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REDUCTION OF GHG EMISSIONS FROM SHIPS

Shipping at the intersection of climate, biodiversity and pollution

FOEI, Pacific Environment and CSC

SUMMARY

Executive summary: This document situates the shipping sector within the triple planetary crisis of climate, biodiversity, and pollution, and prioritizes solutions with co-benefits to address these crises. By focusing on these solutions, action on reversing biodiversity loss and reducing pollution can support climate action and vice versa. The co-sponsors recommend an IMO framework be developed, similar to the 2023 *IMO Strategy on Reduction of GHG Emissions from Ships*, and a task force struck to consider these issues.

*Strategic direction,
if applicable:* 3

Output: 3.2

Action to be taken: Paragraph 22

Related documents: Resolution A.982(24); C 132/16 and MEPC 82/INF.35

Introduction

1 A healthy ocean is crucial for the wellbeing of humans and the planet. With the interconnectedness of marine ecosystems, biodiversity, and climate change mitigation, it is imperative that comprehensive shipping practices are prioritized to minimize multiple and cumulative negative impacts. Shipping is a broadly impactful sector that both contributes to and has the potential to positively tackle the planetary challenges we face today – climate, pollution, and biodiversity. Each of these issues has its own roots and effects in the sector, and all of them must be resolved if we are to ensure a viable future on this planet.¹

¹ This submission is abstracted from the report *Navigating the Future: Bridging Shipping, Biodiversity and Decarbonization* available at: <https://www.equalroutes.ca/resources/index.html>

2 A variety of United Nations (UN) bodies and agencies have begun to tackle these crises. The United Nations Environment Programme (UNEP) has established steps to end plastic pollution through a redesign (products, packaging, shipping, and system) approach to create more just opportunities and initiated negotiations for a new legally binding instrument to end plastic pollution, including in the marine environment.² The United Nations Convention on Biological Diversity (UNCBD) is a legal framework aiming to have at least 30% of terrestrial and inland water areas, and of marine and coastal areas, especially areas of particular importance for biodiversity and ecosystem functions and services, effectively conserved and managed by 2030. There are further international and regional regulations or instruments that need to be delivered on, to which shipping should contribute, such as the BBNJ Agreement (Agreement on Marine Biodiversity of Areas beyond National Jurisdiction). It is essential to harmonize the efforts of reducing shipping's harmful effects on marine biodiversity with the drive for zero emissions shipping, and aligning these efforts with a just and equitable transition is crucial.

The global crises

3 As the UN characterizes it, "no corner of the globe is immune from the devastating consequences of climate change. Rising temperatures are fuelling environmental degradation, natural disasters, weather extremes, food and water insecurity, economic disruption, conflict, and terrorism. Sea levels are rising, the cryosphere (polar and glacier) is melting, coral reefs are dying, oceans are acidifying, and forests are burning".³ We are unequivocally in a planetary emergency and its intersectionalities are indisputable. The Intergovernmental Panel on Climate Change (IPCC) has highlighted the interdependence of climate, ecosystems, biodiversity, and human societies. It recognizes the importance of diverse forms of knowledge and the close linkages between climate change adaptation, mitigation, ecosystem health, human wellbeing, and sustainable development.

4 The Global Assessment Report on Biodiversity and Ecosystem Services⁴ reveals that up to one million species worldwide face extinction, and the extent and condition of natural ecosystems have declined by an average of 47%. Additionally, WWF's biennial Living Planet Report⁵ published in 2022 found that wildlife populations have dropped by an average of 69% in less than 50 years. The IUCN Red List now includes 150,388 species, of which 42,108 are threatened with extinction. Over 1,550 of the 17,903 marine animals and plants assessed are at risk of extinction⁶ with climate change impacting at least 41% of threatened marine species. These biodiversity impacts have knock-on effects on humans, contributing to food insecurity, loss of livelihoods (fishing, agriculture, tourism), disease outbreaks, mental health impacts, and loss of ecosystem services (including climate change mitigation, flood protection, clean water provision and soil conservation).

5 The World Health Organization (WHO) has reported that almost all the global population (99%) breathes polluted air that exceeds the WHO guideline limits. The worst affected are low- and middle-income countries, with the highest exposure to pollutants. In

² United Nations Environment Programme. (2022). UNEA Resolution 5/14 entitled "End plastic pollution: towards an international legally binding instrument". https://wedocs.unep.org/bitstream/handle/20.500.11822/39812/OEWG_PP_1_INF_1_UNEA%20resolution.pdf

³ United Nations. (n.d.) The climate crisis – a race we can win. <https://www.un.org/en/un75/climate-crisis-race-we-can-win>

⁴ IPBES. (2019). Global assessment report on biodiversity and ecosystem services. <https://zenodo.org/records/6417333>

⁵ World Wildlife Fund. (2022). Living planet report 2022. <https://livingplanet.panda.org/en-GB/>

⁶ IUCN. (2024). The IUCN red list of threatened species. <https://www.iucnredlist.org/>

addition, 2.4 billion people are exposed to harmful levels of household air pollution, with the combined effects associated with 7 million premature deaths each year. Ocean pollution is also increasing due to land-based runoff, industrial manufacturing discharges, waste discharges, the disposal of litter or garbage, including plastics and microplastics, atmospheric deposition, as well as oil and chemical spills.

6 Tipping points and planetary thresholds are within reach and in some cases have been crossed, six out of the nine earth systems have been transgressed.⁷ Tipping points occur when changes become self-sustaining, even if the triggers are stopped, and slight disturbances can cause significant, irreversible changes to a system. The models that predict tipping points show that once thresholds are crossed, changes happen suddenly and dramatically. Even if surface temperature or carbon dioxide concentrations return to pre-threshold levels, there is no guarantee that the changed state tipping elements will return to its previous state. The planet is already tied into significant sea level rise from ice sheet melt.⁸

Shipping impacts

7 Shipping accounts for nearly 3% of global greenhouse gas (GHG) emissions, of which black carbon, which has a disproportionate impact in the Arctic, contributes one fifth. Approximately 15% of total global NO_x emissions came from shipping in 2015, linked to thousands of premature deaths in coastal areas, and approximately 265,000 premature deaths were projected for 2020 attributable to global shipping-sourced emissions.⁹ Shipping is responsible for 60 to 90% of the introduction of exotic species into new territories, and ships with scrubbers emitted in 2018 an estimated 190 million cubic meters of scrubber wash water from 178 ships in the Baltic Sea and will emit globally at least 10 gigatons (Gt)¹⁰ of scrubber wash water each year (after 2020). Ship collisions affect at least 75 marine species including sea turtles, penguins and seals, and more than 120 million tons of sewage and grey water – containing bacteria, microplastics, contaminants and pathogens – were generated by ships in coastal areas in China in only six months.¹¹ Moreover, underwater radiated noise (URN) has doubled in some parts of the Arctic over a seven-year time frame, 2013-2019, and globally each decade.¹² Between 2014 and 2019, around 90% of oil slicks were within 160 km of shorelines, with 21 high-density slick belts coinciding with shipping routes.¹³

⁷ Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S. E., Donges, J. F., ... & Rockström, J. (2023). Earth beyond six of nine planetary boundaries. *Science advances*, 9(37), eadh2458. <https://www.science.org/doi/10.1126/sciadv.adh2458>

⁸ Carbon Brief. (2022). Global warming above 1.5C could trigger 'multiple' tipping points. <https://www.carbonbrief.org/global-warming-above-1-5c-could-trigger-multiple-tipping-points>

⁹ Mueller, N., Westerby, M., & Nieuwenhuijsen, M. (2023). Health impact assessments of shipping and port-sourced air pollution on a global scale: A scoping literature review. *Environmental Research*, 216, 114460. <https://www.sciencedirect.com/science/article/pii/S001393512201787X>

¹⁰ Osipova, L., Georgeff, E. & Comer, B. (2021). Global scrubber washwater discharges under IMO's 2020 fuel sulphur limit. <https://shorturl.at/Ry6yx>

¹¹ Shu, Y., Wang, X., Huang, Z., Song, L., Fei, Z., Gan, L., ... & Yin, J. (2022). Estimating spatiotemporal distribution of wastewater generated by ships in coastal areas. *Ocean & Coastal Management*, 222, 106133. <https://doi.org/10.1016/j.ocecoaman.2022.106133>

¹² Jalkanen, J. P., Johansson, L., Andersson, M. H., Majamäki, E., & Sigra, P. (2022). Underwater noise emissions from ships during 2014–2020. *Environmental Pollution*, 311, 119766. <https://www.sciencedirect.com/science/article/pii/S0269749122009800>

¹³ Dong, Y., Liu, Y., Hu, C., MacDonald, I. R., & Lu, Y. (2022). Chronic oiling in global oceans. *Science*, 376(6599), 1300-1304. <https://www.science.org/doi/10.1126/science.abm5940>

Justice and equity

8 Resilient solutions to tackle these global crises through sustainable, integrated shipping practices must lean on a just and equitable approach. This requires equity to be at the core of any policy discussions, mitigation measures, and operational solutions. With 45% of women at sea (2% of all seafarers) reporting sexual harassment and 32,000 to 100,000 fishers losing their lives every year, justice for seafarers and human rights at sea cannot be ignored¹⁴. Climate justice, indigenous self-determination, decolonization, ending modern slavery, and economic reconciliation must be prioritized to ensure that vulnerable populations – black people, Indigenous Peoples, people of colour, children, pregnant women, LGBTQ persons, and elders – are not left behind. These communities are often the most affected by the triple planetary threat, despite contributing the least to it. Neglecting to centre equity in shared efforts will only perpetuate existing inequities and deepen the divide between developed and developing countries. Therefore, it is imperative to establish equal routes to address the needs of the most vulnerable and work towards a more equitable future.

Shipping and a healthy ocean

9 As expressed in the Secretary General's note C 132/16(c): "The ocean is indispensable for the continued existence of humanity. It produces half of the planet's oxygen and is responsible for providing food, jobs and recreation for a large portion of the world's population, fostering economic growth. Close to 40% of all people on the planet rely on food from the sea as a source of protein and key nutrients. The ocean also regulates the planet's climate by absorbing carbon dioxide and heat, mitigating the impacts of climate change. Protecting the ocean is not merely a matter of environmental conservation but a necessity for the well-being and survival of humanity."

10 By acting as a carbon sink, a healthy ocean helps regulate the global climate and in turn delivers on global climate goals by mitigating impacts from destructive human produced emissions. A degraded and unhealthy ocean does not perform this function. Efforts to reduce ocean pollution will directly support climate mitigation. Unfortunately, the ocean is in dire straits and without concerted effort by all sectors, including shipping, to reverse this trend the ability to buffer impacts from emissions will diminish rapidly.

11 UNESCO's 2024 State of the Ocean report¹⁵ details worsening and worrying trends – ocean acidification will increase by more than 100% by the end of the century – the amount of plastics in the ocean has significantly increased and is trending to continue to increase at a worsening rate – ocean warming is occurring at an unprecedented and accelerated pace with consequences including rising sea levels, alterations in ocean currents and dramatic changes in marine ecosystems – ocean oxygen content is decreasing, resulting in worsening hypoxia and larger low oxygen areas – 20-35% of mangroves, seagrasses and tidal marshes have been lost since 1970 – melting ice and stronger ocean warming are contributing to sea level rise – harmful algae blooms continue to impact ocean ecosystems.

12 The urgency of reducing GHG emissions in the shipping sector is crucial. With the 2023 IMO GHG Strategy, shipping now has a mandate to act quickly and decarbonize by 2050. Even though not 1.5°C aligned, the revised strategy puts that goal within reach, setting a zero date of 2050 and interim targets of 30% emissions reduction by 2030 and 80% by 2040. Meeting these revised targets will take innovation, leadership, and a multidisciplinary approach, with a particular focus on reducing ocean pollution and maintaining its health. Meeting the revised targets must not be allowed to happen without addressing (other) pollution reductions in order to allow the ocean to play its role as a carbon sink.

¹⁴ <https://www.humanrightsatsea.org/>

¹⁵ UNESCO. (2024). State of the Ocean Report 2024: <https://www.ioc.unesco.org/en/stor2024>

13 The intersectionality of biodiversity and pollution threats with the climate crisis requires elevating actions and awareness on those issues to effectively and urgently deal with the triple planetary crisis. To address biodiversity loss and pollution impacts in the shipping industry, it is important to create targets, milestones, and timelines that are at least as ambitious as the 2023 IMO GHG Strategy. This will not only focus industry and government action on concrete solutions but contribute significantly to addressing the climate crisis. It is in the interest of urgent climate action to make equal progress on reversing biodiversity loss and pollution impacts.

Co-benefits and the opportunity to address multiple goals

14 Considering the urgency, practical considerations, overlaps, and co-benefits, in order to respond to multiple global and local threats, there are specific and achievable measures for biodiversity and pollution reduction that connect directly to reducing climate impacts. These must be prioritized. The marine shipping sector has some exciting and promising good practices that can help address many of the key triple planetary threats while promoting equity. These practices, if monitored comprehensively while assessing risks and benefits, and by including a full life cycle 20-year global warming potential (GWP) approach to determine their effectiveness and impact, can prove to be economically beneficial, increase regulatory efficiency, and achieve multiple goals at once.

15 Speed reduction – a 10% reduction in global fleet speed could yield a substantial 13% decrease in GHG emissions and increase the likelihood of meeting GHG targets by up to 23%. This reduction could also result in a 40% decrease in underwater noise and a potential 50% reduction in the risk of ship strikes.¹⁶

16 Emission Control Areas (ECA) – air pollution reduction from shipping can improve human health and increase life expectancy and quality – these are fundamental rights that every human deserves. Therefore, ECA+ should be designated in all coastal EEZs (ECA+ means strengthened ECAs by addressing black carbon emissions). Additionally, air pollutant reduction has the potential to decrease global warming.¹⁷

17 Particularly Sensitive Sea Areas (PSSAs) – acknowledging the existence of one ocean and its interconnectedness, an increase in targeted marine protected areas and a focus on reducing shipping impacts are necessary to support a healthy ocean and wellbeing for people. There must be recognition of broader ecological, socio-economic, and scientific attributes of areas, as well as their connection to the whole ocean system, in order to achieve this goal.¹⁸

18 Energy efficiency – improving ship efficiency and revamping the Carbon Intensity Indicator (CII) can lead to a reduction in underwater noise and other shipping impacts, such as a decrease in ship strikes and reducing the spread of invasive species; as well as reduced fuel consumption, air pollution, GHG emissions, and effluent discharges. Routing systems, and voyage planning, also play a role in ship efficiency by ensuring safe navigation while protecting the marine environment.¹⁹

¹⁶ GL Reynolds. (2019). The multi-issue mitigation potential of reducing ship speeds: <https://seas-at-risk.org/wp-content/uploads/2021/03/2019.6.11.-Mitigation-ship-speeds.pdf>

¹⁷ UN Environment Programme. (2022). The Mediterranean is making strides in tackling air pollution from ships: <https://www.unep.org/unepmap/news/news/mediterranean-making-strides-tackling-air-pollution-ships>

¹⁸ Convention on Biological Diversity. (n.d.). 2030 Targets (with guidance notes): <https://www.cbd.int/gbf/targets>

¹⁹ Smith, T.W.P, Bonello, J., Kapur, A. (2023). How can international shipping align with 1.5°C – focus on 1.5°C alignment in 2030. UMAS, London https://www.u-mas.co.uk/wp-content/uploads/2023/04/HOW-CAN-INTERNATIONAL-SHIPPING-ALIGN-WITH-1.5C-FINAL_04.04.23.pdf

19 Eradicating pollution (such as scrubber wastewater) – marine pollution eradication will improve biodiversity, food security and human health while preventing economic loss and tackling the climate crisis. A healthy marine environment is also more resilient to climate change impacts.²⁰

A vision for shipping at the intersection of climate, biodiversity and pollution

20 IMO members are invited to consider the need for a framework or strategy which elevates biodiversity and pollution to the level of climate action. The framework in the 2023 IMO GHG Strategy has catalysed action and created a regulatory pathway to bring down emissions in the sector. If an equally concerted and well-resourced approach and vision were to be actioned for marine pollution and biodiversity, similar results could be achieved. Developing an IMO biodiversity framework with goals, milestones and indicators should be a top priority for the Committee given the planetary crises we face today.

21 Considering the urgency and importance of these intersecting issues, this document recommends establishing a high level and well-coordinated task force, similar to IMO's Maritime Just Transition Task Force,²¹ to study the issues and make recommendations on a way forward. A Position Paper²² was produced by the Maritime Just Transition Task Force and launched at COP 27, that could be a useful model for the new task force's work on shipping at the intersection of climate, biodiversity and pollution.

Action requested of the Committee

22 The Committee is invited to consider the information contained in this document, in particular the proposals in paragraphs 20 and 21, and take action as appropriate.

²⁰ Chalmers University of Technology. (2024). Millions in costs due to discharge of scrubber water into the Baltic Sea: <https://www.sciencedaily.com/releases/2024/05/240507150001.htm>

²¹ International Maritime Organization. (n.d.) Maritime just transition: <https://www.imo.org/en/OurWork/HumanElement/Pages/Maritime-Just-Transition.aspx>

²² UN Global Compact. (2022). Mapping a maritime just transition for seafarers: <https://unglobalcompact.org/library/6100>