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The International Maritime Law Response to Climate Change: The Quest for the Shipping Industry’s ‘Fair Share’ of GHG Emissions Reduction

Aldo Chircop

This chapter discusses the role of international shipping in climate change mitigation, i.e., its emerging contribution to reduce carbon emissions in the wake of the Paris Agreement, 2015 and the expectation that the International Maritime Organization (IMO) will orchestrate the industry’s contribution. The adoption of appropriate targets and standards is expected to be a particularly difficult task because of the global and transnational nature of the shipping industry and the difficulty in establishing the basis for a fair contribution for this industry. While considerable progress has been achieved in enhancing technical and operational regulations to improve efficiencies and reduce harmful emissions, there is concern such measures might not be enough to reduce ship GHG emissions sufficiently. It is arguable that market-based measures could make a difference, but this subject has been controversial and to date has eluded consensus. If a credible plan for industry’s contribution does not promise a realistic fair contribution, it is conceivable that a future meeting of Contracting Parties to the United Nations Framework Convention on Climate Change, 1992, might revisit the decision to defer to the IMO on ship emissions and potentially encourage regionalism in forcing the industry’s contribution.

Introduction

The United Nations Conference on Trade and Development (UNCTAD) has set out the climate change challenge facing international maritime transport in two respects: first there is ‘the need to reduce its carbon emissions’ and, second, and at the same time, there is need to ‘adapt to the potentially wide-ranging impacts of climatic changes’.¹ When it is borne in mind that international maritime transport carries 80 to 90 percent of the volume of global trade, the challenge can only be described as imperative. The aspiration is to deliver the industry’s ‘fair contribution’, without restricting international trade and also without unduly jeopardizing the interests of developing countries.

Aiming at capping global greenhouse gas (GHG) emissions at 2°C above pre-industrial levels and while aiming further efforts to limit the temperature increase to 1.5°C, the Paris Agreement, 2015² pursuant to the United Nations Framework Convention on Climate Change, 1992 (UNFCCC)³ did not include targets for the international shipping industry. However, the understanding was that an industry target consistent with the Paris Agreement cap would be adopted through the International Maritime

¹ United Nations Conference on Trade and Development, ‘Climate Change and Maritime Transport’, accessed 28 January 2017 at <<http://unctad.org/en/Pages/DTL/TTL/Legal/Climate-Change-and-Maritime-Transport.aspx>>.

² Adopted 12 December 2015 (in force 4 November 2016), UN Doc FCCC/CP/2015/L.9/Rev.1, 12 December 2015 (Paris Agreement).

³ Adopted 9 May 1992 (in force 21 March 1994), 1771 UNTS 107.

Organization (IMO or the Organization), the body designated by the United Nations Convention on the Law of the Sea, 1982 (UNCLOS)⁴ as ‘the’ competent international organization with regards to international shipping.⁵ While the international shipping industry in gross terms contributes a relatively small percentage of global GHG emissions and is widely regarded as the most efficient transportation mode, the fact is that its total emissions are comparable to those of Germany or the United Kingdom⁶ and can only be expected to grow with a ‘business as usual’ scenario. Hence the call on the industry to contribute its fair share and, ideally, comparably to targets set by the Paris Agreement.

The maritime industry’s ‘fair share’ of mitigation efforts is now under consideration at the IMO. The Organization has already adopted a range of important measures to enhance technical and operational efficiency, thus reducing emissions, but efforts continue to develop a plan to significantly increase reductions against targets. Ideas for how international shipping can reduce harmful emissions have been proposed for some time,⁷ including through market-based measures (MBMs), but the proposals entail complex ramifications. The IMO is at a crucial juncture to find consensus and turn ideas into a programme of action.

The problem to be addressed is complex. Ships are highly mobile private property whose nationality can be changed with ease. They may be owned in one State, operating in another, but potentially servicing the trade of neither State, but of yet other States. They cannot easily be captured by national contributions under the Paris Agreement. Any scheme for capping their emissions would have to consider that they come in a wide range of classes and use a range of heavy to light fuels (bunkers), depending on the ship, areas of operation, operational practices and regulatory requirements. For this and other reasons, the industry is against absolute emissions, because it can only control relative emissions, i.e., per ton mile in terms of the fuel consumed for the distance covered multiplied by the volume of cargo carried. Indeed, the industry prefers a levy on fuel as a market measure. Bunkers’ suppliers rely on refineries, who in turn receive crude of variable quality from various sources in developed and developing regions. For example, North Sea and West African oils are lighter than Iraqi crude carrying implications for potential emission volumes and types. Each refinery does not necessarily have capacity to produce any kind of bunker fuel. The production of higher quality fuels in sufficient quantities to address the needs of international shipping will be challenging. Ships have schedules to enable just in time delivery, thereby reducing warehousing needs and costs. While low speed results in lower emissions per ton mile, voyages would take longer, necessitating more voyages to meet market demands. Moreover, fewer cargo runs for a ship may reduce the value of its time charter. Ship owners invest in ships for the long-term, perhaps 25-30 years, and amortization costs may be spread over many of those years. The cost of meeting emission reduction targets can be substantial for ships which might require retrofitting, as well as new builds with higher standards to run on superior quality fuels. Assuming the flow of trade is not impeded, higher transportation costs would result in increased cost of goods to consumers. A potential concern

⁴ Adopted 10 December 1982 (in force 16 November 1994), 1833 UNTS 3 (UNCLOS).

⁵ ‘Competent or Relevant International Organizations’ under the United Nations Convention on the Law of the Sea, (1996) *Law of the Sea Bulletin* No. 31, 79-95, accessed 28 January 2017 at <http://www.un.org/depts/los/doalos_publications/LOSBulletins/bulletinpdf/bulletinE31.pdf>.

⁶ Fred Pearce, ‘After Paris, A Move to rein In Emissions by Ships and Planes,’ *Yale Environment* 360, 19 May 2016, accessed 28 January 2017 at <http://e360.yale.edu/features/reduce_co2_emissions_shipping_aviation_regulation_paris>.

⁷ For example see International Council on Clean Transportation, *Air Pollution and Greenhouse Gas Emissions from Ocean-going Ships: Impacts, Mitigation Options and Opportunities for Managing Growth*, Washington & San Francisco 2007, accessed 28 January 2017 at <https://georgiastrait.org/wp-content/uploads/2015/04/MarineReport_Final_Web.pdf>.

is that ship efficiency may lead to the building of much larger ships, and there are canal, berth and port cargo handling limitations to service ships larger than the majority of those in operation.⁸ Also, replacing bunkers by fuel oil which is lower in GHG emissions (e.g., LNG, modified diesel and biodiesel) could cost 20, 70 and 480 percent more.⁹ Beyond the production and use of high quality bunkers and in sufficient volumes to fuel the world's commercial vessels, States whose economies are heavily export-driven could potentially face higher transportation costs. Consumers in importing States would incur higher prices for imported goods. Developing States and others that are geographically distant from their export markets could thus be disproportionately affected by higher priced fuel and costlier ships.

This chapter discusses the role of international maritime law in responding to a complex problem through regulation. This field of law is tasked with shaping the industry's contribution to mitigation, namely the reduction of GHG emissions from ship operations and, perhaps in the distant future, to decarbonize marine transportation. This is not the only role that international maritime law is playing in response to climate change. For example, maritime law has responded to the demands of polar shipping in an increasingly accessible Arctic as a result of sea ice loss.¹⁰ Additionally, and as pointed out above, technical and operational enhancements have been adopted and will contribute to the composition of the 'fair share'. However, the part of the mitigation discourse concerning the creation of appropriate market conditions to incentivize industry is a far more complex process than the initiatives taken to date. Market intervention has the potential of reshaping the industry. This pressure is also occurring at a time when the industry is facing uncertain economic times. The downturn in the global economy has resulted in excess shipping capacity and early recycling of ships.

Against this backdrop, this chapter reports and reflects on the direction and means of achieving the industry's contribution through maritime regulation that extends from the traditional technical and operational regulation to the potential novel role of attempting to shape shipping economics through market-based measures. At the time of writing, the IMO's Marine Environment Protection Committee (MEPC), after many years of work, is on the eve of negotiating new commitments to mitigation. The challenges and opportunities facing the MEPC's work are considered and observations on the challenges that lie ahead are made.

Opportunities and constraints of GHG regulation of ships

Addressing the shipping industry's contribution to mitigation by using international maritime regulation presents opportunities and constraints.

Opportunities

First, the global nature of shipping means that it is most effectively regulated at the global level. Imposing emission reductions at the national or even regional levels potentially undermines the

⁸ Pew Centre on Global Climate Change, 'Marine Shipping', March 2010, accessed 28 January at <<https://www.c2es.org/docUploads/MarineShipping.pdf>>.

⁹ *Ibid.*

¹⁰ For a review of the IMO's polar shipping regulation, see Aldo Chircop, 'Sustainable Arctic Shipping: Are Current International Rules for Polar Shipping Sufficient?' 11 *Journal of Ocean Technology* 2016, 39.

universal nature of maritime regulation and aspirations for uniform application.¹¹ International trade benefits from uniform maritime regulation.

Second, as noted in the introduction, the IMO is the competent international organization for the regulation of shipping. The UNCLOS establishes an obligation for State Parties to act ‘through the competent international organization or general diplomatic conference’ to ‘establish international rules and standards to prevent, reduce and control pollution of the marine environment from vessels.’¹² Specifically with regard to atmospheric pollution, they have the obligation to adopt laws addressing pollution of the marine environment from or through the atmosphere with regard ‘to vessels flying their flag or vessels or aircraft of their registry, taking into account internationally agreed rules, standards and recommended practices and procedures and the safety of air navigation.’¹³ There follows the further duty to act ‘especially through competent international organizations or diplomatic conference’ to endeavour to establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control such pollution.¹⁴ These duties infer a mandate for the IMO to address GHG emissions from ships, in addition to the general environmental mandate in respect of international shipping in its own constitutive instrument.¹⁵

Third, the IMO is widely regarded as an efficient and effective specialized agency of the United Nations. It has a largely successful record of international regulation for safety, environment protection and security. International maritime regulation is underscored by consensus and goals of universalization (ensuring instruments are broadly subscribed), uniformity (instruments are to be implemented consistently) and with ‘no more favourable treatment’ (all ships are treated on the same playing field irrespective of nationality), and with principles for the adoption of regulations.¹⁶ As a result, there is a functional international governance framework that is in a position to address mitigation in an appropriate and effective manner.

Fourth, a major reason for the successful IMO record is the inclusive approach to the development and adoption of regulations, rules and standards. The various IMO committees function not only on the basis of Member State delegations, but also through the active participation of a large number of observers from industry, unions and environmental organizations. These organizations possess substantive technical, operational, commercial, and environmental expertise and their inputs are frequently used not only to inform, but periodically also as basis for particular regulatory initiatives. Indeed, many regulated technical standards may well have been initiated in industry practices.¹⁷ This is important for the GHG reductions discourse because, while industry observers will clearly advance

¹¹ Historically, maritime law has been guided by aspirations for uniformity in the public and private law spheres. See Gordon W Paulsen, ‘An Historical Overview of the Development of Uniformity in International Maritime Law,’ 57 *Tulane Law Review* 1983, 1065.

¹² UNCLOS, *supra* note 4, Art. 211(1).

¹³ *Ibid.*, Art. 212(1).

¹⁴ *Ibid.*, Art. 212(2).

¹⁵ Convention on the Inter-Governmental Maritime Consultative Organization, adopted 6 March 1948, ATS 1958 No 5 (entered into force 17 March 1958), as amended and renamed by IMO Assembly Resolutions A.358(IX), IMO Doc A.358(IX) 14 November 1975 and A.371(X), IMO Doc A.371(X) 9 November 1977. The MEPC was formally established in 1973.

¹⁶ Principles to Be Considered When Drafting IMO Instruments, IMO Res A.1103(29), 26 November 2015.

¹⁷ For example the International Maritime Dangerous Goods Code (IMDG), originally adopted by an IMO Assembly resolution in 1965, IMO Res. A.81(IV) and again in 1991, IMO Res. Doc A.716(17), is a major code under the International Convention for the Safety of Life at Sea (adopted 1 November 1974, in force 25 May 1980) 1184 UNTS 2.

their own particular interests, at the same time Member delegations are alerted to practical concerns that may be important in the impact assessment of proposed rules and standards.

Fifth, the IMO has already the necessary international conventional law framework in place in the form of the International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL), as amended by the Protocol of 1978,¹⁸ Annex VI of which concerns air pollution from ships. With 154 State Parties representing 99.14 percent of global tonnage,¹⁹ this convention is the most important legal instrument concerning the prevention of vessel-source pollution. As will be demonstrated below, actions taken to date by the IMO to address emissions from ships have been under Annex VI.

Sixth, once adopted, mitigation measures from shipping could potentially be effectively enforced because of flag State responsibilities in UNCLOS²⁰ and port State control under MARPOL.²¹ National maritime administrations and recognized organizations are responsible for the regulatory surveying of ships and certifying ship operations. These are potentially important tools to ensure international rules and standards are observed and possibly useful to support MBMs to further mitigation (e.g., green ship certification). The enforcement of international maritime safety and pollution prevention conventions has been greatly assisted through port state provisions in key instruments and memorandums of understanding (MOUs) on port State control among maritime administrations covering virtually all major trading regions.²² Ships calling at ports of the maritime administrations party to these MOUs are inspected for compliance with the requirements of the conventions enforced under the MOU concerned. The port inspections are subject to the ‘no more favourable treatment’ principle so that the international conventions are applied to all ships, irrespective of State of registry. Port State control inspectors have significant powers with regard to infringements of international requirements and in serious cases may even detain a vessel in port until the deficiencies are rectified.

Constraints

First, although the shipping industry has had success in reducing ship emissions over time, the projections are for increased emissions because the emission volume operates *pari passu* with global economic growth and the expectation of carriage of that trade by sea.²³ The Third IMO GHG Study revealed that the 2007 carbon dioxide (CO₂) emission estimate of 2.8 percent of global emissions had

¹⁸ Adopted 2 November 1973) 1340 UNTS 184 as amended by the Protocol Relating to the International Convention for the Prevention of Pollution from Ships of 1973, 1340 UNTS 61 (adopted 17 February 1978, entered into force 2 October 1983), as amended (MARPOL). Annexes I and II entered into force on the same date as the Convention.

¹⁹ IMO, Summary Status of Conventions as of 7 February 2017, accessed 7 February 2017 at <<http://www.imo.org/en/About/Conventions/StatusOfConventions/Pages/Default.aspx>>.

²⁰ UNCLOS, *supra* note 4, Arts. 94 and 217.

²¹ MARPOL, *supra* note 18, Annex VI, Regulations for the Prevention of Air Pollution from Ships, Art. 10.

²² Europe and the North Atlantic (Paris MoU); Asia and the Pacific (Tokyo MoU); Latin America (Acuerdo de Viña del Mar); Caribbean (Caribbean MoU); West and Central Africa (Abuja MoU); the Black Sea region (Black Sea MoU); the Mediterranean (Mediterranean MoU); the Indian Ocean (Indian Ocean MoU) and the Persian Gulf (Riyadh MoU). For links to each MoU, see IMO, Port State Control, accessed 7 February at <http://www.imo.org/blast/mainframe.asp?topic_id=159>.

²³ For example for CO₂ and CO₂e. See *Third IMO GHG Study: Executive Summary and Final Report*, IMO 2015, 1 (tables), accessed 28 January at <<http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/Third%20Greenhouse%20Gas%20Study/GHG3%20Executive%20Summary%20and%20Report.pdf>> (Third IMO GHG Study). The report was completed in 2014.

dropped to 2.2 percent by 2012.²⁴ The report notes that CO₂ emissions are projected to increase by 55 to 250 per cent by 2050 on a business as usual scenario, despite fleet average efficiency improvements of about 40 percent. In other words, whatever the reductions through technical and operational improvements, and in the absence of '0' emission technologies, growth in global trade will push up ship emissions.

Second, there are conflicting views on progress in ship technology. One study suggests that it has not improved much in recent times, whereas others point to improvements.²⁵ The diesel engine is the major workhorse of transportation systems, but the impacts on the environment and public health are considerable.²⁶ Despite the range of fuels used in modern ships, diesel remains a major player.²⁷ In the wake of the diesel engine scandals in the automobile industry, a concern is whether the diesel engine can in fact be further improved sufficiently to significantly reduce harmful emissions.

Third, another technological issue is how to coordinate GHG emissions requirements with other atmospheric emissions from ships so that the purposes and effectiveness of the various regulations are not impaired. For example, it has been reported that sulphur oxide (SO_x) emission reductions under MARPOL Annex VI could lead to increased fuel consumption, and hence not contribute to CO₂ emission reduction.²⁸

Fourth, at this time the determination of GHG reductions based on national contributions under the Paris Agreement has no parallel in the IMO regulatory framework. National governments cannot easily make commitments to lower emissions from their ships or on ships that service their trade. Ships can be easily reflagged and moved out of jurisdiction. Thus contributions to mitigation cannot easily be made by the flag State or State of beneficial ownership, and therefore have to be done through some other manner. One idea is to create a system for emissions certification and a public registry for ships to maintain records that can be monitored and audited. This will not be analogous to the registry for nationally determined mitigation contributions under the Paris Agreement.²⁹ A public registry for ships would involve private owners and recorded fuel supplies to those ships.

Fifth, despite the sophistication and mostly consensus-based decision-making at the IMO, at times the achievement of consensus has entailed simplification of negotiations or agreement at the lowest common denominator.³⁰ The MBM discussions to date have demonstrated fundamental and sharp differences of views between Member States and particular procedural decisions during discussions to date have included majority decision-making. Although the Organization continues to aspire for consensus-based decision-making, its ability to do so also in the case of GHG emission targets will be put to the test.

Sixth, if and whatever MBM system is adopted, and assuming it applies to the amount of carbon emitted by ships per ton mile, it will likely affect developing States harder than developed States. In

²⁴ *Ibid.*

²⁵ Pew Centre, *supra* note 8.

²⁶ A. C. Lloyd and T. A. Cackette, 'Diesel Engines: Environmental Impact and Control,' 51 *Journal of the Air & Waste Management Association* 2001, 809.

²⁷ Kenneth L. Tuttle, 'Marine Diesel and Gas Turbine Engine Emissions', 106 *SNAME Transactions* 1998, 495.

²⁸ UCL Transport Institute, 'Shipping in Changing Climates,' Briefing Note, May 2014, accessed 28 January 2017 at <<https://www.ucl.ac.uk/transport-institute/pdfs/shipping-climate-change>>.

²⁹ Paris Agreement, *supra* note 2, Arts. 3, 4 and 6.

³⁰ For example during the development of the Polar Code environmental organizations advocated attention on ballast water, anti-fouling and use of heavy fuel oils in polar shipping, but these issues were set aside by Member delegations. Some Member delegations advocated higher standards on specific issues, e.g., for ice navigators (proposal by Canada), but without uptake by other delegations.

2016 UNCTAD reported that developing countries remained key world importers and exporters.³¹ Two interesting conflicts arise: the first is that under the Paris Agreement developing countries have a different pace of decarbonisation from developed economies.³² The second is that while on the one hand the Paris Agreement is infused with the equitable principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances, on the other hand port State control and enforcement of maritime regulation is guided by the no more favourable treatment principle to ensure the uniform application of international regulations and standards. An MBM for international shipping will need to consider this conflict.

Seventh, the shipping industry's contribution orchestrated through the IMO will not include all ships. The IMO efforts have focused on ships engaged in international trade. Admittedly, these tend to be large vessels with the highest GHG emitting capacity. However, the consequence is that substantial numbers of other ships, such as those engaged in domestic trade (e.g., ferries), fishing vessels, and recreational vessels are excluded. Presumably, the regulation of the emissions of these vessels would have to be captured by national contributions under the Paris Agreement.

The IMO Response

At the 21st Conference of the Parties to the UNFCCC in Paris in December 2015 (COP 21), the outgoing IMO Secretary-General was emphatic in stating that the IMO was the only international organization 'to have adopted energy-efficiency measures that are legally binding across an entire global industry and apply to all countries.'³³ The Organization has had a longstanding concern with atmospheric emissions from ships. Its work has been undertaken along two major lines of action, the first concerning technical and operational aspects of emission, and the second exploring how MBMs might constitute an integral part of GHG emission reductions strategy.

Technical and operational

A significant contribution to ship emissions was undertaken in 2011 with the adoption of amendments to MARPOL's Annex VI, setting out measures aimed at improving the energy efficiency of shipping.³⁴ The measures made mandatory the Energy Efficiency Design Index (EEDI) for new ships and the Ship Energy Efficiency Management Plan (SEEMP) for all ships. The Design Index is goal-oriented and performance-based, leaving choice of technologies to use in a specific ship design to the industry with the condition that the required energy efficiency level is satisfied.³⁵ This provides industry with a

³¹ UNCTAD, *Review of Maritime Transport 2016*, 12-14, accessed 28 January 2017 at <<http://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=1650>>. 'Developing countries continued to contribute larger shares to the total volumes of international seaborne trade. Their contribution with regard to global goods loaded is estimated at 60 per cent, and their import demand as measured by the volume of goods unloaded increased, reaching 62 per cent. Developing countries remained key world importers and exporters in 2015 and have consolidated their position as suppliers of raw materials, while also strengthening their position as large sources of consumer demand and main players in globalized manufacturing processes.' *Ibid.*

³² Paris Agreement, *supra* note 2, Art. 4.

³³ Koji Sekimizu, as quoted in 'Full Speed Ahead with Climate-change Measures at IMO following Paris Agreement', IMO Press Briefing 55, 14 December 2015, accessed 28 January 2017 at <<http://www.imo.org/en/MediaCentre/PressBriefings/Pages/55-paris-agreement.aspx>>.

³⁴ IMO Res. MEPC.203(62), 15 July 2011 (in force 1 January 2013).

³⁵ MARPOL, *supra* note 18, Annex VI, Chap. IV, Regs. 20-21.

measure of flexibility in complying with the Design Index. The EEDI is subject to periodic review. The Management Plan applies to ships of 400 gross tonnage engaged in international trade and requires operators to improve the energy efficiency of ships on the basis of monitoring, new technologies and improved new practices (e.g., low-carbon fuel regulation, speed regulations, improvements in fuel efficiency).³⁶ By 2025, all new ships will be 30 percent more energy efficient than those built in 2014.³⁷

Additional steps were taken in support of the implementation of the new regulations under Annex VI, including the updated 2014 Guidelines on Survey and Certification of the Design Index (EEDI)³⁸ and the 2013 Interim Guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions.³⁹ The MEPC 69 session continued the work of MEPC 68 in developing guidelines to support the uniform implementation of the Annex VI regulations on energy efficiency for ships. In October 2016, MEPC 70 amended MARPOL to introduce a mandatory system for reporting data on ships' annual fuel consumption for ships of 5,000 gross tonnage or more.⁴⁰ The flag State will monitor reporting and issue a Statement of Compliance to the ship and transfer the data to the IMO Ship Fuel Consumption Database. The plan is for the amendment to enter into force in 2018 and reporting of data to start in 2020, with guidelines for this purpose to be prepared.⁴¹

The overall direction of the IMO's work is now set out in the 'Roadmap for Developing a Comprehensive IMO Strategy on Reduction of GHG Emissions from Ships'⁴² adopted after a multi-party industry proposal.⁴³ The Roadmap consists of further GHG studies, intersessional work subject to timelines, and ongoing Committee work ship energy efficiency improvements. The initial GHG reduction strategy will be adopted in 2018 and will lead to a revised strategy in 2023 to include a range of measures and implementation schedules over the short, medium and long-terms.⁴⁴

Market-based Measures

Despite the above technical and operational measures, which could significantly bring down emissions, there is concern that they might not be sufficient to constitute a generally acceptable contribution from the international shipping industry and comparably to commitments under the Paris Agreement. The discourse in the IMO has considered whether in order for the industry to reach targets comparable to those in the Paris Agreement, an industry-wide MBM is also needed.

The launching point of this discussion was the Organization's platform for the regulation of atmospheric emissions from ships. In 2000 the MEPC conducted the first study on GHG emissions

³⁶ *Ibid.*, Reg. 22.

³⁷ IMO, 'Low Carbon Shipping and Air Pollution Control,' accessed 28 January at <<http://www.imo.org/en/MediaCentre/HotTopics/GHG/Pages/default.aspx>>.

³⁸ 2014 Guidelines on Survey and Certification of the Design Index (EEDI), IMO Res. MEPC.254(67), 17 October 2014.

³⁹ 2013 Interim Guidelines for Determining Minimum Propulsion Power to Maintain the Manoeuvrability of Ships in Adverse Conditions, as amended, IMO Doc. MEPC.1/Circ.850/Rev.1, 15 July 2015.

⁴⁰ IMO Res. MEPC.278(70), 28 October 2016 (in force 1 March 2018). The amendment included a data collection system for fuel oil consumption of ships.

⁴¹ Consideration of the Report of the MEPC, Note by the Secretary-General, IMO Doc. C 117/7, 16 November 2016 (Council 117).

⁴² *Ibid.*

⁴³ Development of a Road Map to Determine a Possible IMO Fair Share Contribution, Submitted by BIMCO, ICS, INTERCARGO, INTERTANKO and WSC, IMO Doc. MEPC 70/7/8, 19 August 2016.

⁴⁴ Council 117, *supra* note 41.

from shipping⁴⁵ and in 2003 this led to the adoption of a policy to guide the IMO's work on the reduction of GHG emissions.⁴⁶ The Committee was urged to identify and develop mechanisms needed to enable limitation or reduction of GHG emissions from international shipping. Priorities included the establishment of a GHG emission baseline based on a better understanding of ship emissions, development of a methodology to describe the GHG (especially CO₂) efficiency of a ship through an emission index, development of guidelines by which GHG emission indexing could be applied and verified, and evaluation of technical, operational and market-based solutions.⁴⁷ The MEPC was also requested to consider the methodological aspects related to the reporting of GHG emissions and develop a work plan.⁴⁸ Building an understanding of emissions from ships constituted a challenge from the beginning and voluntary guidelines to assist with emission indexing were adopted to eventually assist the establishment of a database.⁴⁹

The idea of MBMs was mooted by the United Kingdom at MEPC 55,⁵⁰ but the first substantive discussion was at MEPC 56 in 2006 and the motivation was to introduce inducements to the maritime industry to invest in more fuel efficient ships and ship operations, and explore potential offsets with other sectors.⁵¹ Not all IMO Member States embraced the initiative without reservations, and some even expressed suspicion of MBMs. For example, The Bahamas, while echoing the concerns of other small island developing States, expressed the belief that MBMs have the potential to restrict or distort international trade and development, with the added likelihood that developing States would bear the brunt of the cost, and instead expressed preference for no market intervention at all.⁵²

In 2009 the Second GHG Report concluded that MBMs constituted cost-effective policy instruments with a high environmental effectiveness and that an MBM was needed as part of the comprehensive package of measures to regulate GHG emissions from international shipping.⁵³ An overwhelming majority at MEPC 59 agreed.⁵⁴ At MEPC 59 and MEPC 60 several Member States and observer organizations had submitted proposals that were potentially ground-breaking. A proposal submitted by Cyprus, Denmark, the Marshall Islands, Nigeria and the International Parcel Tankers Association (IPTA) suggested the establishment of an International Fund for GHG emissions from ships based on a global reduction target for international shipping.⁵⁵ Emissions in excess of the target would have to be offset by purchased approved emission reduction credits that would be based on a contribution paid on every ton of bunker fuel purchased. Japan proposed a 'Leveraged Incentive

⁴⁵ Report on the Outcome of the IMO Study on Greenhouse Gas Emissions from Ships, Submitted by the Secretariat, IMO Doc. MEPC 45/8, 29 June 2000. The first Study of Greenhouse Gas Emissions from Ships is attached. At that time the report concluded that shipping contributed 1.8% of the world's total CO₂ emissions.

⁴⁶ Policies and Practices related to the Reduction of Greenhouse Gas Emissions from Ships, IMO Res A.963(23), 23 December 2003.

⁴⁷ *Ibid.*

⁴⁸ *Ibid.*

⁴⁹ Interim Guidelines for Voluntary Ship CO₂ Emission Indexing, IMO Doc. MEPC/Circ.47, 29 July 2005.

⁵⁰ Report of the MEPC on its 55th Session, IMO Doc MEPC 55/INF.7, 16 October 2006 (MEPC 55 Report).

⁵¹ Report of the MEPC on its 56th Session, IMO Doc. MEPC 56/23, 30 July 2007.

⁵² Market-Based Instruments: A Penalty on Trade and Development, Submitted by The Bahamas, IMO Doc. MEPC 60/4/10, 13 January 2010.

⁵³ Report of the MEPC on its 59th Session, IMO Doc. MEPC 59/24, 27 July 2009, 38.

⁵⁴ *Ibid.*, 46.

⁵⁵ An International Fund for Greenhouse Gas Emissions from Ships, Submitted by Cyprus, Denmark, the Marshall Islands, Nigeria and the International Parcel Tankers Association (IPTA), IMO Doc. MEPC 60/4/8, 18 December 2009.

Scheme' consisting of contributions based on bunker fuel paid to a GHG Fund.⁵⁶ Good performance, in terms of ships meeting or exceeding agreed efficiency benchmarks, would be rewarded through partial refunds. The United States argued for mandatory efficiency standards for all ships and that an efficiency credit trading programme should be established to induce compliance.⁵⁷ Norway submitted a proposal for a cap and trade system, with a sector-wide cap on net emissions and the establishment of a global emission trading/auctioning system.⁵⁸ The United Kingdom submitted a proposal similar to Norway's, but based on national rather than global auctioning and with a long-term decreasing cap.⁵⁹ Also similar to Norway's, France suggested an emissions trading system with some differences.⁶⁰ Jamaica proposed a uniform levy on vessels calling into port based on consumed bunkers.⁶¹ Germany proposed an 'Impact Assessment of an Emissions Trading Scheme' with particular consideration of developing countries.⁶² The World Shipping Council (WSC) proposed incremental mandatory efficiency standards for all new and existing ships according to their class, and a fee per ton of fuel consumed would be levied from non-compliant ships.⁶³ The International Union for Conservation of Nature (IUCN) called for a rebate mechanism for a market-based instrument while compensating developing countries for the MBM financial impact.⁶⁴ Although the various initial proposals varied significantly in terms of conceptual development, collectively they produced sufficient working material for the Organization to explore a range of MBM options.

The number and diversity of approaches raised questions on how best to discuss and assess and eventually decide on the MBM that would most likely secure the broadest support. For this purpose, MEPC 60 established an expert group to study these proposals by undertaking a feasibility study and impact assessment to enable it consider options.⁶⁵ This group completed its work in 2011.⁶⁶ The ideas proposed originally were supplemented by additional submissions and were reorganized and constituted the focus of the study as follows:

- Bahamas: technical and operational measures as the only direct and effective means to deliver cuts in CO2 emissions;

⁵⁶ Consideration of a Market-based Mechanism: Leveraged Incentive Scheme to Improve the Energy Efficiency of Ships Based on the International GHG Fund Submitted by Japan, IMO Doc. MEPC 60/4/37, 15 January 2010.

⁵⁷ Further Details on the United States Proposal to Reduce Greenhouse Gas Emissions from International Shipping, Submitted by the United States of America, IMO Doc. MEPC 60/4/12, 14 January 2010.

⁵⁸ A Further Outline of a Global Emission Trading System (ETS) for International Shipping, Submitted by Norway, IMO Doc. MEPC 60/4/22, 15 January 2010.

⁵⁹ A Global Emissions Trading System for Greenhouse Gas Emissions from International Shipping, Submitted by the United Kingdom, IMO Doc. MEPC 60/4/26, 15 January 2010.

⁶⁰ Further Elements for the Development of an Emissions Trading System for International Shipping, Submitted by France, IMO Doc. MEPC 60/4/41, 15 January 2010.

⁶¹ Achieving Reduction in Greenhouse Gas Emissions from Ships through Port State Arrangements Utilizing the Ship Traffic, Energy and Environment Model, STEEM, Submitted by Jamaica, IMO Doc. MEPC 60/4/40, 15 January 2010.

⁶² Impact Assessment of an Emissions Trading Scheme with a Particular View on Developing Countries, Submitted by Germany, IMO Doc. MEPC 60/4/54, 29 January 2010.

⁶³ Proposal to Establish a Vessel Efficiency System (VES), Submitted by the World Shipping Council, IMO Doc. MEPC 60/4/39, 15 January 2010.

⁶⁴ A Rebate Mechanism for a Market-based Instrument for International Shipping, Submitted by the International Union for Conservation of Nature (IUCN), IMO Doc. MEPC 60/4/55, 29 January 2010.

⁶⁵ Report of the MEPC on its 60th Session, IMO Doc. MEPC 60/22, 12 April 2010 at 35-42. The expert group's terms of reference were set out in Work Arrangements for Agenda Item 4 and Proposals for Further Progress on GHG Matters in 2010, IMO Doc. MEPC 60/4/57, 3 March 2010.

⁶⁶ Full Report of the Work Undertaken by the Expert Group on Feasibility Study and Impact Assessment of Possible Market-based Measures, IMO Doc. MEPC 62/5/1, 8 April 2011.

- Denmark, Cyprus, the Marshall Islands, Nigeria (and IPTA): establishment of an International Fund for GHG emissions from ships (GHG Fund);
- Jamaica: reductions in GHG emissions from ships to be achieved through port State arrangements utilizing the traffic, energy and environment model, STEEM (PSL) (essentially proposing a levy in ports);
- Norway, United Kingdom, France and Germany: establishment of a Global Emissions Trading System (ETS);
- Japan and WSC: establishment of an Efficiency Incentive Scheme (EIS) based on the Leverage Incentive Scheme (LIS) and the Vessel Efficiency System (VES);
- United States: adoption of a scheme for Ship Efficiency and Credit Trading (SECT); and
- IUCN: creation of a Rebate Mechanism (RM) for an MBM for international shipping.⁶⁷

The proposals varied in terms of whether the MBMs would operate *intra* the shipping sector (in sector) or operating both *intra* and *extra* sector (out of sector), and were grouped accordingly.⁶⁸ This was an interesting approach because the *extra* sector dimension of some proposals meant that carbon credits could be purchased from or sold to other sectors. The working group identified a number of benefits to be expected from the use of MBMs, including:

- incentivizing shipping to achieve improved energy efficiency;
- offsetting – purchase of approved emission reduction credits;
- providing a rebate to developing countries;
- financing adaptation and mitigation activities in developing countries;
- financing improvement of maritime transport infrastructure in developing countries (e.g. Africa);
- supporting R&D to improve energy efficiency of international shipping; and
- supporting the Organization’s Integrated Technical Co-operation Programme.⁶⁹

While the Expert Group significantly advanced the discourse, there remained fundamental issues and differences. There was uncertainty regarding climate finance and the use and purposes of MBM revenues from emission trading schemes and levies.⁷⁰ The methodology of impact assessment of the proposed measures, most of which required substantially more in-depth study, was an issue. Also, an ongoing issue was the reliability of fuel use and emission data to enable realistic forecasts and likely impacts of the various measures. Moreover, some Member States felt that the discussion on MBMs was largely premature because of the lack of reliable data and potentially disadvantaged developing States. The issues carried forward from one MEPC session to another. MEPC 64 postponed the debate to MEPC 65,⁷¹ and in turn MEPC 65 suspended discussion on MBMs to an as yet undetermined future session.⁷²

⁶⁷ *Ibid.*

⁶⁸ MEPC 62/5/1, *supra* note 66, Annexes 3 and 4.

⁶⁹ Report of the MEPC at its 63rd Session, IMO Doc. MEPC 63/23, 14 March 2012, at 42.

⁷⁰ *Ibid.*, 41.

⁷¹ Report of the MEPC on its 64th Session, IMO Doc. 64/23, 11 October 2012, 38.

⁷² Report of the MEPC on its 65th Session, IMO Doc. MEPC 65/22, 24 May 2013, 44.

The decision to suspend the MBM deliberations appears to have been influenced by several factors, including the continuing uncertainty of impact of MBMs on developing countries, that MBM proposals did not appear to take into consideration differences between ships and operational differences (e.g., navigation speed, actual fuel consumption by different ships and shipowners), and that the relationship to other treaty regimes (UNCLOS, Kyoto Protocol⁷³ and World Trade Organization (WTO)⁷⁴) was unclear and potentially conflicting in the eyes of some. The WTO dimension of potential MBMs in shipping prompted a request from the IMO to the WTO to assist with clarifying the potential relationship.⁷⁵ Although the WTO declined to comment directly on the proposed MBMs, its response to the IMO indicated that a number of trade institutions might need to be considered to determine whether proposed MBMs were compatible with those institutions.⁷⁶ These included provisions in the General Agreement on Tariffs and Trade (GATT)⁷⁷ (e.g., rules on non-discrimination in ‘most favoured nation’ and ‘national treatment’, ‘quantitative restrictions’, and application of exceptions to GATT rules for environment protection and public health purposes), Agreement on Technical Barriers to Trade (TBT)⁷⁸ (e.g., rules for standards, technical requirements and conformity assessment procedures), and General Agreement on Trade in Services (GATS)⁷⁹ (e.g., measures affecting trade in services, including maritime transport).⁸⁰ The flagged matters suggested that there could be issues of consistency between international regimes that likely required further study, as was indeed suggested by some Member delegations.

Conclusion

In a submission at MEPC 69 in April 2016, the International Chamber of Shipping stated that we ‘probably continue to be dependent on fossil fuels for several more decades.’⁸¹ Clearly the process of decarbonizing international shipping is going to take a long time and market measures taken today may have unintended consequences. A spokesperson for that organization further stated that ‘... the shipping industry fully recognizes that society expects more, and we therefore think it is vital that IMO Member States agree some truly ambitious CO₂ reduction commitments by 2018.’⁸² The hope is that ships built after 2025 will be at least 30 percent more efficient. The industry appears supportive of the introduction of a legally binding MBM, although the preference is for a global levy based on fuel consumption. But will all Member States be ready to adopt ambitious commitments on the basis of the

⁷³ 1997 Kyoto Protocol to the UN Framework Convention on Climate Change (UNFCCC), adopted 11 December 1997 (in force 16 February 2005), 2303 UNTS 148.

⁷⁴ 1994 Agreement Establishing the World Trade Organization, adopted 15 April 1994 (in force 1 January 1995), 1867 UNTS 154.

⁷⁵ *Ibid.*, 47.

⁷⁶ World Trade Organization’s Views on Document MEPC 64/5/4 Submitted by India and Saudi Arabia, Note by the Secretary-General, IMO Doc. MEPC 65/INF.18, 21 February 2013 (WTO Views), Annex.

⁷⁷ Adopted 15 April 1994 (in force 1 January 1995), 1867 UNTS 187.

⁷⁸ Adopted 15 April 1994 (in force 1 January 1995), Agreement Establishing the World Trade Organization, Annex 1A, 1868 UNTS 120.

⁷⁹ Adopted 15 April 1994 (in force 1 January 1995), Agreement Establishing the World Trade Organization, Annex 1B, 1869 UNTS 183.

⁸⁰ WTO Views, *supra* note 76, Annex.

⁸¹ Proposal to Develop an ‘Intended IMO Determined Contribution’ on CO₂ Reduction for International Shipping, IMO Doc. MEPC 69/7/1, 12 February 2016.

⁸² ‘ICS: IMO Needs to Agree to CO₂ Commitments by 2018,’ Marine Link, 8 November 2016, accessed 28 January 2017 at < <http://www.marinelink.com/news/commitments-needs-agree418017>>.

industry's preference for application of the no more favourable treatment principle, given the perceived inequities for developing countries and including SIDS States? This has not been the case to date.

Can the IMO deliver a compromise solution? It has to and MEPC 71 in July 2017 promises to be a critical meeting. Already in 2006 at MEPC 55, the Committee was of the view that 'IMO should maintain its leading position to avoid unilateral action either on a global, regional or national level,' and that on this matter the industry needed to improve its image.⁸³ Again in MEPC 56 in 2007 some Member States noted that 'the lack of progress by international organizations may lead countries or regional organizations to take initiatives, such as unilateral inclusion of international shipping in the European Emission Trading Scheme.'⁸⁴ And more recently at MEPC 69, a comment was made that, while recognizing the uniqueness of the maritime sector and the record of the IMO, 'to remain credible a work plan needs to be developed, otherwise the issue will be dealt with elsewhere.'⁸⁵ An unsatisfactory IMO effort might unseat the Organization from the leadership role played to date in favour of a future UNFCCC COP treatment instead and potentially also for the European Union to legislate targets for shipping that trade in and from its ports.⁸⁶

The aims of international maritime law in achieving universality and uniformity will be put to the test. The IMO Member States will have to find a compromise between a regulatory ethos aimed at universal and uniform rules while at the same time ensuring that efficiency does not trump equity. If and whatever MBMs are adopted, they will have an impact on how shipping costs are structured. They can be expected to impact maritime trade and consumer prices.

⁸³ MEPC 55 Report, *supra* note 50, at 32.

⁸⁴ Report of the MEPC at its 56th Session, IMO Doc. MEPC 56/23, 30 July 2007, at 35.

⁸⁵ Report of the MEPC at its 69th Session, IMO Doc. MEPC 69/21, 13 May 2016, at 36.

⁸⁶ For example, the Regulation of 29 April 2015 creating an EU-wide legal framework for monitoring, reporting and verification of CO₂ emissions from ships, to become effective in 2018, could evolve into something more, raising concerns over regionalism in maritime regulation.