

Appraisal of Global Efforts in Achieving *Green Shipping* in the *Maritime Industry*



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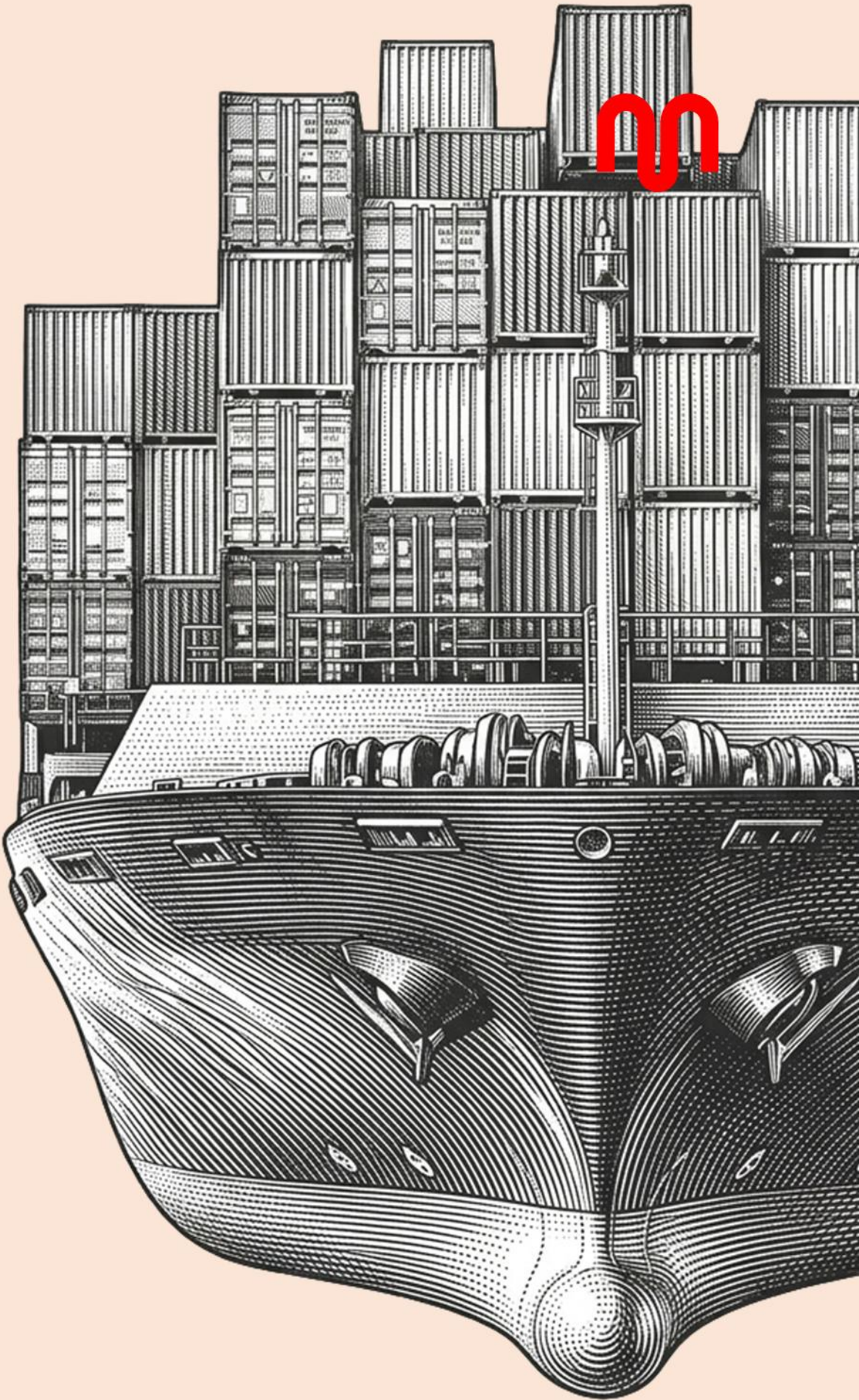
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INTRODUCTION

Shipping is an efficient means of global trade.¹ However, decarbonization which is the process of reducing or removing poisonous emissions, is undeniably one of the major challenges of the maritime industry. In 2020, International Maritime Organisation GHG Study evaluated that, greenhouse gas emissions from shipping in 2018 accounted for 2.89% of global anthropogenic GHG emissions and that such emissions could represent between 90% to 130% of emissions by 2050.²

EFFECTS OF SHIPPING EXHAUSTS

The global movement to actualise green shipping has considerably increased with States, non-governmental organisations (NGOs) and corporations having handshakes on how to mitigate the adverse effects of greenhouse gas emissions and air pollutants. Part of the global efforts includes; drafting conventions and multilateral agreements with the objectives of implementing green shipping, fining erring vessels for the amount of carbon dioxide emissions and transforming the sources of energy used by ships (heavy fuel oil) into renewable energy (ammonia).⁴ Even with all these goal-oriented and aspirational aims at supporting the transition of maritime industry into zero-carbon shipping by 2050, ship exhausts still subsist globally. These exhausts contain nearly 40 toxic air contaminants, many of which are related to cancer-causing substances, such as benzene,⁵ arsenic,⁶ and formaldehyde. Additionally, every liter of fuel used contains approximately 0.75 kg/L of pure carbon and 2.65kg/L of carbon dioxide of diesel fuel. These major harmful substances contained in the exhaust emissions including; carbon monoxide, nitrogen oxide, hydrocarbon, sulphur dioxide, nitrogen, do not only impair the human environment, but also have hazardous effects on humans' health.

The attendant results are significantly observed in the mounting global temperatures, disastrous weather occurrences, rising sea levels, unpredictable shifting climate patterns, inter alia.³ It therefore becomes imperative to appraise the relevant global legal and institutional efforts towards achieving net-zero green shipping in the maritime industry.

The 2019 report of Intergovernmental Panel on Climate Change (IPCC) suggests that '[a]ny increase in global warming is projected to affect human health, with primarily negative consequences. Lower risks are projected at 1.5°C than at 2°C for heat-related morbidity and mortality ... and for ozone-related mortality if emissions needed for ozone formation remain high.... Risks from some vector-borne diseases, such as malaria and dengue fever, are projected to increase with warming from 1.5°C to 2°C, including potential shifts in their geographic range.'⁷ The report further states that, '[a]daptation is expected to be more challenging for ecosystems, food and health systems at 2°C of global warming than for 1.5°C (medium confidence). Some vulnerable regions, including small islands and Least Developed Countries, are projected to experience high multiple interrelated climate risks even at global warming of 1.5°C (high confidence)'.⁸

Therefore, any reduction in greenhouse gas emissions from shipping will directly lower the embodied carbon in building materials, energy, and other goods that are consumed across the globe.

1 Martin Grawford Brunt, 'How Shipping can Become Part of the Solution' Youngship Global Leadership Summit Sri Lanka, 2024, 30.

2 Samantha Dias, 'Is It Too Early to Consider the Potential of Green Ammonia as a Maritime Fuel' Youngship Global Leadership Summit Sri Lanka, 2024, 49.

3 NASA, 'Global Climate Change Vital Signs of the Planet' available <https://www.google.com/amp/s/climate.nasa.gov/what-is-climate-change-amp>

4 *ibid.*(n 2) 50.

5 Benzene is a known human carcinogen and it is linked to an increased risk of developing lymphatic and hematopoietic cancers, acute myelogenous leukemia, as well as chronic lymphocytic leukemia (NCI05). See <https://pubchem.ncbi.nlm.nih.gov/compound/Benzene>.

6 The United States' Agency for Toxic Substances and Disease Registry ranked arsenic as number 1 in its 2001 Priority List of Hazardous Substances at Superfund sites. See, Carelton, James, 'Final Report: Biogeochemistry of Arsenic in Contaminated Soils of Superfund Sites' (2007) United States Environmental Protection Agency.

7 IPCC (Intergovernmental Panel on Climate Change), 'Global Warming of 1.5°C' (2019) (Intergovernmental Panel on Climate Change 9.

8 *Ibid* (n 8) 10.

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APPRAISAL OF LEGAL FRAMEWORKS

Some of the relevant international and regional treaties as well as best corporate practices for the promotion of green shipping are succinctly examined.

1. The Paris Agreement: This is a multilateral agreement which is aimed strengthening the global response to the threat of climate change.⁹ Nearly all countries have ratified this Agreement. The Agreement acknowledges that climate change is a common concern of humankind and notes the importance of ensuring the integrity of all ecosystems including oceans.¹⁰ Article 3 requires the implementation of the purpose of the Agreement including a five-year cycle of increasingly ambitious climate action.¹¹ The Agreement binds the parties to aim at reaching global peak of greenhouse gas emissions and undertake rapid reductions with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases by 2050.¹² It equally recognizes that accelerated action is required to limit global warming to 1.5°C.¹³ In the second Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) held in Geneva, Switzerland, in 1996, parties were requested to revisit and strengthen the 2030 targets in their nationally determined contributions (NDCs) to align with the Paris Agreement temperature goal which is limiting global temperature rise to below 2°C and achieving net zero emissions.

2. EU Emissions Trading System (EU ETS): The European Union in its efforts to meet emissions reductions targets fashioned out a trading approach to combat climate change in a cost-effective and economically efficient manner.¹⁴ As the first and largest emissions trading system for reducing GHG emissions, EU ETS covers more than 11,000 power stations and industrial plants in 31 states.¹⁵ In an effort to meet the Kyoto Protocol to the UN Framework Convention on Climate Change (UNFCCC), EU came up with policy instruments to meet the Kyoto commitments.

The Single European Act (SEA) of 1986, which amended the Treaty of Rome (1957), forms the legal basis for the EU ETS.¹⁶ EU stakeholders aimed at reducing GHG emissions by 80–95% by 2050 in order to keep climate change below 2°C. Another significant milestone in the decarbonisation pathway towards 2050 by EU is the 2030 framework for climate and energy policies proposed on January 2014 and agreed upon by EU leaders in October 2014.¹⁷ This proposal sets out to have (i) a reduction of GHG emissions by 40% below the 1990 level by 2030 to be achieved domestically; (ii) an increase of the EU-wide renewable energy share to at least 27%; and (iii) improving energy efficiency by at least 27% by 2030, with 30% by 2030 in mind.¹⁸

3. African Union Climate Change and Resilient Development Strategy and Action Plan (2022–2032): This is a decade strategic framework developed by the African Union (AU) to address climate change and promote sustainable development across the region.¹⁹ This action plan is in tandem with global climate goals, such as the Paris Agreement. AU like its counterpart, aims at reducing the GHG emissions and promoting sustainable development in Africa. To realise this, AU assists low-carbon development pathways, particularly through investments in renewable energy and energy efficiency in AU member States.

4. MARPOL Annex VI: This is an international regulation under International Convention for the Prevention of Pollution from Ships. Its major objective is to prevent air pollution from ships.²⁰ The Protocol was adopted to amend the Convention and Annex VI was added entering into force on 19th day of May 2005. Annex VI sets limits on sulphur oxide (Sox) and nitrogen oxide (Nox) emissions from ship exhausts and prohibits deliberate emissions of ozone depleting substances; designated emission control areas set more stringent standards for SOx, NOx and particulate matter.

9 United Nations Framework Convention on Climate Change (UNFCCC) 'Paris Agreement 2016' art 2(1).

10 See PA, Preamble

11 PA 2016, art. 4(9)

12 PA 2016, art. 4(1)

13 PA 2016, art. 2(1)(a)

14 European Commission, EU ETS Handbook p.4

15 Ibid.

16 European Commission, EU ETS Handbook p.7–8

17 European Commission, EU ETS Handbook p.12.

18 European Commission, EU ETS Handbook p.13.

19 AU African Union Climate Change and Resilient Development Strategy and Action Plan (2022–2032) available African Union Climate Change and Resilient Development Strategy and Action Plan (2022–2032) | African Union

20 IMO, 'International Convention for the Prevention of Pollution from Ships (MARPOL)' available International Convention for the Prevention of Pollution from Ships (MARPOL)

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APPRAISAL OF LEGAL FRAMEWORKS

5. Global Centre for Maritime Decarbonisation (GCMD): This is an independent, non-profit organization based in Singapore that was established to accelerate the decarbonization of the maritime industry in 2021.²¹ The Centre collaborates with stakeholders across the maritime value chain to implement solutions that reduce GHG emissions in the shipping industry. To serve as a catalyst for the adoption of innovative technologies and operational practices that contribute to the International Maritime Organization's (IMO) decarbonization targets. GCMD concentrates on several key areas to drive maritime decarbonization: alternative fuels, energy efficiency, carbon capture, et cetera. CMD aligns its objectives with the International Maritime Organisation's 2050 targets, which aim to reduce the carbon intensity of international shipping by 40% by 2030 and achieve net-zero emissions by 2050.

6. Sustainable Development Goals (2015–2030): This is also known as Global Goals adopted by the United Member States in 2015.²²

It is a framework hinged on universal call to action to ensure sustainable living and conducive environment, protect the earth planet and ensure that every person enjoys peace and prosperity from toxic emissions. SDGs is the extension of Millennium Development Goals which ended in 2015. Unlike MDGs that have eight goals SDGs have seventeen goals with a deadline of achievement put at 2030. Some of the relevant goals to this discussion are: (G3) Good health, (Goal6) Clean water and sanitation, Goal (11) Sustainable cities and communities, Goal (13) Climate action.

7. Other Instruments: International Convention for Prevention of Pollution of Sea by Oil 1954, African Charter on Human and People's Right, 1986, International Convention for Prevention of Pollution of Sea by Oil 1954, OAU Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa (Bamako Convention) 1991, International Convention on the Establishment of an International Fund for Compensation for Oil Pollution and Damage 1971, Vienna Convention for Protection of Ozone Layers 1985.

CONCLUSION

Global efforts towards realising green shipping in the maritime industry through legal and strategic frameworks show a commendable progress. However, there is still the challenge of addressing climate change in a heavily interconnected sector like maritime. There is a need for more collaboration among IMO, the EU ETS, and the GCMD to considerably reduce emissions.

Secondly, challenges such as the high cost of alternative fuels, the need for implementable regulations, and uneven access to resources across regions persist. Finally, achieving sustainable maritime operations to reduce GHG emissions will require global cooperation.

²¹ Global Centre for Maritime Decarbonisation 'Who are we' available <https://gcformd.org/about-us/>. Available 21 January 2025

²² United Nations Commission on Environment and Development (UNCED) (1992). Agenda 21: the Report of the United Nations Conference on Environment and Development (Earth Summit) in Rio. UNCED; United Nations Development Programme (UNDP) (2016).

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