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**Six Months in a Polluting Boat:¹ Enhancing the International
Maritime Organization's Role in Decarbonizing Shipping**

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¹ The title of this dissertation was inspired by the Split-Enz song "Six Months in a Leaky Boat".

Abstract

In less than six months, the International Maritime Organization (IMO) will review its 2018 Initial Strategy for reducing the carbon emissions of the global shipping industry. The international shipping industry has long been anchored to high carbon emitting fuels due to their relative cost efficiencies. This means significant advances in research, innovation, and investment into carbon free vessels and fuels is required. The IMO is expected to soon enact a market-based mechanism, such as a carbon tax, in order to progress towards decarbonization. However, I argue in this paper that two obstacles stand in the way of such a mechanism being effective. First, I argue the IMO must determine how shipping emissions are to be allocated to member states. After critically analyzing allocation via flag states and via operating companies, I conclude the latter is the most legally efficient and politically feasible option. Second, I argue the IMO must engage with the shipping industry through the framework of a public-private partnership, to allow for the sharing of research, industry knowledge, and resources to make genuine strides towards decarbonization. This general approach provides a springboard for other specialized United Nations agencies to adopt in encouraging their industries to decarbonize.

Key Words

International Maritime Organization, decarbonization, climate change, shipping, flag states, public-private partnership.

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Abbreviations

CBDR – Common but Differentiated Responsibilities

CII – Carbon Intensity Indicator

EEXI – Energy Efficiency Intensity Index

FOC – Flags of Convenience

GHG – Greenhouse Gases

HFO – Heavy Fuel Oil

IMO – International Maritime Organization

MARPOL – International Convention for the Prevention of Pollution from Ships

MBM – Market Based Mechanism

MCN – Multi-National Corporation

NMFT – No More Favourable Treatment

PPP – Private-Public Partnership

SEEMP – Ship Energy Efficiency Management Plan

UNCLOS – United Nations Convention on the Law of the Sea

I Introduction

The International Maritime Organization (IMO) has been tasked with reducing the GHG emissions of a key player in the global economy – the international container shipping industry. In 2018, the Organization in its Initial Strategy announced its goal of at least halving GHG emissions from shipping by 2050.² However, the Initial Strategy is ‘dead in the water’, having had only had modest success in reducing ship emissions through the enactment of complex technical requirements aimed at increasing the carbon efficiency of ships.³ This lack of regulatory ambition has pushed maritime stakeholders to take matters into their own hands, threatening the IMO’s regulatory mandate.⁴ While the IMO is expected to announce more stringent measures in 2023 through a revised Initial Strategy,⁵ shipping emissions are only expected to increase in tandem with the growth of the global economy.⁶

In this paper, I ask how the IMO can more effectively promote the decarbonization of the shipping industry in line with its Initial Strategy and the Paris Agreement temperature goal,⁷ to avoid unilateral action from stakeholders and ultimately create a more cohesive

² Marine Environment Protection Committee, *Initial IMO Strategy on Reduction of GHG Emissions from Ships* (13 April 2018) International Maritime Organization: see generally “Initial IMO Strategy for Reducing Shipping Emissions Set for Adoption” (10 April 2018) United Nations Framework Convention on Climate Change <unfccc.int>.

³ Roel Hoenders and Camille Bourgeon *Assessing Possible Impacts on States of Future Shipping Decarbonization* (20 June 22) United Nations Conference on Trade and Development <unctad.org>. The authors concluded that the current IMO measures for reducing shipping emissions will likely only result in an emissions reductions rate between 21.5 per cent and 10.2 per cent between 2019 and 2030.

⁴ “Fit for 55 Package: Fuel EU Maritime” Impact Assessment (SWD(2021) 635 PE 699.282 (February 2022): see generally Sean Goulding Carroll “Parliament Backs EU’s Maritime Fuel Law to Curtail Shipping Emissions” (20 October 2022) Euractiv <euractiv.com>: see also Michelle Wiese Bockmann “EU Parliament Passes World’s First Fuel Targets for Decarbonization” (19 October 2022) Lloyds List <lloydslist.com>.

⁵ For example, the European Union has recently announced their intention to include shipping within its regional emissions trading scheme: see “IMO’s Work to Cut GHG Emissions from Ships” International Maritime Organization <imo.org>: see also Michelle Wiese Bockmann “IMO’s Decarbonization Division Deepens” (7 June 2022) Lloyds List <lloydslist.com>.

⁶ *Review of Maritime Transport 2018* (United Nations Conference on Trade and Development, UNCTAD/RMT/2018, 2018) at 4.

⁷ Paris Agreement Under the United Nations Framework Convention on Climate Change 3156 UNTS (opened for signature 16 February 2016, entered into force 4 November 2016) art 2.

global regulatory regime. I conclude that a market-based mechanism, such as a carbon tax, is required to achieve decarbonization.⁸ However, there are certain aspects of international maritime law which will inhibit the effectiveness of a market-based mechanism, the most pressing being the current ship ownership framework as established by the United Nations Convention on the Law of the Sea (UNCLOS). How emissions are allocated will determine which member State is responsible for ensuring vessels comply with IMO regulations. However, the current process of ship ownership is highly flexible and artificial, as vessel owners can purposefully register their ships in states with more favorable regulatory environments,⁹ resulting in the majority of the world's fleet being registered in developing countries.¹⁰

This raises the question of how shipping emissions should be allocated to member states. I add to this endeavor by analyzing two methods in which the IMO could allocate shipping emissions. The first is allocation based on the ship's flag state (allocation approach 1). The second is allocation based on the ship's operating company (allocation approach 2). After critically analyzing both allocation approaches, I conclude that, due to the flexible and artificial nature of ship flagging under UNCLOS, allocation approach 1 risks imposing a disproportionate regulatory burden on developing states and would likely breach the principle of common but differentiated responsibilities and respective capabilities. I therefore conclude that ship emissions should be allocated to states based on where the vessel's operating company is based.

Furthermore, I argue we need 'all hands-on deck' to truly decarbonize global shipping. This must involve institutionalized engagement with the shipping industry at the IMO governance level. After considering the arguments for and against industry engagement at

⁸ This position is generally supported in literature: see for example Peyman Ghaforian Masodzadeh and others "A Review on Barriers to and Solutions for Shipping Decarbonization: What Could be the Best Policy Approach for Shipping Decarbonization?" (2022) 184 *Marine Pollution Bulletin* at 28. Furthermore, the IMO itself has stated they are working towards the creation of a market based mechanism in working towards decarbonization: see Isabelle Gerretsen "UN Body Makes 'Breakthrough' on Carbon Price Proposal for Shipping" (23 May 2022) Climate Home News <climatechangenews.com>.

⁹ See generally Nivedita M. Hosanee "A Critical Analysis of Flag State Duties As Laid Down under Article 94 of the 1982 United Nations Convention on the Law of the Sea" (paper submitted for the United Nations-Nippon Foundation Fellowship Program 2009-2010) at 92-95.

¹⁰ "Top 10 Flag States 2020" (3 December 2020) Lloyds List <lloydslist.com>. The top 10 flag states in 2020 (in order) were Panama, Liberia, Marshall Islands, Hong Kong, Singapore, Malta, the Bahamas, China, Greece, and Japan.

the IMO, I suggest a public-private partnership form of governance should be considered, which could be practically implemented by granting the industry consultative status.

I have structured this paper as follows. Part II outlines the dynamics of the international container shipping industry, the legal instruments that apply to vessels on the high seas, the nature of vessel ownership under UNCLOS, and the purpose and governance structure of the IMO. Part III discusses current research into carbon emissions from container ships, the application of UNCLOS to GHG emissions, and the IMO's 2018 Initial Strategy. Part IV outlines some critiques of the IMO's 2018 Initial Strategy, and the technical measures contained in MARPOL Annex VI. Part V considers the perspectives of the shipping industry as to what action is required to reach decarbonization. Parts V and VII consider the issue of how emissions from ships should be allocated to states by considering allocation via flag states and via operating companies, ultimately recommending the most feasible option is allocation via operating company. Given this conclusion, Part VIII argues decarbonization requires further industry engagement at the IMO level and suggests a public-private partnership provides a useful framework for conducting such engagement.

II Setting the (Sea)ne: The International Container Shipping Industry

A Structure and Dynamics

The international container shipping industry is a key component of the global economy, with approximately 80% of all traded goods being carried over the waves.¹¹ The importance of the industry to international trade was demonstrated in 2021, when the *Ever Given* container ship accidentally blocked the Suez Canal.¹² Lloyd's List estimated that each hour of the blockage delayed goods worth US \$400 million, and that each day the delay disrupted a further US \$9 billion worth of goods on other ships.¹³

¹¹ United Nations Conference on Trade and Development *Review of Maritime Transport 2021* (United Nations Centre for Trade and Economic Development, UNCTAD/RMT/2021, 2021) at 4.

¹² Justin Harper "Suez blockage is holding up \$9.6bn of goods a day" (26 March 2021) BBC <[bbc.com/news](https://www.bbc.com/news)>.

¹³ Richard Meade "Suez blockage extends as salvors fail to free Ever Given" (25 March 2021) Lloyd's List <[lloydslist.com](https://www.lloydslist.com)>.

The industry's central role in the global economy can be credited to the efficiency of moving goods across the seas.¹⁴ This means the industry is experiencing exponential growth in tandem with globalization.¹⁵ The volume of goods carried by container ships has more than quadrupled since the 1970's,¹⁶ and it was estimated in 2021 that total maritime trade will increase by 2.4 per cent annually until the 2050 period.¹⁷ The industry has responded to this by expanding the global fleet and by building larger ships with greater cost and fuel efficiencies.¹⁸

The international container shipping industry has also, over the last decade, become increasingly concentrated. The industry is characterized by high fixed costs, high barriers to entry, and the need to achieve economies of scale.¹⁹ Because of this, market participants frequently enter strategic alliances that allow for the sharing in risk associated with investment in larger vessels and the offering of a higher frequency of services by pooling vessels and offering joint services.²⁰ The industry has experienced several significant mergers, acquisitions, and takeovers since the early 2000's, which has resulted in the top five container shipping companies (Maersk, MSC, COSCO, CMA CGM, Hapag-Lloyd) accounting for 64 per cent of the total market capacity.²¹ The market can now be

¹⁴ Andrew C. Trapp and others "Maritime Container Shipping: Does Coopetition Improve Cost and Environmental Efficiencies?" (2020) 87 *Transportation Research Part D* 1 at 2.

¹⁵ Hassiba Benamara, Jan Hoffman, Frida Youssef "Maritime Transport: The Sustainability Imperative" in Harilaos N. Psaraftis (ed) *Sustainable Shipping: A Cross-Disciplinary View* (Springer, Denmark, 2019) at 8.

¹⁶ United Nations Conference on Trade and Development *Trade and Development Report 2020* (United Nations, UNCTAD/TDR/2020, 2020) at 21.

¹⁷ United Nations Conference on Trade and Development, above n 11, at 19.

¹⁸ Justin Alger, Jane Lister and Peter Dauvergne "Corporate Governance and the Environmental Politics of Shipping" (2021) 27 *Global Governance: A Review of Multilateralism and International Organizations* 144 at 147.

¹⁹ Jędrzej Charlampowicz "Analysis of the Market Concentration of the Container Shipping Markets – Selected Issues" (2018) 58 *GLOBMAR* 1 at 5.

²⁰ *Executive Summary of the Roundtable on Competition Issues in Liner Shipping, Working Party No. 2 on Competition and Regulation* (19 June 2015) at 3; see also Steve Saxon, Matt Stone *Container Shipping: The Next 50 Years* (McKinsey & Company, October 2017) at 18. There are currently four key strategic alliances which dominate the international shipping industry: the 2M Alliance (between Maersk and MSC), THE Alliance (NYK, MOL, K Line, Yang Ming, Hapag-Lloyd) and Ocean Alliance (CMA CGM, Evergreen, OOCL, COSCO). Importantly, all these strategic alliances involve the largest players in the market, and account for a very high share of trade in the main trade routes and 80% of the global container capacity.

²¹ Above n 20, at 17; see also UNCTAD *Market Consolidation in Container Shipping: What Next?* (UNCTAD, Policy Brief No. 69, 3 October 2018) at 3. Some notable transactions include Maersk's

characterized as a 'loose oligopoly',²² and it has been predicted that the industry will be dominated by four key players by 2067.²³

B The Legal Instruments Regulating International Shipping

1 United Nations Convention on the Law of the Sea

The United Nations Convention on the Law of the Sea (UNCLOS) establishes the international legal framework for all marine and maritime activities.²⁴ It is a "constitutive instrument" which is 'filled in' and rounded out over time by subsequently enacted international agreements and regulations.²⁵ Thus, UNCLOS outlines the rights and obligations of states on matters relating to international shipping, but specific regulatory obligations are established through subsequently-enacted instruments implemented under the auspices of a 'competent international organization', namely the International Maritime Organization (IMO).²⁶

2 Flag States and Flags of Convenience

Under UNCLOS, the oceans are divided into the 'high seas' and the 'exclusive economic zone'.²⁷ The exclusive economic zone is primarily the coastal areas around states.²⁸ Here,

acquisition of SeaLand, and the merger between Chinese Shipping and COSCO: see Jitendra Bhonsle "Trends in Container Shipping in 2022 – Part 2" (April 27 2022) Marine Insight <marineinsight.com>.

²² At 3. Consolidation continues to be the driving force in the industry and shows no signs of slowing down, as it reduces costs, allows the better management of ship capacity, and enhances efficiency, and is allowing the industry to cope with the ripple effects of the 2008 global financial crisis which depressed market conditions.

²³ Above n 20, at 17.

²⁴ United Nations Convention of the Law of the Sea, 1833 U.N.T.S. 397 (opened for signature 10 December 1982, entered into force 16 November 1994).

²⁵ Robert Backman, Zhen Sun "The Relationship between UNCLOS and IMO Instruments" (2017) 2 *Asia Pacific Journal of Ocean Law and Policy* 201, at 201.

²⁶ Secretariat of the International Maritime Organization *Implications of the United Nations Convention on the Law of the Sea for the International Maritime Organization* (International Maritime Organization, LEG/MISC.8, 30 January 2014) at 103.

²⁷ United Nations Convention on the Law of the Sea, art 92.

²⁸ Emmanuel Kofi Mbiah "Coastal, Flag and Port State Jurisdictions: Powers and Other Considerations Under UNCLOS" in Proshanto K. Mukherjee (ed) and others *Maritime Law in Motion* (Springer Nature, Switzerland, 2020) at 510.

the jurisdiction of the coastal state applies.²⁹ However, on the 'high seas', the laws and regulations of the 'flag state' apply.³⁰ The 'nationality' of a ship is based on the state flag it flies, in which that flag state is responsible under international law for its vessels on the high seas under UNCLOS.³¹

Article 91 of UNCLOS requires that a "genuine link" exists between a flag State and the ship in question. However, neither 'genuine' nor 'link' is defined within UNCLOS. This makes the process of ship flagging is highly flexible.³² A consequence of this flexibility has been the increasing trend of ships being flagged in states with more favorable regulatory environments to avoid regulations, taxes, and therefore additional operational costs. Examples of such states include Panama, the Marshall Islands, and Liberia.³³ In order to attract ship registration and consequential registration fees, these states have become 'open registries', which offer significant tax holidays, fewer legal formalities, and little political and regulatory interference.³⁴ Open registry states allow vessel owners to easily fly the states flag despite there being no 'genuine link' between the two. Such registries are commonly described as 'flags of convenience' (FOC).³⁵

The IMO previously sought to strengthen the 'genuine link' requirement under UNCLOS. The *United Nations Convention on Conditions for Registration of Ships* sought to further clarify the process of ship flagging by increasing the obligatory burden on flag states in the hopes that ship owners would stop registering ships in less developed registries.³⁶ However, the Convention required 40 signatories to enter into force and was only signed by 15, reflecting the industry's preference for flexible flagging of ships and FOC's. Furthermore, the 1986 Convention still did not define the meaning of 'genuine link' in international maritime law.

C The International Maritime Organization

²⁹ United Nations Convention on the Law of the Sea, art 92.

³⁰ Article 92.

³¹ Article 94.

³² Mbiah, above n 28, at 510.

³³ At 510.

³⁴ At 512.

³⁵ At 511.

³⁶ *United Nations Convention on Conditions for Registration of Ships*, GA Res 37/209, (1986), art 3, 4, 5.

The IMO is a specialized agency of the United Nations. Its purpose is to “provide machinery for co-operation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting ships engaged in international trade, and to encourage the general adoption of the highest practicable standards in matters concerning maritime safety and efficiency of navigation”.³⁷ The functions of the IMO are “consultative and advisory”.³⁸ This includes making recommendations, providing for the drafting of conventions and other suitable instruments which can be recommended to Governments or intergovernmental organizations, and to provide machinery for consultation among members and the exchange of information.³⁹

Instruments established and adopted by the IMO are observed by the principle of No More Favorable Treatment (NMFT), also sometimes called the ‘flag neutrality principle’.⁴⁰ This principal stems the IMO’s key governing purpose, that being to “promote the availability of shipping services to the commerce of the world without discrimination”.⁴¹ NMFT dictates that when a state becomes party to an IMO instrument, the regulations apply not only to ships which are registered under their flag, but also to foreign flagged ships which are calling into that state’s ports – regardless of whether the foreign flagged state is party to said conventions.⁴²

1 Governance Framework

Per Article 12 of the IMO Convention, the Organization consists of an Assembly, a Council, a Maritime Safety Committee, a Secretariat, and any such subsidiary organ the IMO may consider necessary.

(a) Assembly

³⁷ *IMO Convention*, United Nations Treaty Series vol. 289 p. 3 (opened for signature 6 March 1948, entered into force 17 March 1958) art 1(a).

³⁸ Article 2.

³⁹ Article 3.

⁴⁰ Article 1; see also *Resolution MEPC.299(65) Promotion of Technical Co-Operation and Transfer of Technology relating to the Improvement of Energy Efficiency of Ships, International Marine Organization (IMO)*, London, 2013.

⁴¹ IMO Convention, art 1.

⁴² Yuli Chen “Reconciling Common but Differentiated Responsibilities Principle and No More Favorable Treatment Principle in Regulating Greenhouse Gas Emissions from International Shipping” (2021) 123 *Marine Policy* 1 at 4.

The supreme organ of the IMO is the Assembly.⁴³ The Assembly consists of all members of the IMO, including 175 Member States,⁴⁴ Associate Members,⁴⁵ 66 Intergovernmental Organizations (IGOs),⁴⁶ and 85 Non-Governmental Organizations (NGOs).⁴⁷ Assembly sessions take place once every two years.⁴⁸ The Assembly has multiple functions as listed in Article 15 of the Convention, including recommending regulations for adoption concerning maritime safety or amendments to regulations and determining the financial arrangements of the organization.⁴⁹ The Assembly accepts and passes resolutions based on recommendations from other, more specialized organs of the IMO.⁵⁰ The making of recommendations to Governments on maritime safety and pollution prevention is reserved for the Assembly under Article 15(j) and cannot be delegated. Assembly recommendations are not legally binding. However, as is common with most specialized UN agencies, IMO recommendations once approved are usually incorporated into domestic law by Member states.⁵¹

(b) Council

The Council sits underneath the Assembly in the IMO hierarchy. Members are elected for two year terms beginning after each regular session of the Assembly.⁵² As of a recent amendment, the council now consists of 52 Members, comprised of ten governments of the nations with the “largest interest in providing international shipping services” (category A states),⁵³ ten governments of nations with the “largest interest in international seaborne

⁴³ IMO Convention, art 12.

⁴⁴ “Member States” International Marine Organization <imo.org>.

⁴⁵ Such as Faroes, Hong Kong, and Macao.

⁴⁶ “Intergovernmental Organizations which have concluded agreements of cooperation with IMO” International Marine Organization <imo.org>.

⁴⁷ “International Organizations which have been granted consultative status within the IMO” International Marine Organization <imo.org>

⁴⁸ IMO Convention, art 14.

⁴⁹ Article 15.

⁵⁰ Md Saiful Karim *Prevention of Pollution of the Marine Environment from Vessels* (Springer International Publishing, Cham, 2015) at 21.

⁵¹ At 21.

⁵² “Structure of the IMO” International Marine Organization <imo.org>.

⁵³ For the 2022-2024 biennium, category A states are China, Greece, Italy, Japan, Norway, Panama, the Republic of Korea, the Russian Federation, the United Kingdom and the United States.

trade” (category B states),⁵⁴ and 20 states not elected under category A or B but which have “special interests in maritime transport or navigation and whose election to the Council will ensure the representation of all major geographic areas of the world” (category C states).⁵⁵ The Council is responsible for all the functions of the Assembly between sessions, which occur once every two years.⁵⁶

(c) Marine Environment Protection Committee

Multiple committees sit underneath the Council.⁵⁷ The Marine Environment Protection Committee (MEPC), established in 1975, is the key body responsible for regulating the environmental impacts of shipping on the environment.⁵⁸ The MEPC is specifically entrusted with the responsibility of performing functions conferred upon the organization under international legal instruments for the prevention and control of marine pollution from vessels.⁵⁹ Virtually all negotiations for legal instruments and amendments of existing legal instruments concerning the marine environment within the purview of the IMO are currently conducted through the MEPC.⁶⁰

2 *Voting, Adoption and Enforcement of IMO Regulations*

Article 57 of the IMO Convention states that all organs of the IMO shall adopt proposed IMO resolutions by a majority vote of all Members present at voting.⁶¹ ‘Members’ is

⁵⁴ Category B states are Australia, Brazil, Canada, France, Germany, India, the Netherlands, Spain, Sweden, and the United Arab Emirates.

⁵⁵ Category C states are Bahamas, Belgium, Chile, Cyprus, Denmark, Egypt, Indonesia, Jamaica, Kenya, Malaysia, Malta, Mexico, Morocco, the Philippines, Qatar, Saudi Arabia, Singapore, Thailand, Turkey, Vanuatu: see *Amendments to the Convention on the International Maritime Organization* C.C.46.2022.TREATIES-XXIII.i (2021), art 17. Prior to these amendments, the IMO Council was dominated by developed maritime States. Gradual expansion has changed this dynamic, although some suggest this expansion is not enough to ensure genuine participation of developing States and particularly less developed coastal States: see Karim, above n 50, at 139.

⁵⁶ Karim, above n 50, at 23.

⁵⁷ Other Committees that exist under the IMO Council include the Maritime Safety Committee (MSC), the Technical Cooperation Committee (TC), and the Legal Committee (LEG): see also Karim, above n 50, at 22.

⁵⁸ At 25.

⁵⁹ At 25.

⁶⁰ At 25.

⁶¹ IMO Convention, art 57.

limited only to States.⁶² Certain decisions however require a two-thirds majority vote of those Members present at the Assembly.⁶³

However, as is common practice amongst most UN bodies, the IMO over recent years has opted to adopt resolutions by consensus, specifically in respect of environmental regulations.⁶⁴ This means if even a handful of Members object to an IMO resolution, it will fail.⁶⁵ The IMO Secretary General during MEPC-60 suggested “decisions made by consensus in this Organization stand good chances to be widely and effectively implemented”.⁶⁶

III A Complex Relation(ship): Container Shipping and Climate Change

A GHG Emissions from Container Ships

Despite the container shipping industry being the most energy and cost-efficient mode of large scale transport, container ships continue to be responsible for approximately 3 per cent of global annual GHG emissions.⁶⁷ To put this into perspective, if the international shipping industry were itself a country, it would be the 6th largest CO₂ emitter worldwide, ahead of states such as Germany and Brazil.⁶⁸ The Fourth IMO GHG Study 2020 projected that, in a global economy with relevantly modest growth, emissions from container ships will increase by approximately 150 to 250 per cent relative to 2007 levels.⁶⁹ Even in

⁶² Article 4.

⁶³ Article 57(b). Such decisions are those which involve amendments made to the IMO Convention, applications by states to become a Member of the IMO, and decisions which involve the taking-over of or transfer of IMO functions by international agreements of mutually acceptable arrangements.

⁶⁴ *Decision-making Processes of ICAO and IMO in respect of environmental regulations* IP/A/ENVI/2016-13, September 2016, (Study for the ENVI Committee) at 14.

⁶⁵ Robert Backman, Zhen Sun “The Relationship between UNCLOS and IMO Instruments” (2017) 2 *Asia-Pacific Journal of Ocean Law and Policy* 201 at 226.

⁶⁶ *Report of the Marine Environment Protection Committee on its Sixtieth Session* MEPC/60/22, 12 April 2010 (60th Session, Agenda Item 22) at 4.43.

⁶⁷ Above n 18, at 112.

⁶⁸ Paul Balcombe and others “How to Decarbonize International Shipping: Options for Fuels, Technologies and Policies” (2019) 182 *Energy Conversion and Management* 72 at 73.

⁶⁹ International Marine Organization *Fourth IMO GHG Study 2020: Full Report* (International Marine Organization, 2020) at 236.

hypothetical scenarios where ambitious decarbonization targets are reached by the industry in the future, emissions are still projected to increase by 40-50% between 2015 to 2050.⁷⁰

A key barrier to decarbonization is the industries reliance on fossil-based fuels for propulsion. The most prominent type of fuel is heavy fuel oil (HFO), which emits approximately 3.114 gallons of CO₂ per gram of fuel oil.⁷¹ HFO is cheap and abundantly available, making it perfect for an industry which is built upon an incentive to be as cost efficient as possible.⁷²

Although shipping is not explicitly mentioned in the Paris Agreement, the industry is nevertheless expected to manage and reduce its carbon emissions in line with the temperature goal in Article 2. At the end of COP 21, it was expected that the IMO would lead emissions mitigation efforts.⁷³ Following this, the IMO has played three key roles in addressing GHG emissions from ships. First, the undertaking of technical studies, such as the Fourth IMO GHG Study 2020.⁷⁴ Second, serving as a forum for the negotiation of international technical standards.⁷⁵ Third, the provision of technical assistance to developing countries reliant on the shipping industry.⁷⁶ However, the IMO has not played a major role in the verification or enforcement of its vessel-source pollution standards, responsibility for which is delegated to flag states.⁷⁷

B UNCLOS and Vessel Source Pollution

UNCLOS defines 'pollution of the marine environment' in Article 1 as "the introduction by man, directly or indirectly, of substances or energy into the marine environment ...

⁷⁰ At 236.

⁷¹ Gustav Krantz *CO₂ and Sulphur Emissions from the Shipping Industry* (Transoleum, October 2016) at 15.

⁷² Balcombe and others, above n 68, at 60.

⁷³ *United Nations Framework Convention on Climate Change, Subsidiary Body for Scientific and Technological Advice* SBSTA 43, 4 December 2015, at 21.

⁷⁴ Sabine Campe "The Secretariat of the International Maritime Organization: A Tanker for Tankers" in Frank Biermann and Bernd Siebenhüer (eds) *Managers of Global Change: The Influence of International Environmental Bureaucracies* (MIT University Press, Cambridge, 2009) at 11.

⁷⁵ At 11.

⁷⁶ At 11.

⁷⁷ Daniel Bodansky "Regulating Greenhouse Gas Emissions from Ships: The Role of the International Maritime Organization" in H. Scheiber (ed) *Ocean Law Debates: The 50-Year Legacy and Emerging Issues for the Years Ahead* (Brill Nijhoff, Netherlands, 2018) at 493.

which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hinderance to marine activities, including fishing and other legitimate uses of the sea, impairment of qualify for us of sea water and reduction of amenities". This definition includes greenhouse gas emissions, as the 'marine environment' is understood to cover the seabed, subsoil, and the atmosphere above the sea.⁷⁸ Thus UNCLOS, and specifically the provisions contained in Part XII (which deals with the protection and preservation of the marine environment) can be utilized to regulate emissions from ships.⁷⁹ For example, Article 212 of Part XII imposes a general obligation on states to adopt laws and regulations to "prevent, reduce, and control pollution of the marine environment".⁸⁰ Articles 211 and 217 requires flag states to adopt and enforce laws and regulations with respect to vessel-source pollution that "at least have the same effect" as generally accepted international rules and standards.⁸¹

C The IMO Initial Strategy

In 2018, the IMO passed its 'Initial Strategy on the Reduction of GHG Emissions from Ships'.⁸² The Initial Strategy seeks to ensure the IMO "remains committed to reducing GHG emissions from international shipping and ... [aim] to phase them out as soon as possible in this century".⁸³ In line with this, the strategy contains an ambition to at least halve international shipping greenhouse gas (GHG) emissions by 2050, while reducing CO2 emissions intensity by at least 40% by 2030, and pursuing efforts towards 70% by 2050, relative to a 2008 baseline level.⁸⁴

The Initial Strategy sets out three levels of ambition. These ambitions have been adopted as technical and operational measure contained in MARPOL Annex VI.

⁷⁸ Meinhard Doelle "Climate Change and the Use of the Dispute Settlement Regime of the Law of the Sea Convention" (2006) 37 *Ocean Development and International Law*

⁷⁹ At 489: see also Yoshifumi Tanaka "Regulation of Greenhouse Gas Emissions from International Shipping and Jurisdictions of States" (2016) 25 *Review of European Community and International Environmental Law* 333 at 333.

⁸⁰ UNCLOS, above n 24, art 212.

⁸¹ Article 217.

⁸² *Initial IMO Strategy on Reduction of GHG Emissions from Ships*, above n 2.

⁸³ At 4.

⁸⁴ At 4.

1 MARPOL Annex VI

In July 2011, the IMO adopted its first legally binding agreement on the issue of regulating GHG emissions from ships. This agreement took the form of the new Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL).⁸⁵ MARPOL is the main international convention covering prevention of the pollution of the marine environment by ships due to operational or accidental causes.⁸⁶ MARPOL is a comprehensive convention setting technical and operational standards for ships registered or operated under the control of state parties.

(a) Energy Efficiency Design Index (EEDI)

The first measure adopted through Annex VI of MARPOL is the Energy Efficiency Design Index (EEDI). This measure seeks to improve a ships energy efficiency and fuel consumption. Under the EEDI, vessels are first ascribed an 'attained EEDI',⁸⁷ which indicates a vessels baseline energy efficiency level.⁸⁸ Vessels are then ascribed a 'required EEDI', which is the energy efficiency level deemed by the IMO to be required to fulfil obligations under the Initial Strategy.⁸⁹ A vessels attained EEDI and its required EEDI are then compared, and to the extent that a vessels attained EEDI is less efficient than the required EEDI, improvements are required to be made to the ships design so the required EEDI can be reached.⁹⁰ As a "non-prescriptive and performance-based mechanism", obligations are directed towards ship builders and designers.⁹¹

(b) Ship Energy Efficiency Management Plan and Carbon Intensity Indicator

⁸⁵ *Protocol of 1997 to Amend the International Convention for the Prevention of Pollution from Ships, 1973, as Modified by the Protocol of 1978 Relating Thereto (MARPOL Annex VI)* (opened for signature 26 September 1997), (entered into force 19 May 2005).

⁸⁶ *International Convention on the Prevention of Pollution from Ships 1973 as modified by the Protocol of 1978 relating thereto (MARPOL)* (opened for signature 2 November 1973 and 17 February 1978 respectively) 1340 UNTS 62 (entered into force 2 October 1983).

⁸⁷ *MARPOL Annex VI*, above n 85, regs 22-23.

⁸⁸ Regulation 23.

⁸⁹ "Energy Efficiency Measures" International Marine Organization <imo.org>.

⁹⁰ *MARPOL Annex VI*, above n 85, regs 25-28.

⁹¹ Yubing Shi "Greenhouse Gas Emissions from International Shipping: The Response from China's Shipping Industry to the Regulatory Initiatives of the International Maritime Organization" (2014) 29 *The International Journal of Marine and Coastal Law* 77 at 91.

The second operational measures adopted in Annex VI of MARPOL is the Ship Energy Efficiency Management Plan (SEEMP) and the Carbon Intensity Indicator (CII) rating scheme. These regulations specifically relate to GHG emissions. The CII rating scheme in particular is the IMO's most recent climate-related development, having only been adopted in June 2021.⁹² Under the scheme, each ship is required to calculate its annual operational CII which reflects the carbon emissions which the vessel emits per unit of transport work.⁹³ Depending on their CII, vessels are then ascribed a CII rating, which ranges from A-E, with A being the most carbon efficient.⁹⁴ Any ship that achieves a rating of D for three consecutive years, or achieves a E rating in a year starting at the end of the 2023, will be required to include a plan of corrective actions in its Ship Energy Efficiency Management Plan (SEEMP).⁹⁵

2 2023 Revised Initial Strategy

The IMO is set to adopt a revised Initial Strategy in 2023, which will be subject to a further review in 2028.⁹⁶ It is envisaged that the 2023 revised strategy will include a suite of more long-term measures to reduce emissions, including a market-based-mechanism, in line with the goal of total decarbonization by the end of the century.⁹⁷

IV Dead in the Water: Criticisms of the IMO's 2018 Initial Strategy

Unfortunately, the 2018 Initial Strategy is unlikely to result in meaningful progress towards the 2050 goal of reducing shipping emissions by 50%. The IMO continues to “move at a snail's pace”, with current policy measures (the EEDI and CII rating schemes) having been rated as ‘highly insufficient’ by Climate Action Tracker (CAT).⁹⁸

⁹² “International Marine Organization adopts key mandatory measures to reduce ships' carbon intensity; establishes ship rating system” International Marine Organization (17 June 2021) <imo.org>.

⁹³ *MARPOL Annex VI*, above n 85, reg 28.

⁹⁴ Regulation 26.

⁹⁵ Regulation 28(8).

⁹⁶ International Maritime Organization “Initial IMO GHG Strategy” <imo.org>.

⁹⁷ Aldo Chircop “The IMO Strategy for the Reduction of GHGs from International Shipping: A Commentary” (2019) 34 *The International Journal of Marine and Coastal Law* 482 at 483.

⁹⁸ “International Shipping” (19 July 2021) Climate Action Tracker <climateactiontracker.org>.

A general lack of regulatory ambition at the IMO is symptomatic of a multitude of factors. Developing countries frequently argue that the principle of common but differentiated responsibilities (CBDR) has been breached by the IMO in making MARPOL Annex VI apply universally, preventing more ambitious regulations from being successfully adopted.⁹⁹ As Shi argues, this is likely symptomatic of the interests of shipping operators based in developing countries not being adequately considered during negotiations.¹⁰⁰

Another factor preventing more ambitious action is general regulatory uncertainty regarding what policy measures will be adopted and along what timeline.¹⁰¹ Regulatory certainty is especially important considering 70% of capital in the shipping sector is financed through debt equity, meaning uncertainty regarding future ship and fuel investments severely hinders the ability for companies to plan ahead and acquire requisite funding.¹⁰²

As the EEDI and CII measures are highly technical in nature, their effectiveness depends on enforcement and compliance. However, a 2022 study found that compliance with the EEDI and CII regulations is not straightforward and will be costly to ship operators.¹⁰³ Indeed, the specific metric to be used to calculate a CII and the CII reduction rate which will be used as the yardstick to determine the improvements needed to be made to a vessel to reach the required CII are yet to be established.¹⁰⁴ Furthermore, no specific methods of ensuring compliance, such as punitive sanctions, have been established by the IMO, and

⁹⁹ Harilaos N. Psaraftis and Christos A. Kontovas “Decarbonization of Maritime Transport: Is There Light at the End of the Tunnel?” (2020) 13 *Sustainability* 1 at 13; for example, at MEPC 62, Brazil, China, India, Saudi Arabia and Venezuela made statements arguing the amendments to Annex VI of MARPOL (which established the EEDI and CII regimes) did not reflect CBDR and “violat[ed] the common understanding and core principle of the international community in addressing climate change: see “Statements by the Delegations of Brazil, China, India, Saudi Arabia and the Bolivarian Republic of Venezuela and the Observers of the Pacific Environment and Clean shipping Coalition after the Adoption of Amendments to MARPOL Annex VI” *Report of the Marine Environment Protection Committee on its Sixty-Second Session* MEPC 62/24/Add.1, Annex 20, (July 2011) at 2.

¹⁰⁰ Shi, above n 91, at 84.

¹⁰¹ Jane Lister and others “Orchestrating transnational environmental governance in Maritime Shipping” (2015) 34 *Global Environmental Change* 185 at 189.

¹⁰² George Alexandridis and others “A Survey of Shipping Finance Research: Setting the Future Research Agenda” (2018) 115 *Transportation Research Part E: Logistics and Transportation Review* 162 at 22.

¹⁰³ Maximilian Schroer and others “An Evidence-based Assessment of IMO’s Short-Term Measures for Decarbonizing Container Shipping” (2022) 363 *Journal of Cleaner Production* 1 at 11.

¹⁰⁴ Chircorp, above n 97, at 505.

the data relevant to the CII and SEEMP is collected and analyzed by the IMO itself is yet to be released.¹⁰⁵ There is therefore no process of third-party validation of compliance, impacting the schemes credibility and transparency.¹⁰⁶ Furthermore, the IMO lacks the administrative capacity and personnel to actually ensure compliance with these regulations by physically inspecting ships.¹⁰⁷

The technical measures contained in the Initial Strategy will also invertedly impact commercial contracting. Parties may disagree on which technical modifications should be adopted to reach the required EEDI or CII needed, causing negotiations to be lengthy and potentially hostile which is particularly problematic for an industry dependent on time and cost efficiency.¹⁰⁸ The CII regime in particular, which requires parties to make technical adjustments to ships, has potential to “cut through the traditional rights and obligations of parties to commercial contracts” in changing risk sharing and allocation dynamics.¹⁰⁹ Parties will also need to determine who will be responsible for compliance with the CII/SEEMP regime and who will bear the financial loss if a ship achieves a D or E rating. Furthermore, to save costs, shipowners may cut corners in making technical adjustments to comply with the required CII level, and this may result in ships become more inefficient and potentially unsafe.¹¹⁰

General inaction from the IMO has recently been challenged by the European Union's decision to include shipping emissions within their regional Emissions Trading Scheme.¹¹¹ This presents a significant challenge to the IMO's sole mandate to regulate shipping emissions. If multiple regimes exist to regulate and catch emissions from shipping, this will result in increased complexities, administrative costs, and general uncertainty for

¹⁰⁵ At 505: see also Shi, above n 91, at 85.

¹⁰⁶ Tanaka, above n 79, at 337: see also Tomas Kristiansen “Harsh Criticism of the Run-Up to IMO's Crucial Climate Summit” (31 May 2021) Shipping Watch <shippingwatch.com>.

¹⁰⁷ At 337.

¹⁰⁸ Alessio Sbraga, Joseph Malpas “The Multifaceted Approach Towards Regulating Carbon Emissions in International Shipping: Global, Regional and National Measures” (2021) Holman Fenwick Willan <hfw.com>.

¹⁰⁹ Sbraga and Malpas, above n 108.

¹¹⁰ Rene Taudal Poulsen and others “Do Eco-Rating Schemes Improve the Environmental Performance of Ships?” (2018) 87 *Marine Policy* 94 at 101.

¹¹¹ “Reducing Emissions from the Shipping Sector” (2022) European Commission Climate Action <ec.europa.eu>; see also “How the Fit For 55 legislation will affect the shipping industry – and what you can do to prepare” (February 3 2022) NAPA <napa.fi>.

shipowners, operators and states alike.¹¹² Furthermore, in 2021 Maersk made a \$175 million investment into 8 large carbon neutral container ships which run on methanol instead of HFO.¹¹³ This investment is a “firm signal to fuel producers that sizable market demand for the green fuels of the future is emerging at speed” and flies in the face of the IMO’s attempts to make technical adjustments to *existing* ships, as opposed to directing investment towards *new* non-carbon emitting ships and fuels.¹¹⁴

V Industry Perspectives on Decarbonization

The perspectives of the container shipping industry should be an integral part of the IMO’s regulatory activities. There are two reasons for this. The first is that the industry is the stakeholder which will experience the bulk of the consequences of any regulation enacted by the IMO. It is therefore only fair that the industry has input in the IMO’s activities, potentially increasing the viability of any regulations enacted. Secondly, the container shipping industry is unique in that it is becoming increasingly consolidated, with multiple mergers and acquisitions having taking place over the past few years. This places regulators such as the IMO in a unique position as they only have a limited number of container shipping stakeholders to engage with.

A The Role of the IMO in Regulating GHG Emissions

Being a complex global industry with multiple stakeholders, contracting parties, and consumers, the container shipping industry embodies a well-established view that the regulatory preserve of international shipping should reside solely with the IMO.¹¹⁵ As the IMO Secretariat stated in 2009, “the overarching logic of the international shipping

¹¹² Sbraga and Malpas, above n 108.

¹¹³ “A.P. Moller – Maersk accelerates fleet decarbonization with 8 large ocean-going vessels to operate on carbon neutral methanol” (24 August 2021) Maersk <Maersk.com>.

¹¹⁴ Jack Wittels “Maersk Makes 1.4 Billion Green Met on Methanol-Fueled Ships” Bloomberg (24 August 2021) <Bloomberg.com>.

¹¹⁵ Kevin Anderson and Alice Bows “Executing a Scharnow turn: Reconciling Shipping Emissions with International Commitments on Climate Change” (2012) 3 *Carbon Management* 615 at 617. The IMO Secretary-General also supports this view: see International Maritime Organization *Control of Greenhouse Gas Emissions From Ships Engaged in International Trade* (2009, United Nations, Geneva) at 16 where they state “[t]he overarching logic of the international shipping industry requires an international regulatory regime ... [it is] imperative that such regulation should, without exception, be the responsibility of an international body”.

industry requires an international regulatory regime” and that it is “imperative ... [that such] regulation should, without exception, be the responsibility of an international body exclusively dealing with maritime matters”.¹¹⁶

There are two key reasons why the industry holds this view. The first is that, with its requisite skill and experience in regulating shipping, specifically in an operational sense, the IMO is “uniquely placed” to deliver on broader climate objectives.¹¹⁷ Second, being an international organization with a mandate provided by the United Nations, the IMO is able to create “global rules for a global industry”.¹¹⁸ Applying regionally specific rules to the world’s most global industry would undoubtedly lead to “[regulatory] chaos, inefficiency and serious market distortion” as some regions may enact more or less favorable regulations than others.¹¹⁹ Thus, the industry’s preference is for the “global regulatory alignment” of climate regulations for ships in which a level playing field is created to reduce uncertainty and provide clarity.¹²⁰

B Perspectives on the IMO’s GHG Emissions Reduction Measures

An interesting perspective which has emerged over the past few years from the industry is a favoring of the total decarbonization of the global fleet instead of technical and operational measures currently put in place by the IMO. This shift in industry focus has been favorably directed towards the establishment of a market-based-mechanism (MBM).¹²¹ The value of MBMs in the context of decarbonization of the global fleet lies in their ability to stimulate investment in non-carbon technologies.¹²² Market factors are the main driver of innovation in the shipping industry.¹²³ In particular, the fluctuation of fuel

¹¹⁶ International Maritime Organization *Control of Greenhouse Gas Emissions from Ships Engaged in International Trade* UN, Geneva, Switzerland (2009) at 16.

¹¹⁷ Anderson and Bows, above n 115, at 16.

¹¹⁸ At 16.

¹¹⁹ International Chamber of Shipping *Key Issues – The Year in Review* International Chamber of Shipping, London, UK (2012).

¹²⁰ Shell and Deloitte *Decarbonizing Shipping: All Hands on Deck* (2020) at 7.

¹²¹ Shell and Deloitte, above n 120, at 7

¹²² Daniel Metzger “Market-based Measures and their Impact on Green Shipping Technologies” (2022) 21 *WMU Journal of Maritime Affairs* 3, at 7

¹²³ Patrizia Serra and Gianfranco Fancello “Towards the IMO’s GHG Goals: A Critical Overview of the Perspectives and Challenges of the Main Options for Decarbonizing International Shipping” (2020) 12 *Sustainability* 3220 at 7.

prices due to market forces have pushed ships to explore alternative energy options or operational practices, such as slow steaming.¹²⁴ Thus, the market will play a crucial role in directing investment towards the innovation of new green fuel options and technologies to achieve decarbonization and should be utilized.

MBMs were at one point being actively considered by the IMO, alongside technical and operational measures.¹²⁵ However, a group of developing countries including China, India, and Brazil argued heavily against the introduction of a MBM by the IMO, mainly on the ground that MBMs were not compatible with the principle of CBDR.¹²⁶ Furthermore, there was disagreement at the IMO over which specific MBM should be adopted, with over 10 designs being proposed.¹²⁷

C Perspectives on Barriers to Decarbonization

The industries perspectives as to what the key barriers to decarbonization are will provide value to any regulatory action taken by the IMO. The industry, being the key market participant, is the best placed actor to fully understand what is preventing them from decarbonizing. Helpfully, a 2020 investigation conducted by Shell Oil in conjunction with Deloitte interviewed over 80 participants in the international shipping industry, including operating company CEOs, ship builders and financiers to understand what the industry perceived to be the key barriers to the decarbonization.¹²⁸

The results of this investigation revealed six key factors needed to trigger decarbonization readiness in the industry. The six factors identified were market and customer demand for change, regulatory incentives from the IMO, developing the technical and commercial feasibility of alternative fuels and lower emissions technology, clarity on roles and decision making, ease of asset replacement, and ease of infrastructure replacement at ports.¹²⁹

¹²⁴ At 7.

¹²⁵ Harliaos N. Psaraftis and Poul Woodall "Reducing GHGs: The MBM and MRV Agendas" in Harliaos N. Psaraftis (ed) *Sustainable Shipping: A Cross-Disciplinary View* (2nd ed, Springer, Denmark, 2019) at 377.

¹²⁶ At 387.

¹²⁷ At 386.

¹²⁸ Above n 120, at 3.

¹²⁹ At 15.

However, the interviewees viewed the need for market and customer demand, regulatory incentives, and technological alignment as the most crucial factors.¹³⁰

1 Market and Customer Demand

Most interviewees (85%) agreed that consumer and market incentives are critical in the quest to free up investment in decarbonization technologies.¹³¹ However, there are several issues here that required addressing. The first is that shipping, as opposed to other similar industries such as road freight or aviation, faces less visibility and therefore less scrutiny from end of the line consumers who have no direct engagement with shipping processes.¹³² Second, there is little appetite in the shipping industry for increased or additional costs on operations, due to concerns regarding competitiveness.¹³³ The third issue is that there are currently no market incentives to unlock investment in decarbonization technologies at scale.¹³⁴ Returns to shareholders of shipping companies have reportedly been low over the past decade, so major operators are reluctant to make major investments which may further erode profit margins.¹³⁵ Finally, shipping companies rely heavily on loans from financiers, with debt making up 70% of capital in the sector.¹³⁶ Combined with the lack of profit over past decades, financiers lack an appetite to fund risky investments in technologies that are unproven to be successful.

2 Regulatory Incentives

While industry participants support the IMO's common goal of halving emissions from shipping by 2050 relative to 2008 levels, interviewees believed more clarity was needed regarding binding regulations as these will be instrumental to unlocking progress.¹³⁷ Importantly, industry participants and specifically operating companies emphasized how advanced notice and clarity regarding incoming regulations are required to allow

¹³⁰ At 16.

¹³¹ At 17.

¹³² At 17.

¹³³ At 17.

¹³⁴ At 17.

¹³⁵ At 17.

¹³⁶ At 17.

¹³⁷ At 18.

companies to obtain financing and coordinate with supply-chain stakeholders.¹³⁸ A sizable majority of interviewees also suggested the IMO engage in proactive, as opposed to reactive regulation, as has been the case thus far.¹³⁹ Interviewees also cited the lack of transparency regarding emissions on the part of the IMO as hindering decision-making, as operators are unable to fully understand the implications of their investment decision making without the full picture.¹⁴⁰ Finally, participants again emphasized the need to create a level regulatory playing field, with specific concern regarding those operating companies based in Europe carrying a larger proportion of decarbonization costs than other competitors if the EU included shipping in its regional ETS scheme.¹⁴¹

3 Technology Alignment

Interviewees also identified how the path to investment in decarbonizing technologies is uncertain and not well supported by the IMO.¹⁴² Participants considered that Liquefied Natural Gas (LNG) and methanol will have a role to play in the initial transition to carbon neutral vessels, but that hydrogen and ammonia fuel is the most promising alternative for shipping.¹⁴³ However, these three types of fuels are all in the early stages of market introduction.¹⁴⁴ Furthermore, both LNG, hydrogen and ammonia have significantly lower energy density than HFO, meaning either new technology or more frequent refueling stops will be required to make these fuels viable alternatives.¹⁴⁵ The challenge is that HFO is incredibly difficult to match in terms of commercial attractiveness and existing scale, meaning shipping lines will likely need to accept losses in the switch to carbon free fuels.¹⁴⁶

Participants agreed that the technology required to fully utilize hydrogen and ammonia fuel, despite being the “ultimate solution” is still “many years away”.¹⁴⁷ Current production of hydrogen and ammonia fuel only represents a small fraction of what the shipping

¹³⁸ At 18.

¹³⁹ At 18.

¹⁴⁰ At 17.

¹⁴¹ At 18.

¹⁴² At 19.

¹⁴³ At 19.

¹⁴⁴ Serra and Fancello, above n 123, at 13.

¹⁴⁵ Above n 120, at 19.

¹⁴⁶ At 20.

¹⁴⁷ At 19.

industry would require to fully decarbonize.¹⁴⁸ For example, Maersk has recently invested in 12 methanol-powered vessels, which is currently the only market-ready and scalable green fuel solution on the market today.¹⁴⁹ However, the company is still unsure if it will be able to find enough fuel to power all 12 vessels before they are set for delivery in 2050.¹⁵⁰

D Insights

Drawing these threads together, multiple insights can be made into the industries perspectives on regulating shipping emissions. The first is that the industry is more in favor of decarbonization than technical measures which require adjustments to currently existing ships.¹⁵¹ In doing so, the industry is recognizing that the future of climate action requires innovation in new technologies that will allow the operation of a crucial part of global trade on a zero-carbon basis.¹⁵²

The second is that the industry continues to favor the IMO as the core actor to enact emissions reduction regulations.¹⁵³ This is so to ensure an even regulatory playing field is created in which no company can gain a competitive advantage depending on where in the world they operate. The industry seeks global regulatory alignment to reduce uncertainty and maximize clarity for investment and contracting purposes.¹⁵⁴ As one interviewee stated, “shipowners don’t care what [decarbonization] costs, as long as it costs the same for everybody”.¹⁵⁵

Finally, the industry has demonstrated an intention to work alongside, and not against, the IMO. It seeks to provide input into the regulatory process, as this will allow for more

¹⁴⁸ At 19.

¹⁴⁹ “Maersk Engages in Strategic Partnerships Across the Globe to Scale Green Methanol Production by 2050” (10 March 2022) Maersk <Maersk.com>.

¹⁵⁰ Nicolas Rivero “Maersk can’t find enough green fuel to power its carbon-neutral ships” (January 12 2022) Quartz <qz.com>.

¹⁵¹ Shell and Deloitte, above n 120, at 7.

¹⁵² At 8: see also Bud Darr “Roadman to a Zero-Carbon Future” (2 March 2022) MSC Shipping <msc.com>.

¹⁵³ Shell and Deloitte, above n 120, at 7: see also Cecilia Joneback “Evergreen Line – Setting Course for New Zero” (February 8 2022) Green Carrier <lineragency.creencarrier.com>.

¹⁵⁴ Shell and Deloitte, above n 120, at 7: see also A.P Moller – Maersk *All the Way: 2021 Sustainability Report* (2021) at 21-22.

¹⁵⁵ Above n 120, at 32.

favorable regulatory outcomes.¹⁵⁶ What is meant by ‘favorable outcomes’ is not the creation of less stringent regulations, but instead regulations which the industry can prepare for through contracting with stakeholders and investment to the IMO’s 2050 goal is within reach.

VI Building a Greener Boat: The Way Forward for the IMO

The IMO currently sits at a crossroads. It can choose to continue along its current sea lane, focusing on operational and technical measures and accept that its 2050 goal of halving shipping emissions will not be reached. However, I suggest it’s a(boat) time that the IMO takes a leap and enacts more stringent GHG emissions measures.

This paper will not engage in an argument as to why the IMO needs to establish a market-based mechanism (MBM) to decarbonize the container shipping industry. It is well accepted amongst scholars,¹⁵⁷ the container shipping industry,¹⁵⁸ and some IMO member states,¹⁵⁹ that such a mechanism is needed to make meaningful strides towards decarbonization. This is because pricing CO₂ emissions is required to incentivize

¹⁵⁶ Shell and Deloitte, above n 120, at 18.

¹⁵⁷ See Michael Bloor and others “Enforcement Issues in the Governance of Ships’ Carbon Emissions” (2015) 4 *Laws* 335 at 337; see also Bodansky, above n 77, at 498, who states market-based approaches “score best in terms of environmental and cost-effectiveness”: see also Harilaos N. Psaraftis and others “A Comparative Evaluation of Market Based Measures for Shipping Decarbonization” (2021) 2 *Maritime Transport Research* 100019; see also H. N. Psaraftis and P. Zachariadis “Chapter 13: The Way Ahead” in Harilaos N. Psaraftis (ed) *Sustainable Shipping: A Cross-Disciplinary View* (online ed, Springer, Denmark, 2019) at 449; see also Kevin Anderson and Alice Bows “Executing a Scharnow Turn: Reconciling Shipping Emissions with International Commitments on Climate Change” (2012) 3 *Carbon Management* 615; see also Paul Balcombe and others “How to decarbonise international shipping: Options for fuels, technologies and policies” (2019) 182 *Energy Conversion and Management* 72 at 72.

¹⁵⁸ See generally The Chamber of Shipping *A Global Cap-and-Trade System to Reduce Carbon Emissions from International Shipping* (The Chamber of Shipping, 2009); see also Deloitte, above n 120, at 6; see also Rasmus Nord Jorgensen “Shipping Industry Needs to Talk Market-Based Measures” (2 March 2021) Baltic and International Maritime Council (BIMCO) <bimco.org>; see also World Shipping Council “Liner Shipping: The Critical Pathways to Zero Carbon Shipping” (2021) World Shipping Council <worldshipping.org>.

¹⁵⁹ For example, at MEPC 60, France, the United Kingdom, Norway, the United States, the Marshall Islands, Denmark, and Japan all submitted to the Council that some form of MBM should be adopted by the IMO, albeit in different forms: Marine Environment Protection Committee *Prevention of Air Pollution from Ships: An International Fund for Greenhouse Gas Emissions from Ships* (MEPC 60/4/8, 2009).

development and investment in carbon free vessels and technologies.¹⁶⁰ A carbon tax in particular has been favored by the industry and some IMO member states alike, as carbon taxes provide a more stable price signal to investors and bring the additional benefit of directing investment towards carbon free fuels.¹⁶¹

Indeed, even the IMO itself in its 2009 GHG study found that MBMs had “high environmental effectiveness and are cost effective policy instruments”.¹⁶² Furthermore, various reports have concluded that the economic impacts of MBMs for international shipping on developing countries are likely to be small, and any undesirable economic impacts can be addressed through a combination of appropriate financing measures.¹⁶³ This can be used to fight arguments from developing countries that a MBM would breach the principle of CBDR, which frequently penetrates IMO negotiations.

The creation of a MBM has been placed on the IMO's agenda to be agreed upon between 2023 and 2030. However, the Damocles sword of a EU ETS scheme - which would include shipping emissions – is casting a dark shadow over the IMO's regulatory mandate.¹⁶⁴

However, before such steps to establish a MBM can be taken, I will now argue that the IMO must address several pressing issues. First, the IMO must determine how it will allocate emissions - will it be based on the flag state, or operating company? Each option, and the legal implications of which, I will analyze. Second, I suggest the IMO must seek to engage with the international container shipping industry to create more impactful regulations. This should take the form of the institutionalization of the industry's participation at the IMO.

¹⁶⁰ Alberto Gianoli and Felipe Bravo “Carbon Tax, Carbon Leakage and the Theory of Induced Innovation in the Decarbonisation of Industrial Processes: The Case of the Port of Rotterdam” (2020) 12 *Sustainability* 7667 at 7667.

¹⁶¹ Simon Koesler “Course set for a cap? A case study among ship operators on maritime ETS” (2015) 37 *Transport Policy* 20 at 32.

¹⁶² International Maritime Organization *Second IMO GHG Study 2009* (International Maritime Organization, March 2009) at 3.

¹⁶³ Annela Anger and others *Research to Assess Impacts on Developing Countries of Measures to Address Emissions in the International Aviation and Shipping Sectors* (Climate Strategies, 2013) at 4: see also United Nations Conference on Trade and Development *Review of Maritime Transport 2013* (UNCTAD, UNCTAD/RMT/2013, 2013) at 108.

¹⁶⁴ Psaraftis and Zachariadis, above n 157, at 449.

VII The Allocation of Shipping Emissions: Who Should Tow the Line?

Under the UNFCCC/Paris Agreement regime, there are two ways in which GHG emissions can be allocated to states.¹⁶⁵ The first is a national approach, which is the traditional position adopted by most international instruments and organizations. Under this approach, emissions are calculated based on where they are produced, rather than where the goods responsible for such emissions are consuming carbon emitting fuels.¹⁶⁶ Under this approach, once emissions have been allocated to a state, they are added to a state's total national emissions.¹⁶⁷ States can then elect to reduce their national emissions in any way they can.¹⁶⁸ This means shipping under a national approach may or may not be included in a state's effort to reduce national emissions across the board.¹⁶⁹

The second approach is a sectoral one. This would instead see the allocation of shipping emissions to those actors within the sector, such as operating companies or flag states.¹⁷⁰ Under this approach, there would be certainty that shipping would be regulated, as a sectoral approach envisages the creation of globally applicable regulations created by an international organization such as the IMO.¹⁷¹ Under this approach, there would be certainty that shipping would be regulated, as a sectoral approach envisages the creation of globally applicable regulations created by an international organization such as the IMO which member states must enforce.

How responsibility for shipping emissions is allocated will have significant implications for any climate related regulations the IMO enacts. This is because allocation will determine what actor is burdened with the responsibility of ensuring and verifying compliance with IMO regulations.¹⁷² The allocation of emissions therefore indicates the

¹⁶⁵ Bodansky, above n 77, at 483.

¹⁶⁶ At 483.

¹⁶⁷ Nadine Heitmann and Setareh Khalilian "Accounting for Carbon Dioxide Emissions from International Shipping: Burden Sharing under different UNFCCC Allocation Options and Regime Scenarios" (2011) 35 *Marine Policy* 682 at 683.

¹⁶⁸ At 683.

¹⁶⁹ At 683.

¹⁷⁰ At 683.

¹⁷¹ Shi, above n 91, at 44.

¹⁷² At 44.

competence of actors to prescribe and enforce regulations.¹⁷³ Because of this, the issue of emissions allocation frequently infiltrates IMO negotiations. For example, at MEPC 61, India and China submitted that given the lifetime of a ship is limited and because operators may only use a specific vessel for a define period of time, setting a country as the emitter and the party to take on the regulatory burden would be appropriate.¹⁷⁴ India further suggested those who bear the most “historical responsibility” for shipping emissions and have the capability to reduce emissions should be responsible.¹⁷⁵ However no suggestion was made as to how such ‘historical responsibility’ would be determined.

Being perhaps the most ‘international’ of industries, emissions from vessels usually take place outside the territory of any specific state.¹⁷⁶ Furthermore, shipping commonly forms one piece of the puzzle that is international consumer supply chains, creating a complex nexus of interacting actors whose roles can be difficult to specify.¹⁷⁷ Bodansky illustrates this issue with an example of a ship flying the flag of Panama, owned by a company incorporated in Greece, operated from Singapore, caring goods from China to Japan and the United States for three separate actors.¹⁷⁸ Which actor is the most culpable along this value chain and should bear the regulatory burden to reduce shipping emissions?

In view of these complexities, I argue the sectoral approach should be preferred.¹⁷⁹ This is because the national approach to allocating emissions, where emissions are allocated based on where they are produced, does suit the complex, cross-boundary dynamics of the international shipping industry. The national approach would likely see emissions allocated to shipping fuel producers, as it focuses on where emissions are produced rather than consumed, ignoring the dynamics of supply chains. Furthermore, under the national allocation approach, states can elect to reduce their total national emissions in any way they can, risking the formation of a ‘regulatory patchwork’: a regulatory regime with multiple

¹⁷³ Alan Khee-Jin Tan *Vessel Source Marine Pollution: The Law and Politics of International Regulation* (1st ed, Cambridge University Press, Cambridge UK, 2009) at 176.

¹⁷⁴ *Uncertainties and Problems in Market-Based Measures (Submission by India and China)* MEPC 61/5/24 (2010) at 11.

¹⁷⁵ At 11.

¹⁷⁶ Bodansky, above n 77, at 485.

¹⁷⁷ Nishatabbas Rehmatulla and Tristan Smith “Barriers to Energy Efficiency in Shipping: A Triangulated Approach to Investigate the Principal Agent Problem” (2015) 84 *Energy Policy* 44 at 47.

¹⁷⁸ Bodansky, above n 77, at 485.

¹⁷⁹ But see Adele Berti and Ilaria Grasso Macola “Debate: Should Shipping be Regulated Regionally or Globally?” (December 23 2020) Ship Technology <ship-technology.com>.

intersecting and conflicting rules making compliance for actors difficult and expensive, commonly resulting in an uneven playing field.¹⁸⁰ Indeed, it may even be that no state under the national allocation approach would choose to reduce shipping emissions, due to the difficulty and technicality involved and the potential impact on the global economy.

However, the sectoral approach allocation still raises issues regarding how shipping emissions will be allocated to actors *within* the sector.¹⁸¹ It is crucial that an allocation approach is clearly established, as Governments want to know the quantitative and financial effects of regulation on their industries before they agree to any global regulatory scheme.¹⁸² I will therefore consider two options for allocation under the sectoral approach. The first is the allocation of emissions based on flag states. The second is allocation of emissions to states by virtue of where the ship operating company is based. Following this, I will suggest steps the IMO would need to take in order to effectively ensure compliance under either allocation approach. Allocation based on flag states will be called 'allocation approach 1'. Allocation based on where operating companies are based will be called 'allocation approach 2'.

A Allocation Approach 1: Flag States

Allocating shipping emissions based on the vessel's flag state is *prima facie* the most logical method for the IMO to adopt. Under international law, flag states are already responsible for implementing and enforcing international law and regulations related to shipping against vessels flying their flag.¹⁸³ Article 92(1) of UNCLOS confirms a flag state has "exclusive jurisdiction" over ships flagged in their registry on the 'high seas', where the majority of emissions take place due to the increased need for fuel propulsion.¹⁸⁴ Under

¹⁸⁰ Indeed, the shipping industry has expressed increasing concern about a global regulatory patchwork for reducing emissions: see Shell and Deloitte, above n 120, at 8.

¹⁸¹ Indeed, the UNFCCC Subsidiary Body on Scientific and Technical Advice (SBSTA) from 1995 to 1996 attempted to resolve this issue but failed to reach consensus amongst states: see Sebastian Oberthur "Institutional Interaction to Address Greenhouse Gas Emissions from International Transport: ICAO, IMO and the Kyoto Protocol" (2003) 3(3) *Climate Policy* 191 at 193.

¹⁸² Heitmann and Khalilian, above n 167, at 683.

¹⁸³ R.R. Churchill and A.V. Lowe "The Law of the Sea" (3rd ed, Manchester University Press, Manchester, 1994) at 494: see also Tamo Zwinge "Duties of Flag States to Implement and Enforce International Standards and Regulations – And Measures to Counter Their Failure to Do So" (2011) 10 *Journal of International Business and Law* 297 at 298.

¹⁸⁴ United Nations Convention on the Law of the Sea, above n 24, art 92(1).

the umbrella of 'exclusive jurisdiction' flag states enjoy two further forms of jurisdiction. The first is a 'prescriptive jurisdiction', which is the flag state's jurisdiction to prescribe law applicable to the activities of ships in their registry by legislation, executive act, or regulation.¹⁸⁵ The second is an 'enforcement jurisdiction', which allows a state to enforce or compel compliance with legislation or regulations, whether through the courts or by use of executive or administrative action.¹⁸⁶ Flag states therefore already have the pre-existing jurisdiction within international law to enforce regulations formulated by the IMO under international law.

Furthermore, flag states are already subject to general pollution-related obligations under UNCLOS. For example, flag states are required under Article 94 to take measures as are necessary to observe and comply with "international regulations concerning ... [the] prevention, reduction and control of marine pollution" taking into account "generally accepted international regulations, procedures and practices and to take any steps which may be necessary to secure their observance".¹⁸⁷ Furthermore, under Article 211(1), flag states are required to pass domestic shipping pollution control laws to prevent, reduce and control pollution of the marine environment that "at least have the same effect as that of generally accepted international rules and standards".¹⁸⁸ Thus, the obligation on flag states to prevent marine source pollution, including GHG emissions, is already established and codified in international law.

This means the IMO will not need to create a new jurisdictional basis by potentially amending UNCLOS or the IMO Convention (which will be dependent on state approval) for flag states to enforce IMO regulations – it already exists. Furthermore, the MARPOL 73/78 regulations envisage enforcement through the categories of flag state, coastal state, and port state.¹⁸⁹ This can be compared to a novel approach to allocation in which the IMO or UN may need to formulate new legal sources of jurisdiction which will require approval from either UN member States or IMO member States – each of which present the risk of amendments not being agreed upon.

¹⁸⁵ Arron N. Honniball "The Exclusive Jurisdiction of Flag States: A Limitation on Pro-active Port States?" (2016) 31 *The International Journal of Marine and Coastal Law* 499 at 501: see also Khee-Jin Tan, above n 173, at 176.

¹⁸⁶ At 501: see also Khee-Jin Tan, above n 173, at 176.

¹⁸⁷ Article 94(3), (4), (5).

¹⁸⁸ Article 211(1), (2).

¹⁸⁹ Shi, above n 91, at 46: citing MARPOL 73/78, art 4(2), 6(3).

1 Potential Consequences of this Approach

As aforementioned, the process of ship flagging under UNCLOS is highly flexible, unregulated, and artificial. This has resulted in the process of ship flagging under UNCLOS to be particularly “footloose”, due to the weakly enforced ‘genuine link’ requirement.¹⁹⁰ This makes allocation method 1 problematic, particularly with regard to the practice of flag of convenience (FOCs) states. Studies have demonstrated that FOCs generally possess “little intention of fulfilling their fundamental responsibilities” under international law and in applying regulations from international organizations such as the IMO.¹⁹¹ Furthermore, the “lack of a substantial connection between the vessel and the flag makes it impossible for a flag State administration to effective control through fines or other penalties”.¹⁹² Indeed, because the primary motivation of most flag States in allowing ships to fly their flag, they may actively avoid enforcing regulations in fear of ship owners de-registering in their registry and losing said income.¹⁹³ Evidence suggests that flag states impose lower fines than port states regarding the average fines for violating MARPOL standards to avoid ship deregistration.¹⁹⁴

Furthermore, due to the practice of using FOCs, allocation approach 1 will burden small, developing economies which have neither the capacity to regulate, nor actual responsibility for ship emissions. As aforementioned, 50% of the world's vessel fleet are registered in Panama, Liberia and the Marshall Islands.¹⁹⁵ Allocating emissions based on flag states would see the two most popular open registries – Panama and Liberia - account for 25% of

¹⁹⁰ See *The M/V “Saiga” Case (Saint Vincent and the Grenadines v Guinea) (No. 2) (Judgment)*, ITLOS, 1 July 1999 at 37[65], where the Tribunal states “Determination of the criteria and establishment of the procedures for granting and withdrawing nationality to ships are matters within the exclusive jurisdiction of the flag state”; see also Art 91(1) UNCLOS; see also Lister, above n 101, at 192.

¹⁹¹ *Ships, Slaves and Competition: Inquiry into Ship Safety* (International Commission on Shipping, ISBN 0-646-41192-6, March 2000) at 90.

¹⁹² At 90.

¹⁹³ Yubing Shi “Climate Change and International Shipping: The Regulatory Framework for the Reduction of Greenhouse Gas Emissions” in David Freestone (ed) *Legal Aspects of Sustainable Development* (Volume 23, Brill Nijhoff, Boston, 2017) at 289.

¹⁹⁴ At 49; see also Ho-Sam Bang “Recommendations for Policies on Port State Control and Port State Jurisdiction” (2013) 44(1) *Journal of Maritime Law and Commerce* 115 at 127.

¹⁹⁵ Lloyd's List, above n 10.

all shipping emissions,¹⁹⁶ despite only accounting for 0.03%¹⁹⁷ and 0.001%¹⁹⁸ of the world's total annual emissions respectively. The next 50% of emissions would be allocated to the next top 8 flag registries,¹⁹⁹ the majority of which are also developing states.²⁰⁰

Thus, allocation approach 1 would disproportionately burden small developing countries with relatively small economies and enforcement capabilities. Such a result would be inconsistent with many of the guiding principles of the Paris Agreement: the most important being common but differentiated responsibilities and respective capabilities (CBDR-RC). This is because allocation approach 1 would burden states not because of their common role in actually emitting carbon, but due to their less developed domestic regulatory regimes.²⁰¹ In doing so, this allocation approach does not recognize the contribution which other states in the global shipping industry – such as major port states like China and Japan – have made to emissions. Furthermore, this approach does not acknowledge the respective capabilities (or lack thereof) of flag states to enforce climate regulations upon ships flying their flag, due to the lack of the enforcement of a 'genuine link' between a flag state and ship in international law.

Some may argue that allocation approach 1 could offer certain benefits. For example, this method of allocation might actually force ship operators to re-register their vessels in states with better climate commitments, in acknowledging that operators themselves may face sanctions for non-compliance with IMO regulations. Indeed, allocation approach 1 may even see traditional FOC states, such as Panama and Liberia, become less willing to allow vessels to register in their registry, in knowing that they will likely be unable to enforce and comply with IMO regulations, again due to the weak 'genuine link' requirement under UNCLOS.

However, this is unlikely to be case: indeed, the opposite may actually occur. The highly flexible nature of ship flagging due to the weak 'genuine link' requirement, allocation

¹⁹⁶ Heitmann and Khallinan, above n 167, at 685.

¹⁹⁷ Hannah Ritchie and Max Roser "Panama: CO2 Country Profile" (2020) Our World in Data <ourworldindata.com>.

¹⁹⁸ Hannah Ritchie and Max Roser "Liberia: CO2 Country Profile" (2020) Our World in Data <ourworldindata.com>.

¹⁹⁹ Heitmann and Khallinan, above n 167, at 685.

²⁰⁰ Lloyd's List, above n 10.

²⁰¹ Heitmann and Khalinian, above n 167, at 688.

approach may just cause shipowners to reflag vessels in states with no binding climate commitments to avoid IMO regulations. It is clear that the flexibility of ship ownership and the fragile 'genuine link' requirement under UNCLOS provides a significant competitive advantage to vessel owners and a form of income for flag states themselves, especially those which are developing countries with smaller economies.²⁰² The industry's clear preference for flexible ship ownership, along with the potential conflict with the principle of CBDR-RC,²⁰³ makes the political feasibility of allocation approach 1 questionable.

2 Steps the IMO Could Take if this Approach is Selected

(a) Defining 'genuine link'

The IMO may favor this approach to allocating emissions as a flag states prescriptive and enforcement jurisdiction is already well established under international law and UNCLOS. However, issues around flags of convenience remain. I therefore recommend two steps the IMO could take to potentially address this issue.

One step I suggest would be to strengthen the requirement of a 'genuine link' between a vessel and its flag state under Article 91 of UNCLOS. This could be by introducing a definition of 'genuine'. Indeed, the genuine link requirement was originally intended to ensure a social and economic connection between a flag state and ship.²⁰⁴ A new definition of 'genuine' should therefore be articulated in light of this. For example, Churchill suggests 'genuine link' could be defined as "the conditions of attribution of nationality", thereby requirement an enforcement-bound link.²⁰⁵ Under such a definition, the genuineness of a link could be demonstrated by, for example, a flag states ability to effectively exercise its jurisdiction over a ship and enforce the necessary mechanisms for such an exercise when a ship is granted nationality.²⁰⁶ This could include, for example, the ability for a flag state to enforce emissions related regulations from the IMO against ships registered in its registry.

²⁰² Gunner K. Sletmo and Susanne Hoste "Shipping and the Competitive Advantage of Nations: The Role of International Ship Registries" (1993) 20 *Maritime Policy and Management* 243 at 244.

²⁰³ Shi, above n 193, at 94.

²⁰⁴ Serhii Kuznietsov "The "Genuine Link" Concept: Is It Possible to Enhance the Strength?" (2021) 7 *Lex Portus* 65 at 66.

²⁰⁵ Robin Rolf Churchill "The Meaning of the Genuine Link Requirement in relation to the Nationality of Ships" *A Study Prepared for the International Transport Workers' Federation* (2000) at 39, 69.

²⁰⁶ At 5.

Importantly, a sanction should be introduced for ships not registered in flag states in which the vessel has a 'genuine link' to. This would have an important deterrent effect, in encouraging ship owners to flag their vessels in States with the enforcement capabilities necessary to ensure ships comply with regulations. This is especially important in the emissions reduction context, as it would likely see ships re-flag in states with better climate ambitions. This is a desirable outcome as to relieve the smaller developing economies of popular flag states – and particularly the top three open registries of Panama, Liberia and the Marshall Islands – of the burden of enforcing potentially costly IMO regulations.

Problematically, there is a demonstrated lack of political appetite to strengthen the requirement of a 'genuine link'. This is illustrated by the failed passing of the United Nations Convention on Conditions for Registration of Ships in 1986, which was only signed by 15 states.²⁰⁷ Since then, the use of FOCs have only become more entrenched in the international shipping industry. The flexible nature of ship flagging and flags of convenience are clearly favored due to the competitive advantage it provides ship operators and the income it provides flag states. Thus, it is unlikely such an amendment would garner the political support needed to pass the resolution by consensus at the United Nations.

(b) Applying NMFT to Emissions Allocation

Another step I suggest would be applying the principle of No More Favorable Treatment (NMFT)²⁰⁸ in allocating emissions under approach 1. Shi suggests such an approach would minimize the consequences of allocating emissions to FOC States as ships would be unable to avoid the application of IMO regulations by re-registering their vessels in states without

²⁰⁷ See generally "United Nations Convention on Conditions for Registration of Ships" (7 February 1986) United Nations Treaty Collection <treaties.un.org>. There were also failed attempts to strengthen the requirement at the First UN Conference of the Law of the Sea in 1958, and the Third UN Conference on the Law of the Sea in 1967.

²⁰⁸ To reiterate, the principle of NMFT, which is one of the IMOs guiding principles, suggests regulations are to be applied universally to all ships, regardless of whether their flag state or the port state has agreed to said regulations.

binding emission reduction commitments.²⁰⁹ Indeed, there is some support for this specific approach to allocation among IMO Member states.²¹⁰

In making this argument, Shi suggests the negative consequences of utilizing FOCs is not that they result in substandard ships, but rather that enforcement mechanisms for FOC states are lacking.²¹¹ However, it is unclear how an application of NMFT, as Shi suggests, would *strengthen* mechanisms for regulatory enforcement by flag states. Even in this scenario, the issue of ships being registered in States which it does not have a 'genuine link' to will remain.

Another issue with this argument is that developing countries at the IMO have argued the application NMFT directly conflicts with the principle of CBDR.²¹² This argument continues to be made at MEPC and IMO Council sessions, by states such as China and India, despite scholars,²¹³ and the IMO Secretariat,²¹⁴ suggesting there is no direct irreconcilable conflict between the principles of CBDR and NMFT. The former applies to *states*, and the latter applies to *ships*. Furthermore, arguably in allocating emissions to flag states, CBDR can be applied harmoniously alongside NMFT in the form of providing financial assistance to developing flag of convenience states, as suggested by Bodansky.²¹⁵ This approach is supported by Article 203 of UNCLOS, which requires international organizations to grant 'preference' to developing countries "in the allocation of appropriate funds and technical assistance". Nonetheless, this line of argument often causes negotiations at the IMO to stagnate, bringing into question the political feasibility of this manner of applying allocation approach 1.²¹⁶

²⁰⁹ Shi, above n 193, at 294.

²¹⁰ See *Identifying Consensus on IMO Principles on Addressing Greenhouse Gas Emissions from International Shipping*, submitted by Australia, Canada, Denmark, Germany, Japan, Marshall Islands, Norway, Panama and the United States, MEPC 58th Session, Agenda Item 4, IMO Doc MEPC 58/4/16 (1 August 2008).

²¹¹ Shi, above n 193, at 294.

²¹² See for example Marine Environment Protection Committee, above n 99, at 2-5.

²¹³ Bodansky, above n 77, at 484; see also Shi, above n 193, at 296; see also generally Sophia Kopela "Climate Change, Regime Interaction, and the Principle of Common but Differentiated Responsibility: The Experience of the International Maritime Organization" (2014) 24 *Yearbook of International Environmental Law* 70.

²¹⁴ IMO, *Prevention of Air Pollution from Ships: Legal Aspects of the Organizations Work on Greenhouse Gas Emissions in the Context of the Kyoto Protocol*, IMO Doc MEPC 58/4/20 (London, August 1, 2008).

²¹⁵ Bodansky, above n 77, at 483.

²¹⁶ At 2-4.

3 Conclusion on Allocation Approach 1

The whole point of allocating emissions is to determine what State will be responsible for enforcing climate regulations. Following this, if emissions are to be allocated to flag states, reform should focus on ensuring flag states have the actual capacity to enforce IMO regulations. In this sense, strengthening the definition of 'genuine link' under Article 91 of UNCLOS, is to be preferred. This position is supported in literature.²¹⁷ However, the political feasibility of this approach can be brought into question, due to the competitive advantage FOCs provide operators and the financial benefits ship registration provides flag states.

B Allocation Approach 2: Operating Company

An alternative approach could be allocating emissions to states based on where a ship's operating company is based. A common critique of the territory based conception of environmental commitments is that it disregards the crucial role of multinational corporations in the global production of greenhouse gases.²¹⁸ Because of this, a new method of allocation has emerged in climate change literature, called "control-based accounting".²¹⁹ Control-based accounting assigns emissions generated by foreign-controlled companies to the origin country of the firm (the controlling company) instead of the host company, as is seen under the territory-based approach.²²⁰

This method of allocation, which is envisioned to operate in conjunction with an MBM, has generated some support in literature relating to reducing the emissions of industries

²¹⁷ See for example Churchill, above n 205; see also Gotthard Mark Gauci and Kevin Aquilina "The Legal Fiction of a Genuine Link as a Requirement for the Grant of Nationality to Ships and Humans – The Triumph of Formality over Substance?" (2017) 17 *ICLR* 167 at 185; see also Kuznietsov, above n 204, at 79. But see Ige F. Dekker and Harry H.G. Post *On the Foundations and Sources of International Law* (1st ed, T.M.C. Asser Press, The Netherlands, 2003) at 12 who suggested the 'genuine link' concept is one of the "more problematic cornerstones of international law" and should actually be abolished.

²¹⁸ Mateo Ortiz and others "EU Carbon Emissions by Multinational Enterprises under Control-Based Accounting" (2020) 163 *Resources, Conservation & Recycling* at 1.

²¹⁹ See generally Robert S. Kaplan and Karthik Ramanna "We Need Better Carbon Accounting. Here's How To Get There" *Harvard Business Review* (April 12, 2022) <hbr.org>.

²²⁰ Ortiz, above n 218, at 1.

with complex supply chains.²²¹ This makes this allocation approach well suited to the international shipping industry in particular, due to there being a complex nexus of actors involved in international container shipping. Indeed, in practice, the ship owner and operating company has been generally regarded as the party responsible for carbon emissions.²²² This is reflected in the MARPOL Annex IV EEDI and SEEMP measures, which requires *ship operators* to implement the operational requirements needed to reach the required EEDI/CII level prescribed by the IMO.²²³

Under this approach, emissions from ships would be attributed to the state in which the ship operating company is incorporated.²²⁴ For example, if the IMO were to establish an MBM (such as a universal carbon tax on HFO fuel), the state in which the ship operating company is incorporated will enforce said tax on the ship operating companies. For example, the emissions from Maersk, which is primarily based in Copenhagen, would be allocated to Denmark. Denmark would then have the responsibility of applying IMO regulations against Maersk's ships.

This approach has multiple benefits. As Miola notes, this method of allocation would overcome the issues previously identified in relation to flag States and FOCs.²²⁵ This is because ship operators possess the most control over their ship's emissions levels by regulating speed, routes, and therefore fuel consumption.²²⁶ This means operators are in a position to make the operational decisions necessary to comply with IMO regulations. Furthermore, once an IMO regulation is in force, States can impose regulations on ship

²²¹ Heitmann and Khalilian, above n 167, at 689; see also Sanjith Gopalakrishnan and others "Incentives and Emission Responsibility Allocation in Supply Chains" (2020) *67 Management Science* 4172 at 4173; see also A. Miola and others "Designing a Climate Change Policy for the International Maritime Transport Sector: Market-based measures and technological options for global and regional policy actions" (2011) *39 Energy Policy* 5490 at 5496; see also Anastasia Christodoulou "Inclusion of Shipping in the EU-ETS: Assessing the Direct Costs for the Maritime Sector Using the MRV Data" (2021) *14 Energies* 3915 at 16. Such an allocation approach has also received support in literature regarding other industries, such as the road transportation industry: see generally Mario Guajardo "Environmental Benefits of Collaboration and Allocation of Emissions in Road Freight Transportation" in *Sustainable Freight Transport* (1st ed, Springer, 2018) at 79-98.

²²² Shi, above n 193 **Error! Bookmark not defined.**, at 112.

²²³ At 112.

²²⁴ Heitmann and Khalilian, above n 167, at 689.

²²⁵ Miola, above n 221, at 5496.

²²⁶ Heitmann and Khalilian, above n 167, at 688.

operators even if the ship is registered under another flag.²²⁷ This can be contrasted with allocation approach 1, under which the flag state likely has little control over the ship and its activities, despite being provided with the requisite jurisdiction under UNCLOS, due to the lack of a 'genuine link'.

This approach would also more fairly disperse the burden of compliance. Under allocation approach 2, the highest shares of emissions would be allocated to Japan, Greece, and China, followed by Denmark and the United States, based on where these companies are incorporated.²²⁸ In terms of regional implications, Europe would be burdened with the largest share of shipping emissions, followed by North East Asia, North America, and South East Asia.²²⁹ This form of allocation will therefore allow for the 'fairest' burden sharing by burdening larger more developed economies who will experience less of a fiscal impact.²³⁰ This method of allocation is also beneficial as it would acknowledge the contribution major port states make to global shipping emissions.²³¹

Such an approach to allocating emissions would essentially be an application of the emerging 'polluter pays' principle.²³² This principle is strongly linked to the idea of fair burden sharing under the UNFCCC regime and is used to "[allocate] costs of pollution prevention and control measures to encourage rational use of scarce environmental resources and avoid distortions in international trade and investment".²³³ The principle declares that the polluter of GHG emissions should bear the expenses of carrying out any regulatory measures decided by public authorities or international organizations to ensure the environment is in an acceptable state.²³⁴ Market based mechanisms (MBMs) are a particularly useful way to practically implement the polluter pays principle, as they internalize the external costs of GHG emissions to market participants – in this case, container ship operating companies and the states they are incorporated in.

²²⁷ At 685.

²²⁸ At 685.

²²⁹ At 687, fig. 2.

²³⁰ At 687.

²³¹ At 688. Furthermore, the consent and compliance of major port states with any forthcoming IMO regulations will be necessary for enforcement

²³² OECD *The Polluter Pays Principle* (26 Feb 2008) at 4.

²³³ OECD *Recommendation of the Council on Guiding Principles concerning International Economic aspects of Environmental Policies* OECD/LEGAL/0102 (26th of May 1972) at A(a).

²³⁴ Shi, above n 193, at 72.

The polluter-pays principle has already been applied in the context of liability for marine oil pollution. The *Trail Smelter* case saw the Canadian-based operating company of the smelting machine be found liable for territorial damage caused to the State of Washington. This demonstrates a willingness for international environmental law to attach liability to a state via corporations which are incorporated/based in that state.²³⁵ There is no reason why a similar logic could not apply to shipping emissions, especially considering the *Trail Smelter* case was also decided in the context of 'trans-boundary harm',²³⁶ which is of course a complicating dynamic of the international shipping industry with vessels constantly travelling around the globe. The *Trail Smelter* case is therefore an example of international law overcoming issues of trans-boundary liability and atmospheric emissions by attaching liability to corporations.

The main benefit of allocation approach 2 is enhanced regulatory enforceability. The states in which operating companies are incorporated already possess the jurisdiction to regulate their practices, as these companies are already subject to the corporate, taxation and regulatory laws of that state. Furthermore, once an IMO regulation is in force, the flag neutrality principle confirms that states can enforce IMO regulations via domestic legislation over operators within their jurisdiction, even if the ship does not fly their flag.²³⁷

The main counterargument to allocation approach 2 is carbon leakage. Operating companies might simply relocate to countries with less stringent climate commitments to avoid regulations being forced upon them and their ships.²³⁸ However, as Heitmann and

²³⁵ This dispute involved pollution arising out of the operation of a smelter in British Columbia which crossed the international boundary into the State of Washington in the United States. The United States, through diplomatic means, intervened and alleged the tort of nuisance to have been committed by the Canadian company which was operating the smelter and referred the issues to the International Joint Commission. Following arbitration proceedings, the parties signed a Convention signed in 1935 which required the government of Canada to pay the United States reparations for the damage caused by the smelter. The dispute also pushed the Canadian government to regulate oil and gas corporations aimed to limit the emission of damaging gasses into the atmosphere; see generally John E. Read "The Trail Smelter Dispute" (1963) 1 CAN. Y.B. INT'L. 213 at 215.

²³⁶ At 215.

²³⁷ Heitmann and Khalilian, above n 167, at 688.

²³⁸ Tabaré Arroyo-Currás "Carbon Leakage in a Fragmented Climate Regime: The Dynamic Response of Global Energy Markets" (2015) 90 *Technological Forecasting and Social Change* 192: see also Shi, above n 193 **Error! Bookmark not defined.**, at 247.

Khalinan identify, this is a risk with all emissions allocation methods assessed in their report.²³⁹ The only allocation scenario which would avoid carbon leakage would be allocation of emissions as a fixed percentage relative to each states total national annual emissions.²⁴⁰ However, this approach is not politically feasible due to the principle of CBDR-RC, as applying such a fixed percentage would not acknowledge the differing contribution that states more heavily involved in the international shipping industry make to the cumulative global shipping emissions.²⁴¹ It is also questionable whether companies would be willing to move the entirety of their operations simply to avoid IMO regulations: many shipping companies are well established within their countries of origin and contribute significantly to the GDP of their home-state.²⁴²

Another counterargument relates to administrative feasibility. Many large shipping companies have hundreds of subsidiary companies and joint ventures incorporated all over the world. For example, Maersk has over 900 subsidiary companies.²⁴³ In this sense, determining the exact country which emissions should be allocated may increase time and administrative costs for the IMO. However, ascertaining the true corporate identity of multinational conglomerates is an issue to which company law is not a stranger: the common law in particular has developed strategies to determine the 'parent company' of a conglomerate for the purposes of attaching liability.²⁴⁴ While admittedly these rules have developed outside the climate change context - more so regarding liability in tort - they provide a useful conceptual springboard for the IMO to determine which entity and therefore which state should be allocated emissions.

²³⁹ At 687.

²⁴⁰ At 687.

²⁴¹ Shi, above n 193, at 95-95.

²⁴² See for example "Infographic: Maersk's Contribution To Denmark" (March 19 2015) Offshore Energy <offshore-energy.biz> who suggest Maersk's activities contributed to 2.5 per cent of Denmark's GDP in 2012. This number has likely increased with the growth of the global economy over recent years.

²⁴³ A.P. Moller – Maersk Group *Company Overview*

²⁴⁴ See generally John Birds, A.J. Boyle *Boyle & Birds' Company Law* (9th ed, Jordans Publishing Limited, Bristol, 2014) for the legal position in the United Kingdom on corporate liability: or see Peter Watts and others *Company Law in New Zealand* (2nd ed, LexisNexis, Wellington, 2015) for the position in New Zealand: see also Junko Ueda "Environmental Challenges for Japanese Corporations in the Twenty-First Century: Legal Aspects of Corporate Environmental Management Risk" in Fiona Macmillan *International Corporate Law* (1st ed, Hart Publishing, Portland, 2000) for an interesting discussion on corporate liability for pollution in Japan.

A final counterargument is that of political feasibility. It is questionable whether states at the IMO would agree to this method of allocation if the interests of shipping operators are able to penetrate IMO negotiations. However, a new paradigm which has been emerging in climate change literature is how climate goals (or eco-business goals) are becoming increasingly linked to the competitive positioning and reputation of corporations.²⁴⁵ Indeed, the shipping industry has already acknowledged this. Participants in the 2021 Deloitte and Shell report recognized that technical and commercial readiness before a MBM gains traction at the IMO will allow for faster and cheaper compliance, providing ‘first-movers’ with a competitive advantage over those who act later.²⁴⁶ Arguably, Maersk’s purchase of 8 carbon-free vessels in late 2021 illustrates how this paradigm is already influencing investment.²⁴⁷ Further, in an interview with Huffington Post, COSCO representative Andrew Craig Bennett stated in regards to decarbonization “We all know this change is coming ... we can lead it, get rich, and be on the side of the angels or we can share the fate of the other rust belt industries. Simple”.²⁴⁸ Thus, it is presumptive to assume that shipping operators would actively fight regulatory action at the IMO – indeed, they have been calling for it for a number of years.²⁴⁹

Furthermore, the political feasibility of allocation approach 2 is demonstrated by the European Union ETS scheme, which would be inclusive of shipping emissions. The proposed scheme would see emissions allocated on the basis of the operating company – just as suggested in this paper.²⁵⁰ In its proposal to the European Parliament regarding the

²⁴⁵ Peter Dauvergne and Jane Lister (ed) *Eco-Business: A Big-Brand Takeover of Sustainability* (1st ed, MIT Press, Cambridge, 2013) at 139; see also Michaelis Skordoulis “Environmental Innovation, Open Innovation Dynamics and Competitive Advantage of Medium and Large-Sized Firms” (2020) 6 *J. Open Innov. Technol. Mark. Complex.* 195 at 196.

²⁴⁶ See Deloitte, above n 120, at 36: see also Moller-Maersk see also “How the Fit For 55 legislation will affect the shipping industry – and what you can do to prepare” (February 3 2022) NAPA <napa.fi>.

²⁴⁷ “Maersk Issues First Green Bond to Fund First Green Methanol Vessels” (19 November 2021) Maersk <maersk.com>.

²⁴⁸ Alexander C. Kaufman “How the Shipping Industry Bullied Its Way Out Of Doing Anything to Fight Climate Change” (15 November 2017) Huffington Post <huffingtonpost.co.nz>.

²⁴⁹ Shell and Deloitte, above n 120, at 18: see also “Evergreen Line – Setting a Course for Net Zero” (February 8 2022) Greencarrier <greencarrier.com>: see also Xin Chen, Cichen Shen “Cosco Targets Carbon Neutrality by 2060” (27 April 2022) Lloyds List <lloydslist.com>.

²⁵⁰ *Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC Establishing a New System for Greenhouse Gas Emission Allowance for Trading Within the Union*, Annex 10796/22 TREE.1.A, 30 June 22, at 14.

inclusion of shipping within its regional ETS scheme, the European Council stated “the person or organization responsible for the compliance with the EU ETS ... [of which shipping would be included] ... should be the shipping company, defined as the shipowner or any other organization or person ... that has assumed the responsibility for the operation of the ship”.²⁵¹ Indeed, this proposal and allocation approach has since been accepted by the European Parliament.²⁵² This demonstrates not only the political feasibility of this approach being accepted at the IMO, with many European member states who are also IMO members having already accepted this approach to allocation, but also how the utility in this approach has been recognized by other policymakers assessing the issue of shipping decarbonization.

VIII Industry Engagement: The Need for All Hands-on Deck at the IMO

Under either allocation approach I have suggested, research, development, and investment into non-carbon technology will form a crucial, if not the biggest, piece of the decarbonization puzzle. Because of the shipping industry's central role in ship and fuel investment, changes to the IMO's regulatory mandate and structure will need to accommodate for the growing role of the industry in decarbonization efforts.²⁵³ Indeed, there is appetite for institutional change at the IMO. Responding to calls for greater transparency from member States,²⁵⁴ the IMO launched an open-ended working group in 2018 on the reform of the IMO Council.²⁵⁵ However, the only reform that has come to fruition since this working group was launched has been an expansion of the Council's membership to 52 states.²⁵⁶

²⁵¹ At 14.

²⁵² “Cutting Emissions from Planes and Ships: EU Actions Explained” (26 October 2022) European Parliament News <europarl.europa.eu>.

²⁵³ Aldo Chircop and Desai Shan “Governance of International Shipping in the Era of Decarbonization: New Challenges for the IMO?” in Proshanto K. Mukherjee and others (ed) *Maritime Law in Motion* (Vol 8, Springer, Sweden, 2020) at 98.

²⁵⁴ Council of the International Maritime Organization *Strategy, Planning and Reform: Access to Information Submitted by Australia, Agenda Item 3(b) C 121/3(b)/5* (19 October 2018)

²⁵⁵ International Maritime Organization, *Terms of Reference for the Working Group on Council Reform - Submitted by Japan, Marshall Islands, Panama, United Arab Emirates, United Kingdom and United States of America*, IMO Doc V 121/3(b)/13 (19 October 2019).

²⁵⁶ “Amendments to IMO Convention will be forwarded for adoption at IMO Assembly in December 2021” (December 2021) International Maritime Organization <imo.org>.

Effective climate policy needs to promote collective action. This involves harnessing the combined capacities of actors across the public and private sector, as well as concepts of liability and market mechanisms to incentivize both action and change.²⁵⁷ The shipping industry has already expressed that decarbonization will require “efforts from a broad and diverse group of stakeholders”.²⁵⁸ Furthermore, globalization has triggered a shift in the dynamics of state policymaking and international governance, being less of a process of “top-down steering from the center”, and more of an “interactive process involving multiple actors and levels”.²⁵⁹ Thus, effective regulation by the IMO will require the utilization of “mechanisms of enforcement against all governance scales, as well as a comprehensive regulatory framework”.²⁶⁰ Enforcement across “all governance scales” must include due regard to the interests and opinions of the shipping industry.

A Private Public Partnerships

The growing political and economic power of multinational corporations (MCN's) has led to an increase in public demand for such corporations to take on more responsibility for global issues like climate change.²⁶¹ This has also forced international organizations to acknowledge the enhanced capacities MCN's have to combat climate change compared to themselves.²⁶² This is primarily because the international scale of the activities of MCNs offers an opportunity for the improvement of environmental protection worldwide, due to their superior technological, managerial, financial, and research and development capabilities.²⁶³

²⁵⁷ Conner P. Spreng “All Hands on Deck: Polycentric Governance for Climate Change Insurance” (2016) 139 *Climatic Change* 129 at 131; see also Miola, above n 221, at 5495; see also Deloitte, above n 120, at 38.

²⁵⁸ Shell and Deloitte, above n 120, at 39.

²⁵⁹ Martin Painter and Jon Pierre “Unpacking Policy Capacity: Issues and Themes” in Martin Painter and Jon Pierre (ed) *Challenges to State Policy Capacity: Global Trends and Comparative Perspectives* (Palgrave Macmillan, Basingstoke, 2005) at 12; see also Bloor, above n 157, at 347.

²⁶⁰ Bloor, above n 157, at 347.

²⁶¹ At 3.

²⁶² Elisa Morgera “The Need for Corporate Environmental Accountability” in Elisa Morgera (ed) *Corporate Accountability in International Environmental Law* (Oxford University Press, online ed, 2009); see generally Kema Irogbe “Global Political Economy and the Power of Multinational Corporations” (2013) 30 *Journal of Third World Studies* 223.

²⁶³ Morgera, at 7.

Calls for interaction between MCNs and international organizations has led to a focus in international governance literature on the developing concept of 'public-private partnerships' (PPPs). PPP's are defined as the "formation of cooperative relationships between government, profit-making firms, and non-profit private organizations to fulfil a policy function".²⁶⁴ The concept originally arose due to the bureaucratic form of organization in governments impeding the ability for the delivery of services effectively – which arguably the IMO is symptomatic of.²⁶⁵ PPPs are therefore mechanisms by which governments or international organizations seek the participation and interaction of private actors to deliver such services.²⁶⁶

The PPP framework has been recently utilized in the global health context in response to the COVID-19 pandemic. Due to the unprecedented need to create, distribute and vaccinate a significant number of individuals to protect the global community from the threat of the COVID-19 virus, collaborative partnerships between biotechnology and pharmaceutical companies emerged in 2020 to respond to this unprecedented need for urgent innovation.²⁶⁷ Various organizations such as the UN, the World Bank Group, the United Nations Development Group, and major pharmaceutical companies such as Pfizer came together under the PPP model to develop and distribute the vaccine despite being from different sectors of the economy.²⁶⁸ The vaccine rollout was the fastest in history compared to other infections threats, being described as "revolutionary" in scale and reach, providing hope for policymakers in utilizing the framework for future global threats.²⁶⁹

The success of the PPP model in the COVID-19 context provides a useful springboard to argue that a similar approach should be adopted at the IMO. The highly successful and unprecedented vaccine rollout in 2020/2021 has entrenched the usefulness of the PPP framework in situations involving consolidated industries, where the swift development of new technologies is required, in the face of unprecedented global threats – whether that be

²⁶⁴ Pauline Vaillancourt Rosenau (ed) *Public-Private Policy Partnerships* (MIT University Press, Cambridge, 2000) at 5.

²⁶⁵ G. Ramesh and others *Public Private Partnerships* (1st ed, Taylor & Francis Group, 2010) at 4.

²⁶⁶ At 4.

²⁶⁷ Lawrence Corey, John R. Mascola, Anthony S. Fauci and Francis S. Collins "A Strategic Approach to COVID-19 Vaccine R&D" (2020) 368 *Science* 948 at 949.

²⁶⁸ At 949.

²⁶⁹ Lara Cornardo "New Study: COVID-19 Vaccine Rollout Fastest in Global History" (February 9th 2022) Centre for Global Development <cgdev.org>.

an infectious disease or climate change.²⁷⁰ Although the two situations differ somewhat and cannot be directly compared, I argue a similar line of thought which was applied to the COVID-19 vaccine can be applied to the issue of shipping decarbonization.

A key benefit of PPPs is that they create a space for the sharing in resources between public and private actors. Research and development increase the capacity of governments and international organizations to solve highly technical problems where specialized expertise is required.²⁷¹ The sharing of resource by private actors is especially important in a highly technical industries such as shipping (or the pharmaceutical industry), with ship operators being the nexus in which multiple stakeholders such as ship financiers, builders, engineers, and port managers intersect. Again, because the perceived end goal of the IMO and the shipping industry is total decarbonization, this is going to require extensive research, innovation, development and financing of non-carbon ships and alternative forms of fuels. The IMO currently lacks the financial and institutional capacity to engage in such extensive research and innovation,²⁷² as well as the ability to actually enforce regulations it adopts, which is partly symptomatic of the issues around ship flagging aforementioned.²⁷³ It is here that PPPs are useful, as they allow for the sharing in burden, risk and expenses when it comes to developing new technologies to address global issues such as climate change.²⁷⁴ Furthermore, the already present strategic alliances in the international container shipping industry as discussed at the beginning of this paper demonstrate both the willingness of the industry and the efficiency of information sharing between market actors.

²⁷⁰ Isaac Akomea-Frimpong and others “A Critical Review of Public-Private Partnerships in the COVID-19 Pandemic: Key Themes and Future Research Agenda” (2022) Forthcoming *Smart and Sustainable Built Environment*

²⁷¹ Julian Korab-Karpowicz “The United Citizens Organization: Public-Private Partnerships in Global Governance” (2020) 2 *Research in Globalization* 100012 at 3.

²⁷² Lucas Amin and others *Governance at the International Maritime Organization: The Case for Reform* (Transparency International, 2018) at 30-31; see also Antoine Halff, Lara Younes, Tim Boersma “The Likely Implications of the new IMO Standards on the Shipping Industry” (2019) 126 *Energy Policy* 277 at 285.

²⁷³ See Olav F. Knudsen and Björn Hassler “IMO Legislation and its Implementation: Accident Risk, Vessel Deficiencies and National Administration Practices” (2011) 35 *Marine Policy* 201 at 203 where the authors state “perhaps the greatest limitation of the IMO is its inability to actually enforce the regulations it adopts”.

²⁷⁴ Anatole Krattiger and others “Driving Innovation for Global Health through Multi-stakeholder Partnerships” in Margaret Chon, Pedro Roffe and Ahmed Abdel-Latif (ed) *The Cambridge Handbook of Public-Private Partnerships, Intellectual Property Governance, and Sustainable Development* (Cambridge University Press, online ed, 2018) at 47.

PPPs also improve the efficiency and legitimacy of decision making for those who link effective problem solving with deliberative democracy.²⁷⁵ The involvement of those who are affected by the creation of regulations leads to better decision making by creating rules based off reasoned consensus as opposed to a bargaining compromise.²⁷⁶ By allowing profit-making firms to contribute to governance by providing additional information and expert knowledge, they contribute to the identification of possible ways of handling problems.²⁷⁷ In doing so public actors become more open to deliberation and consensus.²⁷⁸ This concurrently enhances the democratic legitimacy of the decision making process, thereby removing the 'democratic deficit' which international organizations are so commonly critiqued for.²⁷⁹ Indeed, democratic legitimacy is something which the IMO is lacking in,²⁸⁰ hence why it has begun passing resolutions by consensus rather than majority as is mandated by the IMO Convention.²⁸¹

Another benefit of a PPP framework is enhanced certainty for the shipping industry. A common theme arising in literature on shipping emissions regulation is how uncertainty regarding future regulation prevents and deters investment in more environmentally friendly technology.²⁸² Investment certainty is especially important considering debt financing makes up 70% of capital in the global shipping industry.²⁸³ Operating companies of course need to demonstrate creditworthiness, and financiers need certainty as to what their money is going to be used for, in order to approve financing.²⁸⁴ The IMO would therefore be well advised to engage with the industry during negotiations so the industry can begin to prepare for investment in alternative technologies, instead of simply having IMO regulations blindly imposed upon them, in which they have little time to obtain financing and make any necessary contractual changes to accompany these regulations.

²⁷⁵ At 3, citing James Bohman, William Rehg (ed) *Deliberative Democracy: Essays on Reason and Politics* (The MIT Press, London, England, 1997) at 5.

²⁷⁶ Korab-Karpowicz, above n 271, at 3.

²⁷⁷ At 3.

²⁷⁸ At 3.

²⁷⁹ Luis Cabrera "World Government: Renewed Debate, Persistent Challenges" (2010) 16 *European Journal of International Relations* 511 at 523.

²⁸⁰ Amin and others, above n 272, at 12-13.

²⁸¹ Kopela, above n 214, at 99.

²⁸² Shell and Deloitte, above n 120, at 17.

²⁸³ L. Daniel and C. Yildrian "Ship Finance Practices in Major Shipbuilding Economies" (2019) 75 *OECD Science, Technology and Industry Policy Papers* at 36.

²⁸⁴ At 17.

Finally, industry engagement will be crucial if the IMO is to enact a MBM in its 2023 revised Initial Strategy. Indeed, during the writing of this paper, the IMO achieved consensus among member states that a global carbon price was required to decarbonization, with the details to be fleshed out in the 2023 session.²⁸⁵ The logic behind the need for industry engagement alongside an MBM is clear: if the IMO is going to *use market forces* to regulate shipping emissions, it only makes sense that they engage with *market participants* when doing so. This is a generally accepted position, supported in literature,²⁸⁶ as well as by the industry.²⁸⁷ As Budd Darr, Vice President of Maritime Policy and Government Affairs at MSC Shipping stated, “there must be a massive injection of energy and capital into [research and development] efforts ... we all need to work together, and we all need to take it over the finish line to get to where we need to be with decarbonization”.²⁸⁸

1 Addressing Potential Objections to Industry Participation

Strong objections to enacting PPP-style governance at the IMO are likely. A narrative commonly perpetuated when engagement is suggested between MCNs and international organizations in the climate change arena is that MCNs are self-interested, profit-seeking firms who will seek to prevent action because it will necessarily impact the profit delivered to shareholders.²⁸⁹ Flowing from this is the suggestion that container shipping companies

²⁸⁵ Isabelle Gerretsen “UN Body Makes ‘Breakthrough’ on Carbon Price Proposal for Shipping” (23 May 2022) Climate Home News <climatechangenews.com>.

²⁸⁶ Peyman Ghaforian Masodzadeh and others, above n 8, at 28 where the authors suggest the implementation of a market-based mechanism, for example a carbon tax, could fund a research and development fund into carbon free fuels and vessels, as well as direct investment towards these new technologies: see also Harilaos N. Psaraftis “Market-based measures for Greenhouse Gas Emissions from Ships: A Review” (2012) 11 *WMU Journal of Maritime Affairs* 211 at 233: see also Sotiria Lagouvardou and others “A Literature Survey on Market-Based Measures for the Decarbonization of Shipping” (2020) 12 *Sustainability* 1 at 2: see also George Mallouppas and Elias Ar. Yfantis “Decarbonization in Shipping Industry: A Review of Research, Technology Development, and Innovation Proposals” (2021) 9 *Journal of Marine Science and Engineering* 411 at 415.

²⁸⁷ See for example *A.P. Moller – Maersk Position Paper: IMO – Need for Strong Leadership to Decarbonize Global Shipping* (2022): see also Janin Aden “Why Shipping Needs to be Rethought” (2022) Hapag-Lloyd <hapag-lloyd.com>.

²⁸⁸ Budd Darr “Roadman to a Zero-Carbon Future” (2 March 2022) MSC Shipping <msc.com>.

²⁸⁹ See for example Joseph S. Nye, Robert O. Keohane “Transnational Relations and World Politics” (1971) 25 *International Organization* 329 at 349; see also Anders Fremstad and Mark Paul “Neoliberalism and Climate Change: How the Free-Market Myth has Prevented Climate Action” (2022) 197 *Ecological*

cannot claim to genuinely represent the public interest as climate regulation will likely raise costs, meaning operating companies may actively oppose climate related measures at the IMO.²⁹⁰ Furthermore, interaction with operating companies at the IMO may serve to make the process *less* democratic, if participation is selective and only certain companies from certain regions – such as Europe – are selected to participate.²⁹¹

However, these arguments can be rebutted. Firstly, the narrative that generally all MCNs are profit-driven machines who will hinder any climate progress is no longer necessarily true. Maersk's recent investment in methanol vessels is illustrative of this,²⁹² marking “an important normative shift within the industry” towards an acknowledgment of shipping's impact on global GHG emissions.²⁹³ This investment can be rationalized as Maersk seeking to capture and consolidate markets in view of the fact that the current way in which container ships operate, with their heavy reliance on HFO, is unsustainable.²⁹⁴ Maersk is essentially trying to get ahead of the IMO-regulatory game by ensuring they minimize impact on profitability and can outcompete rivals when emissions regulations are eventually enacted.²⁹⁵ This is not necessarily a bad thing, if it means other shipping companies will identify these market opportunities and follow suit.

Further, the increasing consolidation of the container shipping industry makes it well-suited to PPP style engagement at the IMO. As aforementioned, one issue with PPP-style governance is the selection of participating stakeholders: thousands of MCNs exist across the globe and across different industries, making it difficult for international organizations to select which companies to engage with.²⁹⁶ However, as I identified at the beginning of this paper, the container shipping industry is increasingly unique in that globalization and low profit margins has seen an increase in consolidation over recent years. What this means

Economies at 2: but see Jerry Patchell and Roger Hayter “How Big Businesses Can Save the Climate: Multinational Corporations Can Succeed Where Governments Have Failed” (2013) 92 *Foreign Affairs* at 17.

²⁹⁰ Justin Alger and others “Corporate Governance and the Environmental Politics of Shipping” (2021) 27 *Global Governance* 144 at 146.

²⁹¹ Korab-Karpowicz, above n 271, at 3.

²⁹² “Maersk Issues First Green Bond to Fund First Green Methanol Vessels” (19 November 2021) Maersk <maersk.com>.

²⁹³ Justin Alger and others “Corporate Governance and the Environmental Politics of Shipping” (2021) 27 *Global Governance* 144 at 163.

²⁹⁴ At 163.

²⁹⁵ At 164.

²⁹⁶ Korab-Karpowicz, above n 271, at 3.

for the IMO and PPP-style governance is that there is a lesser scope of actors of which the organization needs to engage with.

Another common critique of the IMO is that the shipping industry *already* has too much influence at the IMO.²⁹⁷ Flowing from this criticism is the argument that the industry has already, to date, been hindering climate action.²⁹⁸ A scathing New York Times article released in mid-2021 described the IMO as a ‘clubby’ and ‘secretive’ UN agency that is “run concert with the industry it regulates”.²⁹⁹ This has, however, been proven to be untrue. A 2020 report which investigated the shipping industries influence at the IMO concluded “the hypothesis that there is a deliberate attempt to stall the drive to decarbonize [by the industry] cannot be supported by evidence”.³⁰⁰ Indeed, multiple sources have concluded that the stalling of regulatory progress at the IMO is actually symptomatic of the political disagreement between developing and developed countries, particularly over the conflict between the principle of CBDR and NMFT.³⁰¹

2 *Practically Implementing a PPP at the IMO*

How could PPP style governance at the IMO be practically implemented? Currently, the shipping industry can participate in IMO sessions only if they are part of a national delegation to the IMO. These delegations have no established norm or requirements of composition set out by the IMO Convention.³⁰² Thus, one option for the practical implementation of the PPP framework is for the IMO to require of state delegations to

²⁹⁷ Matt Apuzzo and Sarah Hurtes “Tasked to Fight Climate Change, a Secretive U.N. Agency Does the Opposite” *The New York Times* (online ed, London, 3 June 2021); see also Kaufman, above n 248.

²⁹⁸ See generally Amin and others, above n 272.

²⁹⁹ Apuzzo and Hurtes, above n 297.

³⁰⁰ Harilaos N. Psarftis and Christos A. Kontovas “Influence and Transparency at the IMO: The Name of the Game” (2020) 22 *Maritime Economics and Logistics* 151 at 169.

³⁰¹ See for example Lloyds List “IMO Needs to Resolve It’s Trust Issues” (18 June 2021) Lloyds List <lloydslist.com>: see also Heitmann and Khalilian, above n 271, at 689: see also Kopela, above n 214, at 78. For example, At MEPC 62 Brazil, China, Saudi Arabia and Venezuela in voting against the Annex VI Amendments to MARPOL argued the amendments “violat[ed] the common understanding and core principle of the international community in addressing climate change”: see “Statements by the Delegations of Brazil, China, India, Saudi Arabia and the Bolivarian Republic of Venezuela and the Observers of the Pacific Environment and Clean shipping Coalition after the Adoption of Amendments to MARPOL Annex VI” *Report of the Marine Environment Protection Committee on its Sixty-Second Session MEPC 62/24/Add.1, Annex 20*, (July 2011) at 2.

³⁰² Psarftis and Kontovas, above n 300, at 159.

include industry representatives. However, a downside of this approach is that it will not allow genuine bargaining between the industry and states as the industry themselves will be confined to state delegations and may not have their interests properly represented over state interests.

Another option could be to allow the industry to vote and participate at MEPC, Council or Assembly sessions. Having an industry presence in such chambers, alongside NGOs and nation-states, would allow for the meaningful deliberation and bargaining which the PPP framework envisages.³⁰³ The institutionalization of operating companies at the IMO could therefore act as the tradeoff for imposing increased regulatory burdens upon said companies, especially if allocation approach 2 is adopted by the IMO. However, it is unlikely that this approach is politically feasible, again due to the fear that MCNs will dominate deliberations with their financially backed interests and will hinder climate action, even if this is not necessary true.

Finally, another option may be to grant the industry consultative status at the IMO.³⁰⁴ This would allow companies to actively participate in Assembly, Council and MEPC meetings, while not actually affording these entities voting rights.³⁰⁵ Currently, consultative status can only be granted to NGOs.³⁰⁶ In my opinion, this is the most viable and politically feasible option. This is because a consultative status would allow the industry to express their interests on their own accord without being confined to state delegations but would ensure industry interest do not dominate IMO negotiations by granting them voting rights. Importantly, it would allow the industry to share their knowledge and resources regarding decarbonization with IMO member states who seemingly lack such highly technical knowledge of the industry. Such a status would also allow the industry to remain informed regarding upcoming regulatory decisions, so they can financially plan and invest accordingly.

³⁰³ Korab-Karpowicz, above n 271, at 4.

³⁰⁴ See Carlos Fortin and Richard Jolly "The United Nations and Business: Towards New Modes of Global Governance" (2015) 46 *IDS Bulletin* at 46, where the authors consider the granting of a consultative status to companies generally in the context of the United Nations regime: see generally Noriko Fujiwara *Sectoral Approaches to Climate Change: What can Industry Contribute?* (May 2010 CEPS Special Report) at 4.

³⁰⁵ Karim, above n 50, at 20.

³⁰⁶ International Maritime Organization *Rules for Consultative Status of Non-Governmental International Organizations with the International Maritime Organization*: see also IMO Convention, art 62.

IX Insights for Other International Organizations

Drawing the threads of this paper together, a variety of insights can be derived from my analysis which can be applied to other international organizations in fighting climate change.

These insights are specifically useful for other specialized UN agencies like the IMO. For example, the International Civil Aviation Organization (ICAO), which like the IMO is also a specialized UN agency, has also been criticized for lacking in climate ambition.³⁰⁷ Like the IMO however, the ICAO has announced an ambition to achieve net-zero carbon emissions for aircraft by 2050, and unlike the IMO has enacted a market-based-mechanism in the form of a carbon credit trading scheme called CORSIA.³⁰⁸ Under the scheme, aircraft operating companies are required to offset their emissions from their aircraft and obtain the necessary carbon credits under the scheme.³⁰⁹ The scheme appears to be a short-term solution to buy time for long-term advances towards non-carbon solutions – namely aircraft that run on non-carbon fuels.³¹⁰

However, the aviation industry is facing a similar issue as the shipping industry – namely the lack of willingness and capacity to develop and invest in carbon-free aircraft technologies.³¹¹ I suggest the approach advocated for in this paper – that being enhanced industry participation through a public-private partnership – may again be useful in this context. Indeed, calls for private climate governance agendas have already been called for in the aircraft decarbonization context.³¹² I ultimately suggest in response to these calls that allocating emissions to aircraft operating companies, and the creation of a private-public

³⁰⁷ Nazia Parveen “Travel Industry Warned to Tackle Climate Disaster Before It’s Too Late” (13 October 2022) *The Guardian* <theguardian.com>.

³⁰⁸ Joe Lo “International Air Travel Set for ‘Aspirational’ 2050 Net Zero Goal” (7 October 2022) *Climate Home News* <climatechangenews.com>.

³⁰⁹ “Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)” (May 2022) ICAO Environment <icao.int>: see generally “CORSIA Explained” (2020) *Aviation Benefits Beyond Borders* <aviationbenefits.org>.

³¹⁰ Michael P. Vandenberg and Daniel J. Metzger “Private Governance Responses to Climate Change: The Case of Global Civil Aviation” (2018) 30(1) *Fordham Environmental Law Review* 62 at 91.

³¹¹ Trevor Laurence Jockims “The Airline Race for a Breakthrough Fuel to Cut One Billion Tons of Carbon is Just Starting” (September 24th 2022) *CNBC Evolve* <cnbc.com>.

³¹² Vandenberg and Metzger, above n 310, at 62.

partnership as suggested in this paper, could be the answer, to allow for the sharing in research, development, and investment in carbon-free aircraft and fuels.

This argument lends itself to a broader insight into global climate governance, specifically in regard to the sector-focused regulatory approach as taken by specialized UN agencies like the IMO. At the end of the day, addressing climate change will require a shift in the way carbon-emitting industries function. This means innovation and private investment in alternative technologies, to replace carbon-emitting technologies, is required. The private industry plays a pivotal, if not the central role, in this switch. The narrative perpetuated in climate politics that multinational corporations will only inhibit climate action, which has historically translated to a lack of engagement with said corporations in climate policy creation in governments and international organizations, must now be disregarded. We must now rock the boat and acknowledge that corporations do and will continue to play a central role in solving the climate problem. Through the approach I advocate for in this paper, the industry can help tow the line of climate change law and policy at the highest level of international governance. Under this approach, there may just be a light at the end of the wharf.

X Conclusion

In this paper, I asked how the IMO can more effectively promote the decarbonization of the shipping industry in line with its Initial Strategy and the Paris Agreement temperature goal, to avoid unilateral action from stakeholders and ultimately create a more cohesive global regulatory regime. I conclude that, alongside enacting a market-based mechanism, the IMO should take two steps when enacting its 2023 Initial Strategy. First, I suggest the IMO should allocate shipping emissions to states based on where the vessel operating companies are based. Second, I suggest the IMO further engages with the global shipping industry through enacting a public-private partnership. I conclude that this approach will bring the global shipping industry closer to total decarbonization, by encouraging the sharing of information and technology, and by unlocking investment in decarbonizing technologies. This will ensure certainty for the shipping industry in the steps they will soon need to take to decarbonize their fleets.

This paper consists of approximately 13,032 words.

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