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**Promotion and protection of human rights: human rights
questions, including alternative approaches for improving the
effective enjoyment of human rights and fundamental freedoms**

Implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes

Note by the Secretary-General

The Secretary-General has the honour to transmit to the General Assembly the report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, Marcos Orellana, in accordance with Human Rights Council resolution [45/17](#).

* [A/78/150](#).



**Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes,
Marcos Orellana**

Shipping, toxics and human rights

Summary

In the present report, the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, Marcos Orellana, examines the impact of the shipping sector on human rights and the environment. Whether in terms of the exposure to toxics of people working in the shipping sector, air pollution from ships affecting people in port cities, water pollution and oil spills affecting coastal communities or emissions of greenhouse gases that contribute to climate change, the shipping industry has an impact on a wide range of human rights. In the present report, the Special Rapporteur analyses the linkages between shipping, toxics and human rights and calls for a human rights-based approach to this sector by States and businesses.

I. Introduction

1. The shipping industry and related activities, including recruitment, transportation and dismantling, are closely linked to human rights. For example, shipping releases hazardous substances into the marine environment that have adverse impacts on coastal communities and biodiversity. Seafarers and ship-breakers are often exposed to toxic chemicals and other harsh working conditions. Greenhouse gas emissions from ships aggravate the global climate emergency. Shipping is thus implicated in the effective enjoyment of many internationally protected human rights, including the human rights to life, health, security of the person and bodily integrity, safe food and water, safe and healthy working conditions and the right to a healthy environment.

2. States have the primary responsibility for enacting appropriate laws and regulations and for monitoring, investigating and prosecuting their breaches, including breaches by the private sector. At the same time, private shipowners or operators and others in the shipping industry are also bound by international and human rights responsibilities. Such responsibilities include the avoidance of causing or contributing to the harming of human rights and the environment through their activities and, if harm unintentionally occurs, immediately taking all necessary actions to stop these negative impacts and facilitate remedial actions.

3. The Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, Marcos Orellana, visited the International Maritime Organization (IMO), including an in-person visit to its headquarters from 16 to 24 January 2023, and will present his mission report to the fifty-fourth session of the Human Rights Council ([A/HRC/54/25/Add.2](#)). While that report provided recommendations related to IMO, the present report provides global recommendations to States and businesses on addressing concerns about shipping, toxics and human rights. The report will also support the implementation of Sustainable Development Goal 14 on the conservation and sustainable use of oceans, seas and marine resources for sustainable development, where States have pledged to “prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution” by 2025 (target 14.1).

4. The report also benefits from the responses to questionnaires of Member States and non-governmental organizations (NGOs) and consultations with NGOs, industry and academicians.¹ The Special Rapporteur acknowledges the valuable input provided by the Working Group on business and human rights and the Special Rapporteur on human rights and the environment. The Special Rapporteur also expresses his gratitude to Member States and stakeholders that shared their expertise and perspectives.

II. Shipping, international trade and human rights

5. Marine transportation plays a crucial role in international trade. Ocean shipping represents around 90 per cent of traded goods worldwide.² Some 11 billion tons of

¹ Submissions available at www.ohchr.org/en/special-procedures/sr-toxics-and-human-rights/call-submission-sr-toxics-and-human-rights-impact-analysis-international-maritime-organization-imo.

² See www.oecd.org/ocean/topics/ocean-shipping/.

cargo were shipped in 2021.³ As of 2019, the total value of the annual world shipping trade had reached more than \$14 trillion.⁴

6. In 2019, 40 per cent of the world's merchant fleet were domiciled in Greece, Japan and China. Meanwhile, 41 per cent of the world's carrying capacity is registered in the registries of Panama, the Marshall Islands and Liberia.⁵

7. The world merchant fleet has around 96,000 ships with almost 2 billion dead weight tonnage of carrying capacity. Some 23 per cent can carry dry bulk (such as iron ore, coal, grain and the like) or crude oil and its products.⁶

8. Shipping provides the most cost-effective method of transportation for goods worldwide when compared with road, rail and airfreight. Although the international shipping industry is key to the functioning of the global economy, the sector has been the object of serious human rights and environmental concerns. While some sustainability initiatives have increased focus on shipping's environmental impacts, much remains to be done to address human rights risks and responsibilities.

III. United Nations Convention on the Law of the Sea and International Maritime Organization conventions

9. Adopted in 1982, the United Nations Convention on the Law of the Sea provides a comprehensive regime of law and order for the world's oceans and seas, including rules governing all uses of the oceans and their resources. The Convention can be described as a "framework convention" setting out principles, definitions, general provisions and jurisdictional authorities. Accordingly, many of its rules require implementation through specific operative regulations in other international agreements.⁷ For example, in 2023 an intergovernmental conference adopted an international legally binding instrument under the Convention on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction.

10. Key principles of the Convention relating to shipping include freedom of navigation and the obligation to protect and preserve the marine environment. There is an inherent tension between the freedom of navigation and the need to regulate to secure maritime safety and environmental protection. The Convention mediates this tension by subjecting the freedom of navigation to the conditions laid down by "other rules of international law",⁸ which include IMO instruments and, crucially, human rights standards.⁹

11. The Convention provides that flag, port and coastal States have some varying duty of enforcement.¹⁰ To strengthen enforcement capabilities, IMO developed the IMO Member State Audit Scheme, which became mandatory in 2016.¹¹ Under the scheme, IMO reviews member States' performance at periodic intervals and,

³ *Review of Maritime Transport 2022: Navigating Stormy Waters* (United Nations publication, 2022). See <https://unctad.org/rmt2022>.

⁴ See www.ics-shipping.org/shipping-fact/shipping-and-world-trade-driving-prosperity/.

⁵ See https://unctadstat.unctad.org/Infographics/FleetOwnership_2019_800x1200.png.

⁶ See https://unctadstat.unctad.org/Infographics/MerchantFleet_2019_800x1200.png.

⁷ See IMO, document LEG/Misc.8.

⁸ United Nations Convention on the Law of the Sea, art. 87 (1).

⁹ See Anna Petrig and Marta Bo, "The International Tribunal for the Law of the Sea and human rights", in *Human Rights Norms in 'Other' International Courts*, Martin Scheinin, ed. (Cambridge University Press, 2019).

¹⁰ United Nations Convention on the Law of the Sea, arts. 217, 218 and 220.

¹¹ IMO resolution A.1067(28).

following each audit, provides the member State with an interim report, a final report, an executive summary report and/or a corrective plan.¹²

12. In 1948, an international conference in Geneva adopted a convention that formally established the Inter-Governmental Maritime Consultative Organization, which changed its name to the International Maritime Organization in 1982. IMO is the primary body governing shipping, including maritime safety, maritime security and the prevention of pollution by ships. At present, 175 sovereign States are members of IMO and three territories of member States are associate members.

13. Article 1 (a) of the Convention on the Inter-Governmental Maritime Consultative Organization explains that the purpose of IMO is:

to provide machinery for cooperation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; [and] to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships.

14. To achieve its objectives, IMO has developed a number of international instruments enjoying significant ratification, such as the International Convention for the Safety of Life at Sea with 167 States parties, and the International Convention for the Prevention of Pollution from Ships with 160 States parties. IMO administers roughly 50 treaties.¹³

15. The 2005 Protocol to the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation of IMO is the only treaty that explicitly refers to human rights. As the United Nations Convention on the Law of the Sea makes clear, flag States, coastal States and port States are all subject to international regulations and law, which includes international human rights law. Hence, all human rights treaties and principles apply to shipping and related activities and provide a useful framework for all stakeholders.

IV. Shipping and pollution

16. Marine pollution may originate from a variety of sources, including space-launch debris, ocean dumping, the operation of vessels, oil and gas activities, mining activities, accidents and land-based activities such as agricultural runoff. Pollution from ships includes oil, chemicals, garbage, plastics, sewage, air pollution, greenhouse gas emissions, the dumping of waste and ballast water, anti-fouling systems, noise and ship recycling, among others.

17. Article 1 of the United Nations Convention on the Law of the Sea defines the “pollution of the marine environment” as:

the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.

¹² Ibid., para 4.1.1.

¹³ For the complete list of IMO conventions see <http://www.imo.org/en/about/Conventions/Pages/ListOfConventions.aspx>.

18. Exposure to toxic chemicals in the context of shipping threatens a wide range of human rights, including the rights to life, health, security of the person and bodily integrity, food, water and sanitation, and safe and healthy working conditions, as well as the right to a clean, healthy and sustainable environment.

A. Water pollution

19. Ships are responsible for large-scale water pollution through biofouling and anti-fouling systems; the release of ballast water, black water, grey water or bilge water; and spills of oil or hazardous substances.

20. Oil and toxic spills remain among the most significant and environmentally damaging disasters worldwide, and arise from deliberate discharges, negligence or accidental leaks. In July 2020, for example, the MV *Wakashio* struck a reef off Mauritius and spilled more than 1,000 tons of fuel oil into the Indian Ocean (see [A/HRC/51/35/Add.1](#)). As with marine life, coastal communities are also directly affected by, and at significant risk from, oil and toxic spills from ships. While spills are becoming less frequent, they remain a grave concern. Noise pollution caused by vessel traffic also threatens to disturb marine life and coastal communities.¹⁴

21. Freight and cargo ships involved in transporting goods also contribute to marine pollution. The main categories of marine cargo are liquid or “wet” bulk cargo (e.g. chemical) containers and dry bulk cargo (e.g. coal, iron ore and grain). As of 2018, dry bulk represented most shipping volumes worldwide.¹⁵ During transport, cargo can often become lost owing to, for example, bad weather, poor infrastructure or human error.¹⁶ On average, 1,600 containers are lost every year.¹⁷ Often, containers are loaded with plastic products (see [A/76/207](#)).

22. It is estimated that the total volume of chemicals entering the ocean rose by 12 per cent between 2003 and 2012.¹⁸ Toxic chemicals accumulate in marine organisms throughout the entire food chain and also affect non-aquatic species.¹⁹ Oil spills have harmful consequences for fur-bearing mammals, birds, fish and corals, among other species, ranging from hypothermia and dysfunction of the immune and reproductive systems to poisoning.²⁰ At the top of the food chain, humans are the final recipients of these toxins. Since some types of contaminants do not break down easily in the environment, they can build up in a person’s body, for example through the long-term intake of contaminated fish. Even low concentrations of heavy metals and other hazardous substances can directly transfer to the human body and cause toxic effects.²¹ Moreover, the impact on coastal ecosystems on which local tourism and fisheries rely often aggravates the already existing vulnerabilities of marginalized groups of society (e.g. low-income households, women, children, ethnic minorities, Indigenous Peoples and persons with disabilities).

¹⁴ Lindy Weilgart, “The impact of ocean noise pollution on fish and invertebrates”, 1 May 2018, pp. 16–17.

¹⁵ See United Nations Conference on Trade and Development (UNCTAD), “Overview: review of the maritime transport 2022” (UNCTAD.RMT/2022 (Overview)).

¹⁶ See European Maritime Safety Agency, *European Maritime Transport Environmental Report 2021* (Luxembourg, Publications Office of the European Union, 2021).

¹⁷ See World Shipping Council, “Containers lost at sea: 2022 update”, 2022.

¹⁸ See One Ocean, “Marine pollution”, September 2019.

¹⁹ Ibid.

²⁰ See National Oceanic and Atmospheric Administration, “How does oil impact marine life?”, 20 January 2023.

²¹ Pramita Garai and others, “Effect of heavy metals on fishes: toxic and bioaccumulation”, *Journal of Clinical Toxicology*, vol. 11, S18 No. 1 (2021), p. 1.

23. The disposal of hazardous substances into the sea also contributes to eutrophication,²² which threatens watercourses and lake and ocean biodiversity and essential fish species on which human livelihoods rely. This all undermines Sustainable Development Goal indicator 14.1.1 (a).²³

24. The prevention of pollution from ships is also reliant on the provision of adequate port reception facilities for the discharge of wastes. At present there is a lack of adequate reception sites.²⁴ There is also significant variability in the provisions for vessel waste management.²⁵ These inadequacies incentivize illegal discharge and on-board incineration, and they unduly burden the vessels attempting to comply with international disposal regulations.

B. Air pollution

25. Air pollution associated with marine shipping accounts for 33 per cent of global trade-related emissions.²⁶ On a more granular level, marine transportation accounts for 10 to 15 per cent of the world's anthropogenic sulphur oxide (SOx) and nitrogen oxide (NOx) emissions.²⁷ In addition, approximately 1.8 million tons of particulate matter are released annually.²⁸ High levels of SOx and NOx cause significant respiratory issues.²⁹ They are also the principal components of smog, a type of visible air pollution that increases the risk of heart and lung diseases.³⁰ NOx also reacts with other volatile organic compounds in the atmosphere to form ozone, which damages vegetation by interfering with photosynthesis and also causes serious respiratory diseases.³¹ Atmospheric deposition of SOx and NOx can increase ocean acidity, harming marine ecosystems and the coastal communities that rely on them.³² Shipping-related emissions of particulate matter are linked to thousands of lung cancer and cardiopulmonary diseases.³³ These health impacts are especially

²² See United Nations Environment Programme (UNEP), "Eutrophication", LEO Thesaurus. Available at <https://leap.unep.org/knowledge/glossary/eutrophication>.

²³ United Nations, Department of Economic and Social Affairs, Statistics Division, "Goal 14: indicator 14.1.1 (a)", SDG Indicator Metadata database. Available at <https://unstats.un.org/sdgs/metadata/>.

²⁴ IMO, consultation with the Special Rapporteur on 24 March 2021.

²⁵ Gabriela Argüello, "Environmentally sound management of ship wastes: challenges and opportunities for European ports", *Journal of Shipping and Trade*, vol. 5, No. 1 (2019), p. 9.

²⁶ Anca Cristea and others, "Trade and the greenhouse gas emissions from international freight transport", *Journal of Environmental Economics and Management*, vol. 65, No. 1 (January 2013), p. 153.

²⁷ Haakon E. Lindstad and Gunnar S. Eskeland, "Environmental regulations in shipping: Policies leaning towards globalization of scrubbers deserve scrutiny", *Transportation Research Part D: Transport and Environment*, vol. 47 (August 2016), p. 68.

²⁸ Tony R. Walker and others, "Environmental effects of marine transportation", *World Seas: An Environmental Evaluation: Volume III – Ecological Issues and Environmental Impacts*, 2nd ed., Charles Sheppard, ed. (2019), p. 4.

²⁹ Tony R. Walker, "Green marine: an environmental programme to establish sustainability in marine transportation", *Marine Pollution Bulletin*, vol. 105, No. 1 (April 2016), pp. 199–203.

³⁰ Ibid.

³¹ Kevin Cullinane and Sharon Cullinane, "Atmospheric emissions from shipping: the need for regulation and approaches to compliance", *Transport Reviews*, vol. 33, No. 4 (2013), pp. 377–379.

³² Robert A. Duce, James N. Galloway and Peter S. Liss, "The impacts of atmospheric deposition to the ocean on marine ecosystems and climate", *World Meteorological Organization Bulletin*, vol. 58, No. 1 (2009).

³³ See www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM. See also Dan Rutherford and Josh Miller, "Silent but deadly: the case of shipping emissions", International Council on Clean Transportation blog, 22 March 2019.

significant given that approximately 70 per cent of conventional pollutants occur less than 400 kilometres from land.³⁴

26. Low air quality due to international maritime transport contributes to approximately 60,000 deaths annually. The highest mortality rates, associated with high concentrations of shipping-related particulate matter, are reportedly seen in Asia and Europe. Given that almost 40 per cent of the European population lives within 50 kilometres of the sea, ship emissions have the potential to adversely affect a large percentage of the population.³⁵

C. Dumping

27. The dumping of hazardous substances and wastes remains a significant source of marine pollution. According to the European Maritime Safety Agency, between 2014 and 2021, 495 cases of pollution were reported in European Union member States' territorial seas or internal waters. Marine pollution by ship's bunkers (fuel) and other pollutants (e.g. cargo residues, lubricating or hydraulic oils) corresponded to 64.2 per cent of all pollution incidents.³⁶

28. Bilge dumping is the disposal of a mix of liquids from ship engines and other potentially toxic substances into the ocean. While it receives less attention than catastrophic oil spills, bilge dumping could amount to 200,000 cubic metres annually.³⁷ However, most cases cannot be verified and remain unpunished. Low levels of accountability, transparency and State control over ships at sea facilitate this situation. In addition, unscrupulous actors have developed tactics to avoid detection, hindering an accurate estimation of the scale of illegal bilge dumping.³⁸ Uncovering the actual extent of this practice remains difficult, particularly since lower-ranked crew members are allegedly often threatened with dismissal or being "blacklisted" if they report such activities.³⁹

29. In 1972, the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter was adopted to prevent pollution of the sea by the dumping of hazardous products and wastes.⁴⁰ The 1996 Protocol to the Convention was later agreed upon to prohibit the dumping of hazardous products while regulating the disposal of less hazardous materials, and a "reverse list" approach was adopted that implied that all dumping was prohibited unless explicitly permitted; the incineration of wastes at sea was prohibited; and the export of wastes for the purpose of dumping or incineration at sea was prohibited.⁴¹ Since the 1990s, amendments to the Convention have been adopted to explicitly ban the dumping of radioactive and industrial waste, and in 2022, of sewage sludge.⁴² Today, there are 100 parties in total to the Convention and the 1996 Protocol.

³⁴ Øyvind Endersen, "Emission from international sea transportation and environmental impact", *Journal of Geophysical Research*, vol. 108, No. D17 (September 2003), p. 1.

³⁵ See European Maritime Safety Agency, *European Maritime Transport Environmental Report 2021* (Luxembourg, 2021).

³⁶ See European Maritime Safety Agency, "Annual Overview of Marine Casualties and Incidents 2022".

³⁷ Max Bernhard, Julia Bayer and Nina Werkhäuser, "Cargo ships dumping oil into the sea go unpunished", *Deutsche Welle*, 22 March 2022.

³⁸ Laura Paddison and others, "Revealed: ships may dump oil up to 3,000 times a year in Europe's waters", *The Guardian*, 22 March 2022.

³⁹ Bernhard, Bayer and Werkhäuser, "Cargo ships dumping oil into the sea".

⁴⁰ See www.imo.org/en/OurWork/Environment/Pages/London-Convention-Protocol.aspx.

⁴¹ *Ibid.*

⁴² See IMO, "Dumping of sewage sludge at sea to be prohibited worldwide", 10 October 2022.

30. The potential application of the dumping instruments and the United Nations Convention on the Law of the Sea is receiving increased attention because of a plan by Japan to discharge contaminated water from the Fukushima plant into the Pacific Ocean. Japan has argued that it has treated the Fukushima waters using the Advanced Liquid Processing System technology. However, this method does not treat some radioactive elements such as carbon-14 and tritium.⁴³

31. The United Nations Convention on the Law of the Sea defines dumping as “any deliberate disposal of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea”. This definition excludes land-based sources of pollution, such as that which flows from rivers to the sea. But it is not self-evident that the definition excludes pipelines or other “man-made structures” designed and built to discharge contaminated waters into the marine environment.

D. Ship-breaking

32. Ship-breaking, also known as ship dismantling or ship recycling, is a type of ship disposal involving the dismantling of an obsolete vessel’s structure for scrapping or disposal. Ship-breaking continues to be one of the most hazardous occupations in the world, with extremely poor working practices and environmental conditions prevailing in many ship-breaking yards.⁴⁴

33. Ship-breaking often releases substances such as oil, lubricants and other hazardous chemicals, contaminating air, soil and water.⁴⁵ These toxic chemicals include anti-fouling paints; asbestos; polychlorinated biphenyls (PCBs); polyvinyl chloride (PVC); heavy metals, such as lead, mercury, arsenic or cadmium; polycyclic aromatic hydrocarbons (PAHs); organotins; oil and sludge; and bilge and ballast waste, all of which threaten the lives and health of workers and local communities.⁴⁶

34. Ship-breaking in developing countries is often cheaper because of low wages, the absence of social protections or the lack of implementation of environmental laws and workers’ rights, including the right to safe and healthy working conditions. This “market-based” system reflects a global environmental injustice, as end-of-life vessels are transferred to the global South, where poor workers and communities suffer human rights and environmental damage while industrialized countries and shipping interests reap the profits of seaborne trade.⁴⁷

35. While some positive steps have been taken, including the ban of some toxic materials in the construction of ships, much more remains to be done. The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships was adopted in 2009. The Hong Kong Convention is aimed at ensuring that ships, when being recycled, do not pose any unnecessary risks to human health, safety or the environment. It is expected to enter into force in 2025.⁴⁸

⁴³ See communication No. AL JPN 1/2021.

⁴⁴ Greenpeace International and FIDH, *End of Life Ships: The Human Cost of Breaking Ships* (2005), pp. 15–38; United Kingdom, Royal Courts of Justice, *Hamida Begum v. Maran (UK) Limited [2021] England and Wales Court of Appeal, Civil Division 326*, Decision of 10 March 2021; and Leigh Day, “Shipbreaking judgment: the shipping industry and the law of negligence”, 10 March 2021.

⁴⁵ International Transport Forum, *Navigating Towards Cleaner Maritime Shipping: Lessons from the Nordic Region* (Paris, OECD Publishing, 2020).

⁴⁶ W. Lin Wu and others, “Asbestos exposure increases risk of cancer in ship recycling workers”, *Science for Environment Policy* No. 55, 2016.

⁴⁷ See, for example, Saiful Karim, *Shipbreaking in Developing Countries: A Requiem for Environmental Justice from the Perspective of Bangladesh* (Routledge, 2018).

⁴⁸ See Marcus Hand, “IMO ship recycling convention to finally come into force in 2025”, *Seatrade Maritime*, 27 June 2023.

36. While the Hong Kong Convention regulates the design, construction, operation and preparation of ships in order to support sustainable end-of-life ship recycling, it does not prohibit unsafe forms of recycling such as “beaching”. Furthermore, the Convention does not include provisions on the duty to reimport illegally transferred waste or the duty to minimize transboundary movement of waste.⁴⁹ As such, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal⁵⁰ establishes stronger levels of protection regarding the cross-border transfer of ships for recycling.

E. Climate change

37. The shipping industry contributes significantly to the effects of climate change, as it is responsible for approximately 2.89 per cent of global greenhouse gas emissions as of 2022.⁵¹ These emissions directly relate to international trade, as more than 80 per cent of global trade is carried across the world’s oceans by ships.

38. Anthropogenic climate change leads to sea-level rise, increased ocean temperatures, the acidification of waters and more frequent and severe storms and surges. This is forcing coastal communities to leave their homes and seek livelihoods elsewhere (see [A/HRC/53/54](#)). The adverse impacts of climate change are often felt most severely by people living in vulnerable situations.

39. The greenhouse gases emitted by merchant ships, including carbon dioxide, methane and nitrous oxide, have increased by 10 per cent from 2012 to 2018 and will likely continue to rise, aggravating the threat of climate change.⁵² According to the United Nations Conference on Trade and Development (UNCTAD), between 2020 and 2021, emissions of greenhouse gases increased by 4.7 per cent.⁵³ Bulk carriers, oil tankers and container ships are responsible for the majority of greenhouse gas emissions in the shipping sector, primarily due to the burning of high-sulphur marine diesel oil, marine fuel oil and heavy fuel oil.⁵⁴ If left unregulated, the shipping industry could contribute up to 17 per cent of global carbon dioxide emissions by 2050.⁵⁵

40. In 2018, IMO adopted an initial strategy for the reduction of greenhouse gas emissions from ships. The initial strategy sought to reduce the total annual greenhouse gas emissions by at least 50 per cent by 2050 compared with 2008.⁵⁶ This strategy was much criticized for failing to align with the temperature goals of the Paris Agreement.

41. In 2023, IMO revised its greenhouse gas emissions reduction strategy to reach net-zero greenhouse gas emissions by 2050, with indicative checkpoints at 2030 and 2040. Measures to enhance the energy efficiency of vessels complement the strategy ([A/HRC/54/25/Add.2](#), para. 49). In addition, a basket of economic measures is to be developed to accompany the strategy and accelerate the energy transition. The concept of “zero-emission maritime trade routes”, first discussed at the twenty-sixth meeting of the Conference of the Parties to the United Nations Framework

⁴⁹ Centre for International Environmental Law, *Shipbreaking and the Basel Convention: Analysis of the Level of Control Established under the Hong Kong Convention* (2011), p. 57.

⁵⁰ United Nations, *Treaty Series*, vol. 1673, No. 28911.

⁵¹ IMO, *Fourth IMO Greenhouse Gas Study 2020* (London, 2021), p. 121. See also Estela Morante, “Roadmap to decarbonize the shipping sector: Technology development, consistent policies and investment in research, development and innovation”, UNCTAD, 19 December 2022.

⁵² IMO, *Fourth Greenhouse Gas Study 2020*.

⁵³ See <https://unctad.org/rmt2022>.

⁵⁴ IMO, *Third IMO Green House Gas Study 2014* (London, 2015), p. 3.

⁵⁵ Martin Cames and others, *Emission Reduction Targets for International Aviation and Shipping* (European Union, 2015), p. 37.

⁵⁶ IMO, document MEPC 72/17/Add.1, para. 3.1.3.

Convention on Climate Change, could further increase the impact of these measures. While the revised IMO strategy is an important step that sets a vision and objectives, projections show that without additional measures the shipping sector is likely to increase its release of greenhouse gas emissions and aggravate the global climate change threat.

42. The revised IMO strategy also includes the uptake of zero or near-zero greenhouse gas emissions technologies, fuels and/or energy sources. This objective highlights the interface between decarbonization and detoxification strategies, which is analysed in the thematic report by the Special Rapporteur ([A/HRC/54/25/Add.2](#)).

F. Examples of marine pollutants

1. Oil

43. While they occur less frequently, petroleum (including gasoline, diesel, bunker fuel, and unrefined crude oil)⁵⁷ spills remain among the most significant and environmentally damaging disasters worldwide.⁵⁸ Oil spills pose a threat to food safety, to coastal communities who rely on fisheries or tourism and to human rights more broadly. The components of crude oil are very challenging to clean up. Once discharged, oil can travel hundreds of kilometres and last for years in the sediment and marine environment.⁵⁹ Polycyclic aromatic hydrocarbons, the main chemical compound present in petroleum products, are toxic to marine life and can devastate coastal communities, economies and tourist facilities.⁶⁰ The severity of a spill on a marine ecosystem depends on the type of oil, the exposure pathway and reactivity.⁶¹ Thicker oil slicks cause the greatest environmental harm, but even small quantities of surface oil can have an impact on wildlife.⁶²

2. Sulphur

44. Sulphur oxides can cause adverse impacts on human health, leading to respiratory complications and lung disease.⁶³ They also contribute to acid rain deposition, which can harm terrestrial ecosystems and contribute to ocean acidification.

3. Chemicals

45. UNCTAD estimates that 200 million tons of chemicals are traded by sea annually.⁶⁴ The long-term effect of chemical spills varies widely and depends on the

⁵⁷ International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978, annex I, regulation I. In which it defines oil as “petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products (other than those petrochemicals which are subject to the provisions of Annex II of the present Convention) and, without limiting the generality of the foregoing, includes the substances listed in appendix I to this Annex”.

⁵⁸ International Tanker Owners Pollution Federation, “Oil tanker spill statistics 2019”, January 2020, p. 7.

⁵⁹ Jerry M. Neff and others, “Effects of weathering on the toxicity of three offshore Australian crude oils and a diesel on marine animals”, *Environmental Toxicology and Chemistry*, vol. 19, No. 7 (July 2000), p. 1809.

⁶⁰ *Ibid.*, p. 1810.

⁶¹ *Ibid.*

⁶² *Ibid.*, p. 1811.

⁶³ United States, Environmental Protection Agency, “Report on the environment indicators: sulfur dioxide emissions”, May 2019, p. 1. Available at <https://cfpub.epa.gov/roe/indicators.cfm>.

⁶⁴ See *Review of Maritime Transport 2019* (United Nations publication, 2019); and *Review of Maritime Transport 2022* (United Nations publication, 2022).

quantity and nature of the chemical as well as the location of the spill.⁶⁵ Marine accidents may lead to chemical fires, explosions or toxic releases, devastating marine environments and affecting human health. Many chemicals are quite heterogeneous; therefore, the full extent of the risk they pose to aquatic organisms and humans has yet to be fully established.⁶⁶ Damage to the environment from chemicals can be difficult to address when they leach into the marine environment and become diluted.

4. Anti-fouling systems

46. Anti-fouling paints are used to coat the undersides of vessels to prevent unwanted organisms from growing on the hull and slowing down the ship and increasing fuel consumption.⁶⁷ The compounds in anti-fouling paints leach into the water and can persist for long periods, killing sea life, harming the environment and possibly biomagnifying through the food chain. Historically, lime and arsenic were used as hull coatings until the chemical industry developed anti-fouling paints. To tackle anti-fouling risks, the use of organotin compounds (e.g. tributyltin) is banned and, since 2023, so too is the biocide cybutryne.⁶⁸ As a result, copper-based compounds and other biocides have become the primary anti-fouling substances, which nevertheless carry their own risks.

5. Solid waste and wastewater pollution

47. Solid waste pollution generated by ships includes glass, metal and plastic containers, organic waste, cardboard and paper packaging waste, wastewater and hazardous waste (e.g. batteries, noxious liquids, paint waste and pharmaceuticals).⁶⁹ Food waste is one of the most significant waste streams.⁷⁰ Food waste is often discharged directly into the water, resulting in negative impacts on coastal waters, such as reduced water and sediment quality, damage to marine biota, increased turbidity and heightened nutrient levels.⁷¹ Incineration is prohibited and plastic is required to be stored on ship for onshore disposal.⁷² Ships also generate around 20 litres of sewage and about 120 litres of wastewater per person each day.⁷³ Raw sewage can legally be discharged on the high seas at a vessel speed of no less than four knots and at a certain minimum discharge rate.⁷⁴ Treated sewage may be discharged beyond three nautical miles from land.⁷⁵

6. Plastic waste

48. Plastics account for the majority (varying between 60 and 80 per cent) of marine debris.⁷⁶ There are an estimated minimum 5.25 trillion particles of macro- and

⁶⁵ A. Cristina S. Rocha and others, "Toxicity of seven priority hazardous and noxious substances (HNSs) to marine organisms: Current status, knowledge gaps and recommendations for future research", *Science of the Total Environment*, vol. 542, Part A (January 2016), p. 747.

⁶⁶ Ibid.

⁶⁷ See www.imo.org/en/OurWork/Environment/Pages/Anti-fouling.aspx.

⁶⁸ International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001.

⁶⁹ Stefano Zuin, Elvis Belac and Boris Marzi, "Life cycle assessment of ship-generated wasted management of Luke Koper", *Waste Management*, vol. 29, No. 12 (December 2009), p. 3036.

⁷⁰ Ibid.

⁷¹ Ibid.

⁷² Ibid.

⁷³ Nickie Butt, "The impact of cruise ship generated wasted on home ports and ports of call: a study of Southampton", *Marine Policy*, vol. 31, No. 5 (September 2007), p. 591.

⁷⁴ International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978, annex IV, regulation 11.1.1; and IMO resolution MEPC.157(55).

⁷⁵ International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978, annex IV.

⁷⁶ Jelena Čulin and Toni Bielić, "Plastic pollution from ships", *Journal of Maritime and*

microplastics, weighing 268,940 tons in total, afloat in the world's oceans.⁷⁷ This situation will worsen given that global plastic production is set to double in the next 10 years.⁷⁸ Plastic litter can enter the marine environment from a wide range of land- and sea-based activities. Nearly 20 per cent of total marine plastic waste comes from marine-based sources, including cargo, recreational and military activities, fishing, aquaculture facilities, oil and gas platforms and legal and illegal dumping.⁷⁹ The remaining 80 per cent enters the marine environment from land-based sources.⁸⁰

49. The fishing industry is responsible for the 500,000 to 1,000,000 tons of plastic fishing nets that pollute the oceans and coastal communities every year.⁸¹ Abandoned, lost or otherwise discarded fishing gear, often the result of illegal, unreported and unregulated fishing, accounts for approximately 10 per cent of the total plastic entering the oceans.⁸² Vessels engaged in illegal, unreported and unregulated fishing are more likely to lose fishing gear in risky areas, to lose fishing gear as a result of fishing in poor weather and to dump gear to evade capture, destroy evidence or ensure port access.⁸³

50. Much of the plastic currently under production is designed to be thrown away after a single use and can take thousands of years to decompose.⁸⁴ The ecological impacts of plastics in the marine environment have been well documented and include the death of marine organisms by ingestion or entanglement, the pollution of the seabed associated with toxic substances added to plastics, the destruction of coral reefs and biomagnification across the food chain into human populations.⁸⁵ Plastic bags can also block or clog waterways, worsening natural disasters and providing breeding grounds for organisms that carry vector-borne diseases.⁸⁶ Some plastic products contain carcinogenic chemicals such as styrene and benzene, which are highly toxic if ingested and can lead to damage of the nervous system and lungs as well as to reproductive abnormalities.⁸⁷ The incineration of plastic waste in open-air pits results in the release of hazardous substances such as furans and dioxins.⁸⁸

51. Plastic pollution also causes a significant amount of economic damage. Plastic debris in the Asia-Pacific region alone costs its tourism, fishing and shipping

Transportation Sciences (Pomorski zbornik), vol. 51, No. 1 (March 2016), pp. 57–66; and United Nations, “Fact sheet: marine pollution”, prepared for the Ocean Conference, New York, June 2017, available at https://sustainabledevelopment.un.org/content/documents/Ocean_Factsheet_Pollution.pdf.

⁷⁷ Marcus Eriksen, “Plastic pollution in the world's oceans: more than 5 trillion plastic pieces weighing over 250,000 tons afloat at sea”, *PLOS One*, vol. 9, No. 12 (2014), p. 1.

⁷⁸ See UNEP, *Single-Use Plastics: A Roadmap for Sustainability* (2018), p. 3.

⁷⁹ See Čulin and Bielić, “Plastic pollution from ships”; and United Nations, “Fact sheet: marine pollution”.

⁸⁰ Ibid.

⁸¹ World Wildlife Fund, *Stop Ghost Gear: The Most Deadly Form of Marine Plastic Debris* (Gland, Switzerland, 2020).

⁸² L. Lebreton and others, “Evidence that the Great Pacific Garbage Patch is rapidly accumulating plastic”, *Scientific Reports*, vol. 8, No. 4666 (2018); and <https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/pressures-human-activities/marine-litter/beach-litter/>.

⁸³ Graeme Macfadyen, Tim Huntingon and Rod Cappell, *Abandoned, Lost or Otherwise Discarded Fishing Gear*, UNEP Regional Seas Reports and Studies, No. 185 and Food and Agriculture Organization of the United Nations (FAO) Fisheries and Aquaculture Technical Paper, No. 523 (Rome, UNEP and FAO, 2009).

⁸⁴ See UNEP, *Single-Use Plastics*, p. 3.

⁸⁵ See Čulin and Bielić, “Plastic pollution from ships”; and Ibrahim Issifu and U. Rashid Sumaila, “A review of the production, recycling and management of marine plastic pollution”, *Journal of Marine Science Engineering*, vol. 8, No. 11 (November 2020), pp. 949–51.

⁸⁶ UNEP, *Single-Use Plastics*.

⁸⁷ Issifu and Sumaila, “A review of the production, recycling and management”, p. 956.

⁸⁸ UNEP, *Single-Use Plastics*, p. 3.

industries \$1.3 billion per year.⁸⁹ Similarly, removing plastic waste from coasts and beaches costs countries in Europe about €630 million per year. Studies estimate that plastics cost at least \$13 billion dollars in damage to the world's ecosystems yearly.⁹⁰ Despite these data points, there is a significant lack of transparency throughout the life cycle of plastics production.⁹¹ In this context, the treaty on plastic pollution, currently in negotiations conducted through the United Nations Environment Programme, is expected to be a crucial tool for curbing the disastrous impact of plastic pollution.

7. Black carbon

52. Black carbon, a small soot particle that is emitted when fuel fails to burn completely, is the second-largest contributor to shipping's climate impacts, representing 7 per cent and 21 per cent of carbon dioxide-equivalent emissions on a 100-year and 20-year time frame, respectively.⁹² Ship fuel, specifically heavy fuel oil, emits high amounts of black carbon when burned.⁹³ Since 2015, use of heavy fuel oil in the Arctic has grown by 75 per cent, while black carbon pollution from ships has increased by 85 per cent and will reportedly continue to grow if the use of heavy fuel oil remains unabated.⁹⁴

53. Black carbon is a potent driver of climate change, especially in Arctic regions. Black carbon is 3,200 times more persistent than carbon dioxide on a 20-year timescale.⁹⁵ When it lands on snow or ice, it reduces the surface reflectivity, causing the snow or ice to absorb more of the sun's energy, accelerating melt rates and exacerbating global warming.⁹⁶ Black carbon also has significant adverse health impacts. It can penetrate deep into the lungs and is linked to cardiovascular diseases, strokes and cancer, and to acute respiratory infections in children.

54. Indigenous Peoples in the Arctic are particularly vulnerable to black carbon pollution. Since Indigenous Peoples depend on Arctic natural resources for spiritual, physical and other sustenance, the adverse climate-related impacts, including increased temperatures, melting snow and permafrost, shrinking glaciers, longer dry seasons, an increase in forest fires and severe climate extremes, threaten their health and food security.⁹⁷ The failure to effectively regulate black carbon emissions may infringe on their cultural rights, their right to self-determination, their right to the means of subsistence, their right to property and their right to a clean, healthy and sustainable environment, among others.

⁸⁹ Ibid.

⁹⁰ Ibid.

⁹¹ "The lifecycle of plastics and human rights", global stakeholders' consultation with the Special Rapporteur, held on 30 March 2021.

⁹² International Council on Clean Transportation, "Greenhouse gas emissions from global shipping, 2013–2015", October 2017, p. v.

⁹³ International Council on Clean Transportation, "The International Maritime Organization's proposed arctic heavy fuel oil ban: likely impacts and opportunities for improvement", September 2020, p. iv.

⁹⁴ Ibid.

⁹⁵ T.C. Bond and others, "Bounding the role of black carbon in the climate system: a scientific assessment", *Journal of Geophysical Research: Atmospheres*, vol. 118, No. 11 (June 2013), p. 5413.

⁹⁶ International Council on Clean Transportation, "Greenhouse gas emissions from global shipping", p. v.

⁹⁷ Veronica de la Rosa Jaimes, "Rapid arctic warming, black carbon and Athabaskan peoples: a human rights case", *ILSA Quarterly*, vol. 23, No. 3. (February 2015), p. 21.

8. Noise

55. Noise is also a form of pollution. Underwater radiated noise caused by vessel traffic, the military use of sonar⁹⁸ and resource extraction, among other sources, can cause loss of hearing and behavioural changes in marine species such as fish, invertebrates and phytoplankton.⁹⁹ In 2023, IMO updated its guidelines on underwater radiated noise.¹⁰⁰

V. Seafarers' right to a safe and healthy working environment

56. The human right to safe and healthy working conditions is explicitly recognized in international law and is a fundamental aspect of the right to just and favourable working conditions. All workers in both formal and informal settings have the inherent right to life, the right to enjoy the highest attainable standard of physical and mental health and the right to physical integrity.

57. The harms of chronic exposure to toxics are often invisible, and it may be years or even decades until adverse health impacts manifest in workers. The prevention of exposure to toxic substances is essential to protect human rights, including the rights of workers as reflected in the principles on human rights and the protection of workers from exposure to toxic substances (see [A/HRC/42/41](#)).

58. The Maritime Labour Convention, 2006, of the International Labour Organization (ILO) sets minimum requirements for working and living conditions for seafarers, including recruitment and placement practices, conditions of employment, hours of work and rest, repatriation, annual leave, the payment of wages, accommodation, recreational facilities, food and catering, health protection, occupational safety and health, medical care, onshore welfare services and social protection.

59. In June 2022, ILO recognized “a safe and healthy working environment” as a fundamental principle and right at work. It also designated the Occupational Safety and Health Convention, 1981 (No. 155), and the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187), as fundamental conventions.¹⁰¹ The human right to a clean, healthy and sustainable environment also applies to seafarers.¹⁰²

A. Recruitment, contracting and supply chains

60. Various practices in maritime recruitment, including recruitment fees, abandonment and informal assignment, increase the risk of debt bondage and forced labour. Recruiting large numbers of temporary or contract workers increases the risks of labour rights violations and exploitation since those workers are subject to less favourable employment terms. This has been witnessed in the fisheries sector, where

⁹⁸ Alix Kroeger, “How the war in Ukraine is killing marine mammals”, BBC Future, 4 January 2023.

⁹⁹ Rob Williams and others, “Impacts of anthropogenic noise on marine life: publication patterns, new discoveries, and future directions in research and management”, *Ocean and Coastal Management*, vol. 115 (October 2015); and Lindy Weilgart, “The impact of ocean noise pollution on fish and invertebrates”, 1 May 2018.

¹⁰⁰ IMO, document MEPC.1/Circ.906; and www.imo.org/en/MediaCentre/MeetingSummaries/Pages/MEPC-80.aspx.

¹⁰¹ See <http://www.ilo.org/global/topics/safety-and-health-at-work/areasofwork/fundamental-principle/lang--en/index.htm>.

¹⁰² As recognized by Human Rights Council resolution 48/13 in 2021, and General Assembly resolution 76/300 in 2022.

numerous fishers have been subjected to forced labour, including psychological and sexual abuse, trafficking and debt bondage, and have experienced work-related deaths.¹⁰³

61. The employment agencies used to hire workers are not effectively monitored, while recruitment fees increase the risk of debt bondage. Greater efforts must be taken to work with ethical and regulated recruitment agencies, in addition to prohibiting recruitment fees and communicating the expectation in contracts that human rights, employment and recruitment standards are respected across the supply chain.

62. In some instances, when a shipowner goes bankrupt, the ship is abandoned with the seafarers still aboard. These seafarers may not be paid their wages and are often not allowed to go ashore at the port where they have been abandoned.¹⁰⁴

63. In December 2022, the First Meeting of the Joint ILO–IMO Tripartite Working Group to identify and address seafarers’ issues and the human element adopted a set of guidelines for port State and flag State authorities on how to deal with cases of seafarer abandonment.¹⁰⁵ The guidelines seek to address the significant increase in cases of abandonment of crews reported to ILO, which have risen from fewer than 20 cases per year between 2011 and 2016 to 114 cases per year as of mid-December 2022.¹⁰⁶

B. Seafarers’ rights

64. Hazardous substances alone are estimated to cause more than 650,000 deaths a year in workplaces worldwide.¹⁰⁷ Crew members and seafarers also work in hazardous conditions. Poor health and safety standards, and procedures arising from the weak regulation and inspection of shipyards, increase the risk of accidents and injuries. Ships emit tons of gases and particles daily, causing severe health effects, including increased risks of asthma and cancer.¹⁰⁸

65. As a result of restrictions linked to the coronavirus disease (COVID-19) pandemic, approximately 400,000 seafarers in 2021 were stranded on ships after their contracts ended, were not remunerated and were unable to access medical assistance.¹⁰⁹ Many workers who sought to join a crew were prevented from doing so and thus lost their livelihoods. As a result, human rights issues have become increasingly salient to the industry. Reportedly, a similar crisis occurred in 2022, following the invasion of Ukraine, where hundreds of seafarers and crew members located in the Black Sea were stranded at ports under siege.¹¹⁰

¹⁰³ See www.ilo.org/global/topics/forced-labour/policy-areas/fisheries/lang--en/index.htm.

¹⁰⁴ ILO, Abandonment of Seafarers database, available at <http://www.ilo.org/dyn/seafarers/seafarersBrowse.list>.

¹⁰⁵ ILO and IMO, “Guidelines on how to deal with seafarer abandonment cases”, 2022.

¹⁰⁶ See ILO, “Joint ILO-IMO meeting adopts guidelines on seafarer abandonment”, 20 December 2022.

¹⁰⁷ See www.ilo.org/moscow/areas-of-work/occupational-safety-and-health/WCMS_249278/lang--en/index.htm.

¹⁰⁸ European Maritime Safety Agency, *European Maritime Transport Environmental Report 2021*.

¹⁰⁹ UN News, “‘An unwanted prison sentence’ for seafarers stuck at home and stranded at sea”, 6 January 2021.

¹¹⁰ ILO, “ILO and IMO call for urgent action on seafarers stranded in Ukraine following Russian aggression”, 8 April 2022; and United Nations Global Compact, “UN leaders urge companies relying on shipping supply chains to undertake urgent measures to protect seafarers’ rights”, 6 May 2021.

66. Enterprises that prioritize low-cost shipyards and suppliers put their workers at greater risk of substandard working conditions and weak regulatory compliance. Since human error is the primary cause of maritime accidents, it is essential for seafarers to be sufficiently trained. In addition, companies should follow the Promotional Framework for Occupational Safety and Health Convention and ensure that preventive measures are taken to avoid work-related accidents, for example emergency plans, reporting processes and grievance mechanisms.¹¹¹

C. Due process for seafarers

67. Seafarers have the right to due process and a fair trial.¹¹² This right applies both where seafarers are accused of violations of national laws or international standards, and also where seafarers complain of mistreatment by States and businesses.

68. With respect to pollution violations by foreign vessels at sea, States are under the obligation to observe the recognized rights of the accused.¹¹³ This obligation entails the non-discriminatory application of the laws of the forum State and the duty to incorporate all international human rights obligations binding the State.¹¹⁴ Considerations of humanity and human rights must be respected in the context of the prompt release of vessels and their crews in cases of arrest of ships by coastal States.¹¹⁵ At the same time, the growing and legitimate international concern over environmental offenses, including in relation to marine pollution, must be taken into consideration when interpreting the rights of the accused.¹¹⁶

69. In 2006, IMO and ILO adopted the Guidelines on fair treatment of seafarers in the event of a maritime accident as a way to ensure that seafarers are treated fairly during any investigation and detention by public authorities and that detention is for no longer than necessary. The IMO Legal Committee is currently considering draft guidelines on the fair treatment of seafarers detained on suspicion of committing maritime crimes.

VI. Application of a human rights-based approach to shipping and toxics

70. Shipping has a direct and indirect impact on the effective enjoyment of human rights, and the human rights responsibilities of States and businesses also apply at sea. The human rights principles of non-discrimination, accountability, transparency and participation are key to upholding the rights of individuals and groups that may be affected by shipping, including seafarers, coastal communities and Indigenous Peoples. However, references to the human rights obligations and responsibilities of States and private businesses are almost non-existent in the international instruments relating to shipping.

¹¹¹ Carine Dominguez-Péry and others, “Reducing maritime accidents in ships by tackling human error: a bibliometric review and research agenda”, *Journal of Shipping and Trade*, vol. 6, No. 20 (2021).

¹¹² See, for example, Universal Declaration of Human Rights, art. 10; and International Covenant on Civil and Political Rights, art. 14.

¹¹³ United Nations Convention on the Law of the Sea, art. 230.

¹¹⁴ Bernard H. Oxman, “Human rights and the United Nations Convention on the Law of the Sea”, *Columbia Journal of Transnational Law*, vol. 36, Nos. 1–2 (1998).

¹¹⁵ Petrig and Bo, “The International Tribunal for the Law of the Sea”.

¹¹⁶ In comparison see, for example, European Court of Human Rights, Grand Chamber, *Mangouras v. Spain*, Application No. 12050/04, Judgment, 28 September 2010, paras. 86–88.

A. Transparency and access to information

71. The right to information is crucial to the protection and promotion of human rights, the protection of the environment and the safety of shipping operations (see [A/74/480](#) and [A/HRC/30/40](#)). Seafarers and workers on ships and in ports who are exposed to toxic chemicals need to receive appropriate information before engaging in work activities.

72. Transparency and the right to information are also key to holding States and private companies accountable for human rights violations and infringements. Regional instruments, such as the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (the Aarhus Convention) and the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (the Escazú Agreement), require States to grant access to environmental information and foster public participation in environmental decision-making. So also do basic human rights norms recognized at the universal level.

B. Protection for whistle-blowers

73. Whistle-blowers who denounce illegal practices, whether seafarers or others, can play a critical role in enabling the enforcement of laws to protect the marine environment. For example, in the case involving the largest penalty levied by the United States of America on a cruise company, a whistle-blower reported the illegal dumping of oil-contaminated waste and the falsification of official logs to conceal the discharges from one of the company's ships.¹¹⁷

74. Seafarers who denounce illegal discharges of wastes generally can rely for protection only on national whistle-blowing laws, where they exist. Whistle-blowers should be recognized as human rights defenders and afforded adequate protection against intimidation, threats and other forms of reprisals, in line with the Declaration on the Right and Responsibility of Individuals, Groups and Organs of Society to Promote and Protect Universally Recognized Human Rights and Fundamental Freedoms adopted by the General Assembly in its resolution [53/144](#).

C. Meaningful participation in decision-making processes

75. Every person and community is entitled to active and meaningful participation in decision-making processes that can directly or indirectly affect them. Establishing participatory mechanisms with States and private businesses to hear the voices of maritime workers and their rights to peaceful assembly and freedom of association, including the right to form and join trade unions, is particularly important. In the light of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication adopted by States, establishing participatory mechanisms with local communities, including Indigenous and fisherfolk communities, is an important tool to consider. Applying these human rights principles also advances the shipping industry's interest in increasing trust and public support for improvements in the sector generally.

¹¹⁷ United States, Department of Justice, "Princess Cruise Lines to pay largest-ever criminal penalty for deliberate vessel pollution", 1 December 2016; and The Maritime Executive, "MARPOL whistle-blower gets \$1 million", 20 April 2017.

D. Non-discrimination and equality for women

76. Today, women represent only 2 per cent of the world's 1.2 million seafarers.¹¹⁸ In order to increase opportunities for the employment of women in a safe and healthy work environment, additional measures need to be taken. For instance, protective and safety gear that are tailored for women should be available on ships. Because women, owing to hormonal differences, are more susceptible to the effects of exposure to hazardous substances, additional measures should be taken to monitor the impact of toxic exposures on women.¹¹⁹

77. On 27 January 2020, the Women's International Shipping and Trading Association and IMO signed a memorandum of understanding under which they agreed to enhance technical cooperation activities in the maritime field to build opportunities for diversity and inclusion.¹²⁰ In addition, IMO established the International Day for Women in Maritime (18 May) to contribute to more awareness of women in maritime.

78. Nevertheless, much more needs to be done to allow for a healthy and safe working environment. Fear of discrimination or ill-treatment can hinder female crew members and workers in claiming their rights to a safe and healthy working environment or denouncing wrongdoings at sea and on shore.¹²¹ In a survey of 1,128 female seafarers from 78 countries, 60 per cent reported encountering gender-based discrimination on-board and 25 per cent reported that in the shipping sector, physical and sexual harassment was common, occurred on-board and involved intrusions on their privacy.¹²²

E. Just transition

79. As stated by the Secretary General: "Shipping, aviation, steel, cement, aluminium, agriculture – every sector must be aligned with net zero by 2050 with clear plans, including interim targets to get there."¹²³ In the context of shipping, just transition can be seen as the transition out of high-carbon activities and into a sustainable and non-polluting economy. In this context, workers who may lose their jobs as a result of ecological transformation should receive support for retraining and re-entering chemically safe circular economies, among other protections, and seafarers whose jobs are redefined must be retrained adequately (A/75/181/Rev.1, para. 9).

¹¹⁸ IMO, "Seafarers and aircrew need priority COVID-19 vaccination", 26 March 2021.

¹¹⁹ United Nations Development Programme, "Chemicals and gender", February 2011.

¹²⁰ *Review of Maritime Transport 2020* (United Nations publication, 2020), p. 50.

¹²¹ ILO, "Towards Indonesia's maritime industry free from discrimination and harassment", 9 November 2022; Julia Kercher and others, "Gender inequality in maritime industry: could systems thinking help?", Women+Sea, 18 May 2022; and Danny McGowan and Gustavo Abdiel Aguilar-Miranda, "Focus on rights at risk for LGBT+ crew", Nautilus International, 9 February 2022.

¹²² Anglo-Eastern and International Seafarers Welfare and Assistance Network, "Gender diversity: towards building and maintaining a diverse shipboard team", 1st ed., 2017 (The Diversity Handbook 2018); and Anglo-Eastern and International Seafarers Welfare and Assistance Network, "Gender diversity: heading towards an inclusive work culture", 2nd ed., 2022 (The Diversity Handbook 2022).

¹²³ António Guterres, Secretary-General, video message for press conference to launch the Synthesis Report of the Intergovernmental Panel on Climate Change, 20 March 2023.

F. Alignment of State and business actions with human rights law

80. Shipping companies and business enterprises can contribute to or cause harm to human rights and a healthy environment both directly (e.g. when businesses fail to ensure that working contracts and conditions comply with human rights standards or even engage in trafficking or forced labour), and indirectly (e.g. when human rights abuses occur through association or business relationships). It is therefore crucial that States, and in particular flag States, coastal States and port States, and businesses integrate and apply the Guiding Principles on Business and Human Rights.¹²⁴

G. Obligations of States to protect

81. Guiding Principle 1 of the Guiding Principles on Business and Human Rights calls on States to protect against human rights abuses within their territory and/or jurisdiction by third parties, including business enterprises. This requires taking appropriate steps to prevent, investigate, punish and redress such abuse through effective policies, legislation, regulations and adjudication. This duty encompasses extraterritorial action in situations over which State acts or omissions bring about serious and foreseeable adverse effects on the enjoyment of human rights and the State is in a position to regulate or influence the conduct of businesses.

82. Regarding the State duty to protect human rights at sea, three different types of jurisdictions come into the foreground: flag State, coastal State and port State.

83. Flag States (i.e. the State in which a vessel is registered) have primary enforcement responsibility over their vessels anywhere at sea. Flag States should establish and enforce clear legal frameworks to ensure compliance with international requirements and human rights standards. The flag State enforcement system requires that flag States be willing and technically equipped to enforce national and international standards, including IMO conventions. But several “flags of convenience” do not have the capacity to regulate the number of ships registered in them.

84. Coastal States have enforcement authority over their territorial seas and may declare exclusive economic zones that can extend for up to 200 nautical miles from their baselines. In an exclusive economic zone, all States enjoy the freedom of navigation and the coastal State has jurisdiction with regard to the protection and preservation of the marine environment. Similarly, the coastal State’s legal framework and enforcement measures must be in compliance with international norms and human rights standards.

85. Port States can serve as a “corrective remedy” and can act in cases in which ships are suspected of violating an IMO convention through inspection regimes such as the Paris Memorandum of Understanding on Port State Control, the Memorandum of Understanding on Port State Control in the Asia-Pacific Region, the Maritime Labour Convention and the Work in Fishing Convention, 2007 (No. 188). These regimes are vital components of a State’s duty under the Guiding Principles on Business and Human Rights, as they enable port States to investigate reports of human and labour rights violations on vessels that call into port, regardless of whether the vessel is registered domestically or abroad. For example, in 2018, South Africa inspected and seized a shipping vessel under the Work in Fishing Convention

¹²⁴ For more information on the Office of the United Nations High Commissioner for Human Rights and business and human rights, see www.ohchr.org/en/business-and-human-rights and www.ohchr.org/en/special-procedures/wg-business.

following complaints by crew members about health and safety concerns.¹²⁵ The ship was only released once the owner could prove that all concerns had been remediated. While the powers granted by these mechanisms are far-reaching, a lack of implementation limits their effectiveness.

86. Unfortunately, in many instances, the overlapping jurisdiction of different States results in inaction. This is further complicated by the fact that ships may be registered in one State but managed and operated by a business enterprise in another State, owned by a person or enterprise in a third State and crewed by individuals from several different States. This can result in no action taken by any State to protect human rights.

87. In addition, in some instances, the registration of vessels occurs without the knowledge or approval of the relevant national maritime administration. These fraudulent registrations prevent States from effectively exercising their jurisdictional control over vessels, deprive legitimate State registries from revenue and allow ships that are not in compliance with environmental and safety standards to continue to operate.

88. By introducing mandatory human rights due diligence, States can strengthen human rights at sea by requiring enterprises in maritime supply chains to take proactive steps to respect human rights and remedy violations.

H. Responsibility of businesses to respect

89. In accordance with Guiding Principle 11 of the Guiding Principles on Business and Human Rights, business enterprises have the responsibility to respect human rights by avoiding “infringing on the human rights of others” and addressing “adverse human rights impacts with which they are involved”. Taking these steps benefits businesses by potentially avoiding wrongdoings that will result in legal actions, negative publicity and reputational risks.

90. Shipping companies and businesses related to shipping should, at a minimum, fulfil their corporate responsibility to respect human rights by: (a) developing and implementing a policy commitment to meet their responsibility to respect human rights; (b) establish a human rights due diligence process to identify, prevent, mitigate and account for how they address their impacts on human rights; and (c) put in place processes to enable the remediation of any adverse human rights impacts they cause or to which they contribute.

1. Policy commitment on human rights¹²⁶

91. Human rights policies implemented by business enterprises must be appropriate and relevant, and informed by relevant expertise in order to be effectively applied. As human rights are indivisible, interdependent and interrelated, companies cannot choose to only respect some rights but not others; negative impacts, too, cannot be offset by general corporate social responsibility. Once approved and adopted, human rights policies should be public, shared with all staff and widely disseminated with business partners. The responsibility of ensuring that all business processes and operations comply with these policies lies firmly with the enterprise itself.

92. One such example of a specific human rights policy is the code of conduct introduced by the Sustainable Shipping Initiative in collaboration with the Institute

¹²⁵ ILO, “First fishing vessel detained under ILO Fishing Convention”, 17 July 2018.

¹²⁶ See United Nations, Guiding Principles on Business and Human Rights: Implementing the United Nations “Protect, Respect and Remedy” Framework, principle 16 (A/HRC/17/31, annex).

for Human Rights and Business and the Rafto Foundation. The code protects the rights of seafarers by reinforcing compliance with the Maritime Labour Convention and the commitment to fair terms of employment, crew well-being and safety and appropriate grievance processes.¹²⁷

2. Human rights due diligence

93. Human rights due diligence requires that businesses be able to “know and show” that they are respecting human rights by having in place policies and processes appropriate to their size and circumstances.¹²⁸ The process can be divided into the following stages: assessment; accountability; monitoring; transparency; and remediation.

94. Human rights impact assessments can help businesses achieve the first two stages because they enable enterprises to identify, prioritize and address any actual and potential human rights risks that an enterprise may cause or contribute to, either through its own activities or its business relationships. Corporate responsibility includes the duty “to prevent or mitigate adverse human rights impacts that are directly linked to their operations, products or services by their business relationships”, even where enterprises have not contributed to these adverse impacts.¹²⁹ These include violations in their supply chains.

95. In recent years, more businesses have said they are carrying out due diligence procedures, which has led to greater accountability within shipping supply chains. In 2021, Wesfarmers, an Australian-owned company, engaged an independent human rights consultant to conduct an assessment of human rights and modern slavery risks across the business and its supply chain. The consultant identified cargo shipping and charter vessels as being at high risk for modern slavery.¹³⁰ Wesfarmers reviewed and bolstered the modern slavery clauses in their shipping contracts.¹³¹

96. In addition, business enterprises should track and/or monitor ongoing human rights impacts in relation to business activities, report on those impacts and explain how human rights risks are being actively mitigated. Reports on human rights impacts should be made public, including through online posting, meetings and the publication of annual reports.

97. During the COVID-19 pandemic, some 400,000 seafarers were stranded on their ships beyond the end of their contracts,¹³² many without medical care.¹³³ To address this situation, IMO established a multi-divisional Seafarer Crisis Action Team that dealt with thousands of individual cases in 2020 alone, and joined an action group with ILO, the World Health Organization and transport organizations to protect workers and secure supply chains in future crises.¹³⁴ A number of tools were developed to provide guidance for cargo owners, charterers and logistics providers to conduct human rights due diligence across their supply chains to identify, prevent,

¹²⁷ Institute for Human Rights and Business, Sustainable Shipping Initiative and Rafto Foundation for Human Rights, “Delivering on seafarers’ rights code of conduct: a seafarers’ rights and welfare code of conduct for shipowners, operators, charterers and cargo owners”, October 2021.

¹²⁸ United Nations, Guiding Principles on Business and Human Rights, principle 17. See also commentary for principle 15.

¹²⁹ United Nations, Guiding Principles on Business and Human Rights, principle 13 (b).

¹³⁰ See <https://2021sustainability.wesfarmers.com.au/sustainability/our-principles/ethical-sourcing-and-human-rights/impact-of-covid-19>.

¹³¹ Ibid.

¹³² UN News, “‘An unwanted prison sentence’ for seafarers”.

¹³³ Birgit Pauksztat and others, “Seafarers’ experiences during the COVID-19 pandemic: report”, 2020, p. 11.

¹³⁴ ILO, “UN agencies and other international organizations establish Joint Action Group to protect transport workers and secure supply chains during the COVID-19 pandemic”, 13 December 2021.

mitigate and address adverse human rights impacts for seafarers affected by the COVID-19 crisis.

I. Obligation of States to remedy

98. Victims of human rights abuses must, in all circumstances, be given access to an effective remedy, judicial or non-judicial, where a human rights violation has occurred.¹³⁵ If a human rights violation is claimed, it is important that an independent and impartial investigation be conducted. Once human rights impacts have been identified, the company has a duty to remediate these either through direct action or by coordinating with other actors, as appropriate.

99. In the context of maritime operations, several conventions provide for liability and compensation in certain scenarios, such as the International Convention on Civil Liability for Oil Pollution Damage and the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, the International Convention on Civil Liability for Bunker Oil Pollution Damage and the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea. However, the efficacy of these instruments is limited by the number of ratifications or their implementations.

J. Accountability

100. Accountability is an essential element of the human rights framework. Without it, there can be no effective measures to remedy a situation of wrongdoing and ensure non-repetition. It is also a central element in improving policies and programmes and moving away from mere declarations.

101. Accountability is characterized by the three dimensions of responsibility, answerability and enforceability. Responsibility requires States and private businesses involved in shipping operations to have clear and defined duties and performance standards, allowing their behaviour to be assessed with transparency and with unhindered access to information. In this context, there is a need for clear legislation, and legislative gaps need to be addressed. Answerability requires States and private businesses to provide reasoned justifications for the actions and decisions for which they assume responsibility, both to those they affect and to the public at large. Enforceability implies the existence of recourse and redress mechanisms to monitor the degree to which States and private businesses comply with their responsibilities and obligations and impose corrective measures or sanctions in cases of non-compliance.

102. The global and divided character of the shipping industry is a hurdle for accountability, for instance in cases where the registration of a ship and the flag under which it sails is different, and the company that owns the ship is incorporated in a third country. This is why efforts need to be coordinated across both national and international contexts.

VII. Conclusions and recommendations

103. The shipping industry is closely linked with the environment and human rights. Oil and toxic spills harm coastal communities and Indigenous Peoples, air

¹³⁵ United Nations, Guiding Principles on Business and Human Rights, principles 22 and 25.

emissions from vessels adversely affect port cities, greenhouse gas emissions contribute to climate change, seafarers are exposed to hazardous working conditions and the transport of hazardous cargo poses risks to crew and the environment.

104. Historically, the shipping industry has been characterized by opacity. Beneficial owners and other stakeholders in the shipping sector have tried to keep away from public scrutiny. However, there is an increasing recognition of the importance of transparency in the shipping industry. Such transparency is key to global trade efficiency, shipping's decarbonization and a just transition. It is also essential for ensuring the protection of human rights of workers and communities adversely affected by shipping and toxics.

105. Toxic pollution by the shipping industry results from various sources: the combustion of heavy fuel oil; spills of oil and highly noxious substances; biofouling and anti-fouling systems; ship recycling; dumping; the loss of containers; the release of ballast water; and discharges of black water, grey water and bilge water, among others. While improvements in maritime safety and environmental protection have reduced the number of accidents and oil spills at sea in the past decades, there are still many areas where improvement is urgently needed.

106. Certain groups are particularly vulnerable to the adverse impacts of shipping. Coastal communities can be devastated by spills of oil or highly noxious substances. Indigenous Peoples, such as those living in the Arctic, are especially affected by marine pollution and the bioaccumulation of persistent pollutants. Seafarers are often exposed to hazardous substances and working conditions. Forced labour is still alarmingly present in the maritime sector; many live in slavery-like conditions. During the COVID-19 pandemic, seafarers experienced an unprecedented crisis that made some "prisoners at sea" and blocked others from joining their workplace. Women represent only 2 per cent of the world's 1.2 million seafarers and often experience ill-treatment, sexual violence and harassment. Ship-breakers are also regularly mortally injured in the course of their work, even in approved ship recycling facilities.

107. Efforts have been made to reduce the environmental and human rights impact of the shipping industry. Under the auspices of IMO, more than 50 international treaties have been adopted, with wide-ranging and often highly technical regulations on international shipping. However, human rights are not sufficiently considered under these conventions. While several conventions indirectly support human rights by seeking to improve safety and security at sea and the protection of the environment, there is an urgent need to implement and enforce IMO conventions in the light of the human rights obligations of States.

108. Without adequate global membership and enforcement, the impact of IMO conventions is vastly reduced, as they require States to be willing and technically equipped to enforce them. Several "flags of convenience" do not have the capacity to regulate the number of ships registered under them. Technical cooperation and capacity-building efforts must increase in order to establish a system of international adherence, effective enforcement and accountability.

109. Addressing the impact of shipping on human rights and the environment is also crucial to advance on the objectives of the 2030 Agenda for Sustainable Development. These targets cannot be achieved without properly tackling the adverse impacts of exposure to hazardous substances by the shipping industry.

110. The Special Rapporteur echoes the specific recommendations made to IMO and its member States with regard to his visit to the organization, and further recommends that States:

- (a) Interpret existing legal instruments concerning shipping in conformity with human rights law and principles to prevent exposure to hazardous substances and environmental degradation;
- (b) Introduce mandatory human rights due diligence and require businesses in the shipping industry to respect human rights at sea and remedy abuses;
- (c) Recognize the particular interests and capacity needs of small island developing States in terms of safe navigation and the prevention of spills of oil and highly noxious substances;
- (d) Establish criteria to determine when a State has a genuine link with a ship authorized to fly its flag, and effective mechanisms to evaluate this link;
- (e) Continue to strengthen international standards under the auspices of IMO for the protection of the marine environment in relation to air, water and noise pollution, greenhouse gas and other emissions and risks of the shipping industry;
- (f) Ensure that the design, construction and material used in the construction of ships substitutes hazardous for non-hazardous substances;
- (g) Analyse ship-breaking activities closely by paying special attention to potential human rights violations and abuses, especially in the context of beaching;
- (h) Commit to examining and evaluating the human rights impact of ship-breaking, including the implications of beaching, with a view to amending and strengthening the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships;
- (i) Implement fully the 2023 revised IMO strategy on reduction of greenhouse gas emissions from ships and continue to strengthen it to align with the best available science and not frustrate the global mitigation goals of the Paris Agreement;
- (j) Contribute to the multi-donor trust fund to support the implementation of the IMO strategy on reduction of greenhouse gas emissions from ships;
- (k) Establish a pollution levy at a level that can accelerate the decarbonization of shipping fleets and help secure funds to build capacities for, inter alia, the sound management of wastes at port reception facilities worldwide;
- (l) Introduce zero-emission maritime trade routes;
- (m) Undertake national and international efforts to tackle forced labour at sea and encourage initiatives such as the ILO Global Action Programme against forced labour and trafficking of fishers at sea;
- (n) Encourage the use of relevant guidelines developed by ILO and IMO in relation to seafarer abandonment;
- (o) Enact and implement whistle-blower protection legislation, which should also designate an independent body that is empowered to receive and investigate complaints of retaliatory, discriminatory or disciplinary action taken against whistle-blowers;

(p) Enact and implement comprehensive legislative provisions to ensure the long-term reliability of compensation and reparations for intentional and unintentional marine pollution from shipping;

(q) Tackle the issue of plastic pollution of the marine environment, including in respect of the transport of plastic precursors and plastic nurdles, in the negotiations on a plastic pollution treaty;

(r) Ratify and implement the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972, and introduce more stringent measures to prevent and eliminate pollution of the marine environment from dumping at sea;

(s) Ratify the Protocol to the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea to secure its entry into force as soon as possible;

(t) Ratify the Convention on Limitation of Liability for Maritime Claims and its 1996 Protocol to ensure States may benefit from increased limits of liability;

(u) Properly fund IMO to allow it to function in a transparent and rule of law-based manner;

(v) Secure access to free, up-to-date, consolidated and easily accessible electronic copies of IMO conventions, codes and guidelines.

111. The Special Rapporteur recommends that businesses in the shipping sector:

(a) Implement the Guiding Principles on Business and Human Rights, and in particular:

(i) Prepare and observe a human rights policy that is regularly updated;

(ii) Conduct appropriate human rights due diligence, including the ongoing monitoring of human rights impacts related to their business activities;

(iii) Establish mechanisms to secure adequate investigations with regard to allegations of human rights abuses and access to remedies by victims where warranted;

(b) Actively tackle the opacity that has characterized the shipping sector;

(c) Commit to decarbonizing and detoxifying the shipping industry and contribute to a just transition, including by investing in energy-efficient ships and in energy sources that do not emit greenhouse gases or risk toxic discharges;

(d) Avoid “flags of convenience” that lack the capacity of oversight of compliance and enforcement with international standards;

(e) Properly disclose the content of hazardous cargo to prevent accidents and ensure the sound management of chemicals.