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This chapter provides a summary of important international legal and regulatory developments which took place during the period under review and presents some policy considerations. Some relevant technological developments, along with related work by UNCTAD, are also covered in context. Developments include an ongoing regulatory scoping exercise at IMO for the review of relevant legal instruments to ensure the safe design, construction and operation of autonomous ships and a legal framework that provides the same levels of protection as for operations with traditional ships.

Other regulatory developments relate to the reduction of greenhouse gas emissions from international shipping and other ship-source pollution control and environmental protection measures. Issues covered include air pollution, in particular sulphur emissions; marine litter; the protection of biodiversity in areas beyond national jurisdiction; shipping and climate change mitigation and adaptation; ballast water management; and the shipment of hazardous and noxious substances. Relevant developments – as they relate to environmentally sustainable shipping and the oceans – are highlighted and considered in the wider context of the implementation of the 2030 Agenda for Sustainable Development, the Paris Agreement under the United Nations Framework Convention on Climate Change and the Sendai Framework for Disaster Risk Reduction 2015–2030, which collectively provide the foundation for sustainable, low-carbon and resilient development in a changing climate.

In addition, developments covered in this chapter include a series of measures to prevent unlawful practices associated with the fraudulent registration of ships; discussion on the growing number of cases regarding the abandonment of seafarers, most of which come from developing countries; the importance of attaining and promoting equality between women and men working in the maritime industry; and international action needed to address these issues.

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## LEGAL ISSUES AND REGULATORY DEVELOPMENTS

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Before autonomous ships start operating, the technology needs to be proven and appropriate institutional and regulatory safeguards and frameworks should be developed.



The new **0.50% limit** on sulphur in ships' fuel oil (down from 3.50%) will be in force globally from 1 January 2020.

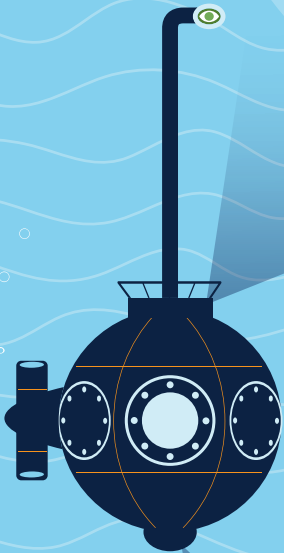
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Ocean science will be key in developing effective measures for coastal protection and coastal zone management, as well as for climate-risk assessment, adaptation and resilience-building for seaports and other coastal transport infrastructure.

The fourth IMO greenhouse gas study, to be published in 2020, will include an inventory of current global emissions from ships of 100 gross tons and above engaged in international voyages, as well as scenarios for future international shipping emissions (2018–2050).

Ongoing negotiations for a legally binding international instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction seek to achieve consensus on complex substantive and procedural issues. The participation of all States, including developing countries, for which marine genetic resources are an important priority, will be essential.



## A. TECHNOLOGICAL DEVELOPMENTS AND EMERGING ISSUES IN THE MARITIME INDUSTRY

Players in the shipping industry are increasingly taking advantage of digitalization and joint collaborative platforms and solutions enabled by new technologies and innovations, including blockchain, and are thus changing their business and partnership models. These aim to promote efficient and secure trade, including by offering greater supply chain visibility and the use of electronic documents, ultimately benefiting customers who rely on shipping industry services. Benefits include lower transaction costs and consumer prices, increased market access and competition, better use of underutilized resources and added flexibility for service providers. However, gains are not automatic, and there are growing concerns over the rising market power of certain platforms and its implications for competition, data protection and ownership, consumer protection, and taxation and employment policies (UNCTAD, 2019).

For instance, Trade Lens, a collaborative platform established by Maersk and IBM in 2018, has – after some initial concerns – attracted other major container shipping lines to its membership, including ZIM Integrated Shipping Services, Pacific International Lines, CMA CGM, Mediterranean Shipping Company, Hapag-Lloyd and ONE. In addition, four of the world's six largest carriers, namely Maersk, Mediterranean Shipping Company, Hapag-Lloyd and ONE, officially established the Digital Container Shipping Association in 2019, aiming to create common information technology standards that will improve the overall efficiency of the shipping sector. Five more carriers, namely CMA CGM, Evergreen, Hyundai Merchant Marine, Yang Ming and ZIM Integrated Shipping Services, joined subsequently (Port Technology, 2019; Splash 247, 2019).

Developments regarding ship automation and the related regulatory framework are highlighted below.

### 1. Maritime autonomous surface ships

Autonomous ships, or maritime autonomous surface ships – the general term for autonomous ships used at IMO – may soon become a reality, promising to provide enhanced safety and cost savings by removing the human element from certain operations. For instance, the safety and security of ship operations may benefit from the use of autonomous ships, since most marine accidents and liability insurance claims can be attributed to human error. Further, crew costs may decrease, and so may the risk of piracy and hostage-taking, and respective insurance premiums and costs. Vessel construction and other costs may also be reduced, with space required for seafarer accommodation being used for cargo storage instead. Vessel operations may also become more environmentally friendly because

of the potential use of alternate fuels, zero-emission technologies, no ballast, and less garbage and sewage. However, while there are potential benefits, there are also a number of challenging concerns. These include cybersecurity; safety related to the lack of a crew on board; the undue impacts on the prospects of employment for seafarers, many of which come from developing countries; and regulatory issues, shipping rates and insurance (see UNCTAD, 2018a).

Considerations also depend on the degree of automation of a ship. For instance, should a fully autonomous ship suffer system failure caused by technical defects or hackers, there would be no scope for human intervention – no operators – on board to control the ship and prevent an incident. However, the human element would remain relevant, as shore-based operators and software programmers are needed to control autonomous ships. It appears that both autonomous and manned ships might coexist, and while shipmasters have the professional ability to make instant decisions, based on the circumstances – saving lives at sea, for example – it is still not clear whether and how shore-based operators acting remotely would be able to take similar decisions. Therefore, in view of past incidents where the use of autonomous vehicles has resulted in the loss of innocent lives, it is necessary that the technology be proven before autonomous ships start sailing and appropriate institutional and regulatory safeguards and frameworks be developed.

With regard to the effect of autonomous ships on the work of seafarers, a recent paper (IMO, 2018a) reflects the concern of seafarers about possible job losses owing to the advent of automation and their opposition to the technology. Further, if its introduction is motivated solely by cost-cutting considerations, livelihoods and safety may be adversely affected. The use of autonomous ships will require new skills from seafarers to ensure the safety and efficiency of operations. Seafarers and land-based personnel will need to improve their skills through continuous learning and training in order to keep abreast with changes in technology.

For instance, a study by the Hamburg School of Business Administration (2018), published by the International Chamber of Shipping, highlights the potential effects of autonomous ships on the global shipping industry and the role of seafarers. It suggests that automation will create new but different jobs, requiring higher skills, significant training and a redefinition of the role of personnel on board and ashore. Automation will require less physical strength and more information technology skills and knowledge.

A recent report found that, in many areas, automation in the transportation sector was likely to lead to a shift in the workforce, not in labour reduction (International Transport Workers' Federation, 2019). Thus, it is suggested that increased levels of technology and automation will contribute significantly to increasing efficiency. "In transportation, the highest potential for

automation is in low-skilled jobs, which are intensive on predictable physical activities and data processing; therefore, those jobs face a high risk of being impacted by automation. At the same time, the further introduction of automation will also create a demand for new types of jobs, such as remote operators, worldwide operating maintenance crews and mobility-as-a-service providers. As a result, the demand for labour will not completely disappear, but the requirements and skills needed for individual jobs will change.”

The report also notes that the introduction of automation in global transport will be “evolutionary, rather than revolutionary”, and that despite high levels of automation, qualified human resources with the right skill sets would still be needed in the foreseeable future. It further notes that technological advances are inevitable, but that they will be gradual and will vary by region, and that workers will be affected in different ways, based on their skills levels and the varying degrees of preparedness of different countries.

## 2. Regulatory scoping exercise

Since the whole spectrum of applicable maritime laws and regulations operates on the presumption of having a master and crew on board, their traditional roles, as well as the role of artificial intelligence and the remote-

control crew working ashore, will need to be assessed and (re)defined for autonomous shipping. In this context, recent international regulatory developments include an ongoing scoping exercise, initiated at the IMO in 2017, entailing the review of relevant legal instruments to ensure the safe design, construction and operation of autonomous ships, and

to guarantee that the legal framework provides the same levels of protection in ship operation to autonomous ships as those afforded to traditional ships.

### *IMO Maritime Safety Committee*

The regulatory scoping exercise aimed at assessing the potential application of IMO instruments to ships with varying degrees of autonomy continued during the 100th session of the Maritime Safety Committee in December 2018. The Committee approved the framework for the regulatory scoping exercise on the use of maritime autonomous surface ships (IMO, 2018b, annex 2). The following degrees of autonomy were identified for the purpose of the exercise:

- Degree one: Ship with automated processes and decision support. Seafarers are on board to operate and control shipboard systems and

functions. Some operations may be automated and may at times be unsupervised but with seafarers on board ready to take control.

- Degree two: Remotely controlled ship with seafarers on board. The ship is controlled and operated from another location. Seafarers are available on board to take control and operate shipboard systems and functions.
- Degree three: Remotely controlled ship without seafarers on board. The ship is controlled and operated from another location; there are no seafarers on board.
- Degree four: Fully autonomous ship. The operating system of the ship is able to make decisions and determine actions by itself.

The work methodology of the framework is divided into two steps. First, for each instrument related to maritime safety and security, and for each degree of autonomy, the methodology contains provisions applying to different cases: those that apply to autonomous ships and prevent their operations; those that apply to autonomous ships, do not prevent their operations and require no actions; those that apply to autonomous ships and do not prevent their operations but may need to be amended or clarified and/or may contain gaps; or those that have no application to the operations of autonomous ships.

Second, the most appropriate way of addressing the operations of autonomous ships will be analysed and determined, taking into account, inter alia, factors relating to the human element, technology and operations. The analysis will establish whether it is necessary to present equivalences as provided for by the instruments or developing interpretations; to amend existing instruments; to develop new instruments; or none of the aforementioned, depending on the result of the analysis.

The initial review of legal instruments under the purview of the Committee was to be conducted during the first half of 2019 by volunteering member States, with the support of interested international organizations, the ultimate goal being to complete the regulatory scoping exercise by 2020. The legal instruments related to maritime safety and security that will be covered in this exercise are as follows:

- Convention on the International Regulations for Preventing Collisions at Sea, 1972.
- International Convention for Safe Containers, 1972, as amended.
- International Convention on Load Lines, 1966.
- Protocol of 1988 relating to the International Convention on Load Lines, 1966.
- International Convention on Maritime Search and Rescue, 1979.

The demand for labour will not completely disappear, but the requirements and skills needed for individual jobs will change.



- International Convention for the Safety of Life at Sea, 1974, as amended.
- Agreement Concerning Specific Stability Requirements for Ro-ro Passenger Ships Undertaking Regular Scheduled International Voyages between, to or from Designated Ports in North West Europe and the Baltic Sea, 1996.
- 1978 Protocol relating to the International Convention for the Safety of Life at Sea, 1974, as amended.
- 1988 Protocol relating to the International Convention for the Safety of Life at Sea, 1974, as amended.
- 1973 Protocol on Space Requirements for Special Trade Passenger Ships.
- International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended.
- International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, 1995.
- Special Trade Passenger Ships Agreement, 1971.
- International Convention on Tonnage Measurement of Ships, 1969.

In addition, the Committee at its 100th and 101st sessions, noted the need to develop guidelines on autonomous ships trials. Such guidelines should be generic and goal-based; the trials should be in line with mandatory instruments, which would also include exemptions and equivalent arrangements; and the human element and training and certification requirements should be taken into account (IMO, 2019a).

### *IMO Legal Committee*

At its 106th session in March 2019, the IMO Legal Committee began its work on the regulatory scoping exercise of international legal instruments under its purview. Its aim was to assess the degree to which the existing regulatory framework may need to be adjusted in order to address issues related to the operation of maritime autonomous surface ships.

Like the Maritime Safety Committee, a framework for the regulatory scoping exercise was agreed, including the list of instruments to be reviewed. A similar methodology was agreed to be used by the Legal Committee as well, with appropriate adjustments to accommodate the specificities of the conventions under its purview. It was also agreed that the differentiation between the four degrees of autonomy were not as relevant in the context of the Legal Committee's regulatory scoping exercise and that a simplified approach might be used, focusing on only two levels of autonomy. Volunteer member States, along with interested non-governmental and

intergovernmental organizations, would work on the review and analysis (IMO, 2019b, annex 3; 2019c).

The international legal instruments under the purview of the IMO Legal Committee to be reviewed are as follows:

- International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001.
- International Convention on Civil Liability for Oil Pollution Damage, 1969.
- 1976 Protocol to Amend the International Convention on Civil Liability for Oil Pollution Damage, 1969.
- 1992 Protocol to Amend the International Convention on Civil Liability for Oil Pollution Damage, 1969.
- 1992 Protocol to Amend the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971.
- 2003 Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992.
- Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, 1971.
- Athens Convention Relating to the Carriage of Passengers and Their Luggage by Sea, 1974.
- 1976 Protocol to the Athens Convention relating to the Carriage of Passengers and Their Luggage by Sea, 1974.
- 2002 Protocol to the Athens Convention relating to the Carriage of Passengers and Their Luggage by Sea, 1974.
- Convention on Limitation of Liability for Maritime Claims, 1976.
- 1996 Protocol to amend the Convention on Limitation of Liability for Maritime Claims, 1976.
- Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation, 1988.
- 1988 Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf.
- 2005 Protocol to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation.
- 2005 Protocol to the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf.
- International Convention on Salvage, 1989.
- Nairobi International Convention on the Removal of Wrecks, 2007.

- 2010 Protocol to the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996.

The following international legal instruments emanating from the IMO Legal Committee, with shared cognizance with other IMO committees, will also be reviewed:

- International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969.
- 1973 Protocol relating to Intervention on the High Seas in Cases of Pollution by Substances other than Oil.

The following joint international legal instruments concluded between IMO and other United Nations bodies, emanating from the IMO Legal Committee, will be reviewed as well:

- International Convention on Maritime Liens and Mortgages, 1993 (with UNCTAD).
- International Convention on Arrest of Ships, 1999 (with UNCTAD).

Within the liability regime, the role of the remote operator would also have to be considered by the Legal Committee at some stage. However, it was agreed that this discussion was not within the scope of the regulatory scoping exercise. It was generally observed that autonomous shipping should not compromise safety, security and environmental protection and should be discussed in a comprehensive manner. In addition, considering the drastic effect the introduction of autonomous ships might have on seafarers, their concerns should also to be taken into consideration. The Legal Committee invited member States and observer organizations willing to volunteer to lead or support the initial review of specific instruments, to inform the IMO Secretariat by 30 April 2019 (IMO, 2019b).

## B. REGULATORY DEVELOPMENTS RELATING TO THE REDUCTION OF GREENHOUSE GAS EMISSIONS FROM INTERNATIONAL SHIPPING AND OTHER ENVIRONMENTAL ISSUES

Recent regulatory developments relate to the reduction of greenhouse gas emissions from international shipping and other ship-source pollution control and environmental protection measures, including those concerning air pollution, marine litter, the protection of biodiversity in areas beyond national jurisdiction, oceans and climate change mitigation and adaptation, ballast water management and the shipment of hazardous and noxious substances.

This chapter discusses relevant regulatory developments as they relate to environmentally sustainable shipping and the oceans and in the wider context of the implementation of the 2030 Agenda for Sustainable Development, the Paris Agreement under the United Nations Framework Convention on Climate Change and the Sendai Framework for Disaster Risk Reduction 2015–2030. These collectively provide the foundation for sustainable, low-carbon and resilient development in a changing climate.

### 1. Paris Agreement under the United Nations Framework Convention on Climate Change

Since its adoption in 1992, the United Nations Framework Convention on Climate Change has progressively built a global response to climate change and its impacts, with the most recent multilateral response outlined in the 2015 Paris Agreement. Greenhouse gas emissions from international shipping are also addressed at the global level, although they are not covered under the 1997 Kyoto Protocol to the Convention. Article 2.2 of the Protocol specifies that parties shall pursue the limitation or reduction of emissions of greenhouse gases from marine bunker fuels by working through IMO. Work has been going on at IMO for many years; the Organization adopted a resolution on carbon-dioxide emissions from ships in September 1997 and an initial strategy in April 2018 aimed at setting emissions-reduction targets consistent with the Paris Agreement (see section 2 below).

The Paris Agreement was adopted in December 2015, entered into force in November 2016 and has been ratified to date by 186 States (see <https://unfccc.int/process/the-paris-agreement/status-of-ratification>). Under article 2 of the Agreement, parties commit to reducing emissions expeditiously to achieve the goal of “holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels”.

A special report by the United Nations Intergovernmental Panel on Climate Change (2018), prepared by eminent climate scientists at the request of the parties to the Paris Agreement, warns that a global warming beyond 1.5°C will significantly worsen the risks of drought, floods, extreme heat and poverty for hundreds of millions of people. Urgent and unprecedented changes are needed to reach the target, which according to the report, is affordable and feasible, although it lies at the most ambitious end of the pledge of the Agreement to maintain temperatures between 1.5°C and 2°C. “Limiting warming to 1.5°C is possible but the window is narrowing” (*The Guardian*, 2018).

### ***Twenty-fourth Conference of the Parties and the Katowice climate package***

Coinciding with the third anniversary of the adoption of the Paris Agreement, the twenty-fourth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change was held in Katowice, Poland, in December 2018. The participating States adopted the Katowice climate package (<https://unfccc.int/process-and-meetings/the-paris-agreement/paris-agreement-work-programme/katowice-climate-package>), designed to operationalize the climate change regime contained in the Paris Agreement.

The Katowice climate package aims to promote international cooperation and encourage greater ambition for implementing the Paris Agreement as of 2020. It indicates how countries will provide information about their nationally determined contributions, outlining their domestic climate actions, including mitigation and adaptation measures, as well as details of financial support for climate action in developing countries.

The package includes guidelines on the establishment of new finance targets from 2025 onwards to follow up on the current target of mobilizing \$100 billion per year from 2020 to support developing countries (United Nations Framework Convention on Climate Change, 2016, paragraph 53). It also describes how to conduct a global stocktaking of climate action in 2023 and how to assess progress on the development and transfer of technology (United Nations Framework Convention on Climate Change, 2018).

Issues related to market and non-market cooperative approaches, as contained in article 6 of the Paris Agreement, including internationally transferable mitigation outcomes (article 6.2), as well as the sustainable development mechanism (article 6.4), will continue to be discussed at the twenty-fifth Conference of the Parties.

In order to boost political and economic efforts to strengthen climate action and ambition globally, the Secretary-General of the United Nations convened the Climate Action Summit in New York, United States, in September 2019.<sup>13</sup> In advance of the 2020 deadline for countries to raise their commitments in their national climate plans, the Summit focused on practical initiatives to limit emissions and build climate resilience, emphasizing six key areas: energy transition, climate finance and carbon pricing, industry transition, nature-based solutions, cities and local action, and resilience.

#### ***Climate finance***

In the decision adopting the Paris Agreement (United Nations Framework Convention on Climate Change,

<sup>13</sup> As information related to the twenty-fourth Conference of the Parties suggests, “even if all the commitments made by countries for the Paris Agreement are achieved, the world will still be on a course to warm by more than 3°C this century” ([www.un.org/en/climatechange/cop24.shtml](http://www.un.org/en/climatechange/cop24.shtml)).

2016), States agreed to set by 2025 a “collective quantified goal from a floor of \$100 billion per year, taking into account the needs and priorities of developing countries” (paragraph 53). In this context, the Green Climate Fund is the world’s largest dedicated fund, aiming to help developing countries reduce their greenhouse gas emissions and enhance their ability to respond to climate change. The Fund has a crucial role in serving the Paris Agreement by channelling climate finance to developing countries, which have joined other nations in committing to climate action. With \$5 billion of the Fund committed to projects and more than \$17 billion in the pipeline, there is a real demand for climate finance ([www.greenclimate.fund/home](http://www.greenclimate.fund/home)). However, whether adequate financing will be available on the ground remains to be seen.

As an expression of global solidarity and partnership with countries and communities most affected by climate change, and in order to accelerate and scale up global action to match the ambition and urgency needed to meet the climate challenge, the Fund’s first replenishment was launched in October 2018 ([www.greenclimate.fund/how-we-work/resource-mobilization/replenishment](http://www.greenclimate.fund/how-we-work/resource-mobilization/replenishment)). This followed pledges for the 2015–2018 period of \$10.2 billion, nearly \$7 billion of which had been received at the time. The replenishment process involves organizational and consultation meetings with potential contributors and was set to conclude with a pledging conference in October 2019. In addition, the World Bank has pledged \$200 billion in climate action funding for the period 2021–2025 (World Bank, 2018a). Multilateral development and other leading banks have committed to aligning their activities and exploring ways to steer financial streams towards the goals of the Paris Agreement (World Bank, 2018b).

## **2. Developments at the International Maritime Organization related to the reduction of greenhouse gas emissions from ships**

Various relevant regulatory activities are carried out at IMO. These include complementing international efforts to address greenhouse gas emissions<sup>14</sup> and an initial strategy on reduction of greenhouse gas emissions from ships, adopted in April 2018. In particular, the strategy sets out a vision and levels of ambition for international shipping (IMO, 2018c, annex 1). The vision states that IMO remains committed to reducing greenhouse gas emissions from international shipping and, as a matter of urgency, aims to phase them out as soon as possible in the present century.

The IMO initial strategy envisages a reduction of carbon-dioxide emissions per transport work (carbon intensity), as an average across international shipping, by at

<sup>14</sup> For example, the Paris Agreement and the 2030 Agenda for Sustainable Development (Sustainable Development Goal 13, take urgent action to combat climate change and its impacts).

least 40 per cent by 2030, pursuing efforts to achieve 70 per cent by 2050, compared with 2008. Importantly, for the first time, the strategy aims to reduce total annual greenhouse gas emissions by at least 50 per cent by 2050, compared with 2008, while, at the same time, pursuing efforts towards phasing them out in accordance with the vision, for achieving carbon-dioxide emissions reduction consistent with the Paris Agreement goals.

Technical and operational energy efficiency measures for both new and existing ships, such as speed optimization and reduction, the development of robust lifecycle greenhouse gas and carbon intensity guidelines for all types of fuels to prepare for the use of alternative low-carbon and zero-carbon fuels, port activities and incentives for first movers, were included, *inter alia*, under candidate short-term measures to be further developed and agreed upon by member States between 2018 and 2023.

Innovative emissions-reduction mechanisms, possibly including market-based measures, to incentivize greenhouse gas emission reduction, were included among candidate midterm measures to be agreed and decided upon between 2023 and 2030, along with possible long-term measures to be undertaken beyond 2030 that would ultimately lead to zero-carbon or fossil-free fuels to enable the potential decarbonization of the shipping sector in the second half of the century (for more information, see UNCTAD, 2018a).

Another regulatory development is the approval in October 2018 of a programme of follow-up actions of the initial IMO strategy on reduction of greenhouse gas emissions from ships up to 2023, including the consideration of concrete proposals on candidate short-term measures and the finalization of the procedure for assessing the impacts on States, starting from 2019 (IMO, 2018d, annex 9).

Further developments include the implementation in phases of IMO energy efficiency requirements, which have been legally binding and applicable to the maritime industry since 2013. For example, the energy efficiency design index sets standards for new ships and associated operational energy efficiency measures for existing ships (UNCTAD, 2011a, pp. 113–116; 2012a, pp. 96–98). At its seventy-fourth session in May 2019, the Marine Environment Protection Committee of IMO agreed to bring forward the phase III requirement from 2025 to 2022 for some ship types and approved phase III reduction rates for containerships that are based on different size categories (up to a 50 per cent reduction by 2022 for the largest ships). (For information on policy measures to reduce greenhouse gas emissions from ships, see also chapter 2.)

In addition to technical and operational measures, IMO has for a number of years been discussing in

parallel market-based measures to reduce emissions from international shipping. However, no agreement has been reached so far (for earlier discussions, see UNCTAD, 2011a, pp. 118–119; 2012a, pp. 99–101). In 2014, prompted by controversies, formal discussion on market-based measures by the Marine Environment Protection Committee was suspended (IMO, 2014, p. 44). The topic was reconsidered at meetings of the Intersessional Working Group on Reduction of Greenhouse Gas Emissions from Ships in June and October 2017 (IMO, 2017a, 2017b), for possible inclusion in the future comprehensive IMO strategy on reduction of greenhouse gas emissions from ships, as candidate midterm measures, to help incentivize the uptake of alternative fuels. Indeed, the IMO initial strategy lists “new/innovative emission reduction mechanisms, possibly including market-based measures, to incentivize greenhouse gas emission reduction” among candidate midterm measures (IMO, 2018c, p. 8). (For a summary of various potential market-based measures under consideration, see UNCTAD 2018a, chapter 3).

In addition, during its seventy-fourth session, the Committee took the following actions:

- Decided to initiate a fourth IMO greenhouse gas study, expected to be published in autumn 2020, which will include an inventory of current global emissions of greenhouse gas and relevant substances emitted from ships of 100 gross tons and above engaged in international voyages, as well as business-as-usual scenarios for future international shipping emissions (2018–2050).
- Adopted resolution MEPC.323(74), encouraging voluntary cooperation between the port and the shipping sectors to contribute to the reduction of greenhouse gas emissions from ships. This could include regulatory, technical, operational and economic measures in key areas such as the provision of onshore power supply (preferably from renewable sources); safe and efficient bunkering of alternative low-carbon and zero-carbon fuels; incentive schemes that address greenhouse gas emissions and sustainability; and support for the optimization of port calls, including the facilitation of just-in-time arrival of ships.
- Approved a four-step procedure for assessing the impacts on States of candidate measures for the reduction of greenhouse gas emissions from ships.
- Agreed to establish a voluntary multi-donor trust fund to provide a dedicated source of financial support for technical cooperation and capacity-building activities as support for the implementation of the initial IMO strategy on reduction of greenhouse gas emissions from ships (IMO, 2019d).



### 3. Interlinkages between ocean issues, climate change mitigation and adaptation, and sustainable development

#### *Related processes under the United Nations Framework Convention on Climate Change*

For people living on the coasts, the link between climate change and the ocean is clearly present, including in terms of sea-level rise and extreme weather events, changing weather patterns, rising ocean temperatures and related impacts on fisheries, tourism and coastal infrastructure. An important development in this context, highlighting the close nexus between ocean and climate-related issues, was the launch of the Ocean Pathway (<https://cop23.com.fj/the-ocean-pathway/>) at the twenty-third session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, in Bonn, Germany in 2017, followed by the holding of Oceans Action Days at the twenty-third and twenty-fourth sessions of the Conference of the Parties, and the launch of various ocean-related initiatives, alliances and action agendas. The Ocean Pathway introduced a two-tracked strategy for 2020 supporting the goals of the Paris Agreement. The strategy aims to increase the role of ocean considerations in the United Nations Framework Convention on Climate Change process, as well as further action and activities in priority areas relevant to ocean and climate change. These would include cooperation with coastal cities and settlements and islands States, which are on the frontline of ocean and climate change impacts – particularly in the areas of emissions reduction, adaptation, and ocean health; reducing emissions from transportation, including maritime transportation; ocean acidification; blue and resilient economies; coastal habitats and ecosystems; ocean law and policy; and nationally determined contributions.

The latest Oceans Action Day was held as part of the Marrakech Partnership for Global Climate Action (<https://unfccc.int/climate-action/marrakech-partnership/events/gca-at-cop24>) on 8 December 2018 during the twenty-fourth session of the Conference of the Parties. Panel discussions focused on new scientific findings, adaptation and displacement, ocean content of nationally determined contributions and ocean financing, and ocean acidification. It was said among others, that the second United Nations Ocean Conference in 2020 should focus on action and funding needed to address risks to the ocean as they relate to climate change ([www.oceanactionhub.org/ocean-action-day-held-climate-change-cop-24-poland](http://www.oceanactionhub.org/ocean-action-day-held-climate-change-cop-24-poland)).

The inclusion of ocean matters in nationally determined contributions as they are implemented and enhanced, has been increasingly encouraged. Under the Paris Agreement, States are required to commit to climate mitigation goals by submitting and implementing increasingly ambitious nationally determined

contributions in five-year cycles (article 4). Also, under the Paris Agreement, each Party should, as appropriate, submit and update periodically an adaptation communication, which may include its priorities, implementation and support needs, plans and actions, without creating any additional burden for developing country Parties (article 7.10).

Therefore, as the call to global climate action of civil society and industry leaders at the Global Climate Action Summit 2018 suggests, one action by countries could be to increase specific and meaningful ocean-related content in their 2020 nationally determined contributions submissions. Another action could be to increase specific and meaningful ocean-related adaptation measures in their adaptation communications, which include their priorities, plans, and actions to enhance adaptive capacity, strengthen resilience, and reduce vulnerability to climate change.

#### *UNCTAD work on climate change impacts and adaptation for ports and coastal transport infrastructure*

With an estimated 80 per cent of the volume of world trade carried by sea, international shipping and ports provide crucial linkages in global supply chains and are essential to enable all countries, including those that are landlocked, to access global markets. Ports are likely to be affected directly and indirectly by climatic changes, such as rising sea levels, extreme weather events and rising temperatures, with broader implications for international trade and for the development prospects of the most vulnerable nations, in particular the least developed countries and small island developing States. Given the strategic role of seaports and of other key transport infrastructure as part of the global trading system and the potential for climate-related delays and disruptions across global supply chains, enhancing the climate resilience of key transport infrastructure is a matter of strategic economic importance and one in respect of which UNCTAD research and technical assistance work, as well as the outcomes of a series of UNCTAD expert meetings since 2008, have helped to raise awareness and advance the international debate (For further information, see <https://unctad.org/ttl/legal>).

Recent UNCTAD work in support of climate change adaptation for coastal transport infrastructure has included technical assistance and capacity-building with a focus on key coastal transport infrastructure in Caribbean small island developing States, using innovative methodological approaches (for further information and full documentation, see <https://SIDSport-ClimateAdapt.unctad.org>; see also chapter 2, box 2.1). Key project outcomes include the assessment of potential operational disruptions and marine inundation risk to eight coastal international airports and seaports of Jamaica and Saint Lucia under different climate scenarios, as well as a transferable methodology to assist in adaptation planning for small island developing States in the Caribbean and beyond.

Some of the main substantive findings and technical details of the methodology developed under the project were presented and discussed in a peer-reviewed scientific paper (Monioudi et. al, 2018) and have helped inform the Panel 1.5 degrees report (Intergovernmental Panel on Climate Change, 2018), highlighting substantial increases in risk to small island developing States' critical coastal transportation infrastructure from climate changed-induced marine inundation as early as in the 2030s, unless further climate change adaptation is undertaken. Relevant substantive findings are also reflected as part of the United Nations report World Economic Situation and Prospects (United Nations, 2019a, chapter 2, pp.75–76; see also UNCTAD, 2018b).

UNCTAD has also published the findings of a port industry survey on climate change impacts and adaptation (Asariotis et al., 2017), designed in collaboration with global port industry associations and other experts. The survey aimed to improve the understanding of weather- and climate-related impacts on ports, identify data availability and information needs, and determine current levels of resilience and preparedness among ports. Although the majority of respondents had been affected by weather- or climate-related events, including by extremes, the study revealed important gaps in terms of relevant information available to seaports of all sizes and across regions, with implications for effective climate risk assessment and adaptation planning.

The important trade-related implications of weather- and climate-related extreme events were also highlighted by UNCTAD at the twenty-fourth session of the Conference of the Parties (UNCTAD, 2018b), in an online article (UNCTAD, 2018c) and as part of an interactive discussion that was co-organized with the International Trade Centre and the United Nations Office for Disaster Risk Reduction as part of the International Day for Disaster Reduction 2018 (see UNCTAD, 2018d), focusing on the need to reduce economic losses from disasters. Most recently, relevant UNCTAD work included an ad hoc expert meeting on climate change adaptation for international transport in preparing for the future, held in Geneva, Switzerland, on 16 and 17 April 2019. The meeting brought together technical experts, key industry stakeholders and a number of international organizations, with an aim to identify effective ways to support climate change adaptation action, resilience- and capacity-building across closely interlinked transport modes and global supply chains, and to develop policy recommendations to help inform the United Nations Climate Action Summit of September 2019. It also aimed to contribute towards progress in advancing the 2030 Agenda for Sustainable Development and explore options for an informal international transport adaptation forum (for more information and material relating to the meeting, see <https://unctad.org/en/pages/MeetingDetails.aspx?meetingid=2092>).

### ***UNCTAD work on climate change mitigation and related aspects of sustainable freight transport***

Since its inception, UNCTAD has been contributing to the advancement of the sustainable transport agenda, including maritime transport. Relevant areas of intervention include promoting blue growth, sustainability in ports, and low-carbon and clean shipping. More recently, building on the growing international momentum on global sustainability and climate action, UNCTAD intensified its efforts to ensure that maritime transport effectively integrates the triple bottom-line principle aimed at striking the right balance between the economic, social and environmental objectives of the sector.

A key development in 2018 was the agreement with other United Nations agencies with a mandate in the field of transport for UNCTAD to act as the lead organization representing the United Nations system at relevant deliberations under the global Sustainable Mobility for All Initiative. This reflects a recognition of the role of UNCTAD in promoting the sustainable transport and shipping portfolio, as well as its ability to leverage its extensive network of transport sustainability-minded partners.

Recent work in the field include the UNCTAD Multi-year Expert Meeting on Transport, Trade Logistics and Trade Facilitation held in Geneva in November 2018 under the theme “Sustainable freight transport in support of the 2030 Agenda for Sustainable Development”. The meeting provided a platform for policy dialogue and expert discussions that clarified the strategic importance of sustainable freight transportation, including maritime transport, in achieving the 2030 Agenda. It also provided an opportunity to collaborate with the World Bank and other partners driving the Carbon Pricing Leadership Coalition, whose main objective is to help the shipping sector in its transition to energy-efficient, clean and low-carbon shipping.

Under the overall theme “Challenges and opportunities of global climate policy, including potential market-based mechanisms applied to international shipping”, the panel discussions of the meeting brought together experts and executives from industry, academia, development banks, civil society and government, including from small island developing States. Discussions helped inform the state of play of climate discussions at IMO and outline a possible way forward to decarbonizing the maritime transport sector. The meeting underscored the importance of international shipping for world trade; the shipping and climate change nexus, the need to decarbonize international shipping and the IMO plan; and operational, technical and policy aspects of decarbonization in international shipping. Importantly, the meeting emphasized the perspective of developing countries and the potential implications of some market-based measures on the transport and trade of these countries, in particular small island developing States.

In parallel, UNCTAD disseminated and, in some cases, applied, various tools and instruments that had been developed under a technical assistance project on building capacities of developing countries to shift towards sustainable freight transport. These include a methodology to assess gaps and strengthen the capacity to design, develop, and implement sustainable freight transport and finance strategies (UNCTAD Sustainable Freight Transport Framework); a training and capacity-building package consisting of training modules, case studies, a compilation of good practices and useful knowledge products and resources; and a web portal that facilitates information sharing and partnership-building.

Concrete examples of UNCTAD assistance being deployed and resulting in tangible outcomes include capacity-building activities delivered in small island developing States of the Caribbean. These activities and the supporting planning and decision-making tools made available to the beneficiaries have helped enhance the capacities of transport stakeholders in these regions and enable them to develop and implement sustainable freight transport strategies.

This work continues and complements the long-standing support of UNCTAD to small island developing States that seeks to address the unique sustainability challenges arising from their heightened economic, social and environmental vulnerability. This is also illustrated by the active contribution of the Organization to the 2014 Third International Conference on Small Island Developing States, including through a substantive report entitled “Closing the Distance: Partnerships for Sustainable and Resilient Transport Systems in Small Island Developing States” (UNCTAD, 2014), as well as the UNCTAD special programme on small island developing States.

#### ***United Nations Decade of Ocean Science for Sustainable Development, 2021–2030***

To enhance the knowledge and understanding of the linkages between the ocean and climate, more investment in ocean research, monitoring and observation will be needed. The upcoming Decade of Ocean Science for Sustainable Development, 2021–2030 proclaimed by the United Nations General Assembly (<https://en.unesco.org/ocean-decade/resources>), which was also the subject of the twentieth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea, on 10–14 June 2019 ([www.un.org/depts/los/consultative\\_process/consultative\\_process.htm](http://www.un.org/depts/los/consultative_process/consultative_process.htm)), could help in this respect, and also mobilize action and support by Governments. Its implementation will be coordinated by the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization ([www.ioc-unesco.org/](http://www.ioc-unesco.org/)). In September 2019, the Intergovernmental Panel on Climate Change is expected to finalize the Special Report on the Ocean and Cryosphere in a Changing Climate. Yet, much more

needs to be done to strengthen the linkages between ocean-related action and climate-related processes.

With respect to international maritime transport which, as already noted, accounts for over 80 per cent of global merchandise trade (by volume), ocean science plays an important role in providing data and information required to ensure the safety of navigation, effectively monitor compliance with environmental regulations and respond to ship-source marine pollution incidents, among others. In addition, ocean science will be key in developing effective measures for the purposes of coastal protection and coastal zone management, as well as for climate-risk assessment, adaptation and resilience-building for seaports and other coastal transport infrastructure.

UNCTAD has been highlighting the importance of scientific data and evidence-based information in the context of climate change impacts and adaptation for critical coastal transport infrastructure, as well as in the context of disaster risk reduction and response (see above). Among others, ocean science and related human capacity-building, in particular at the local level, have an important role to play in adapting critical transport infrastructure and services to the impacts of climate variability and change and in enhancing their overall climate and disaster-risk resilience. Relevant scientific data are necessary, in particular, for monitoring and early warning systems for effective disaster risk reduction and management and effective emergency response; as well as forecasting and effective risk- and vulnerability assessment, to improve levels of preparedness and help take appropriate adaptation response measures.

Ocean science will be key in developing effective measures for the purposes of coastal protection and coastal zone management, as well as for climate-risk assessment, adaptation and resilience-building for seaports and other coastal transport infrastructure.

#### **4. Sendai Framework for Disaster Risk Reduction 2015–2030**

The Sendai Framework for Disaster Risk Reduction 2015–2030 is an important agreement, adopted in 2015, in the context of the post-2015 sustainable development agenda. It is a 15-year voluntary agreement that recognizes that the State has the lead role in reducing disaster risk but that responsibility should be shared among other stakeholders, including local government and the private sector.

With regard to its scope, the Framework applies to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters, caused



by natural or human-made hazards, as well as related environmental, technological and biological hazards and risks. It aims to guide the multi-hazard management of disaster risk in development at all levels, within and across all sectors.

The aim of the Framework is to achieve the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of people, businesses, communities and countries over the next 15 years. The goal of the Framework is to “prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience” (paragraph 17).

The Framework outlines seven targets and four priorities for action to prevent new disaster risks and reduce existing ones. The seven global targets (paragraph 18), are as follows:

- Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020–2030, compared with the period 2005–2015.
- Significantly decrease the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020–2030, compared with the period 2005–2015.
- Diminish direct economic loss caused by disasters in relation to global GDP by 2030.
- Greatly reduce disaster damage to critical infrastructure and the disruption of basic services such as health and educational facilities, including by developing their resilience by 2030.
- Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
- Considerably enhance international cooperation with developing countries through adequate and sustainable support to complement their national actions for implementation of the Framework by 2030.
- Significantly improve the availability of, and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

The four priorities for action (paragraph 20) are as follows: understanding disaster risk; strengthening disaster risk governance to manage disaster risk; investing in disaster reduction for resilience; and enhancing disaster preparedness for effective response

to “build back better” through recovery, rehabilitation and reconstruction.

The United Nations Office for Disaster Risk Reduction has been tasked with supporting the implementation, follow-up and review of the Sendai Framework.<sup>15</sup> As noted previously, UNCTAD in 2018 highlighted the important trade-related implications of extreme weather- and climate-related events as part of an interactive discussion (UNCTAD, 2018d), co-organized with the United Nations Office for Disaster Risk Reduction and the International Trade Centre in connection with the International Day for Disaster Reduction 2018, focusing on the need to reduce economic losses caused by disasters.

## 5. Tackling ship-source pollution

The role of the ocean as a prominent factor in stabilizing climate and supporting life and human well-being, and as a resource that needs to be protected and supported, cannot be overemphasized. However, the first world ocean assessment found that much of the ocean is now seriously degraded, with changes and losses in the structure, function and benefits from marine systems (UNEP, 2016a). In addition, as the human population grows towards the expected 9.7 billion by 2050 (United Nations, 2019b), the impact of multiple stressors on the ocean is projected to increase.

Particularly relevant in the context of sustainable maritime transport, ship-source pollution control and coastal zone management, is Sustainable Development Goal 14, Conserve and sustainably use the oceans, seas and marine resources for sustainable development. Since the adoption of the 2030 Agenda, action for the implementation of this goal has been taken in various areas of ocean governance, although much remains to be done. In addition to sustainable fisheries management, which will not be the subject of analysis here, some relevant areas where action has recently been taken or is under way are as follows: the reduction of ship-source pollution and protection of the environment by implementing the new IMO 2020 sulphur limit; ballast water management; means of dealing with liability for the shipment of hazardous and noxious substances; pollution from plastics and microplastics; and the conservation of coastal and marine areas, including in areas beyond national jurisdiction.

It is worthwhile recalling that sustainable and resilient transport is key to sustainable development and, therefore, is among the cross-cutting issues of relevance to progress in achieving several Sustainable Development Goals and targets. These include not only Goal 14, but also, for instance, Goal 1, End poverty in all its forms everywhere, in particular target 1.5, Build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability

<sup>15</sup> For progress in implementation by global target and country, see <https://sendaimonitor.unisdr.org>.



to climate-related extreme events and other economic, social and environmental shocks and disasters; Goal 9, Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation; and Goal 13, Take urgent action to combat climate change and its impacts.

### ***Implementing the new 2020 sulphur limit of the International Maritime Organization***

The new 0.50 per cent limit on sulphur ships' fuel oil, down from 3.50 per cent, will be in force from 1 January 2020. Yet, in designated emission control areas,<sup>16</sup> the limit will remain even lower, at 0.10 per cent. With shipping emissions associated with hundreds of thousands of fatalities and millions of cases of illness at the global level (*Independent*, 2018), the consistent implementation of the global sulphur limit for all ships is expected to bring positive results for human health and the environment, particularly for populations living close to ports and major shipping routes.

In order to support consistent implementation and compliance and provide a means for effective enforcement by States, particularly port State control, IMO in October 2018 adopted an additional amendment to MARPOL 73/78 that will prohibit not just the use, but also the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship, unless the ship is fitted with a scrubber, which is an exhaust gas cleaning system. This amendment is expected to enter into force on 1 March 2020, but it does affect the date of entry into force of the 0.50 per cent limit from 1 January 2020. Also, a comprehensive set of guidelines to support the consistent implementation of the lower 0.50 per cent limit on sulphur in ships' fuel oil, and related MARPOL amendments were approved (IMO, 2019d). (For more information about the effects of the IMO sulphur 2020 limit on the shipping industry, see chapter 2, section D).

Enforcement, compliance with and monitoring of the new sulphur limit is the responsibility of States party to MARPOL 73/78, annex VI. Ships found not to be in compliance may be detained by port State control inspectors, and/or be imposed sanctions for violations, including fines determined by local law where the violation occurs, or the law of the flag State. In the light of the implications for the required fuel oil quality, relevant industry associations have recommended that shipowners consider the relevant charter-party terms to protect their position with respect to potential fines and/or charter-party disputes. Both BIMCO and the International Association of Independent Tanker Owners have drafted relevant bunker 2020 clauses ([www.standard-club.com/media/2767972/bimco-2020-marine-fuel-sulphur-content-clause-for-time-](http://www.standard-club.com/media/2767972/bimco-2020-marine-fuel-sulphur-content-clause-for-time-)

[www.intertanko.com/info-centre/model-clauses-library/templateclausearticle/intertanko-bunker-compliance-clause-for-time-charterparties](http://www.intertanko.com/info-centre/model-clauses-library/templateclausearticle/intertanko-bunker-compliance-clause-for-time-charterparties)) that deal with these MARPOL 73/78 regulations compliance, both equally valid and ready for use in time charters being negotiated now. (For more information, see [www.bimco.org/ships-ports-and-voyage-planning/environment-protection/2020-sulphur-cap/contractual-issues-for-scrubbers/time-charter-issues/additional-clauses](http://www.bimco.org/ships-ports-and-voyage-planning/environment-protection/2020-sulphur-cap/contractual-issues-for-scrubbers/time-charter-issues/additional-clauses).)

### ***Ballast water management***

The Ballast Water Management Convention, 2004 (as of 31 July 2019: 81 State parties, representing 80.76 per cent of the gross tonnage of the world's merchant fleet), has been in force since September 2017. The Convention aims to prevent the risk of the introduction and proliferation of non-native species following the discharge of untreated ballast water from ships. This is considered one of the four greatest threats to the world's oceans and a major threat to biodiversity, which, if not addressed, can have extremely severe public health-related and environmental and economic impacts (<http://globallast.imo.org>; UNCTAD, 2011b, 2015). From the date of entry into force, ships have been required to manage their ballast water to meet standards referred to as D-1 and D-2; the former requires ships to exchange and release at least 95 per cent of ballast water by volume far away from a coast; the latter raises the restriction to a specified maximum amount of viable organisms allowed to be discharged, limiting the discharge of specified microbes harmful to human health.

Currently, the regulatory focus is on the effective and uniform implementation of the Ballast Water Management Convention, 2004, and on an experience-building phase associated with it, with a focus on gathering data on its application (see IMO, 2018d, 2019d).

### ***Hazardous and noxious substances***

The International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996, as amended by its 2010 Protocol, requires accession by at least 12 States, representing at least 40 million tons of contributing cargo to enter into force. Until 31 July 2019, the 2010 Convention had been ratified by only five States (Canada, Denmark, Norway, South Africa and Turkey), bringing the Convention closer to its entry into force. The Convention covers liability and compensation in the event of an incident involving hazardous goods. With the number of ships carrying cargoes of hazardous and noxious substances growing steadily and more than 200 million tons of chemicals traded annually, other States are encouraged to consider becoming parties to the Convention as well.

The Convention will help cover a broad gap in the global liability and compensation framework: while

<sup>16</sup> The four emission control areas are as follows: the Baltic Sea area; the North Sea area; the North American area (covering designated coastal areas of Canada and the United States); and the United States Caribbean Sea area (around Puerto Rico and the United States Virgin Islands).

a comprehensive and robust international liability and compensation regime is in place with respect to oil pollution from tankers (International Oil Pollution Compensation Fund regime),<sup>17</sup> as well as with respect to bunker oil pollution from ships other than tankers (International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001), this is presently not the case for hazardous and noxious substances, which may cause marine pollution, as well as significant personal injury (UNCTAD, 2012b; 2013, pp.110–111). Administrative preparations for the setting up of the hazardous and noxious substances Fund, required under the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, as amended by the 2010 Protocol thereto, are under way. Preliminary preparations have also been made for the first session of the Assembly on Hazardous and Noxious Substances, which will be convened in accordance with article 43 of the Convention, when all entry-into-force criteria of the 2010 Protocol to the Convention have been met (IMO, 2019b).

#### ***Marine pollution from plastics and microplastics***

The plastic pollution crisis, including microplastics, in the oceans is already known, and has been receiving increased public attention (see <https://www.cleanseas.org/>). It was also the topic of the seventeenth session of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea in 2016 ([www.un.org/depts/los/consultative\\_process/consultative\\_process.htm](http://www.un.org/depts/los/consultative_process/consultative_process.htm)). It has been recognized that marine debris in general, and plastics and microplastics in particular, give rise to some of the greatest environmental concerns of all times, along with climate change, ocean acidification and loss of biodiversity. These directly affect the sustainable development aspirations of developing countries and small island developing States in particular, which, as custodians of vast areas of oceans and seas, are disproportionately affected by the effects of such pollution.

Marine plastic debris and microplastics are already harming many marine species by ingestion and entanglement and are likely to have an impact on human health in ways not yet fully understood. The recognition of these threats has finally brought the topic onto the international agenda (Finska, 2018). For many States, such pollution is also having a direct economic impact, and pollution from land-based activities is the biggest source of the problem. This trend is linked to a global increase of production and consumption of plastic in recent decades, combined with insufficient waste management infrastructure and lack of political

urgency about the problem, which has caused a severe deficiency in the capacity to collect and safely manage all plastic waste (Norwegian Academy of International Law, 2018).

Target 14.1 of the 2030 Sustainable Development Agenda calls for the prevention and significant reduction of marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution, by 2025, while target 14.2 calls for sustainably managing and protecting marine and coastal ecosystems, by 2020, to avoid significant adverse impacts, including by strengthening their resilience. Given the cross-cutting nature of the problem, other related targets include 11.6 (reduce the adverse per capita environmental impact of cities including through municipal and other waste management), 12.4 (by 2020 achieve the environmentally sound management of chemicals and all wastes throughout their life cycle), and 12.5 (substantially reduce waste generation through prevention, reduction, recycling and reuse).

Plastic pollution management is a global transboundary environmental issue that needs to be regulated internationally. Several conventions and other instruments have already or could potentially be taking steps to address certain aspects of plastic pollution. However, none of these is specifically designed to prevent increasing plastic pollution, or to comprehensively manage the current degree of plastic pollution. Relevant legal instruments worth noting include the following: globally binding conventions dealing with sea-based sources of marine litter; multilateral environmental conventions addressing trade in hazardous waste and persistent organic pollutants; and other programmes and partnerships.

#### ***Globally binding conventions dealing with sea-based sources of marine litter***

With regard to sea-based sources of maritime litter, four globally binding conventions are of particular relevance. These are the United Nations Convention on the Law of the Sea, 1982; the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78); the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 and the 1996 Protocol thereto; and the Convention on Biological Diversity, 1992.

The United Nations Convention on the Law of the Sea, 1982 is the framework convention governing the use of the world's oceans.<sup>18</sup> While it does not specifically address pollution of the marine environment by plastic waste, the Convention contains several provisions applicable to marine plastic pollution. Thus, for instance, article 194.1 requires States to “prevent, reduce and control pollution of the marine environment from any

<sup>17</sup> International Convention on Civil Liability for Oil Pollution Damage, 1969, and its 1992 Protocol and International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971 and its 1992 and 2003 Protocols.

<sup>18</sup> The status of ratification of the Convention can be found at [https://treaties.un.org/Pages/ViewDetailsIII.aspx?src=TREATY&mtdsg\\_no=XXI-6&chapter=21&Temp=mtdsg3&clang=\\_en](https://treaties.un.org/Pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XXI-6&chapter=21&Temp=mtdsg3&clang=_en).

source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities". Article 207 requires States to "adopt laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources" and specifies that "States, acting especially through competent international organizations or diplomatic conference [sic], shall endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution of the marine environment from land-based sources".

MARPOL 73/78 is one of the most important international marine environmental conventions adopted by IMO, aiming to minimize pollution of the oceans and seas, including dumping, oil and air pollution.<sup>19</sup> Annex V to the Convention, entitled Regulations for the Prevention of Pollution by Garbage from Ships, specifically prohibits the discharge of plastics from ships.

In October 2018, the Marine Environment Protection Committee adopted an action plan to address marine plastic litter from ships, intended to contribute to the global solution for preventing marine plastic litter entering the oceans by means of ship-based activities. Areas of action include the following: reducing marine plastic litter generated from, and retrieved by, fishing vessels; lessening shipping's contribution to marine plastic litter; improving the effectiveness of port reception and facilities and treatment in the reduction of marine plastic litter; enhancing public awareness, education and seafarer training; broadening the understanding of the contribution of ships to marine plastic litter; strengthening international cooperation; and targeting technical cooperation and capacity-building activities (IMO, 2018d, annex 10). In May 2019, the Committee approved the terms of reference for an IMO study on marine plastic litter from ships to focus on information on the contribution of all ships to marine plastic litter and on the storage, delivery and reception of plastic waste from and collected by ships (IMO, 2019d). An earlier IMO resolution adopted in 2017, had recommended that "all shipowners and operators should minimize taking on board material that could become garbage" (IMO, 2017c).

The 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 prohibits the dumping and incineration at sea of wastes, including plastics. It establishes reporting requirements and compliance procedures and mechanisms for its Parties.<sup>20</sup> Recent efforts include the investigation of permit requirements to address plastics in sewage waste and dredged material dumped at sea (IMO, 2016).

<sup>19</sup> The status of ratification of the Convention can be found at [www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx](http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx).

<sup>20</sup> The status of ratification of the Convention can be found at [www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx](http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx).

The Convention on Biological Diversity, 1992 has as its objective the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising from the utilization of genetic resources.<sup>21</sup> The Conference of the Parties to the Convention issued a decision on addressing the impacts of marine debris on marine and coastal biodiversity, urging parties "to develop and implement measures, policies and instruments to prevent the discard, disposal, loss or abandonment of any persistent, manufactured or processed solid material in the marine and coastal environment" (United Nations Environment Programme (UNEP), 2016b, paragraph 8).

### ***Multilateral environmental conventions addressing trade in hazardous waste and persistent organic pollutants***

Two multilateral environmental conventions focus specifically on trade in hazardous waste and persistent organic pollutants: the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989 and the Stockholm Convention on Persistent Organic Pollutants, 2001.

The main objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes.<sup>22</sup> According to the definition in article 2.1 of the Convention, "wastes" are "substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law". Article 2.3 of the Convention defines "transboundary movement", while article 1 provides for certain categories of wastes which are considered to be "hazardous wastes" for the purposes of the Convention. Plastic waste would not appear to fall under the category of "hazardous waste" or "other wastes" under this Convention.

However, in their recent decision 13/17, the parties to the Basel Convention agreed to consider relevant options available to further address marine plastic pollution and develop a proposal for further action within the scope of the Basel Convention for its Conference of the Parties (see UNEP, 2018a). Among these were two amendments aimed at reclassifying solid plastic waste to remove the presumption that it is non-hazardous (annex IX) and to list it among the wastes requiring prior informed consent (annex II), which in turn would provide transparency on transboundary shipments of scrap plastic. Parties are also considering the establishment of a partnership on plastic wastes, which would produce non-binding guidelines on plastic waste management.

The Stockholm Convention on Persistent Organic Pollutants, 2001 aims to protect human health and

<sup>21</sup> The status of ratification of the Convention can be found at <https://www.cbd.int/information/parties.shtml>.

<sup>22</sup> The status of ratification of the Convention can be found at [www.basel.int/Countries/StatusofRatifications/PartiesSignatories/tabid/4499/Default.aspx](http://www.basel.int/Countries/StatusofRatifications/PartiesSignatories/tabid/4499/Default.aspx).



the environment from such pollutants.<sup>23</sup> It can have the potential to regulate the production, use and disposal of additives used in the manufacture of plastics, to the extent that they are persistent organic pollutants. However, its role would be limited to such pollutants in greening the lifecycle of a range of plastic polymers to promote safer design and increase rates of recycling and reuse (UNEP, 2017, pp.17, 32–22, 64–65). Along with the Basel Convention, it also addresses the re-entry of regulated chemicals onto the market through the recycling of products that contain such pollutants.

### ***Regional Seas programmes***

The 18 Regional Seas programmes<sup>24</sup> dealing with land-based sources of pollution vary in scope and effectiveness. In general, they are fragmented in their legal structure, and in some cases, rely solely on non-binding instruments. Nevertheless, they serve as important regional tools to strengthen regional cooperation and address region-specific issues. To some extent, some of the gaps regarding plastic pollution have been narrowed with the introduction of action plans but again these are varied in their approaches and methodologies (UNEP, 2017, pp. 49–62).

### ***Addressing gaps in the existing regulatory framework***

Despite the existence of the above-mentioned instruments, significant gaps remain in the governance structure of marine plastic pollution. The global regulatory framework is based on the United Nations Convention on the Law of the Sea, 1982; MARPOL 73/78; and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 and the 1996 Protocol thereto. Although the framework should in principle be capable of preventing marine litter, including the discharge of plastic waste into the marine environment, there are challenges in implementation and compliance that need to be urgently addressed (UNEP, 2017). For instance, MARPOL 73/78, annex V, contains exemptions based on vessel size, excluding most fishing vessels, that are responsible for abandoned, lost or otherwise discarded fishing gear (UNEP, 2018b).

There are no global agreements that specifically prevent marine plastic litter and microplastics or provide a comprehensive approach to managing the lifecycle of plastics. Further, the regional framework is fragmented in its legal structure in general and in addressing land-based sources of pollution in particular. The Convention on Biological Diversity, 1992 principally applies to the conservation of biological diversity and does not directly address pollution of the marine environment. The Basel Convention, 1989 focuses on plastics in the waste phase, mainly regulating the transboundary

movement of plastic waste. However, it establishes a general duty for the parties to the Convention to reduce the generation of plastic waste, providing non-binding guidelines in this regard. The Stockholm Convention, 2001 does not regulate all chemical additives used in plastic products. It provides protection for a limited number of persistent organic pollutants used in the manufacture of plastics; however, the rapid innovation of plastics, particularly in the application of packaging, and the length of time it takes to amend the Convention, make this an unsuitable instrument to keep up with industry trends (UNEP, 2017). In addition, none of the instruments is specifically designed to prevent and minimize marine plastic pollution, particularly from land-based sources. As a result, most sources of plastic pollution in the ocean remain unregulated. For instance, only 9 out of 18 regional seas conventions and action plans have adopted protocols related to land-based sources and activities; this is problematic, since most marine plastic litter originates on land (UNEP, 2018b).

Further, national legal frameworks do not comprehensively address the issue. At times, it has even been observed that more creative and effective measures have been taken at the domestic level by local governments and non-State actors, rather than by central governments. A recent article focusing on the case studies of two countries in Asia suggests that there is a need to create specific marine plastic pollution laws or strengthen existing national laws, in particular waste management and recycling laws; build awareness and educate consumers on plastic consumption habits, reduce plastic pollution as part of corporations' business practices and forge multi-stakeholder and cross-border partnerships to combat plastic pollution. If taken altogether, such governance efforts are likely to be more effective (García et al., 2019).

With regard to the way forward, an assessment by UNEP (2017) suggests that one possible approach would be to strengthen current efforts and focus on each aspect of the lifecycle of plastics and combine voluntary and binding measures to address the issue.

### ***Conservation and sustainable use of marine biodiversity of areas beyond national jurisdiction: Legally binding instrument under the United Nations Convention on the Law of the Sea, 1982***

The use of the marine environment and its resources, including in areas beyond national jurisdiction is increasingly expanding.<sup>25</sup> For instance, shipping activity has increased and so have its environmental

<sup>23</sup> The status of ratification of the Convention can be found at [www.pops.int/Countries/StatusofRatifications/PartiesandSignatoires/tabid/4500/Default.aspx](http://www.pops.int/Countries/StatusofRatifications/PartiesandSignatoires/tabid/4500/Default.aspx).

<sup>24</sup> See [www.unenvironment.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/regional-seas-programmes](http://www.unenvironment.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/regional-seas-programmes).

<sup>25</sup> Maritime zones under the United Nations Convention on the Law of the Sea, 1982 include the following: the territorial sea, extending up to 12 nautical miles from the baselines (part II, section 2, article 3); exclusive economic zones, extending from the edge of the territorial sea to 200 nautical miles from the baseline (part V, article 57); the continental shelf, the natural prolongation of land territory to the outer edge of the continental margin, or 200 nautical miles from the baselines, whichever is greater (part VI, article 76); and areas beyond



impacts, including marine and air pollution, litter and the introduction of invasive species. In addition, other marine activities, such as high-seas fishing, seabed mining, submarine cables, marine scientific research, bioprospecting<sup>26</sup> and the development of commercial products, could all have significant environmental impacts, including on marine ecosystems. Moreover, greenhouse gas emissions, climate change and ocean acidification are placing further pressure on marine ecosystems, reducing their resilience and compounding existing impacts (The National Academies Press, 2010). Areas beyond national jurisdiction hold unique oceanographic and biological features and play a role in climate regulation. They provide seafood, raw materials, and genetic and medicinal resources, which are of increasing commercial interest and hold promise for the development of new drugs to treat infectious diseases that are a major threat to human health. From the perspective of developing countries, access and benefit sharing, as well as the conservation of marine genetic resources, are of particular importance in this context (UNCTAD, 2018e).

Sustainable Development Goal target 14.5 sets the deadline for conserving at least 10 per cent of coastal and marine areas by 2020. Prior to the expiry of the deadline, this target should be enhanced by international consensus to conserve at least 30 per cent of coastal and marine areas by 2030 through well monitored and managed ecologically representative and well-connected systems of marine protected areas and other effective area-based conservation measures (The Pew Charitable Trusts, 2018).

The United Nations Convention on the Law of the Sea, 1982 sets forth the rights and obligations of States regarding the use of the oceans, their resources and the protection of the marine and coastal environment; however, it does not expressly refer to marine biodiversity or to exploration and exploitation of resources within the water column in areas beyond national jurisdiction. In the absence of a specific international legal framework regulating related issues, negotiations have been taking place under the auspices of the United Nations towards the establishment of an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. Three sessions of the intergovernmental conference on the issue have taken place, the most recent being in August 2019.

Marine genetic resources in areas beyond national jurisdiction are an important priority, including for developing countries, given the economic value that can be generated from their exploitation and the potential expansion of economic activities in coastal

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national jurisdiction, composed of the "Area" (part I, article 1) and the high seas (part VII, article 86).

<sup>26</sup> Bioprospecting is the search for genes in organisms living in extreme environments in areas beyond national jurisdiction.

and offshore areas, sustainably and in line with the Sustainable Development Goals. However, differences currently exist between developed and developing countries. According to a recent study, players located or headquartered in 10 developed countries registered 98 per cent of the patents related to genes of marine origin, making possible their economic exploitation, and 165 countries were unrepresented (Blasiak et al., 2018). These findings highlight the importance of inclusive participation by all States in international negotiations and the urgency of clarifying the legal regime around access and benefit sharing of marine genetic resources. Therefore, in addition to aiming to achieve consensus on relevant complex substantive and procedural issues, negotiations for the new legal instrument will need to ensure a wide participation of all States, especially developing countries.

At the three sessions of the intergovernmental conference held so far, discussions reflected the elements of a package agreed in 2011, namely, marine genetic resources; area-based management tools, including marine protected areas; environmental impact assessments; and capacity-building and marine technology transfer. During the first session of the conference, discussions on the main issues largely reiterated familiar positions that had been presented during earlier sessions of a preparatory committee established by General Assembly resolution 69/292. Work was still needed on finding common solutions, particularly among options based on common heritage versus the high seas, and global versus regional approaches.

During the second session of the conference, participants continued their deliberations on the basis of the conference President's aid to discussions, structured along the lines of the elements of the 2011 package. Convergence was achieved in a few areas, such as the need to promote coherence, complementarity and synergies with other frameworks and bodies; benefit sharing as part of conservation and sustainable use; and environmental impact assessments being mutually supportive with other instruments. However, there is still no agreement about other important issues, including the scope of the instrument; whether benefit sharing would be carried out on a monetary or non-monetary basis; and the overarching principles governing the future instrument, particularly the common heritage of humankind and the principle of the high seas (International Institute for Sustainable Development Reporting Services, 2019a).

During the third session of the conference, held in August 2019, participants held textual negotiations for the first time on the basis of a zero draft containing treaty language developed by the President of the conference. The draft contained 12 parts, which in addition to the dedicated parts addressing the elements of the package agreed in 2011, included a preamble and general provisions, such as on the use of terms, institutional

arrangements and the settlement of disputes (United Nations, 2019c). Negotiating on a zero draft allowed delegations to move away from restating general views towards making concrete textual proposals. However, divergence still remained on the substance of certain provisions, as well as on the scope of the new convention. Discussions are expected to continue during the fourth session of the conference, to be held from 23 March to 3 April 2020, at United Nations Headquarters in New York, United States (International Institute for Sustainable Development Reporting Services, 2019b; United Nations, 2019d).

## C. OTHER LEGAL AND REGULATORY DEVELOPMENTS AFFECTING TRANSPORTATION

### 1. Seafarers' issues

According to the International Chamber of Shipping, the worldwide population of seafarers serving on internationally trading merchant ships is estimated at 1,647,500. Most seafarers come from developing countries, with China, the Philippines, Indonesia, the Russian Federation and Ukraine estimated to be the five largest supply countries for all seafarers ([www.ics-shipping.org/shipping-facts/shipping-and-world-trade/global-supply-and-demand-for-seafarers](http://www.ics-shipping.org/shipping-facts/shipping-and-world-trade/global-supply-and-demand-for-seafarers)).

At its 106th session in March 2019, the IMO Legal Committee expressed concern about the growing number of cases of abandonment of seafarers and action needed to address this issue. An update on the latest cases was provided, including those which had been successfully resolved, following intervention by the IMO Secretariat, relevant flag States, port States, seafarers' States, the International Labour Organization and others. As at 31 December 2018, 366 abandonment incidents were listed in the database since its establishment in 2004, affecting 4,866 seafarers. Of those incidents, 175 cases had been resolved, 77 cases had been disputed, and 52 cases were inactive. There are still 52 unresolved cases. From 2011 to 2016, the number of cases per year ranged from 12 to 19 (IMO, 2019b). At times, shipowners who do not take their responsibilities seriously and find themselves in financial difficulty abandon seafarers in ports far from home, leaving them without fuel, food, water or medical care and without pay for months. The 2014 amendments to the International Labour Organization Maritime Labour Convention, 2006, which entered into force in January 2017, require shipowners to put in place a financial security system to ensure compensation for seafarers and their families in the event of abandonment, as well as in respect of claims for death or long-term disability due to an occupational injury, illness or hazard. This requirement will help prevent the unfortunate situation of seafarers being stranded in port for long periods when

shipowners abandon their crews without paying their wages or repatriating them to their home countries.

The IMO Legal Committee also addressed the fair treatment of seafarers on suspicion of committing maritime crimes. The inadequacy of the current guidelines on fair treatment of seafarers in the event of a maritime accident, adopted in 2006, was highlighted, as the guidelines are limited to the fair treatment of seafarers in the case of a maritime accident and do not adequately address the fair treatment of seafarers detained on suspicion of committing maritime crimes. The establishment of a joint working group consisting of representatives of IMO, the International Labour Organization and the International Transport Workers' Federation to look into the issue was suggested.

### 2. Fraudulent registration of ships

Following recent reports by several member States on cases concerning the fraudulent use of their flag, the IMO Legal Committee, at its 106th session in March 2019, agreed on a series of measures to prevent unlawful practices associated with the fraudulent registration and fraudulent registries of ships.

Information compiled by the IMO Secretariat on the cases received included the following:

- The registration of ships without the knowledge or approval of the relevant national maritime administration.
- The continuous operation of a ship registry after the contact with the registration company had expired or had otherwise been terminated.
- The submission of fraudulent documentation to IMO, without the knowledge of the cognizant flag State authority, in order to obtain IMO documentation and ship identification numbers.
- The intentional manipulation of automatic identification system data to materially alter a ship's identifying information or to reflect such data pertaining to an entirely different ship.
- The operation of an illegal international ship registry.

Participating in the session, UNCTAD recalled the long-standing history of its fruitful collaboration with IMO, in line with the respective mandates of the two bodies, including the joint negotiation and adoption of the International Convention on Maritime Liens and Mortgages, 1993 and the International Convention on Arrest of Ships, 1999. UNCTAD joined others in expressing concern regarding the growing problem of fraudulent ship registries and noted that addressing fraudulent practices effectively was vital to promoting maritime safety, security and environmental protection. UNCTAD also highlighted that this issue was closely related to the achievement of the Sustainable Development Goals, notably Goals 14 and 16, and reiterated its support for combating unlawful practices associated with fraudulent registration and

registries. UNCTAD further noted that in the interest of achieving relevant public policy objectives, stakeholders, including shippers and charterers, should also have access to information concerning registration and registries (IMO, 2019b).

The Committee supported the development of a comprehensive database of registries in the publicly available contact points module of the IMO Global Integrated Shipping Information System that would contain the names and contact details of the national governmental bodies or authorized/delegated entities in charge of registration of ships, as well as other relevant information.

The Legal Committee also approved recommended best practices to help combat fraudulent registration and registries of ships. Such practices include the following:

- Verifying IMO numbers of vessels when receiving an application for registration.
- Making sure that flag State administration contact point information is up to date.
- Ensuring the application of the requirement for the continuous synopsis record, which is intended to provide an onboard record of a ship's history.
- Recommending that prospective flag States review the United Nations Security Council Sanctions List Search webpage (<https://scsanctions.un.org/search>).
- Checking the relevant information pertaining to registries of ships in the contact points module of the Global Integrated Shipping Information System.

An intersessional correspondence group was established to further discuss some issues and consider various proposals in more detail. These issues included enhancing capabilities for the detection and reporting of fraudulent registration documentation and working with the IMO Secretariat, member States, port State control authorities, vessel owners and operators, non-governmental organizations and the private sector, including the maritime insurance industry ship brokers and relevant maritime stakeholders.

The Committee also agreed that IMO should work with the United Nations Security Council to establish an easily searchable database by IMO number and name of vessel currently the subject of, or designated pursuant to, Security Council resolutions (IMO, 2019b).

### 3. Women in shipping: Achieving gender equality

The attainment of equality between women and men, and the elimination of all forms of discrimination against women are fundamental human rights and United Nations values. At the global level, the United Nations has emphasized gender equality over the years, through various instruments, including the 1995 Beijing

Declaration, the Millennium Development Goals and the Sustainable Development Goals. With the adoption of the 2030 Agenda for Sustainable Development, world leaders committed “to achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value” (Goal 8, target 8.5) and “to achieve gender equality and empower all women and girls” (Goal 5) by 2030.

Despite some progress and ongoing efforts to address gender inequality, the global labour force participation rate for women remains low overall – women continue to have fewer career opportunities and earn less than men. Reducing the gender gap in labour force participation could also lead to additional economic gains and increased growth.

With regard to the maritime industry, women still make up a small percentage of the seagoing workforce and are faced with challenges that could hinder their participation in the sector, ranging from overt abuse, to covert discrimination and fundamental barriers. To close the gender gap in the maritime industry and foster gender equality, it is necessary to combat the traditional perceptions of having women at sea, promote career opportunities and ensure appropriate living and working conditions for women in the sector. This requires political and legal action at the international level, accompanied by corresponding action at the national level by all key stakeholders.

#### *Economic benefits of achieving gender equality*

According to the International Labour Organization report, *World Employment and Social Outlook: Trends 2019* (International Labour Organization, 2019a), gender gaps still remain a pressing challenge facing the world of work. On average, women remain much less likely to participate in the labour market than men. The much lower labour force participation rate of women, which stood at 48 per cent in 2018, compared with 75 per cent for men, means that about three in five of the 3.5 billion people in the global labour force in 2018 were men. An earlier report (International Labour Organization, 2017) estimated that if a goal to reduce the gap in participation rates between men and women by 25 per cent by the year 2025 was realized at the global level, it had the potential to add \$5.8 trillion to the global economy, which could also unlock large potential tax revenues. Northern Africa, the Arab States and Southern Asia would see the greatest benefits, given that in these regions the gaps in participation rates between men and women exceed 50 per cent.

According to the United Nations Industrial Development Organization, targeting gender equality and women's economic empowerment is not only important from the perspective of realizing women's rights but is also smart economics. Women are key agents of change, and when women and men are equal, economies grow faster, less people remain in poverty and the overall

well-being of people increases. Harnessing women's potential as economic actors, leaders and consumers results in higher levels of industrialization and more sustained growth rates. Global GDP could increase by more than 25 per cent by 2025 if women played the same role in labour markets as men ([www.unido.org/our-focus-cross-cutting-services/gender-equality-and-empowerment-women](http://www.unido.org/our-focus-cross-cutting-services/gender-equality-and-empowerment-women)).

Ostry et al. (2018) found that while progress has been made in increasing women's labour force participation in the past 20 years, the pace has been uneven and large gaps remain. Narrowing participation gaps between women and men is likely to bring large economic gains. In addition, reducing female underemployment should yield greater gains than an equivalent increase in male employment: gender diversity brings benefits all its own. The paper supports the view that women bring different skills and ideas to the workplace, which are economically valuable, and women and men complement each other in the production process. Narrowing gender gaps can bring benefits, including a bigger boost to growth. Closing the gender gap could increase GDP by between 10 and 80 per cent, depending on the initial value of women's labour force participation. Men stand to gain from this as well, with higher wages for males, because gender complementarity raises productivity. In turn, as the demand for services rises, driven by economic development and income growth, more women are brought into the labour force. In addition, the growth of the services sector in developing economies should contribute to smaller gender gaps over time.

The World Economic Forum (2017) estimated that if the global gender gap in labour market participation was closed by 25 per cent by 2025, an additional \$5.3 trillion would be added to GDP globally. More recently, an International Labour Organization survey of almost 13,000 enterprises in 70 countries found that, at the national level, an increase in female employment is positively associated with GDP growth (International Labour Organization, 2019b).

## Gender equality in the maritime industry

### *Facts and figures*

Attention to women in the shipping industry began to increase in conjunction with discussion on the shortage of seafarers and the publication in 1995 of the first Manpower Report by BIMCO and the International Chamber of Shipping. These reports, issued every five years, provide a comprehensive assessment of the global supply of and demand for seafarers, and make predictions for developments in the industry for the next 5 to 10 years. The latest one, issued in 2016, forecasts a serious shortage in the supply of seafarers. According to the report, a combination of factors, including an ageing workforce, lack of skills diversity and the industry's inability to attract young new talent,

has led to a labour shortage of about 16,500 officers (2.1 per cent), and by 2025, the world merchant fleet would be needing an additional 147,500 officers (BIMCO, 2016).

It has been recognized that there is a gender gap in the maritime and related industries, including for seafarers, fishers, port operators, port State control officers and government officials, particularly in senior roles, which remain mostly male dominated. It appears that the underrepresentation of women in the maritime industry has not changed much over the past decades. According to the International Transport Workers' Federation ([www.itfseafarers.org/en/issues/women-seafarers](http://www.itfseafarers.org/en/issues/women-seafarers)), only 2 per cent of the world's maritime workforce are women. Women seafarers work mainly in the cruise and ferries sector, often for flags of convenience vessels, which are among the most underpaid and least protected of jobs at sea. Women also tend to be younger, and fewer are officers or in other leadership roles, compared with their male crew mates (Fjærli et al., 2017). Their low number means that women can be subject to discrimination and harassment.

A joint industry survey conducted in 2015 indicates that 40 per cent of women are employed within the cruise sector, whereas the rest work on cargo ships, ferry services, tankers and other vessels (International Maritime Health Association et al., 2015, p. 9). According to 2018 data on global workforce positions in organizations belonging to the Maritime Human Resources Association, 35 per cent of that workforce were women, 52 per cent were men and 13 per cent, unknown. Over 76 per cent of that female workforce have administrative, junior or professional-level occupations. Very few women reach managerial level or above, with just over 10 per cent of those on executive leadership teams being women, and female executives most likely to operate as chief financial officers (Spinnaker Global, 2019).

The Gender, Empowerment and Multi-cultural Crew project (Pike et al., 2017), sponsored by the International Transport Worker's Association Seafarers' Trust, studied welfare and gender issues in three uniquely different maritime nations: China, Nigeria and the United Kingdom. The study found that sexual harassment, abuse and bullying are the key issues faced by women seafarers on board. The mistreatment faced by women, especially in the lower ranks and in the younger age demographic, was similar to that experienced by some vulnerable men and ethnic minorities on board.

### *Technical skills, education and training*

One of the main obstacles relating to the employment of women is their lack of technical skills, particularly in science, technology, engineering and math. A recent study (Microsoft.com, 2018) found that despite the high priority that is placed on such subjects in schools, efforts to expand women's interest and employment in those subject areas, as well as in computer science, are not working as well as intended. This is especially true



in technology and engineering. The reasons range from peer pressure to a lack of role models and support from parents and teachers, and a general misperception of careers in science, technology, engineering and math in the real world. But the research also points to ways to better support girls and young women in those subject areas and close this gender gap. These include the following actions: providing teachers with more engaging and relatable curriculum in those subjects, such as three-dimensional and hands-on projects, the kinds of activities that have proven to help retain girls' interest in science, technology, engineering and math in the long term; increasing the number of mentors and role models in those subject areas – including parents – to help build young girls' confidence so that they can succeed in those subjects; and creating inclusive classrooms and workplaces that value their opinions.

As regards maritime education and training, and thanks to efforts by IMO member States, many institutions, including in developing countries, have been increasingly opening their doors to women students. However, such a positive trend would be negated if shipping companies made limited efforts to employ women graduates from such institutions. The biggest challenge for women cadets is often access to ships where they receive onboard training for a total of 12 months to meet the requirements for a certificate of competence based on standards of training, certification and watchkeeping for seafarers. Some women fail to receive a certificate of competence because they are not granted permission to work onboard ships (Kitada and Tansey, 2018).

In one project (Pike et al., 2017), mentoring and training at all levels was considered essential. Throughout the research, lack of training and mentoring were frequently mentioned as contributing to the issues surrounding gender and multicultural crews. The project highlights, inter alia, the importance of raising awareness about the merchant maritime business, particularly to young people of school age, as a vital first step in encouraging more women and men to enter the industry. Providing ship captains and other senior officers with ongoing access to training so that they can adequately respond to any gender-related issues that may arise at sea was also considered important.

### ***Shipping and digitalization***

More recently, the board of the International Association of Ports and Harbours announced the allocation of a budgeted fund of \$10,000 to develop mentoring programme on women in ports designed to attract, empower and retain female talent in the industry. The programme was launched by the Women's Forum of the Association, which was established in 2012 with the aim to “aspire to advance and empower women in the maritime industry; create a platform for discussing women's issues in the maritime industry, ways to encourage women to join the industry; and to promote training programmes enabling women to better compete for positions at all levels, including those previously not

open to women” ([www.iaphworldports.org/womens-forum](http://www.iaphworldports.org/womens-forum)). It will deploy an online system to connect women port professionals with both female and male senior mentors. As the Vice-Chair of the Association stated: “Smart shipping and digitization is set to change the face of port operations. Autonomous vessel operation will require completely different skillsets as well as mindsets. Women port operators such as those remotely managing harbour cargo-handling equipment in Panama have already demonstrated that women have an important contribution to make to the ports of the future” (Safety4sea.com, 2019).

The shipping industry is becoming highly digitalized and automated, with many ship and port systems and components linked on the Internet. Future expansion will require new and higher skills from seafarers, according to the newly redefined roles they will need to assume, both on board and ashore, in order to ensure the safety of vessels and efficiency of operations (Hamburg School of Business Administration, 2018). With less physically strenuous tasks and more information technology skills and knowledge required, there may be increased opportunities for women to actively pursue a career in the maritime sector.

### ***Supporting action at the international level by United Nations agencies and other bodies***

The need to promote gender equality has long been recognized within the maritime industry, as evidenced by studies, reports and activities of various relevant bodies, and political action has been taken at various international forums to support women in the industry.

As a specialized body responsible for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships, IMO, through its Technical Cooperation Committee, has approved a number of strategies for the advancement of women in the maritime sector, placing gender as a common agenda topic throughout shipping industry organizations. Since 1988, IMO has developed and implements a gender programme to promote the advancement of women in the maritime industry. Today, the programme, called Women in Maritime, helps put in place an institutional framework to incorporate a gender dimension into IMO policies and procedures, and supports access to maritime training and employment opportunities for women in the maritime sector. Over the years, the programme has helped women reach leadership positions in the maritime sector and bring a much-needed gender balance to the industry by giving them access to high-level technical training ([www.imo.org/en/MediaCentre/HotTopics/women/Pages/default.aspx](http://www.imo.org/en/MediaCentre/HotTopics/women/Pages/default.aspx)). In addition, the advancement of women is being supported and promoted through the development of human and institutional resources in the maritime sector in the framework of the Integrated Technical Cooperation Programme ([www.imo.org/en/OurWork/TechnicalCooperation/ITCP/Pages/Default.aspx](http://www.imo.org/en/OurWork/TechnicalCooperation/ITCP/Pages/Default.aspx)), which aims to assist developing countries in building up their human and institutional capacities for

uniform and effective compliance with the IMO regulatory framework. An international regulatory measure demonstrating awareness on issues of women seafarers was the adoption in 2010 of the Manila Amendment to the International Convention on Standards of Training, Certification and Watch keeping for Seafarers, 1978, which included a resolution (No. 14) on the promotion of the participation of women in the maritime industry.

For the last two decades, the International Labour Organization has actively promoted the participation of women on board vessels. For instance, according to a 2003 study (International Labour Organization, 2003), a great advantage of having women aboard ships is that it creates a more normal social environment. Seafaring has traditionally not been viewed as a career for women; however, promoting and facilitating their increased participation could address the issue of seafarer shortages. In addition, the responsibilities of shipowners towards women seafarers were reflected in the Maritime Labour Convention, 2006. Flag States that ratify the convention must ensure that separate sleeping rooms and separate sanitary facilities for men and women are available on vessels. Other relevant conventions are the International Labour Organization Maternity Protection Convention, 2000 (No. 183), as well as the Convention on the Elimination of All Forms of Discrimination against Women, 1979.

An International Labour Organization sectoral meeting on the recruitment and retention of seafarers and the promotion of opportunities for women seafarers, held in Geneva, Switzerland, in February 2019, recognized that the sustainability of the shipping sector “depends on the ability to continue to attract a sufficient number of quality new entrants and retain experienced seafarers, including women seafarers and other underrepresented groups. This calls for a creative approach involving the social partners and all relevant stakeholders to achieve both meaningful and viable solutions” (International Labour Organization, 2019c). Encouraging and facilitating a more diverse and inclusive workplace benefits all seafarers. Highlighting the importance of equal opportunities and treatment of seafarers, including women seafarers, the meeting conclusions reiterated that prohibition of discrimination in employment and occupation, one of the fundamental principles and rights at work of the International Labour Organization, should be treated in a holistic manner and address diversity as a whole. All seafarers, regardless of race, colour, sex, religion, political opinion, national extraction or social origin, nationality, gender and sexual orientation, have the right to equal opportunities and treatment.

With regard to women seafarers in particular, it is recognized that a one-size-fits-all approach to combat discrimination is not realistic since there are notable differences in the life at sea of women across different types of ships, cultures and different trading patterns; publications, job advertisements and other information produced by shipowners and others are not always adopted to attract both women and men seafarers;

ensuring diversity in the hiring of seafarers is difficult – although in many cases women graduate with excellent results in areas of science, technology, engineering and math subjects, sometimes they see their job applications being turned down systematically; mandatory pregnancy testing as part of the pre-employment medical examination of seafarers is a concern for many women seafarers and may be discriminatory. The issue requires further research and deliberation among interested parties in the maritime industry and medical experts. The meeting recommended that the International Labour Organization conduct a study that would include statistical research and an analysis of the numbers and distribution of women seafarers within the industry, identify the positions and sectors they work in and examine the legislation member States have in place to ensure non-discriminatory access to employment and equal opportunities and to highlight examples of best practice. It also recommended that the Organization carry out a review of the international labour standards related to the maritime sector with the aim of identifying biased language to address and promote diversity and inclusion (International Labour Organization, 2019c).

Other important achievements of the International Labour Organization affecting women seafarers, who often face harassment in the workplace, are the Convention Concerning the Elimination of Violence and Harassment in the World of Work, 2019 and the Recommendation Concerning the Elimination of Violence and Harassment in the World of Work, 2019, adopted by delegates on 21 June 2019, at the conclusion of the Centenary International Labour Conference, in Geneva ([www.ilo.org/ilc/ILCSessions/108/media-centre/news/WCMS\\_711321/lang--en/index.htm](http://www.ilo.org/ilc/ILCSessions/108/media-centre/news/WCMS_711321/lang--en/index.htm)). The Convention recognizes that violence and harassment in the world of work “can constitute a human rights violation or abuse... is a threat to equal opportunities, is unacceptable and incompatible with decent work”. It defines violence and harassment as behaviours, practices or threats “that aim at, result in, or are likely to result in physical, psychological, sexual or economic harm”. It recalls that member States have a responsibility to promote a “general environment of zero tolerance”. The Convention will enter into force 12 months after ratification by two member States.

And finally, the global 2019 theme for International Women’s Day was “Think equal, build smart, innovate for change” – focusing on innovative ways in which gender equality and the empowerment of women can be advanced in support of Sustainable Development Goal 5, Achieve gender equality and empower all women and girls. In the same vein, IMO in 2019 selected “Empowering women in the maritime community” as the theme of World Maritime Day, providing an opportunity to raise awareness of the importance of gender equality, in line with the Sustainable Development Goals, and to highlight the important contribution of women all over the world to the maritime sector.

Further, IMO has been working with maritime stakeholders towards achieving the Sustainable Development Goals,

particularly Goal 5, to help create an environment in which women are identified and selected for career development opportunities in maritime administrations and in ports and maritime training institutes and to encourage more dialogue for gender equality in the maritime space. IMO supports gender equality and the empowerment of women by granting gender-specific fellowships; by facilitating access to high-level technical training for women in the maritime sector in developing countries; by creating an environment in which women are identified and selected for career development opportunities in maritime administrations, ports and maritime training institutes; and by helping to establish professional women in maritime associations, particularly in developing countries ([www.imo.org/en/OurWork/TechnicalCooperation/Pages/WomenInMaritime.aspx](http://www.imo.org/en/OurWork/TechnicalCooperation/Pages/WomenInMaritime.aspx)). In this context, the need for stronger partnerships and cooperation between the public and private sectors cannot be overemphasized.

Women's empowerment is also promoted by the Women's International Shipping and Trading Association, a networking body established in 1974 that aims to attract and support women at the management level in the maritime, trading and logistics sectors. The Association is currently supported in 45 countries by national embodiments of the Association, striving to empower "women to lead, through their unique perspective and competencies", based on the conviction that "gender diversity is key in providing a sustainable future for the shipping industry internationally" (<https://wistainternational.com/>).

## D. STATUS OF CONVENTIONS

A number of international conventions in the field of maritime transport were prepared or adopted under the auspices of UNCTAD. Table 4.1 provides information on the status of ratification of each of those conventions as at 31 July 2019.

Table 4.1 Contracting States Parties to selected international conventions on maritime transport, as at 31 July 2019		
Title of convention	Date of entry into force or conditions for entry into force	Contracting States
Convention on a Code of Conduct for Liner Conferences, 1974	6 October 1983	Algeria, Bangladesh, Barbados, Belgium, Benin, Burkina Faso, Burundi, Cameroon, Cabo Verde, Central African Republic, Chile, China, Congo, Costa Rica, Côte d'Ivoire, Cuba, Czechia, Democratic Republic of the Congo, Egypt, Ethiopia, Finland, France, Gabon, Gambia, Ghana, Guatemala, Guinea, Guyana, Honduras, India, Indonesia, Iraq, Italy, Jamaica, Jordan, Kenya, Kuwait, Lebanon, Liberia, Madagascar, Malaysia, Mali, Mauritania, Mauritius, Mexico, Montenegro, Morocco, Mozambique, Niger, Nigeria, Norway, Pakistan, Peru, Philippines, Portugal, Qatar, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Senegal, Serbia, Sierra Leone, Slovakia, Somalia, Spain, Sri Lanka, Sudan, Sweden, Togo, Trinidad and Tobago, Tunisia, United Republic of Tanzania, Uruguay, Bolivarian Republic of Venezuela, Zambia (76)
United Nations Convention on the Carriage of Goods by Sea, 1978	1 November 1992	Albania, Austria, Barbados, Botswana, Burkina Faso, Burundi, Cameroon, Chile, Czechia, Dominican Republic, Egypt, Gambia, Georgia, Guinea, Hungary, Jordan, Kazakhstan, Kenya, Lebanon, Lesotho, Liberia, Malawi, Morocco, Nigeria, Paraguay, Romania, Saint Vincent and the Grenadines, Senegal, Sierra Leone, Syrian Arab Republic, Tunisia, Uganda, United Republic of Tanzania, Zambia (34)
International Convention on Maritime Liens and Mortgages, 1993	5 September 2004	Albania, Benin, Congo, Ecuador, Estonia, Honduras, Lithuania, Monaco, Nigeria, Peru, Russian Federation, Spain, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Serbia, Syrian Arab Republic, Tunisia, Ukraine, Vanuatu (19)
United Nations Convention on International Multimodal Transport of Goods, 1980	Not yet in force – requires 30 contracting parties	Burundi, Chile, Georgia, Lebanon, Liberia, Malawi, Mexico, Morocco, Rwanda, Senegal, Zambia (11)
United Nations Convention on Conditions for Registration of Ships, 1986	Not yet in force – requires 40 Contracting Parties, representing at least 25 per cent of the world's tonnage as per annex III to the Convention	Albania, Bulgaria, Côte d'Ivoire, Egypt, Georgia, Ghana, Haiti, Hungary, Iraq, Liberia, Libya, Mexico, Morocco, Oman, Syrian Arab Republic (15)
International Convention on Arrest of Ships, 1999	14 September 2011	Albania, Algeria, Benin, Bulgaria, Congo, Ecuador, Estonia, Latvia, Liberia, Spain, Syrian Arab Republic (11)

Note: For additional information, see UNCTAD Transport and Policy Legislation at [unctad.org/ttl/legal](http://unctad.org/ttl/legal). For official status information, see the United Nations Treaty Collection, available at <https://treaties.un.org>.

## E. SUMMARY, OUTLOOK AND RELATED POLICY CONSIDERATIONS

Players in the shipping industry are increasingly taking advantage of digitalization and joint collaborative platforms and solutions enabled by new technologies and innovations, including blockchain, thus changing their business and partnership models. These aim to promote efficient and secure trade, including by offering greater supply chain visibility and the use of electronic documents, ultimately benefiting customers who rely on shipping industry services.

Importantly, autonomous ships, or maritime autonomous surface ships – the general term for autonomous ships used at IMO – may soon become a reality, promising to provide enhanced cost savings and safety by removing the human element from certain operations. However, before they start to be fully used in commercial operations, the technology needs to be proven. With regard to the effects on the work of the seafarers, it appears that the further introduction of automation will also create a demand for new types of jobs, such as remote operators, maintenance crews and service providers. As a result, the demand for labour will not completely disappear, but the requirements and skills needed for individual jobs will change, for example, there may be an increase in shore-based jobs and crew reductions on board vessels. Recent international regulatory developments in respect of maritime autonomous surface ships include an ongoing scoping exercise, initiated at the IMO in 2017. The exercise focuses on the review of relevant legal instruments to ensure the safe design, construction and operation of autonomous ships and to guarantee that the legal framework provides the same levels of protection to autonomous ships as for operations with traditional ships. Further, the scoping exercise would benefit from the participation and contribution of all countries, including developing countries.

With respect to environmentally sustainable shipping and the oceans, international regulatory developments at relevant international bodies during the period under review continued to contribute towards the implementation of the 2030 Agenda for Sustainable Development, the Paris Agreement under the United Nations Framework Convention on Climate Change and the Sendai Framework for Disaster Risk Reduction 2015–2030, which collectively provide the foundation for sustainable, low-carbon and resilient development in a changing climate. Important developments worth noting include the Katowice climate package, adopted at the twenty-fourth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, which aims to promote international cooperation and encourage greater ambition for implementing the Paris Agreement; the Climate Action Summit convened by the Secretary-General of the

United Nations in September 2019 to boost political and economic efforts to strengthen climate action and ambition globally; ongoing work at IMO towards setting emissions reduction targets consistent with the Paris Agreement; and the initiation of the fourth IMO study on greenhouse gas.

Various examples concerning the interlinkages between oceans, sustainable development and climate change mitigation and adaptation are worth noting. For example, the call to global climate action made by civil society and industry leaders at the Global Climate Action Summit 2018 suggests that countries increase specific and meaningful ocean-related content in their 2020 submissions of nationally determined contributions and in their adaptation communications. The need to recognize that ocean science will be key in developing effective measures for the purposes of coastal protection and coastal zone management, as well as for climate-risk assessment, adaptation and resilience-building for seaports and other coastal transport infrastructure, will become particularly relevant in the context of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030). This is a matter of concern for developing countries, in particular small island developing States.

A number of important regulatory issues include the following: the required implementation of the new lower 0.50 per cent limit (from 3.50 per cent currently) on sulphur content in ships' fuel oil, applicable globally, as of 1 January 2020 – expected to bring positive results for human health and the environment; and the adoption of an additional amendment to MARPOL 73/78, entering into force on 1 March 2020, which will prohibit not just the use but also the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship – unless the ship is fitted with a scrubber. Enforcement, compliance with and monitoring of the new sulphur limit is the responsibility of States party to MARPOL 73/78, annex VI. Ships found not in compliance, may be detained by port State control inspectors, and/or sanctions may be imposed for violations.

As regards other ship-source pollution issues, the Ballast Water Management Convention, 2004 concentrates on its effective and uniform implementation, and on an associated experience-building phase, with emphasis on gathering data on its application. As of July 2019, the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996, as amended by its 2010 Protocol, had been ratified by five States, bringing it closer to its entry into force. With the number of ships carrying hazardous and noxious substances cargoes growing steadily, and more than 200 million tons of chemicals traded annually, other countries, including developing countries, are encouraged to consider becoming parties to it as well,



thus helping close an important gap in the global liability and compensation framework.

Plastic pollution is a serious environmental concern, directly affecting the sustainable development aspirations of developing countries, in particular small island developing States, which are disproportionately affected by the effects of such pollution. Plastic pollution management is a global transboundary environmental issue that needs to be regulated internationally. Given that there are no existing international legal instruments that are specifically designed to prevent increasing plastic pollution or to comprehensively manage the current pollution levels, a possible way forward may be to strengthen current efforts and focus on each aspect of the lifecycle of plastics, while combining voluntary and binding measures to address the issue.

Marine genetic resources from areas beyond national jurisdiction are also a priority for developing countries, given the economic value that can be generated from their exploitation and the potential development of economic activities in coastal and offshore areas. Therefore, the conservation and sustainable use of marine biodiversity of these areas is important. An intergovernmental conference on an international legally binding instrument on the issue is under way. However, agreement still remains to be reached about a number of important issues. In order for a meaningful consensus to be achieved, it will be important for developing countries, and small island developing States in particular, to actively participate in the international negotiations towards the establishment of a new legal instrument.

Regarding the growing problem of fraudulent ship registration and registries, the IMO Legal Committee in March 2019 agreed on a series of measures to prevent

unlawful practices associated with the fraudulent registration and fraudulent registries of ships and approved recommended best practices to assist in combating them. As noted by IMO, UNCTAD and other participants in the Committee's deliberations, addressing fraudulent practices effectively is vital to promoting maritime safety, security and environmental protection.

The attainment of equality between women and men, and the elimination of all forms of discrimination against women are fundamental human rights and United Nations values. While there may be various challenges and barriers in the maritime industry that hinder the ability of women to pursue careers in shipping, the gender gap in the industry also needs to be addressed. Gender equality should be further promoted through political and legal action at the international level, accompanied by corresponding action at the national level.

An important achievement of the International Labour Organization, which is also relevant to women seafarers who often face harassment at the workplace, is the Violence and Harassment Convention, 2019, and its related recommendation, which among others, reminds member States that they have a responsibility to promote a "general environment of zero tolerance".

As the shipping industry embraces digitalization and automation, new and higher skills will be required from seafarers, according to the new redefined roles they will need to assume, both on board and ashore, in order to ensure the safety of vessels and efficiency of operations. Women may enjoy increased opportunities to pursue a maritime career, given that less physically strenuous tasks, combined with the need for more information technology skills and knowledge, are being required in the maritime sector.

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