Law of the Sea (2019)

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The concept of disaster has continued to play a major role in the implementation and development of the Law of the Sea during 2019. For purposes of this note, the “law of the sea” is not limited to the UN Convention on the Law of the Sea and includes both public and private international law instruments. In 2018, this yearbook note was organized using the themes of “traditional maritime disaster”, which encompassed oil spills and collisions, and “non-traditional maritime disaster”, which covered long-term trends including overfishing and emissions. This year, the note is drafted to focus on developments on two major themes of interest for both Law of the Sea and international disaster law practitioners: climate change as an ocean disaster and recurring shipping accidents, disastrous impacts on sensitive island and coastal environments.

1 Climate Change, the Oceans, and Disasters

In 2019, the Intergovernmental Panel on Climate Change released its special report on the ocean and cryosphere in a changing climate.¹ It is not a legal document but is intended to represent best available science to enable decisionmakers to understand the implications of inaction. The changes that are expected in the coming decades are ‘unprecedented’ and include ‘increased temperatures (virtually certain), greater upper ocean stratification (very likely), further acidification (virtually certain), oxygen decline (medium confidence), and altered net primary production (low confidence).’² The summary for policymakers noted that changes to oceans will have significant impacts on all people but especially 680 million people currently living in low-lying coastal zones (nearly 10% of the 2010 global population) including the 65 million people living in the small island developing (or ‘big ocean’) states.³

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1 Intergovernmental Panel on Climate Change, ‘The Ocean and Cryosphere in a Changing Climate’ (24 September 2019) <https://report.ipcc.ch/srocc/pdf/SROCC_FinalDraft_Full_Report.pdf> last accessed (as any subsequent URL) on 4 May 2020.

2 *Ibid.*, at Summary for Policymakers, 21.

3 *Ibid.*, at Summary for Policymakers, 3 (defining low elevation coastal zones at distances that are 10 meters or less above sea level).

Scientists have identified a doubling in numbers of marine heatwaves that are having noticeable impacts on marine resources due to their frequency, duration, and intensity.⁴ Scientists are observing more open ocean zones of decreased oxygen that may contribute to area ‘dead zones’.⁵ By 2031–2050, scientists model deoxygenation of 59–80% of ocean areas between 100 and 600 meters of depth which are common areas for commercial fishing. The impacts of ongoing gradual sea level rise is compounded by more frequent extreme tropical cyclone winds and rainfalls plus increases in wave action.⁶ In 2050, extreme sea level events that occurred only once per century in the recent past are projected to occur at least once per year in many vulnerable locations.⁷ For coastal communities that lack capacity to efficiently address multiple coastal hazards, warming deoxygenated oceans and storm activities generate disaster conditions. At least some communities are being forced to engage in coastal retreat as the coastline become uninhabitable due to sea level rise and extreme weather events, but this has been so far restricted to small communities.⁸

Regarding food security, marine species have been shifting geographical ranges and seasonal appearances in response to ocean warming, sea ice change, habitat impacts, and deoxygenation.⁹ Some areas are becoming biomass “winners” while other areas are losing important food biomass. Part of the change is the result of shifting habitats with seagrass meadows and kelp forests expanding their range northerly and southerly to regions where there is less coastal warming.¹⁰ In some areas, abundance of fish and shellfish have been directly and indirectly impacted by global warming leading to continued declines in catches for some historic fishing communities. For communities that depend on protein from fisheries, the loss of accessible fisheries resources is a matter of critical concern. The impact of climate on living marine resources is having consequences for catch levels, livelihoods, and culture.

In coastal States, fishermen are at the frontlines of climate change. In some States, such as the United States, there have been several federal declarations of “fishery disasters” issued over the course of several years related to unprecedented warming events. In 2019, the federal government declared a disaster under the Magnuson-Stevens fisheries act for the 2018 Gulf of Alaska Pacific

4 *Ibid.*, at Summary for Policymakers, 8 (A “heatwave” is defined when daily sea surface temperatures exceed the 99th percentile between 1982 and 2016).

5 *Ibid.*, at Summary for Policymakers, 10.

6 *Ibid.*

7 *Ibid.*, at Summary for Policymakers, 22.

8 *Ibid.*, at Summary for Policymakers, 19.

9 *Ibid.*, at Summary for Policymakers, 12.

10 *Ibid.*, at Summary for Policymakers, 13.

Cod fishery resulting from all-time low stock figures.¹¹ In 2020, the Pacific Cod fishery was shut down.¹² Making a declaration of disaster, however, does not provide quick relief for individuals. Financial payments to support fishermen after the pink salmon run in Alaska collapsed in 2016 were not paid until 2019 even though a fishery disaster had been declared in 2017.¹³

In 2019, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) published its report that highlighted the pressures on marine ecosystems. The report noted that tropical regions, in particular, face high risks of biodiversity damage due to the interactions between climate change, land-use change and fisheries exploitation.¹⁴ Coral reefs are projected to decline between 10 and 30 per cent from former cover if the oceans experience 1.5°C warming and to decline 99% from former cover at 2°C warming.¹⁵ IPBES calls upon States to invest in specific actions for recovery of biodiversity and ecosystems including implementing ecosystem-based approaches to fisheries, managing key marine biodiversity areas, and reducing run-off pollution into oceans.¹⁶

Given the severity of concerns, what have States done collectively to respond to immediate coastal emergencies and to long term food security threats? To turn off the emissions tap, about 70% of the States that have nationally determined contributions under the Paris Agreement made commitments that included ocean and marine industries.¹⁷

Ocean shipping is a major contributor to emissions and in this regard some relevant practice could be recorded in 2019, largely as a follow-up to the 2018 resolution of the Marine Environment Protection Committee on the Initial

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- 11 Fishery Disaster Determination, 'Gulf of Alaska Pacific Cod 2018' (25 September 2019) <<https://www.fisheries.noaa.gov/webdam/download/100218457>>.
 - 12 Elizabeth Earl, 'Stock decline leads to historic shutdown for Gulf P-cod', Alaska Journal of Commerce (11 December 2019) <<https://www.alaskajournal.com/2019-12-11/stock-decline-leads-historic-shutdown-gulf-p-cod>>.
 - 13 Elizabeth Earl, 'Efforts Underway to Streamline Fisheries Relief', Alaska Journal of Commerce (23 October 2019) <<https://www.alaskajournal.com/2019-10-23/efforts-underway-streamline-fisheries-disaster-relief>>.
 - 14 Summary for policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (advance unedited version), (6 May 2019) <https://ipbes.net/sites/default/files/ipbes_7_10_add.1_en_1.pdf>.
 - 15 *Ibid.*, 8.
 - 16 *Ibid.*, 10.
 - 17 Natalya D. Gallo et al., 'Ocean commitments under the Paris Agreement', (2017) 7 Nature Climate Change, 833–838 (30 October 2017) <<https://www.nature.com/articles/nclimate3422?draft=journal&proof=true1>>.

Strategy on Reduction of Greenhouse Gas Emissions from Ships.¹⁸ Annex VI to the International Convention for the Prevention of Pollution from Ships (MARPOL), aimed to limit the main air pollutants contained in ships exhaust gas, was amended by the Marine Environment Protection Committee to require a global limit of 0.50% on sulphur in fuel oil with a 0.10% limit in designated emission control areas.¹⁹ This amendment went into force on 1 January 2020. In 2019, work began on a fourth IMO greenhouse gas study to update emissions' estimates from international shipping from 2012 to 2018.²⁰ The IMO also approved strengthened mandatory requirements for new ships to be more energy efficient.²¹

In particular the Marine Environment Protection Committee approved, for final adoption in its seventy-fifth session to be held in 2020, amendments to MARPOL Annex VI to significantly strengthen the Energy Efficiency Design Index,²² bringing forward the entry into effect of the so-called phase 3 to 2022, from the planned date of 2025, for some categories of new ships, including gas carriers, general cargo ships and LNG carriers. This means that new ships built from that date must be significantly more energy efficient than the baseline. Additionally, the IMO Intersessional Working Group on Reduction of GHG Emissions from Ships agreed on the text of a draft resolution to be put forward to the next Marine Environment Protection Committee in 2020 which would urge Member States to develop and update voluntary National Action Plans with a view to reducing GHG emissions from international shipping through legal, institutional and policy measures.²³ Such National Action Plans

18 Resolution MEPC.304(72) (13 April 2018) <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/Resolution%20MEPC.304%2872%29_E.pdf>.

19 2019 Guidelines on consistent implementation of 0.50% Sulphur limit under MARPOL Annex VI adopted by resolution MEPC.320(74), <<http://www.imo.org/en/OurWork/Environment/PollutionPrevention/Documents/Resolution%20MEPC.320%2874%29.pdf>>.

20 International Maritime Organization UN Pushes Forward on Shipping Emissions Reduction (20 May 2019) <<http://www.imo.org/en/MediaCentre/PressBriefings/Pages/11-MEPC-74-GHG.aspx>>.

21 *Ibid.*

22 The Energy Efficiency Design Index was made mandatory for new ships and the Ship Energy Efficiency Management Plan (SEEMP) for all ships in 2011 with the adoption of amendments to MARPOL Annex VI, through resolution MEPC.203(62). This technical measure aims at promoting the use of more energy efficient equipment and engines, requiring a minimum energy efficiency level per capacity mile (e.g. tonne mile) for different ship type and size segments.

23 The National Action Plans called for by the IMO are intended to enable each State to implement its international IMO obligations as well as take additional actions to promote sustainable shipping – such as port-based incentives, promotion of electric ships, and pilot projects for sustainable alternative fuels. These National Action Plans should

could include but are not limited to: (a) improving domestic institutional and legislative arrangements for the effective implementation of existing IMO instruments, (b) developing activities to further enhance the energy efficiency of ships, (c) initiating research and advancing the uptake of alternative low-carbon and zero-carbon fuels, (d) accelerating port emission reduction activities, consistent with resolution MEPC.323(74), (e) fostering capacity-building, awareness-raising and regional cooperation and (f) facilitating the development of infrastructure for green shipping.²⁴

Recognizing that more than one-third of States are likely to be impacted by sea-level rise, the International Law Commission (ILC) is contributing legal analysis designed to assist States in understanding their obligations to communities. In 2019, the ILC included the topic 'Sea-level rise in international law' in its programme of work. This decision followed from the establishment in 2012 of a working group to examine the impact of international law and sea level rise on three main legal areas: the law of the sea; forced migration and human rights; and issues of statehood and international security.²⁵ Of particular interest for disaster law practitioners is the question of what protection persons directly affected by sea-level rise are entitled to under international law? The ILC view this new work project as related to previous ILC work regarding the 'Protection of persons in the event of disasters'.²⁶

Individual States are also developing frameworks for response and preparedness. The State of Hawai'i in the United States provides a good illustrative example of how national and subnational actors can develop more holistic legal frameworks to improve pre-disaster risk reduction and post-disaster responses. For example, Hawai'i published and disseminated in 2019 the Hawai'i Disaster Recovery Preparedness Guidance to assist state, county, and community planners with developing pre-disaster recovery efforts.²⁷ The guidance document provided best practices including development of a Disaster Recovery Ordinance designed to establish a "recovery management organization"; a Disaster Recovery Framework designed to govern activities both

support States in achieving their Nationally Determined Contributions (NDC) under the Paris Agreement. The NDCs did not set targets based on sectors and generally emissions from international shipping have not been included with a NDC. National Action Plans have also been called for the International Civil Aviation Organisation to support transformations within the aviation industry.

24 IMO pushes forward with work to meet ship emission reduction targets (15 November 2019) <<http://www.imo.org/en/MediaCentre/PressBriefings/Pages/26-ISWG-GHG.aspx>>.

25 ILC, 'Report of the International Law Commission', 71st Session, A/74/10, 6, para. 21.

26 ILC, 'Report of the International Law Commission', 70th Session, A/73/10, 327, para 9.

27 C. Courtney et. al., 'Guidance for Disaster Recovery Preparedness in Hawai'i', prepared by Tetra Tech, Inc. for the University of Hawai'i Sea Grant College Program and State of Hawai'i Department of Land and Natural Resources and Office of Planning (2019).

pre- and post-disaster; and a Disaster Reconstruction Ordinance (expediting reconstruction while also trying to increase community resilience).

The guidance document emphasizes the significance of cross-sector information. For example as part of the development of a Disaster Recovery Framework for Hawaiian counties, updated hazard mitigation plans should be used to inform community development plans.²⁸ In the case of responding to a disaster that has already happened in Hawai'i, the Guidance proposes the development of a Disaster Reconstruction Ordinance that takes into account existing laws including county building codes, county special management area permits, the State coastal zone management act and the state's land use laws.²⁹

2 Shipping Disasters Impacting the Environment

Given the large numbers of vessels transiting the ocean at any given time, it is not surprising that there are numerous maritime accidents leading to loss of property and lives. Maritime insurers keep track of these losses and work with international and national bodies to make technical changes across fleets. For example, the International Maritime Organization in response to the 2012 'Costa Concordia' cruise ship disaster reviewed the adequacy of shipboard safety signs and adopted a resolution for all shipbuilders, shipowners, and ship operators to ensure that all ships constructed or modified after January 2019 use the same ISO standard series symbols for escape sign and equipment locations.³⁰

This section describes a series of events from 2019 with serious long-term implications for the health of coastal ecosystems. The intent in providing this list of accidents is to highlight ecological damage that may or may not be easily recovered by a State depending on laws in place to recover for natural resource damages.

On 2 January 2019, the Panama-flagged ultra large container vessel MSC Zoe hit the seabed floor and lost over 340 shipping containers while transiting to Germany. By the end of January 2019, containers were washing up on German and Dutch beaches with significant debris washing up on coastlines including large numbers of plastics.³¹

²⁸ *Ibid.*, 32.

²⁹ *Ibid.*, 42–43 and Appendix B-Model Disaster Reconstruction Ordinance.

³⁰ IMO Assembly Resolution A.1116(30) (5 December 2017).

³¹ Edwin Lopez, 'Environmental concerns loom after MSC loses 270 containers at sea' (7 January 2019) <<https://www.supplychaindive.com/news/MSC-Zoe-container-loss-pollution/545296/>> (noting that on average in 2017, an average of 612 containers per year were lost at sea over a three-year period).

On 5 February 2019, the disabled Hong Kong flagged and owned bulk carrier *Solomon Trader* was pushed aground in the Solomon Islands while loading bauxite causing damage to a reef system off Rennell Island, an UNESCO World Heritage site recognized as one of the world's largest raised coral atolls.³² When it ran onto the reef, the vessel hull was damaged leading to three miles of reefs and coastline being impacted by fuel oil with \$50 million of clean-up estimates. Due to a tropical cyclone interfering with rescue efforts, the vessel was not pulled off the reef and the leak stopped until 18 March 2019 with major assistance from the Australian and New Zealand governments. Notably, this was the second time that the *Solomon Trader* had run aground on a significant reef; in 2012, the vessel operating under a different name had grounded on the Great Barrier Reef in Australia, another UNESCO World Heritage Site. The liability insurer for the owner of the *Solomon Trader* took over clean-up operations in March 2019.³³ In July 2019, a second accident happened off Rennell Island with a bauxite barge spilling 5,000 tons of bauxite onto the vulnerable reef with concerns of reef life being smothered.³⁴ The Solomon-Island bauxite company at the time of the second accident was registered in the Caribbean to a Hong Kong company whose mining permit had been previously suspended due to illegal logging activity.³⁵

On 18 December 2019, a tourist cruise ship 'Aqua Blu' ran aground on a reef off Wajag Island, Raja Ampat Regency, West Papua, Indonesia in the biodiverse Coral Triangle. The ship was refloated at high tide with no serious damage to the ship but harm to the reef.³⁶ With over 108 ships operating in a critical conservation area, the local administrative district limited the number of ships permitted to operate and required the use of a local pilot.³⁷

32 *Solomon Trader* Refloated and Removed from Rennell Island (13 May 2019) <<https://www.maritime-executive.com/article/solomon-trader-refloated-and-removed-from-rennell-island>>.

33 Liability insurer takes charge of *Solomon Trader* oil spill clean-up, Insurance Marine News (29 March 2019) <<https://insurancemarinenews.com/insurance-marine-news/liability-insurer-takes-charge-of-solomon-trader-oil-spill-clean-up/>>.

34 Lisa Martin, 'Solomon Islands: Bay Hit by Oil Spill Suffers Second Contamination Crisis' (5 July 2019) <<https://www.theguardian.com/world/2019/jul/05/solomon-islands-bay-hit-by-oil-spill-suffers-second-contamination-crisis>>.

35 Alan Boyd, 'Paradise Lost in the Solomon Islands', Asia Times (5 March 2019), <<https://asiatimes.com/2019/03/paradise-lost-in-the-solomon-islands/>>.

36 Mikhail Voytenko, 'Luxury Cruise Ship Hits Conservation Reef, Papua', Fleetmon.com (20 December 2019) <<https://www.fleetmon.com/maritime-news/2019/28117/luxury-cruise-ship-hits-conservation-reef-papua/>>.

37 'Raja Ampat to reduce liveaboard boats operating in its waters', Antaranews.com (15 January 2020) <<https://en.antaranews.com/news/139711/raja-ampat-to-reduce-live-aboard-boats-operating-in-its-waters>>.

Each of these accidents share a similar theme of vulnerability. All of the accidents have been attributed to some human error that might have been avoided by better risk management. In the case of MSC Zoe, the fault was a problem with insufficient lashing of cargo on the ship.³⁸ In the case of the Solomon Trader, fault was placed on the crew for failing to perform basic crew duties.³⁹ Likewise, human error resulted in the bauxite barge spill and the luxury live-aboard Aqua Blu grounding on an Indonesian reef. What all of these events suggest is that basic operational risk management is lacking across numerous maritime sectors. Notably, all of these maritime disasters have an international component depending on the registration of the ship, ownership of the ship, or the location of the insurer. What this suggests is that public international law through the International Maritime Organisation and Private International Law through maritime insurers might play even stronger roles in ensuring the setting and implementation of adequate risk management standards to protect vulnerable environments.

3 Conclusion

The development of autonomous shipping continues as the future of the shipping industry. It is possible in the future that computer algorithms will avoid the types of chronic human errors that lead to significant ecological damage. Until that future date when global fleets have proven to reduce risk through automation, there will continue to be a demand for better maritime regulations designed to protect not just human lives and property but also the health of the broader environment. At this point in time, any advances that the global shipping industry makes to avoid accidents such as those described above will mean little if the nations of the world are incapable or unable to avoid any additional warming of the oceans. In 2019, the political will to avoid additional warming either through mitigation or climate interventions remained tepid in spite of the IPCC speaking clearly in its 2019 special report on the Ocean and the Cryosphere of the perils of not curbing emissions.

38 'Lashing Failure Said to be Most Likely Cause of MSC Zoe Container Losses' (1 February 2019) <<https://insurancemarineneeds.com/insurance-marine-news/lashing-failures-said-to-be-most-likely-cause-of-msc-zoe-container-losses/>>.

39 Lisa Martin, 'Solomon Islands Oil Leak: Lack of Night Watch May Have Caused Ship to Run Aground', *The Guardian*, (1 March 2019) <<https://www.theguardian.com/world/2019/mar/02/solomon-islands-oil-leak-lack-of-night-watch-may-have-caused-ship-to-run-aground>>.