue of fishing nets as a source of plastic at sea through Interreg projects.
- The programmes Horizon 2020 for 2014-2020 and Horizon Europe for 2021-2027, which support research into reducing marine pollution.
- The Union Civil Protection Mechanism, which also covers the co-financing of prevention and preparedness projects and full-scale exercises, all related to marine pollution.

72 We asked the relevant Commission directorates-general, executive agencies and the member states we visited for a list of the EU projects tackling ship-source pollution in EU seas from 2014 to 2023. Based on the information received, EU funding for such projects amount with over €216 million during 2014-2023, mostly on improving port waste reception facilities, but also on the collection of fishing nets and on research (see ***Figure 15***). This information is however incomplete, as we found other relevant EU-funded projects not included in the Commission's data. The French and German authorities also provided only partial data.

Figure 15 – EU projects related to tackling ship source pollution in EU seas, 2014-2023



Source: ECA, based on data provided by the European Commission and CINEA.

73 We selected two EU projects in each of the two member states we visited. Despite some achievements, these projects have not demonstrated that they would reduce ship-source pollution on a large scale (see ***Annex VI***). Neither the Commission, nor the member states had a comprehensive overview of the results achieved by EU-funded projects on ship-source pollution.

The EU framework for monitoring ship-source pollution has limitations

74 The 2008 Marine Strategy Framework Directive (MSFD) required member states to develop regionally coordinated strategies and measures to assess, manage, and reduce the impact of human activities on the marine environment, including ship-source pollution. Member states had to establish and implement monitoring programmes for the assessment of the environmental status of their marine waters,

and notify them to the Commission, to assess whether the programmes were appropriate for achieving or maintaining good environmental status.

75 We examined whether the Commission and the member states effectively monitored the environmental status of EU seas and reported comparable results. We checked whether:

- data on ship-source pollution was available and complete;
- the Commission laid down criteria and methodological standards for assessing the good environmental status of EU seas, and member states used them and ensured, by working with each other, that assessment methodologies were consistent across the marine region or subregion;
- member states reported to the Commission their assessment of the good environmental status at the level of the marine region or subregion.

There is little information on seawater contamination and marine litter from ships

76 The MSFD requires member states to determine the achievement of good environmental status based on the qualitative "descriptors", including on contaminants (i.e. "descriptor 8"), and on marine litter (i.e. "descriptor 10"). The MSFD also requires member states to reduce the input of substances into the marine environment from specific sources, such as ships.

77 The descriptor on contaminants covers 45 substances from the Water Framework Directive and some additional contaminants selected at member state level, e.g. through regional cooperation. Altogether, this covers only a tiny fraction of the 6 000 substances which represent more than 99 % of the total amount of commercial chemicals globally. Scientists consider that it is worth monitoring other contaminants.

78 The Commission and the authorities of the member states we visited reported that it is rarely possible to link the share of monitored contaminants to the sources because, for most substances, many factors contribute to the pollution (industry, consumers, oil platforms, historical dumping sites, vessels, and others).

79 The amount of marine litter from ships is largely unknown. The European Environment Agency estimates that 80 % of marine litter comes from the land and 20 % from the sea. In the 2025 European maritime transport environmental report, the

EEA and EMSA quantified the share of litter originating from maritime activities found on EU beaches at 16 %, including 11.2 % of litter from "fisheries and mariculture" and 1.8 % from "shipping". There is no such comprehensive information about seafloor or floating marine litter.

80 The information available on marine litter and contaminants is often incomplete or outdated. ***Figure 1*** and ***Figure 2***, which show the overall pollution status in EU seas, reveal gaps in data collection across many areas. Member states were required to prepare a new dataset for the 6-year period 2016 to 2021, due by October 2024, and by December 2024, five member states had reported their datasets.

Non-comparable and incomplete methodologies and thresholds affected monitoring and reporting

81 A 2017 Commission Decision on good environmental status replaced a 2010 Decision and was intended to establish clearer, simpler, more concise, and more coherent and comparable criteria and methodological standards to assess the good environmental status of EU seas. However, member states interpret the decision in their own way, which leads to differing approaches and knowledge gaps.

82 Assessments of contaminants are based on their concentrations and pollution effects. In 2019, the European Environment Agency reported that member states were still using different thresholds to assess the contaminants' concentration.

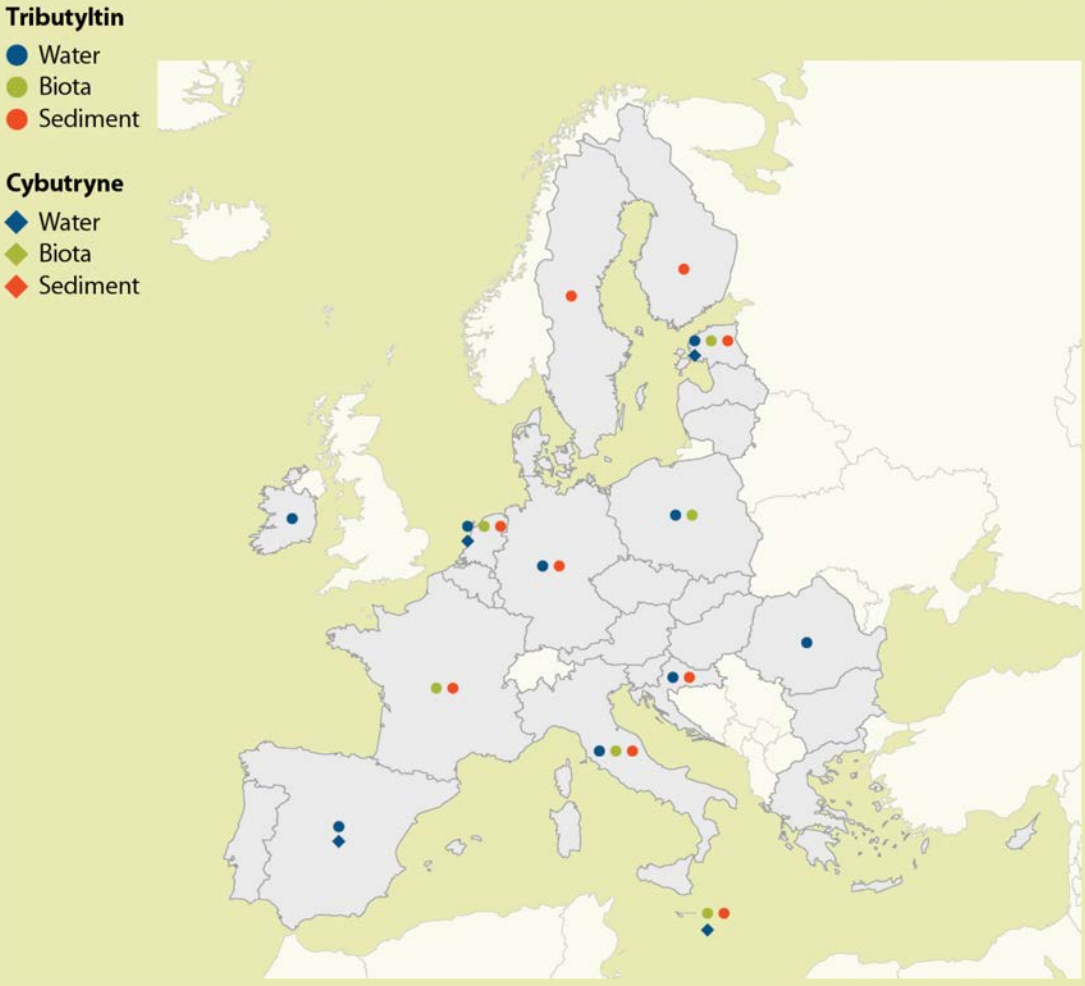
83 There is no consistent data on the annual quantities of oil spilt by ships in EU seas (paragraph ***43***). Neither the MSFD nor any Commission document define the levels at which an acute pollution event is considered to be "significant". In 2019, having analysed member states' reporting on contaminants, the Joint Research Centre (JRC) stressed the need for a common understanding about minimum thresholds for reporting oil spills for MSFD purposes. HELCOM has an oil spills indicator and a map of ship accidents causing pollution for the Baltic.

84 When it comes to chemical substances, Tributyltin (TBT) and Cybutryne are two compounds clearly linked to ships as sources of seawater contamination. However, different ways of monitoring these two compounds were used by the member states in the MSFD reporting cycle ending in 2018, see ***Box 3***.

Box 3

2018 MSFD member state reporting on certain contaminants

TBT was used in ship anti-fouling paints until 2008, when an EU regulation and the International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention) obliged all ships visiting EU ports to be TBT-free. Cybutryne has been banned in anti-fouling systems since 1 January 2023. The JRC found numerous discrepancies in the TBT and Cybutryne analysed by member states in their 2018 MSFD reporting: 10 member states tested for TBT and 4 for Cybutryne in seawater, while the other coastal member states did not collect such data as part of their MSFD monitoring. A common threshold for TBT was applied among those member states which analysed it, but national authorities used different thresholds for Cybutryne.



© Tornero, V., Hanke, G., and the MSFD Expert Network on Contaminants, Marine chemical contaminants – support to the harmonization of MSFD D8 methodological standards, 2019.

85 As regards marine litter, similar thresholds for beach litter monitoring are now used by the EU member states and in the regional sea conventions OSPAR and HELCOM (see ***Annex IV***). Status is "good" when there are fewer than 20 litter items per

100 metres of beach. However, there is still no harmonised threshold for seafloor marine litter, while floating macro litter is being currently monitored with different methods.

86 The MSFD monitoring periods for marine litter differ by marine region. OSPAR assessed the beach litter situation in the North-East Atlantic from 2018 to 2020 and current trends from 2015 to 2020. HELCOM analysed the situation of beach litter for the 2016-2021 period. The Commission set up a technical group on marine litter which updated the Guidance on the monitoring of marine litter in European seas in 2023 to further harmonise MSFD monitoring across member states.

Gaps and mismatches in reporting tools

87 Member states collect data relating to the environmental status of their seas. They share with the Commission their general assessments of whether good environmental status has been achieved or not. The Commission facilitates discussion between national experts, but does not check the underlying data and methodology used by national authorities.

88 The MSFD provides for reporting on achievement of a good environmental status at detailed level. The JRC published some information at this level in its analysis of the member states' 2018 reports but did not conclude overall whether a member state has achieved, or not achieved, good environmental status for contaminants and marine litter. Data from the subsequent reports (from 2024) was not available at the time of our audit.

89 Member states have to use Reportnet, an e-reporting platform for environmental and climate data, for their MSFD reporting to the European Environment Agency. MSFD information can be found in the Eionet Central Data Repository, which forms part of Reportnet platform.

90 In addition, two EU tools provide publicly available information on marine pollution.

- The Marine Water Information System for Europe (WISE-Marine), hosted by the European Environment Agency, is a portal for sharing information on the marine environment at the European level. WISE Marine displays MSFD data reported by member states on Reportnet, as well as data from other sources.

- The European Marine Observation and Data Network (EMODnet), funded and managed by the Commission, is a source of marine data, metadata, and related data products.

91 We found that some information displayed in WISE-Marine dashboard on whether good environmental status was reached or not did not always correspond to some scientific assessments by national bodies or JRC. It was for example the case for Belgium and France regarding marine litter.

92 EMODnet presents beach litter data from the MSFD reporting and other sources, seafloor litter data from activities involving trawling for litter, and micro-litter data, but with limited coverage. Stakeholders, such as member state authorities, may input marine data into EMODnet on a voluntary basis. The non-mandatory nature of reporting to EMODnet leads to gaps in its data. The 2020 MSFD implementation report and a 2023 Commission evaluation of EMODnet highlighted that there was no systematic data exchange between EMODnet and WISE-Marine, and recommended that the information in the two databases be better aligned and organised.

Conclusions and recommendations

93 Overall, we found that the EU rules addressing ship-source pollution were improving, but that implementation and enforcement had weaknesses and data was insufficient to measure results.

94 EU legislation incorporates international rules, which contributes to their proper enforcement regardless of whether member states are parties to the IMO conventions. The Commission is acting to fill in gaps on remaining pollution risks, i.e. from ship dismantling and recycling, containers lost at sea, shipwrecks, submerged munitions, and exhaust gas cleaning systems (paragraphs *19*-*40*).

95 We found that the European Maritime Safety Agency (EMSA) provided member states with useful tools to tackle ship-source pollution, but they were not used to their full potential. CleanSeaNet uses advanced satellite technology to detect possible oil spills, but it lacks similar capabilities for other pollutants. Member states checked fewer than half of the CleanSeaNet alerts triggered by satellites and often did not confirm the pollution with on-site checks (paragraphs *43*-*51*).

Recommendation 1 – Improve the functioning and effectiveness of EMSA pollution alert tools

The Commission should, with the support of EMSA:

(a) provide guidelines to member states on actions to be taken and reporting obligations related to CleanSeaNet alerts;

(b) develop the technology and methodology for alerts on pollutants other than oil; and

(c) assess the reliability of EMSA's pollution alerts and whether member states' actions in response to the alerts are effective.

Target implementation date: 2027

96 The implementation and enforcement of EU rules on checking for and preventing pollution from ships still have shortcomings. EMSA visits to member states between 2012 and 2022 focused on the port state control Directive. Member states still often did not meet their target rates for inspections under the port reception

facilities Directive, and some failed to reach the annual inspection commitment under the port state control Directive. The way in which penalties or sanctions were defined and applied varied between member states (paragraphs *52*-*63*).

Recommendation 2 – Strengthen the monitoring of member states' mandatory checks under EU directives

The Commission should, with the support of EMSA, improve how member states report on their compliance with the requirements under EU directives to make checks and apply penalties or sanctions, for instance by setting reporting deadlines, reporting formats, and indicators.

Target implementation date: 2028

97 Neither the Commission nor the member states we visited could fully identify the amounts from the EU budget being used to tackle EU seawater pollution. They did not have an overview of the results achieved and on how they could be used on a larger scale (paragraphs *71*-*73*).

Recommendation 3 – Follow up scaling-up issues in EU-funded projects

The Commission, together with the member states, should follow up on issues relating to scaling up, which affect EU-funded projects that tackle ship-source pollution.

Target implementation date: 2026

98 Our audit revealed that the EU framework for monitoring ship-source pollution has limitations. Marine environment indicators defined at EU level (i.e. descriptors under the Marine Strategy Framework Directive) could be used to check on ship-source pollution, but they can rarely link marine contamination and litter to its source. In addition, thresholds and monitoring methodologies are not fully harmonised among member states, resulting in differences in monitoring and reporting of results. We also found gaps and mismatches in the platforms which report data on seawater quality, undermining their reliability (paragraphs *76*-*92*).

Recommendation 4 – Enhance reporting and monitoring on the environmental status of marine waters

The Commission should improve the harmonisation of monitoring and reporting on contaminants and marine litter, both among member states and to the Commission. This includes gaining access to comparable underlying data to better measure progress in the condition of the marine environment.

Target implementation date: 2027

This report was adopted by Chamber I, headed by Ms Joëlle Elvinger, Member of the Court of Auditors, in Luxembourg at its meeting of 15 January 2025.

For the Court of Auditors

Tony Murphy
President

Annexes

Annex I – ECA reports on land-originating pollution

Special report 02/2025: "Urban pollution in the EU – Cities have cleaner air but are still too noisy"

Review 02/2023: "EU actions to address the increasing amount of hazardous waste"

Special report 12/2021: "The Polluter Pays Principle – Inconsistent application across EU environmental policies and action"

Review 04/2021: "EU actions and existing challenges on electronic waste"

Special report 05/2020: "Sustainable use of plant protection products – limited progress in measuring and reducing risks"

Review 04/2020: "EU action to tackle the issue of plastic waste"

Annex II – Main international legislation addressing ship-source pollution

- The 1972 London Convention addresses preventing marine pollution by dumping waste and other matter at sea. This was complemented by its 1996 Protocol.
- The 1973 International Convention for the Prevention of Pollution from Ships (MARPOL) and its 1978 Protocol set out regulations and standards to control pollution from various sources including oil, chemicals, sewage, garbage, and air emissions.
- The 1974 International Convention for the Safety of Life at Sea (SOLAS) deals with the safety of merchant ships by specifying minimum standards for construction, equipment and operation of such ships.
- The 2001 International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS Convention) prohibits the use of harmful organotins in anti-fouling paints used on ships.
- The 2007 Nairobi Convention lays down rules on the removal of wrecks which may affect adversely the marine environment.
- The 2009 Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships covers the operation of ship recycling facilities in a safe and environmentally sound manner.

Annex III – Main EU legislation addressing ship-source pollution

- Directive 2005/35/EC on ship-source pollution and on the introduction of penalties for infringements has the purpose of incorporating international standards for ship-source pollution into EU law, and ensuring that those responsible for discharges of polluting substances are subject to adequate penalties, including criminal ones. As of 2024, the criminal penalties for ship-source pollution are covered by the Directive (EU) 2024/1203 on the protection of the environment through criminal law.

- Directive 2008/56/EC establishing a framework for community action in the field of marine environmental policy.

- Directive 2009/16/EC on port state control sets out common criteria for control of ships by the port state and lays down harmonised procedures on inspection and detention.

- Directive 2009/18/EC on maritime accidents establishes fundamental principles for the investigation of accidents in the maritime transport sector.

- Directive 2009/21/EC on compliance with flag state requirements aims to prevent pollution from ships flying the flag of a member state.

- Directive (EU) 2019/883 on port reception facilities requires member states to establish port reception facilities for different types of waste generated by ships, including oil residues, garbage, sewage, and cargo residues.

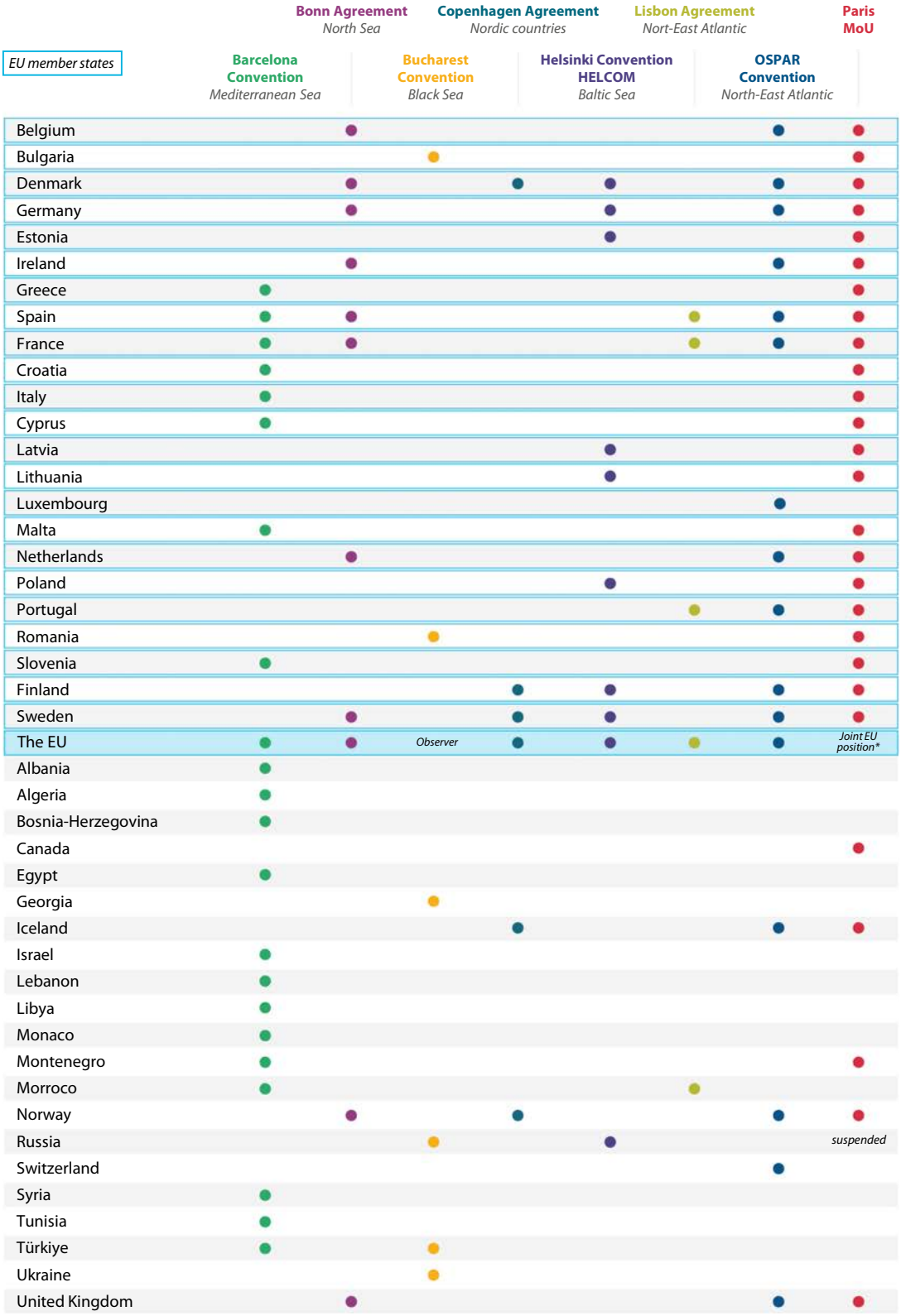
- Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment.

- Regulation EC (No) 1406/2002 establishes a European Maritime Safety Agency (EMSA) to ensure a high, uniform and effective level of maritime safety and prevent pollution by ships in the EU.

- Regulation EC (No) 782/2003 on the prohibition of organotin compounds on ships has the objective of reducing or eliminating adverse effects on the marine environment and human health caused by organotin compounds used as active biocides in anti-fouling systems used on ships.

- Regulation EU (No) 1257/2013 on ship recycling has the objective of ensuring that hazardous waste from such recycling is subject to environmentally sound management.

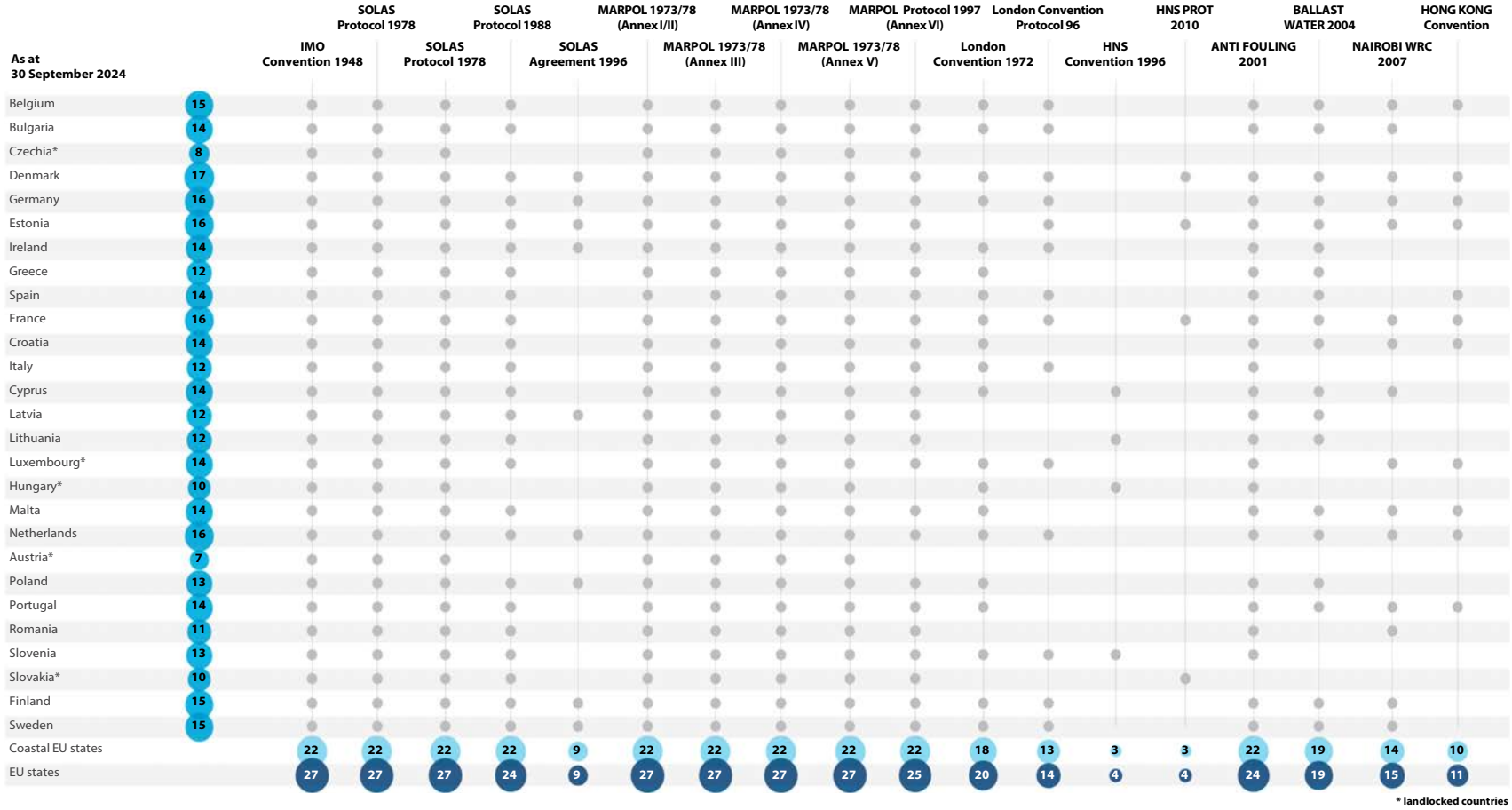
Annex IV – Multilateral cooperation mechanisms



* Council Decision (EU) 2020/722 (OJ L 171, 2.6.2020, pp. 4–5).

Source: ECA.

Annex V – Ratification by EU member states of most relevant IMO conventions and protocols addressing ship-source pollution, with totals



Source: ECA.

Annex VI – Projects selected in the member states we visited

Objectives	Achievements
INDIGO project, France-England Interreg, €2.9 million	
Reducing marine plastic pollution from fishing and aquaculture activities by: o developing the first biodegradable fishing gear in EU seas o identifying fishing gear already lost and improving the recycling of end of life fishing gear	The EU funding enabled a prototype of a biodegradable mussel net to be developed. The absence of structured fishing gear collection and recycling sectors, and the lack of an industrial base with expertise in weaving nets meant that industrial-scale production was not possible.
FIRENOR project, France, EMFF, €57 000	
o studying the technical and economic feasibility of a recycling sector for used fishing gear in Normandy o providing key indicators for establishing extended producer responsibility for fishing gear at national level.	FIRENOR collected 26 tonnes of waste fishing gear in three pilot ports in Normandy. When FIRENOR came to end, one port stopped collecting waste fishing gear, one continued to collect waste fishing gear, while the third port is still only collecting fine netting, which it was already doing prior to the FIRENOR project.
HISEA project: 8 partners from 8 countries; Horizon 2020; total cost: €2.4 million, EU contribution: €1.9 million	
Developing a novel Copernicus-based downstream services incorporating Copernicus marine, land monitoring, including pollution alerts, and climate change services, local monitoring data, and advanced modelling into an integrated service adding value for potential Copernicus data user	The project led to the creation of a platform which is still active and used by ports (in Portugal and Brazil). It is also used for both UNITED and ULTFARMS projects (co-financed by Horizon Europe).

Objectives	Achievements
SEACLEAR project: 8 partners from 5 countries; Horizon 2020; total cost / EU contribution: €5.0 million	
Developing autonomous robots to collect smaller quantities of debris underwater using new mapping, classification and collection systems. SeaClear focused in particular on setting up a mixed team of unmanned underwater craft, surface craft and aircraft to find and collect waste from the seabed.	The project was still ongoing when we visited it: final reporting was not available and final demonstration was only due to take place shortly before the end of 2023. The project owner found there were challenges, notably regarding interfaces, image recognition (sensor quality, reflective water surface), data and power cables (e.g. susceptibility to wind and current), locating waste, device autonomy and heterogeneous operating areas.

Acronyms and abbreviations

EEA: European Environment Agency

EMSA: European Maritime Safety Agency

HELCOM: Baltic Marine Environment Protection Commission, also known as the Helsinki Commission

IMO: International Maritime Organization

JRC: Joint Research Centre

LIFE: L'Instrument Financier pour l'Environnement

MARPOL: International Convention for the Prevention of Pollution from Ships

MSFD: Marine Strategy Framework Directive

OSPAR: Convention for the Protection of the Marine Environment in the North-East Atlantic

PRF: Port reception facilities

PSC: Port state control

SSP: Ship-source Pollution

TBT: Tributyltin

Replies of the Commission

https://www.eca.europa.eu/en/publications/sr-2025-06

Timeline

https://www.eca.europa.eu/en/publications/sr-2025-06

Audit team

The ECA's special reports set out the results of its audits of EU policies and programmes, or of management-related topics from specific budgetary areas. The ECA selects and designs these audit tasks to be of maximum impact by considering the risks to performance or compliance, the level of income or spending involved, forthcoming developments and political and public interest.

This performance audit was carried out by Audit Chamber I Sustainable use of natural resources, headed by ECA Member Joëlle Elvinger. The audit was led by ECA Member Nikolaos Milionis, supported by Kristian Sniter, Head of Private Office and Katarzyna Radecka-Moroz, Private Office Attaché; Emmanuel Rauch, Principal Manager; Jan Huth, Deputy Head of Task; Monika Dedicova, Auditor.
Stamatis Kalogirou and Viktor Popov provided data analysis support. Jennifer Schofield and Laura Mcmillan provided linguistic support.

From left to right: Viktor Popov, Kristian Sniter, Emmanuel Rauch, Nikolaos Milionis, Monika Dedicova, Jan Huth.

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Figure 12 – © EMSA, planned operational services by the end of 2024.

Box 3 – © Tornero, V., Hanke, G., and the MSFD Expert Network on Contaminants, Marine chemical contaminants – support to the harmonization of MSFD D8 methodological standards, 2019.

HTML	ISBN 978-92-849-4561-0	ISSN 1977-5679	doi:10.2865/1018940	QJ-01-25-013-EN-Q
PDF	ISBN 978-92-849-4562-7	ISSN 1977-5679	doi:10.2865/5084386	QJ-01-25-013-EN-N

HOW TO CITE

European Court of Auditors, special report 06/2025: "EU actions tackling sea pollution by ships – Not yet out of troubled waters", Publications Office of the European Union, 2025.

The EU's ambition is zero water pollution by 2030. In view of this, we assessed EU actions to address ship-source seawater pollution. Overall, EU rules improved, but implementation weaknesses existed and data was insufficient to measure results.

While the European Maritime Safety Agency developed useful tools, member states did not use them to their full potential. They often failed to meet their mandatory targets for ship inspections. There was no overview of the results achieved by EU-funded projects or of the options for scaling up. Lastly, the monitoring of ship-source pollution was not adequate.

Our recommendations aim to make pollution alert tools more effective, strengthen the monitoring of ship inspection targets, improve the impact of EU funding, and better measure seawater pollution.

ECA special report pursuant to Article 287(4), second subparagraph, TFEU.

EUROPEAN COURT OF AUDITORS

Publications Office of the European Union

EUROPEAN COURT OF AUDITORS
12, rue Alcide De Gasperi
1615 Luxembourg
LUXEMBOURG

Tel. +352 4398-1

Enquiries: eca.europa.eu/en/contact
Website: eca.europa.eu
X: @EUAuditors