



SHIPPING PACT
FOR PEOPLE & NATURE

Navigating the Future

Bridging Shipping, Biodiversity,
& Decarbonization



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Equal Routes is an organization working to build a decarbonized maritime industry that focuses on human rights, ocean health, and climate equity.

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Race to Zero is a global campaign rallying non-state actors – including companies, cities, regions, financial, educational, and healthcare institutions – to take rigorous and immediate action to halve global emissions by 2030 and deliver a healthier, fairer zero-carbon world. Race to Zero is led by the UN Climate Change High-Level Champions for COP27 and COP28 – Dr. Mahmoud Mohieldin and H.E. Razan Al Mubarak – to drive real world momentum and action.

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The **Sustainable Shipping Initiative (SSI)** is a multi-stakeholder collective of ambitious and like-minded leaders, driving change through cross-sectoral collaboration to contribute to – and thrive in – a more sustainable maritime industry.

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The **UN Foundation** is an independent charitable organization created to work closely with the United Nations to drive global progress and tackle urgent problems.

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Glossary

BBNJ	Marine Biodiversity in Areas Beyond National Jurisdiction	PM	Particulate Matter
CII	Carbon Intensity Indicator	Polar Code	International Code for Ships Operating in Polar Waters
ECA	Emission Control Area	PRB	Principles for Responsible Banking
EEDI	Energy Efficiency Design Index	PSSAs	Particularly Sensitive Sea Areas
EEXI	Energy Efficiency Existing Ship Index	SIDS	Small Island Developing States
GFANZ	Glasgow Financial Alliance for Net Zero	SOLAS	International Convention on the Safety of Life at Sea
GHG	Greenhouse gas	SOx	Sulfur Oxide
GWP	Global Warming Potential	SPPaN	Shipping Pact for People and Nature
HFO	Heavy Fuel Oil	TSS	Traffic Separation Scheme
ICC	Inuit Circumpolar Council	UNCBD	United Nations Convention on Biological Diversity
IMO	International Maritime Organization	UNDRIP	UN Declaration on the Rights of Indigenous Peoples
IPCC	Intergovernmental Panel on Climate Change	UNEP	United Nations Environment Programme
IUCN	International Union for Conservation of Nature	URN	Underwater Radiated Noise
LDCs	Least Developed Countries	WHO	World Health Organization
LGBTQ+	Lesbian, gay, bisexual, transgender, queer or questioning, intersex, asexual, and more		
LNG	Liquefied Natural Gas		
MARPOL	International Convention for the Prevention of Pollution from Ships		
MEPC	Marine Environment Protection Committee		
MPAs	Marine Protected Areas		
NOx	Nitrogen oxides		
NZBA	Net Zero Banking Alliance		



Introduction

A healthy ocean is crucial for the well-being of humans and the planet. With the interconnectedness of marine ecosystems, biodiversity, and climate change mitigation, it is imperative that we prioritize comprehensive shipping practices to minimize multiple negative impacts.

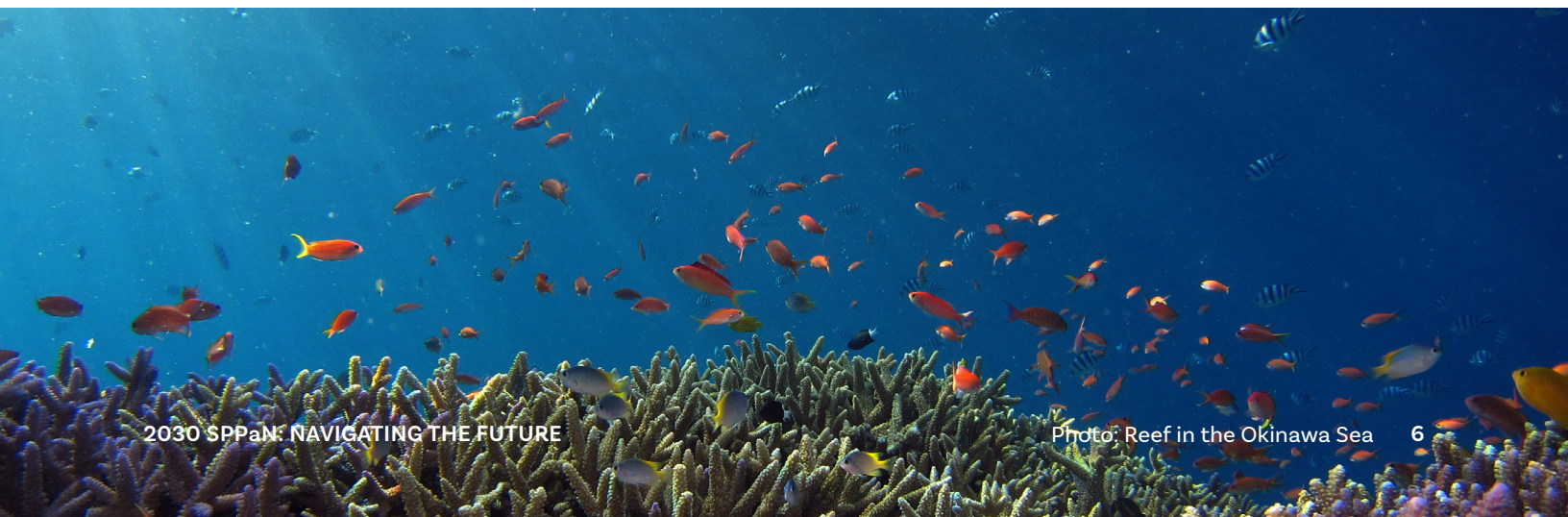
Shipping is a broadly impactful sector that both contributes to and has the potential to positively tackle the planetary challenges we face today – climate, pollution, and biodiversity¹ (Figure I). Each of these issues has its own roots and effects in the sector, and all of them must be resolved if we are to ensure a viable future on this planet. A variety of United Nations (UN) bodies and agencies have begun to tackle these crises. The International Maritime Organization (IMO) has recognized the urgency of climate action and set decarbonization reduction targets of 30% by 2030, 80% by 2040, to zero by 2050, and calling for alignment with a just and equitable transition. 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. 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

Biological diversity,

or biodiversity, is defined by the Convention on Biological Diversity as the variety of life on Earth, including all living organisms and the ecosystems in which they exist. This encompasses diversity within and between species, as well as the ecological complexes that support them, including terrestrial, marine, and other aquatic ecosystems.

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 (Marine Biodiversity in 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.

To this end, *Navigating the Future: Bridging Shipping, Biodiversity, and Decarbonization* is a comprehensive initiative that evaluates shipping's impact on ocean health, aligns decarbonization ambitions with biodiversity conservation, engages the shipping community, and formulates strategies to address the multiple, interconnected, adverse effects.



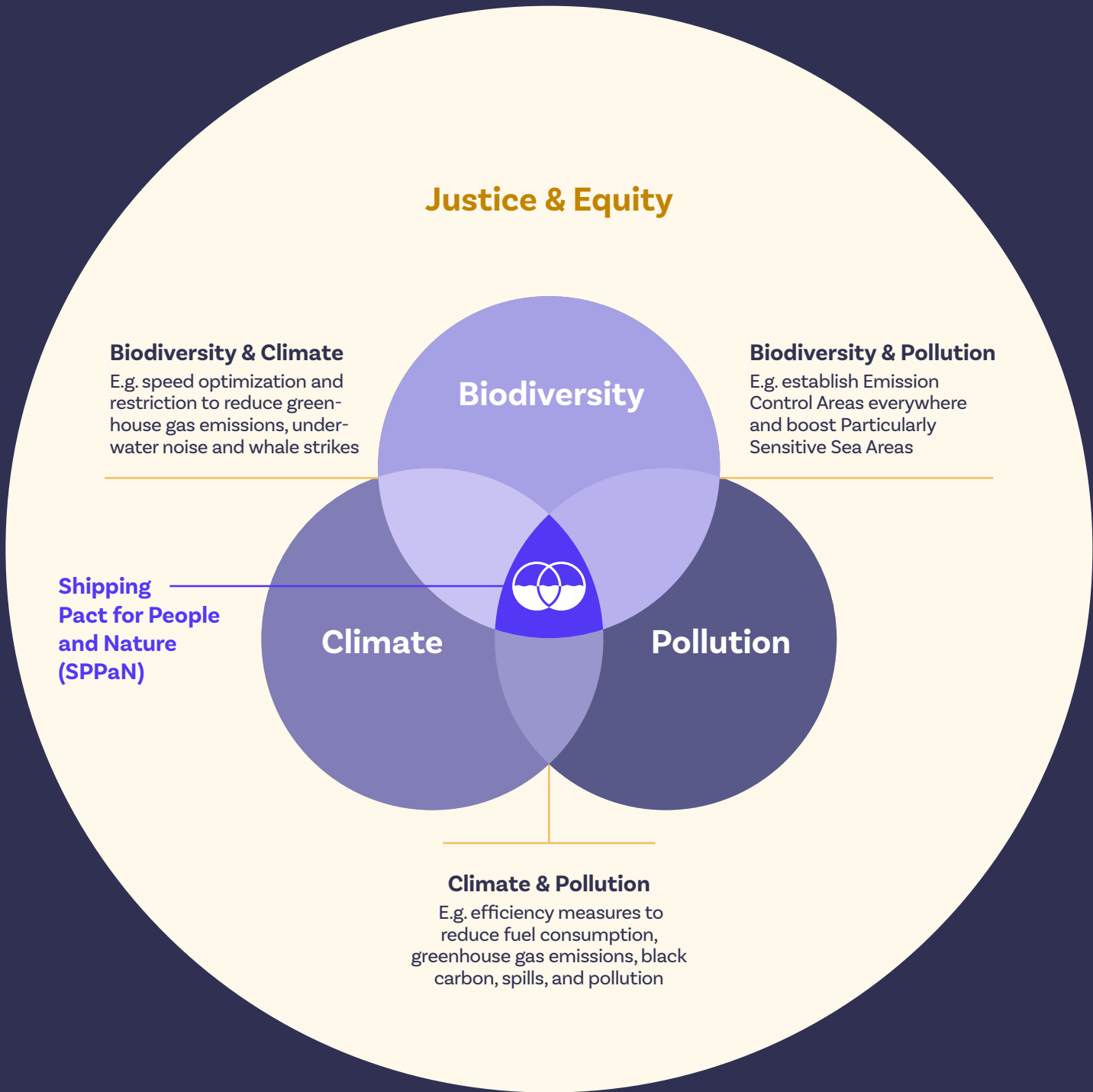


Figure I – The intersection of the triple planetary crisis and shipping’s potential to tackle these challenges.

The Global Crises

As the UN characterizes it, “No corner of the globe is immune from the devastating consequences of climate change. Rising temperatures are fueling 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”.² We are unequivocally in a planetary emergency and its intersectionalities are indisputable. The 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 well-being, and sustainable development.

The Global Assessment Report on Biodiversity and Ecosystem Services³ reveals that up to one million species worldwide face extinction, and natural ecosystems have decreased by an average of 47%. Additionally, the biennial Living Planet Report⁴ states 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 extinction, with climate change impacting at least 41% of threatened marine species.⁵ These biodiversity impacts have knock-on effects to 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).⁶

The World Health Organization (WHO) has reported that almost all the global population (99%) breathes polluted⁷ air that exceeds the WHO guideline limits.⁸ The worst affected are low- and middle-income countries, with the highest exposure to pollutants. In 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, sewage and grey water effluent releases, the disposal of litter or garbage, including plastics and microplastics, atmospheric deposition, as well as oil and chemical spills.

Shipping accounts for nearly 3% of global greenhouse gas (GHG) emissions, of which black carbon contributes one-fifth with a disproportionate impact in the Arctic. Approximately 15% of total global NOx emissions came from shipping in 2015,⁹ linked to thousands of premature deaths in coastal areas. Shipping is responsible for 60 to 90% of the introduction of exotic species into new territories¹⁰ and in just one year (2018) an estimated 190 million cubic meters of scrubber wash water was reported to be discharged from 178 vessels in the Baltic Sea.¹¹ Vessel collisions affect at least 75 marine species including sea turtles, penguins, and seals,¹² and more than 120 million tonnes of sewage and grey water - containing bacteria, microplastics, contaminants, and pathogens - were generated by vessels in coastal areas in China in only six months.¹³ Moreover, underwater Radiated Noise (URN) has doubled in some parts of the Arctic over a 7-year time frame, 2013-2019,¹⁴ and in the global ocean between 2014-2019 around 90% of oil slicks were within 160 KM of shorelines, with 21 high-density slick belts coinciding with shipping routes.¹⁵

Justice and Equity

Resilient solutions to tackle the 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 discussion, mitigation measures, and operational solutions. With 45% of women at sea (2% of all seafarers) reporting sexual harassment and 32-100,000 fishers losing their lives every year,¹⁶ justice for seafarers and human rights at sea can't be ignored. Climate justice, Indigenous self-determination, decolonization, ending modern slavery,¹⁷ and

economic reconciliation must be prioritized to ensure that vulnerable populations are not left behind. These communities are often the most affected by the triple planetary threat, despite contributing the least to it.¹⁸ Neglecting to centre equity in our efforts will only perpetuate the existing hegemony and deepen the divide between developed and developing countries. Therefore, it is imperative that we establish equal routes to address the needs of the most vulnerable and work towards a more equitable future.

Climate disasters cause

5x as many displaced people in low-income countries.¹⁹

More than

50%

of Black and Latino children under ten live in areas with inadequate environmental justice resources in the United States.²⁰

Due to a lack of parks and trees to provide cooling for neighborhoods, urban areas are more susceptible to

heat waves.²¹

Indoor air pollution causes more than

4,000,000 deaths

per year globally, of which more than half occur in China and India alone, with less than 40% of all people in the region having access to health-care services.²²

Life expectancy is shorter

for both adults and children in countries with higher inequality rates, as these groups tend to suffer more from type-2 diabetes and related conditions such as ischemic heart disease, strokes, and other chronic diseases.²³

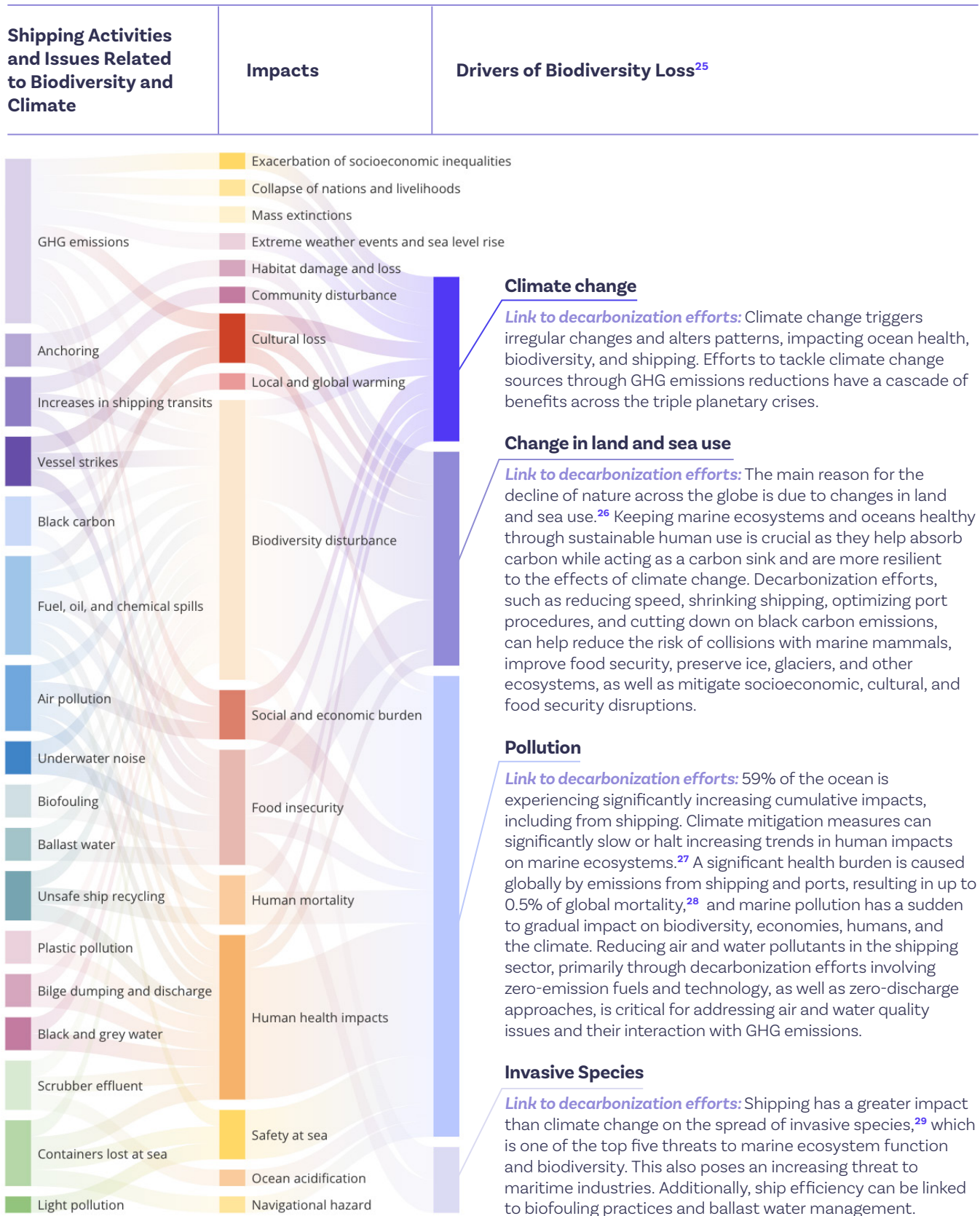
Communities that are predominantly Latino, Black, Asian American, and low-income in the US are more likely to be

exposed to significantly greater air pollution caused by transportation.²⁴



Shipping, Biodiversity, and Climate

Figure II – This work envisions a paradigm shift which promotes the urgency of addressing biodiversity loss by developing a shipping umbrella strategy, encompassing the vast array of shipping threats, risks, and impacts to people, ecosystems, and nature.



A New Vision for Biodiversity on par with Climate

The urgency of reducing GHG emissions in the shipping sector is crucial. With the revised IMO 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 target by 2050 and checkpoints of 30% by 2030 and 80% by 2040. Meeting these revised targets will take innovation, leadership, and a multidisciplinary approach.

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 revised GHG IMO Strategy. This will not only focus industry 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 biodiversity loss and pollution impacts.



A photograph of fishermen in Galle, Sri Lanka, silhouetted against a vibrant sunset sky. The fishermen are perched on tall, thin wooden poles in the shallow water, holding long fishing rods. The sky is a mix of purple, pink, and blue, and the ocean is calm with gentle waves. The overall mood is serene and traditional.

The 2030 Shipping Pact for People and Nature (2030 SPPaN)

Why 2030?

It is essential to take bold actions to address climate change and biodiversity loss before 2030. If we don't, we're likely to cross critical thresholds, called tipping points. These are points beyond which even slight disturbances can cause significant, irreversible changes to a system.³⁰ Tipping points occur when changes become self-sustaining, even if we stop the triggers.³¹

For instance, the Climate Change 2021: The Physical Science Basis report³² warns that the Amazon rainforest is at risk of becoming dry during this century due to a combination of deforestation and climate change. This could trigger a tipping point, causing the ecosystem to degrade irreversibly. At a regional level, we can expect abrupt changes, tipping points, and even reversals in the direction of change. These changes could have severe consequences such as extreme weather events, temperature changes, droughts, and forest fires.

The models that predict tipping points show that once we cross the threshold, changes happen suddenly and dramatically. Even if we manage to return surface temperature or carbon dioxide concentrations to pre-threshold levels, there is no guarantee that the tipping elements will return to their previous state. In fact, some tipping points are considered to already be “within reach” and the planet is already tied into significant sea level rise from ice sheet melt.^{33,34}

Considering the urgency, practical considerations, overlaps, and co-benefits, to respond to multiple global and local threats, there are specific and achievable targets for biodiversity and pollution reduction that connect directly to reducing climate impacts, which

should be prioritized. The 2030 Shipping Pact for People and Nature or 2030 SPPaN provides a vision with concrete goals and linkages to the global crises, which harnesses these co-benefits.

2030 SPPaN Implementation: Feeding Two Birds with One Hand

Taking a “feeding two birds with one hand” approach can lead to significant progress. 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.



The 2030 Shipping Pact for People and Nature (2030 SPPaN)

<h2>What</h2>	<p>2 ECA (plus) everywhere</p>	<p>3 Marine protection focus, reboot, and expansion</p>
	<p>1 Slow down</p>	
<p>4 Efficiency revamped</p>		<p>5 Eradicating pollution</p>

<h2>Why</h2>	<p>2 <u>ECA (plus) everywhere</u></p> <p>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 plus everywhere (plus means strengthened ECAs by adding black carbon). Additionally, air pollutant reduction has the potential to decrease global warming.</p>	<p>3 <u>Marine protection focus, reboot, and expansion</u></p> <p>Acknowledging the existence of one ocean and its interconnectedness, an increase in marine protected areas and a focus on reducing shipping impacts are necessary to support a healthy ocean and 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.</p>
	<p>1 <u>Slow down</u></p> <p>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 result in a 40% decrease in underwater noise and a potential 50% reduction in the risk of ship strikes.</p>	
<p>4 <u>Efficiency revamped</u></p> <p>Improving ship efficiency through technology and maintenance can lead to a reduction in underwater noise and associated shipping impacts, such as a decrease in vessel strikes; it is also linked to reduced fuel consumption, air pollution, GHG emissions, and effluent discharges. Routing systems, and voyage planning, also play a role in vessel efficiency by ensuring safe navigation while protecting the marine environment.</p>		<p>5 <u>Eradicating pollution</u></p> <p>Marine pollution eradication will improve biodiversity and human health while preventing economic loss and tackling the climate crisis. A healthy marine environment is also more resilient to climate change impacts.</p>

How

1 Slow down

PLAN: Global speed restrictions, resulting in reductions in URN, whale strikes, and GHG emissions.

2030 GOALS

- **25%** fleet average speed reduction
- **50%** underwater noise reduction by 2030
- Whale strike mortalities decrease by **80%** by 2030
- **40-50%** GHG emissions reduction

2 ECA (plus) everywhere

PLAN: Designating the global ocean as an Emission Control Area (ECA), including in ocean areas beyond national jurisdiction and including black carbon in the regime.

2030 GOALS

- **50%** reduction in air pollutants
- **50%** global reduction of black carbon emissions, and 99% near ice sheets and glaciers

3 Marine protection focus, reboot, and expansion

PLAN: Protecting the ocean is a critical climate action. Expand PSSA designations and reforming how they are implemented to ensure significant and lasting protections. Focus on existing and new protected areas that prohibit all forms of waste disposal, anchoring, light restrictions during bird migrations, re-routing, speed restrictions, and no-go zones.

2030 GOALS

- **4x more PSSAs** compared to 2020 baseline
- Global protected area network covering at least 30% of our ocean by 2030, in alignment with the CBD target.

4 Efficiency revamped

PLAN: Improve the energy efficiency of ships, which swiftly brings down fuel consumption and GHG emissions while reducing spill risks, black carbon emissions, and underwater noise.

2030 GOALS

CII reform in 2026 includes an 8% per year target.

5 Eradicating pollution

PLAN: The International Convention for the Prevention of Pollution from Ships (MARPOL) and Ballast Water Convention amendments to regulate various aspects of marine pollution including noise, light, fuel, oil, and chemical discharges. The amendments must also focus on improving the effectiveness of existing regulations, strengthening monitoring mechanisms, and establishing new regulations for discharges. The objective is to reduce the impacts of invasive species and eliminate plastics such as fishing gear, marine paints, microplastics, and other garbage.

2030 GOALS

- **Underwater noise and light pollution** included in MARPOL Convention
- **HFO ban worldwide**
- **Ballast water treatment** achieves 100% effectiveness
- **Mandatory hull fouling** measures
- **All effluent discharges treated** to the highest standard through advanced wastewater treatment systems and not discharged in protected areas
- **Reduced threshold** for oil content in bilge water discharge
- **Regulations on grey water**, and mandatory testing of all treatment systems
- **Scrubber discharges** phased out across all oceans worldwide
- **100% reduction** in plastic waste, improved waste management facilities at ports and container loss response and mitigation measures



The act of creating a paradigm shift calls on both imagination and skill!

By Gillian Goddard, a member of the Cross-Atlantic Chocolate Collective from Trinidad and Tobago

My typical day is consumed with designing and redesigning systems alongside other human and non-human folks. Sitting and thinking, planting, walking and thinking, phone calls, meet-ups, organizing harvests, team conversations, back and forth, tasting, calculating numbers, reading, brewing tea, feeding birds, driving, imagining, filling forms, and on and on.

Fundamentally there's something I don't get. That I've never comprehended. Something that's completely distracted me from becoming technically super competent in anything – including the world of chocolate. And that is: how does a product get disassociated from its context?

I started making chocolate bars. Then the land grab, the racism, the settler behavior, the elitism, the ongoing colonial mindsets, the exceptionalism, the alienation of the shipping practices distracted me. Head turn right. Saw deforestation. Head centre.

Perfect bonbons. Head left. Dispossessed communities. Turn back centre – 70% dark with inclusions. Whiplash right – politics.

Quite recently, there were mainly two types of chocolate makers. One kind grew cacao and then grounded the beans - usually using arm power – to make drinking chocolate of all types. Industrial makers, the other kind, infrequently handled beans, instead relegating the process to machines to turn out a standardized product.

Small-scale makers numbered in the hundreds of thousands and were mainly in Latin America and the Caribbean. Industrial makers were mostly in Europe/North America. They numbered in the hundreds if you count the decision makers or in the tens of thousands if you include the machine operators.

Fast forward to today, and there are a fair number of us straddling the lines. Using local cacao and making traditional products for drinking, and more recently popularized items. Chocolate bars and drinking chocolate. Using cocoa as a spice, cocoa butter for skin care, pulp for juice, the tree as a shade provider/nitrogen fixer. We farm other crops, process other foods, and even have other areas of focus – fishing, teaching, fixing cars, creating art, beekeeping, making music, and reimagining shipping logistics.

I'm rethinking the ways my chocolate gets to places (currently by airplanes) and how global logistics should prioritize regional approaches, creating local redistribution networks and ensuring vessel capacity is not underutilized. I imagine a sailing culture rather than sailing cargo. Vessels' role in society must be optimized through a system that transports more than goods: it supports connections and exchange of culture and materials, fills socioeconomic gaps between the South and North, becomes a platform for artists to travel, and potentializes nature's

mechanisms—a polyculture system that moves ideas, products, and people.

The current shipping model needs to centre communities and cultures of trade. A decentralized approach is needed where very few big sailboats trade across the Atlantic, and smaller sailboats redistribute the trade regionally. The vessels would carry small amounts of diverse goods and move according to the potential and limitations of the cross-Atlantic oceanic currents and atmospheric phenomena.

I am a chocolate maker. I can't imagine living without drinking chocolate. Banana trees. Hand mills. Fresh air everywhere. Sharing the delight of a thick, warm cup of cocoa tea. Shipping impacts jeopardize this life while it can also be the means to expand it. Reconciling these contradictions is a big part of my journey.

The truth is that sometimes, the definition of right and wrong makes decision-making really complex. Sometimes, this definition makes particular products impossible. This means we spend more time planting trees and making chocolate than imagining how to transport them in alignment with our values and self-determination. And it means choosing never to use chemical pesticides, fertilizers, and fossil fuels. And it means we must work to reduce human inequity. But for us, it makes sense. It makes for large, expansive lives. And absolutely delicious micro-batch chocolate.

Gillian is a systems thinker and community organizer who engages mainly with food and agriculture to instigate change. She has been gardening and farming indigenous style for over three decades. She has also played different roles in delivering her harvest, and that of others, to nearby communities.

2030 SPPaN Pillars

Just and equitable — building a transition that leaves no one behind.

The 2030 SPPaN prioritizes upholding and enhancing the principles of justice and equity, including but not limited to the UN Declaration on the Rights of Indigenous People, promoting gender and LGBTQ+ equality, engaging youth, and eliminating racism. For any new initiatives and objectives, it is essential to conduct comprehensive impact assessments (which include economic, social, and environmental impacts) and establish

equitable transition frameworks that align with these principles. These frameworks should also address economic challenges or disadvantages and eliminate modern slavery risks (debt bondage, enforced work beyond contract expiry, low manning levels resulting in overwork and lack of shore leave, abandonment, and threat of piracy³⁵). The call from Pacific Island states for a fair and equitable transition within the IMO's GHG reduction strategy, particularly a carbon levy that allocates a portion of its revenue to vulnerable SIDS and LDCs to ensure that no one is left behind, is a prime example.

Precautionary – aligned with the UN Precautionary Approach

According to Principle 15 of the 1992 Rio Declaration on Environment and Development, uncertainty should not be used as a reason for inaction in the face of serious or irreversible damage that may be caused to the environment. This means that preemptive action should be taken by regulators, policy makers, coastal communities, and Indigenous Peoples, even if there is a lack of full scientific certainty.

The IMO adopted guidelines for incorporating the Precautionary Approach in the form of RESOLUTION MEPC.67(37)³⁶ on September 15, 1995. The decision-making and management processes detailed in this resolution include the anticipation and prevention of environmental problems, the development and use of cost-effective interim protective measures where existing practices fail to provide adequate environmental protection, and the promotion of clean technologies and waste minimization techniques for maritime activities.

The Precautionary Approach is a critical element of 2030 SPPaN, and it supports the establishment of linkages between climate action and reversing biodiversity loss. Swift action must be taken to address the triple planetary threat, and shipping mitigation measures must keep pace with rapid changes and ecosystem tipping points.

Nature-based – acknowledging the power of the natural world and its complex ecosystems to address and reverse the impacts of climate change

According to the IUCN's definition, nature-based solutions utilize nature and the power of healthy ecosystems to safeguard a biodiverse future, optimize infrastructure and protect people. A

healthy and resilient ocean is crucial for tackling and reversing the climate crisis. Reducing ocean pollution, minimizing ocean acidification, thriving coastal ecosystems, and lessening food insecurity all contribute to the benefits that people can reap from the ocean. This, in turn, enhances its ability to protect against sea-level rise, help to protect from storms, flooding and erosion, and support carbon sequestration, locking it up for centuries. The ocean should be treated as a sensitive life support system and therefore must be provided with extraordinary protection and mandatory measures. The ocean can play a significant role in reversing the climate crisis, and Particularly Sensitive Sea Areas (PSSAs) can be used as a spatial shipping tool which complements networks of Marine Protected Areas (MPAs) and other conservation measures.

Safety

Safe shipping is inextricably linked to seafarers rights and environmental protection, and often can't happen without adequate and well maintained port and on ship infrastructure. Preventing accidents resulting in oil, fuel, and chemical spills, loss of containers, and other pollution depends heavily on weather forecasting, ship design, construction and operation, cargo handling and stowage, crew training and working conditions, regular ship and equipment inspections, the use of pilots/escort tugs in challenging waters, the development of emergency response plans and regular emergency response drills. Additionally, digitization and e-navigation are showing promise in contributing to fewer accidents³⁷, spills and reduced whale strikes.³⁸ Navigating the future of biodiversity protection and reducing climate impact for the shipping sector will count on creating a safety culture which respects human rights and substantially invests in planning, training and equipment.

It Takes a Village

An ecosystem of actors is needed to move ahead on limiting impacts from shipping on nature, people, and climate. The IMO, as the global shipping regulator, must be involved in setting new and enhancing the ambition of existing targets to reduce biodiversity loss and pollution resulting from shipping activity. Following these rules can have a major effect on shipping impacts. However, in many cases, regulatory tools alone are insufficient to deal with the multiple shipping challenges we face.

To achieve meaningful change, multiple governance mechanisms must be engaged. This includes corporate leadership, financial tools, state sovereignty, port state enforcement, and Indigenous self-determination. Ports, banks, marine services, shipyards, classification societies and insurers, among others, have a role to play in the marine sector ecosystem. By working together, we can make progress towards a more sustainable shipping future.

Key actors and their contributions to 2030 SPPaN

Ports often operate as independent or semi-independent entities, with their own governance and jurisdictional sovereignty. They possess the ability to enforce significant measures to reduce harm within their territories, and generally oversee dredging activities for larger vessels to

access their facilities. Ports are also important players in promoting bunkering and developing climate corridors that facilitate the adoption of renewable marine fuels. Port fee reductions have been used to incentivize operational changes that can have co-benefits for people, the climate, and biodiversity on a scale just as impactful. For instance, the Port of Vancouver has implemented underwater noise reduction guidelines and port fee rebates, which have led to a quieter acoustic habitat for whales, while also reducing air pollutants, GHG emissions, and the risk of whale strikes.³⁹

Owners and operators face complex legal, flag, chartering, client, and ownership dynamics in shipping operations. This network can create disincentives in some cases for impact mitigation. For example, operators may not be encouraged to optimize routes if third parties absorb fuel costs. Similarly, liability regimes may not cover the true and long-lasting impacts of an oil or chemical spill, compromising safety. Historically, shipping has been an industry out of sight and out of mind with a lack of consumer pressure for change and less than enthusiastic corporate social responsibility initiatives. However, the tide has turned, and owners and operators have played a significant leadership role in moving towards sustainable practices. For instance, Maersk's pledge to say no to LNG has sent a powerful signal to the global bunkering market to steer clear of this

fossil gas. Owners and operators can also play a significant role in meeting climate and biodiversity targets. Hurtigruten was the leading industry voice to say no to Heavy Fuel Oil (HFO) in the Arctic, reducing the risks of oil spills and the threat associated with black carbon emissions.

Regulators play a vital role in mitigating the impacts of shipping, especially in an industry that struggles to meet minimum regulatory standards, due to the level playing field paradigm and global shipping trade that involves multiple jurisdictions. While voluntary and aspirational goals are encouraged, mandatory regulations and measures are necessary for actual and long-lasting change towards sustainable shipping. For example, operators and owners have admitted to being unable to follow and implement the voluntary guidelines on underwater radiated noise due to their capacity.⁴⁰ As a result, underwater noise levels have increased while the guidelines remain unused.⁴¹ In parallel, once the ballast water convention came into force, ships started treating ballast water.⁴² Similarly, with the implementation of the 2020 sulfur cap, emissions decreased.⁴³ These outcomes demonstrate that mandatory regulations have been effective in promoting sustainable shipping practices and help maintain consistent standards for the shipping sector.

Banks and insurers primarily focus on regulatory compliance to underwrite risk, rather than exceeding the minimum requirements. However, the true value of nature is often overlooked when it comes to shipping voyage insurance. Factors such as reducing underwater noise, avoiding whale strikes, engaging with local communities, using less hazardous fuels, and routing around sensitive areas are not considered when calculating premiums or financial incentives for ship owners and operators. This is a missed opportunity, as loans and financial tools should also consider the cost of biodiversity protection and climate mitigation.

Strong shipping policies can jointly reduce GHGs and air pollution

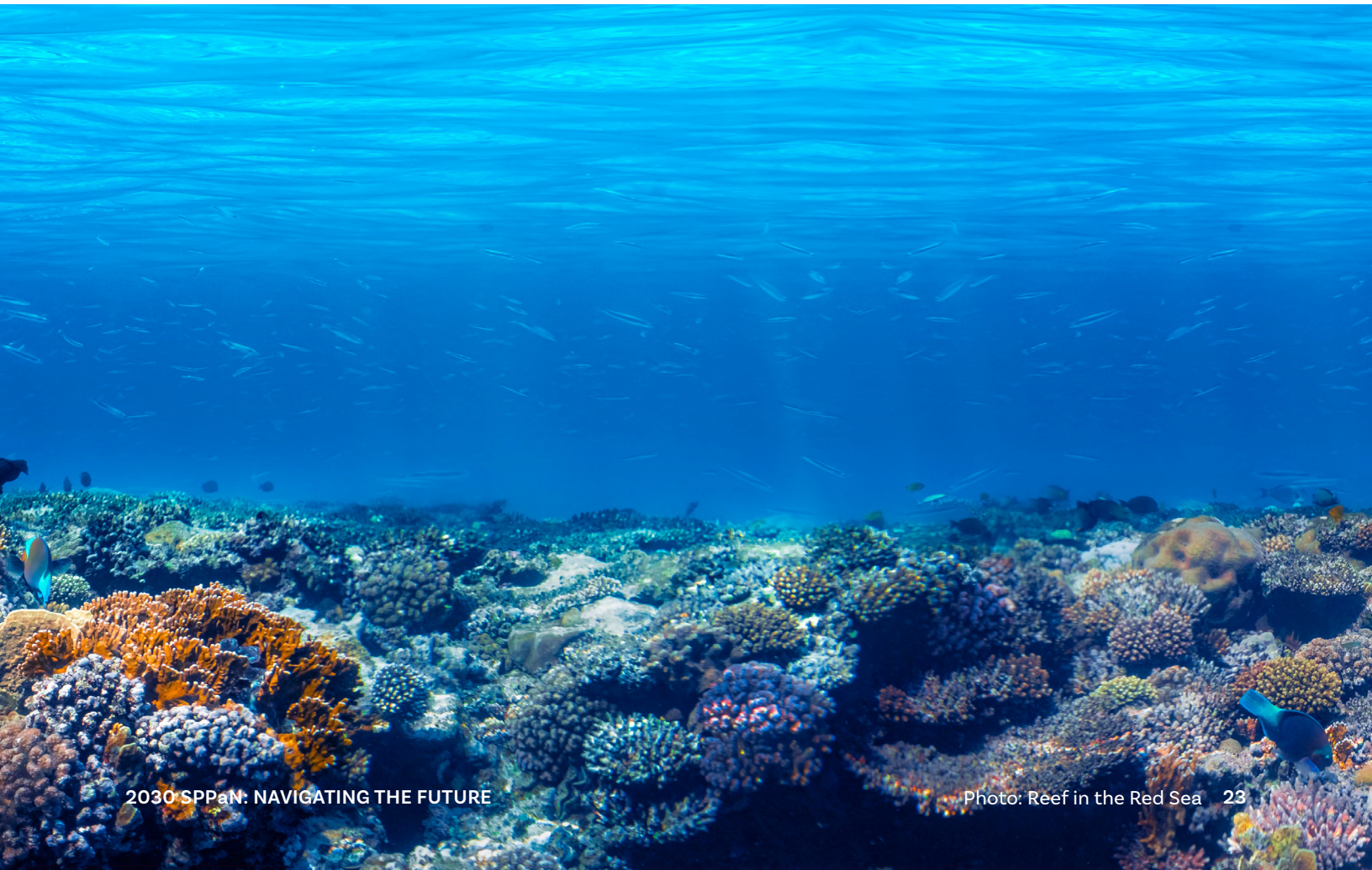
A study conducted in 2020⁴⁷ evaluated the impact of ship-related pollution on human health, comparing the use of low-sulfur to the use of conventional fuels, using emissions inventories, atmospheric models, and health risk assessments. The results showed that using cleaner marine fuels can significantly reduce premature deaths and illnesses caused by ship related PM2.5 pollution. The reductions in premature deaths and illnesses were found to be 34% and 54% respectively, translating to a reduction of 2.6% in global PM2.5 cardiovascular and lung cancer deaths, and a 3.6% reduction in childhood asthma cases.

Despite the significant reductions, low-sulfur marine fuels would still result in an estimated 250,000 deaths and 6.4 million childhood asthma cases annually. Therefore, it is recommended that more stringent standards be put in place beyond 2020 to achieve additional health benefits. The study also found that lower sulfur fuels reduce radiative cooling from ship aerosols by approximately 80%, removing the masking effect of a 3% increase in anthropogenic forcing. Thus, implementing stronger international shipping policies may be necessary to achieve climate and health targets by jointly reducing GHGs and air pollution.

Fortunately, there are some initiatives such as the Glasgow Financial Alliance for Net Zero (GFANZ)⁴⁴ and the Net Zero Banking Alliance (NZBA),⁴⁵ which is the climate accelerator for UNEP's Financial Institution's Principles for Responsible Banking (PRB), that are beginning to show the way within this sector for how financial tools and institutions are able to account for nature.

Rights holders, Indigenous Peoples, and community-based stakeholders' voices have been historically overlooked in shipping policy and regulatory circles. For instance, although 144 countries, of which a majority are part of the IMO, signed the UN Declaration of the Rights of Indigenous Peoples in 2007, these voices have been marginalized. In 2021, the Inuit Circumpolar Council (ICC) became the first Indigenous organization to receive provisional consultative status at the IMO. However, they

still need to be granted full status in 2025, which will be ten years after the adoption of amendments to the International Convention on the Safety of Life at Sea (SOLAS) and MARPOL Convention to implement the IMO's International Code for Ships Operating in Polar Waters (or Polar Code), which is of direct relevance to Arctic Indigenous Peoples. The Heiltsuk Nation in British Columbia Canada suffered devastating consequences from a fuel oil spill⁴⁶ in their coastal waters, however marine liability regimes and spill compensation funds don't account for non-economic and cultural losses leaving community members with a legacy of social and environmental destruction. Systemic inequalities still exist in many global and regional shipping governance regimes. To develop lasting solutions that centre communities in nature and climate policies, these inequalities must be overcome.



Annex

Table AI – For the purposes of this report, the focus of this table, and throughout, is on the international regulatory seascape, with the recognition that at the national and regional levels various regimes and actions are being taken. Often regional advancements in environmental protection (such as IMO Special Areas⁴⁸, or banning HFO in the Arctic and Antarctic) can ladder up to international best practices. This report isn’t able to fully catalog those progressive initiatives but recognizes the limited discussion in the report and the need to more fully recognize and account for their value with bridging climate and biodiversity.

Activities	Description	Regulatory Landscape	Regulation
Underwater Radiated Noise (URN)	URN is a form of pollution that has a significant impact on the environment, biodiversity, and people. It is essential to understand the unique environmental characteristics of different locations and the level of noise sensitivity exhibited by various species to assess the full consequences of shipping noise.	URN from ships are currently not regulated. In 2014, the IMO issued guidelines (MEPC.1/Circ.833) to reduce URN from commercial shipping, which was revised in 2023 (MEPC.1/Circ.906) and included supplementary guidance in Inuit Nunaat (MEPC.1/Circ.907). While offering some advice and best practices, the guidelines do not suggest strict rules or regulations. MARPOL has yet to explicitly define URN as a form of pollution.	Voluntary Guidelines
Increases in ship transits	The number of ships in the ocean is causing distress to animals and worsening climate, socioeconomic, and political issues. ^{49, 50} As shipping transits continues to increase, so does the pollution and disturbance associated with it. It is essential to address the intensity and projected increase of vessel traffic to ensure the ocean’s limits in tolerating repeated shocks or disruptions are not surpassed. Additionally, we must address the disruption of shipping to cultural practices.	There are no regulations or guidelines that limit the number of ships that can navigate the ocean sustainably. In the fight against climate breakdown and biodiversity loss, the IPCC and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) suggest that degrowth policies should be considered. These policies aim to establish a more sensible and resource-conscious form of growth, which does not imply stagnation. ^{51, 52}	Neither
Black carbon	Black carbon is a minuscule, dark particle released into the air when fuel is burned incompletely in marine engines. The negative impacts of this particle include lung and heart diseases, as well as premature	There are currently no global regulations on black carbon emissions from shipping. The IMO has released voluntary recommendations (IMO Resolution MEPC .342(77)) suggesting using distillate or alternate fuels	Voluntary Guidelines

<p>Black carbon cont.</p>	<p>death is also the second largest contributor to climate change caused by shipping, accounting for 7-21% of CO₂-equivalent emissions from the global shipping industry.</p>	<p>in areas near and in the Arctic to reduce such emissions.</p>	
<p>Vessel strikes</p>	<p>A collision between any type of boat and a marine animal in the ocean is characterized as a vessel strike. Any marine species can be hit by any vessel size or type, from large ships to jet skis. Collisions can happen when vessels cross paths with marine life. It can be challenging for a vessel operator to spot marine animals since they are not always visible from the surface. Even if the operator sees the animal, there might not be enough time for either of them to avoid a collision.⁵³</p>	<p>There is currently no global regulation on vessel strikes. The IMO has established Traffic Separation Schemes (TSS) in various areas such as the Bay of Fundy, near Boston, the Santa Barbara Channel, off San Francisco, and in the approach to Panama City. These schemes help in reducing the risk of collisions between ships and whales. Additionally, the IMO provides guidance to Member Governments on how to minimize the risk of ship strikes on cetaceans while also promoting the use of voluntary vessel traffic exclusion zones. In some instances PSSA's provide guidance as well.</p>	<p>Voluntary Guidelines</p>
<p>Anchoring</p>	<p>Anchoring is a crucial operation for ships that can be required for a variety of reasons, such as unavailability of berth or cargo, change in passage plan, or adverse weather. Nevertheless, vessels at anchor pose a risk to the seafloor and its biota.⁵⁴ The ship's anchor can shift, and its mooring chain can swing across the seabed, causing abrasion of the seafloor and damage to benthic ecosystems.</p>	<p>There is currently no specific regulatory framework that addresses the environmental impacts of anchoring, nor the cumulative effects it has on the environment. Within some PSSAs, the IMO has established mandatory no-anchoring zones. Some countries have domestic regulations which can address the management of anchoring.</p>	<p>Neither</p>
<p>Greenhouse gas (GHG) emissions</p>	<p>The total GHG emissions from shipping which includes carbon dioxide (CO₂), methane (CH₄), black carbon, and nitrous oxide (N₂O) expressed in CO₂ equivalent (CO₂e) have increased from 977 million tonnes in 2012 to 1,076 million tonnes in 2018, resulting in a 9.6% increase. Ships are responsible for approximately 3% of the global CO₂ and GHG emissions (CO₂-eq).</p>	<p>There is currently no legally binding regulation that limits GHG emissions from shipping. In 2018, the IMO initiated a GHG Strategy, which was updated in 2023 to cut GHG emissions from ships. Their goal was to progressively diminish and eventually eliminate these emissions. The 2023 Strategy sets targets for the global shipping industry, emphasizing that success depends on technological advancements and widespread adoption of alternative fuels or energy sources. Also included in the strategy are the</p>	<p>Mandatory (CII, EEXI, EEDI) Voluntary Guidelines (GHG strategy)</p>

<p>Greenhouse gas (GHG) emissions cont.</p>		<p>Energy Efficiency Existing Ship Index (EEXI) and the annual operational carbon intensity indicator (CII) which both require ships to improve their energy efficiency in the short term leading to fuel savings and reduced GHG emissions.</p>	
<p>Air pollution</p>	<p>Ships emit high levels of sulfur and nitrogen oxides, as well as particulate matter (including black carbon), as a by-product of burning fuel for energy. The emissions of these air pollutants can negatively impact the health of coastal populations, particularly in harbor cities – roughly 70% of ship emissions occur within 400 km of coastlines, leading to air quality problems.</p>	<p>MARPOL Annex VI was established in 1997 to limit air pollutants emitted by ships, including sulfur oxides (SOx), particulate matter, and nitrous oxides (NOx). The annex prohibits deliberate emissions of ozone-depleting substances (ODS) and regulates shipboard incineration and tanker emissions of Volatile Organic Compounds (VOC). The regulations limit the maximum sulfur content of fuel oils and require the retention of bunker delivery notes onboard for at least three years after delivery. The regulation also prohibits the incineration of certain listed materials. Emission control areas can be designated to provide additional reduction requirements for SOx and NOx emissions in vulnerable areas.</p>	<p>Mandatory</p>
<p>Plastic pollution</p>	<p>Plastics are globally traded with cargo ships responsible for 90% of the trade and plastic litter discharge. They make up 75% of marine litter and can take decades to decompose due to altered weathering mechanisms. Plastics negatively impact marine life, ecosystems, human health and maritime industries.</p>	<p>MARPOL Annex V requires strict requirements on the discharge of garbage into the sea, including a complete prohibition of the discharge of all plastics including synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products. In 2021, the IMO adopted a Strategy aimed at addressing continued discharge of marine plastic litter from ships. The strategy sets out to address the amount of marine plastic litter still generated by fishing vessels, decrease other shipping contributions to marine plastic litter, and improve the effectiveness of port reception facilities and treatment in reducing marine plastic litter. The ultimate goal is to achieve zero plastic waste discharges from ships into the sea by 2025.</p>	<p>Mandatory Voluntary Guidelines</p>

Light pollution	Sea light pollution refers to the negative impact of shipping and port lights on humans, safety, and marine life.	There is currently no specific regulatory framework that addresses the environmental impacts of light pollution from shipping. MARPOL has yet to recognize light as a pollutant. In many cases, threatened and endangered species and habitats are protected under national and international legislation, which can be applied to light pollution.	Neither
Bilge dumping and discharge	Bilge water forms in most modern cargo and container vessels due to the usage of oil-based fuels. Illegal bilge dumping happens when tankers and cargo vessels discharge oily bilge water into the sea without the necessary controls in place.	MARPOL Annex I covers pollution by oil - discharge of oily wastes, tank washings and oil spills (see below). It regulates oily waste discharges and storage of oil sludge in holding tanks and disposal in port reception facilities. In Special Areas and through the Polar Code regulations on oil discharge are more stringent. The discharge of oil or oily mixtures from ships over 400 gross tonnage is prohibited unless the requirements of MARPOL Annex I are met including the ship being en route, the oily mixture being filtered through an oily water separator, and oil content does not exceed 15 ppm. For ships of 10,000 GT and above and for all ships discharging in Special Areas a bilge alarm is also required and the discharge is stopped when the monitor exceeds 15 ppm.	Mandatory (MARPOL Annex I) Neither (illegal dumping)
Black & grey water	Black water is wastewater from toilets and urinals, while grey water is from washing, laundering, bathing, or showering. Both are included in wastewater.	MARPOL Annex IV regulates sewage discharge from ships but it does not regulate grey water. Stricter requirements have been agreed for polar waters and Special Areas.	Mandatory (Sewage) No greywater guidelines or regulations
Scrubber effluent	Exhaust Gas Cleaning Systems (EGCS), or scrubbers, are used to remove harmful sulfur oxides (SO _x) from the exhaust gases produced during combustion processes in marine engines, to comply with pollution control. The scrubbing material used to remove sulphur, in the process is collected with wash-water, which can be stored or disposed of immediately as effluent at sea.	Scrubbers are allowed under the alternative compliance regulations of MARPOL Annex VI to reduce the amount of sulfur in fuel oil. However, to be approved, scrubbers must comply with the 2021 Guidelines for EGCS set by the IMO in Resolution MEPC.340(77). These guidelines require that the wash-water produced by scrubbers meet certain standards for pH, PAH concentration, nitrates, turbidity, metals	Voluntary Guidelines

<p>Scrubber effluent cont.</p>		<p>concentration, and temperature. Despite these guidelines, the use of scrubbers can still harm aquatic environments. Forty-five countries have implemented additional measures to regulate the use of scrubbers, with 86% of these measures being direct bans on either use or discharge.</p>	
<p>Oil spills (crude and fuels)</p>	<p>When oil is spilled into an aquatic environment, it can cause significant harm to organisms that live on or around the water's surface and those that reside under it. Spilled oil can also damage food chains, including human food resources. The severity of the impact of an oil spill depends on various factors, including the characteristics of the spilled oil, and natural conditions such as water temperature and weather. Different marine habitats have varying sensitivities to crude and fuel oil spills.</p>	<p>The IMO adopted the OPRC Convention in 1990 to tackle oil pollution emergencies. According to this framework, States must develop and maintain their own oil pollution response systems. MARPOL Annex I regulates fuel oil tank protections, double hulls for oil tankers, and Shipboard Oil Pollution Emergency Plans (SOPEP).</p>	<p>Mandatory</p>
<p>Containers lost at sea</p>	<p>Proper packing, stowage, and securing of goods are crucial for ensuring the safety of container ships, crew and cargo, dockers, and the environment. Even when done correctly, severe weather, ship groundings, or collisions can cause containers to be lost at sea. Shipping companies are responsible for the goods and insured for such cases. It is estimated that over 12,000 containers float around the world's seas, posing a significant safety and environmental risk to smaller vessels. Sailors often see these boxes at the last minute, and collisions are frequent, with some boats sinking.</p>	<p>Container losses at sea have a significant environmental impact, but there is no regulatory framework to address the issue. Measuring or recording losses is challenging, but tracking devices and technological innovations are being explored. The IMO is amending the SOLAS and MARPOL Conventions to mandate reporting of containers lost overboard, effective early 2026.</p>	<p>Neither</p>
<p>Unsafe ship recycling</p>	<p>Ship recycling is a practical way to dispose of old ships. It reuses most of the materials and equipment, making it environmentally friendly and energy efficient. However, working practices and environmental standards vary by yard. Global regulation is needed to ensure safe working practices and consistent environmental standards.</p>	<p>The Hong Kong Convention aims to ensure that ships recycled at the end of their operational lives pose no risks to human health or the environment. It was adopted in Hong Kong, China in 2009, and will come into force on June 26, 2025. The regulations cover the safe and environmentally sound recycling of ships, including ship recycling</p>	<p>Mandatory</p>

<p>Ship recycling cont.</p>		<p>facilities, enforcement mechanisms, and certification requirements. Ships must carry an Inventory of Hazardous Materials and undergo surveys before recycling. Ship recycling facilities must be authorized and develop specific plans, including a Ship Recycling Plan for each vessel.</p>	
<p>Biofouling</p>	<p>Biofouling is the accumulation of biological matter on submerged objects such as ship hulls. It is a significant vector for bioinvasions and can pose serious risks to human, animal and plant life, as well as to economic and cultural activities and the aquatic environment.</p>	<p>There is currently no international regulation on biofouling. The IMO has issued Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (resolution MEPC.378(80)), which were last updated and adopted in 2023. Some countries and states, such as New Zealand and California, have implemented mandatory regulations for managing biofouling. The IMO's Antifouling Convention prohibits the use of harmful organotins, control the use of biocide cybutryne in anti-fouling paints used on ships, and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems.</p>	<p>Mandatory (Antifouling Convention)</p> <p>Voluntary Guidelines (biofouling)</p>
<p>Ballast water</p>	<p>Ballast water is used to provide stability and maneuverability to ships during a voyage – essential for safe and efficient shipping operations. However, it can introduce invasive aquatic species to new environments, causing ecological, economic, and health issues. These species include bacteria, microbes, invertebrates, algae, and larvae.</p>	<p>The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) is an IMO treaty adopted in 2004 and ratified by over 60 countries. It requires ships to have a Ballast Water Management Plan, carry a Record Book, and follow specific procedures. The IMO guidelines support the Convention and provide the Code for Approval of Ballast Water Management Systems (BWMS Code). Some regions have additional mandatory or voluntary requirements.</p>	<p>Mandatory</p>

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