Centre for International
Governance Innovation

Conference Report – Halifax, Nova Scotia, March 6, 2017

Understanding the Challenges of Climate Change Regulation in International Shipping

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About CIGI

We are the Centre for International Governance Innovation: an independent, non-partisan think tank with an objective and uniquely global perspective. Our research, opinions and public voice make a difference in today's world by bringing clarity and innovative thinking to global policy making. By working across disciplines and in partnership with the best peers and experts, we are the benchmark for influential research and trusted analysis.

Our research programs focus on governance of the global economy, global security and politics, and international law in collaboration with a range of strategic partners and support from the Government of Canada, the Government of Ontario, as well as founder Jim Balsillie.

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Nos programmes de recherche ont trait à la gouvernance dans les domaines suivants : l'économie mondiale, la sécurité et les politiques mondiales, et le droit international, et nous les exécutons avec la collaboration de nombreux partenaires stratégiques et le soutien des gouvernements du Canada et de l'Ontario ainsi que du fondateur du CIGI, Jim Balsillie.

About the International Law Research Program

The International Law Research Program (ILRP) at CIGI is an integrated multidisciplinary research program that provides leading academics, government and private sector legal experts, as well as students from Canada and abroad, with the opportunity to contribute to advancements in international law.

The ILRP strives to be the world's leading international law research program, with recognized impact on how international law is brought to bear on significant global issues. The program's mission is to connect knowledge, policy and practice to build the international law framework — the globalized rule of law — to support international governance of the future. Its founding belief is that better international governance, including a strengthened international law framework, can improve the lives of people everywhere, increase prosperity, ensure global sustainability, address inequality, safeguard human rights and promote a more secure world.

The ILRP focuses on the areas of international law that are most important to global innovation, prosperity and sustainability: international economic law, international intellectual property law and international environmental law. In its research, the ILRP is attentive to the emerging interactions among international and transnational law, Indigenous law and constitutional law.

About the Author

Basil Ugochukwu is a post-doctoral fellow with CIGI's International Law Research Program. At CIGI, his current research focuses on how to reflect human rights and sustainable development goals in climate mitigation and financing projects. This research includes analyzing regulatory and human rights risks that could result from market-based mechanisms in article 5 and use of internationally transferred mitigation outcomes to achieve nationally determined contributions in article 6 of the Paris Agreement. Basil will also produce research that examines how these mechanisms could facilitate sustainable financing for a transition to a green economy.

Prior to joining CIGI, Basil was a director of the Legal Defence Centre and a staff attorney at the Constitutional Rights Project, both in Nigeria. He has also taught various courses in legal process and international human rights law at York University. His research has been published in *African Human Rights Law Journal, Law and Development Review, Transnational Legal Theory* and *Windsor Yearbook of Access to Justice*, among other journals.

Basil holds an LL.B. (Common Law) from Abia State University, an LL.M. from Central European University in Hungary, a teaching certificate from York University and a Ph.D. from Osgoode Hall Law School, where he was lead editor of the *Osgoode Hall Review of Law and Policy*.

Acronyms and Abbreviations

CBDR	common but differentiated responsibilities
CO_2	carbon dioxide
CORSIA	Carbon Offsetting and Reduction Scheme in International Aviation
GHG	greenhouse gas
ICAO	International Civil Aviation Organization
IGOs	intergovernmental organizations
IMO	International Maritime Organization
ITLOS	International Tribunal for the Law of the Sea
MARPOL	International Convention for the Prevention of Pollution from Ships
MBMs	market-based measures
MELAW	Marine & Environmental Law Institute
MEPC	Marine Environment Protection Committee
Mt CO_2	megatonnes of carbon dioxide
NGOs	non-governmental organizations
UNCLOS	United Nations Convention on the Law of the Sea
UNFCCC	United Nations Framework Convention on Climate Change

Executive Summary

This research workshop was co-organized by the Centre for International Governance Innovation (CIGI) and the Marine & Environmental Law (MELAW) Institute at Dalhousie University, Halifax, under the Chatham House Rule. It brought together experts from CIGI's International Law Research Program and from governmental, academic and private sectors. Its goal was to discuss how the international maritime legal and governance frameworks can address climate change challenges in shipping, and explore potential knowledge and research needs to further inform policy initiatives in this area.

Most workshop participants had expertise in different areas of law, administration and practice related to shipping and climate and attended to brainstorm ideas for future research at both CIGI and the MELAW Institute.

Among the topics discussed during the workshop were:

- scoping of the issue and the governance framework for shipping and climate, including the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC), the international regulation of pollution under the United Nations Convention on the Law of the Sea (UNCLOS), and the legal framework for the shipping industry under the International Maritime Organization (IMO);
- current initiatives at the IMO;
- lessons from comparable initiatives, such as the International Civil Aviation Organization (ICAO) and the European Union, and sectoral commonalities and differentiation between aviation and maritime transport;
- legal and governance issues, such as the specific role of industry in developing greenhouse gas (GHG) reduction contributions and the role of port states and non-governmental organizations (NGOs); and
- other policy and legal constraints and opportunities.

Scoping of the Issue and the Governance Framework

In this session, participants discussed the UNFCCC and the Paris Agreement[1] in relation to shipping; the impact of UNCLOS;[2] a general overview of the international shipping industry and its contribution to GHG emissions; and the role of the IMO. It was noted that the Paris Agreement was finalized in 2015 and came into force in record time. Its long-term goal is to keep the increase in global temperatures to below 2.0 degrees Celsius above pre-industrial levels and to pursue efforts to limit it to 1.5 degrees. In recent years, there have been very encouraging developments in high-emitting countries such as China, where emissions have already peaked and are now in decline. A participant noted that it is likely that the global carbon budget — now assessed to be 250 gigatonnes of carbon — will be exhausted by around 2030, meaning that removing further carbon emissions will require additional efforts.

Regarding the treatment of shipping in the current climate regime, a participant noted that meeting the goals of the Paris Agreement would require the shipping industry to contribute its fair share in terms of emissions reductions, because the industry is a significant source of such emissions. Shipping, like aviation, is not specifically mentioned in the Paris Agreement, and international shipping emissions — unlike emissions from domestic shipping, including fisheries and military shipping — are not included in the nationally determined contributions of individual parties. Emissions from international shipping could be included in the Paris Agreement's global stocktake of progress toward achieving its targets. A key element of the climate regime not found in the governance of shipping under the IMO is the principle of "common but differentiated responsibilities" (CBDR). Without it, some challenges are posed regarding how to address shipping emissions in the IMO, which is based on the "no more favourable treatment" principle (i.e., that ships of non-convention states in the waters or ports of convention states

1 *Paris Agreement to the United Nations Framework Convention on Climate Change*, 12 December 2015, Dec CP.21, 21st Sess, UN Doc FCCC/CP/2015/L9 (entered into force 4 November 2016).

2 *United Nations Convention on the Law of the Sea*, 10 December 1982, 1833 UNTS 3 (entered into force 16 November 1994).

substantially comply with the regulations such that international shipping standards are maintained).

The next issue examined was how UNCLOS could be interpreted to advance the goal of reducing carbon emissions from the shipping industry. Reference was made to article 212, which specifically requires states to adopt laws and regulations to "prevent, reduce and control pollution of the marine environment from or through the atmosphere, applicable to the air space under their sovereignty and to vessels flying their flag or vessels or aircraft of their registry, taking into account internationally agreed rules, standards and recommended practices and procedures." Article 222 provides a legal duty for states to enforce regulations under article 212 with respect to their air space or vessels flying their flags, as well as to "take other measures necessary to implement applicable international rules and standards established through competent international organizations or diplomatic conferences to prevent, reduce and control pollution...from or through the atmosphere." Besides the above provisions, articles 192 (obligation to protect and preserve the marine environment), 194 (obligation on states to prevent, reduce and control pollution of the marine environment) and 211 (obligation on states to establish international rules and standards to prevent, reduce and control pollution of the marine environment from vessels) were also mentioned as relevant.

One participant opined that carbon emissions from international shipping could likely fall within the definition of pollution under UNCLOS and thereby could be controlled under UNCLOS. All obligations from the articles highlighted above collectively seem to suggest that, under UNCLOS, there is an obligation to reduce carbon dioxide (CO_2) emissions. With this as a legal basis, the question that arises is whether or not states could rely on the Convention to pursue additional measures for ocean and climate protection. Unlike the Paris Agreement, UNCLOS has language that is binding in nature, calls for enforcement and provides a binding dispute resolution system.

Three decisions of the International Tribunal for the Law of the Sea (ITLOS) were discussed. First was the *Seabed Advisory Opinion*,[3] which dealt with the legal obligations of states parties to UNCLOS with respect to the sponsorship of activities in the "Area" — defined in article 1(1) of UNCLOS as "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction" — including such seabed activities as exploration and mining. The most relevant part of the opinion from an environmental law perspective was its itemization of the constituent elements of this obligation, describing it as an obligation of conduct rather than of result. The second case examined — *The Fisheries Advisory Case*[4] — also imposed a due diligence obligation on states. However, in the *South China Sea Arbitration*, the Tribunal considered "that the general obligation to 'protect and preserve the marine environment' in article 192 includes a due diligence obligation to prevent the harvesting of species that are recognised internationally as being at risk of extinction and requiring international protection."[5] In its ruling, the Tribunal held that the capturing of endangered turtles was a violation of the law of the sea but considered that a multilateral approach was a more helpful option to address the issue.

Another important question that participants discussed was how, why and in what respects the regulation of emissions from international shipping is different from their regulation in other industries and how significant this difference could be for determining mitigation contributions. The ship as a piece of technology and shipping as a business are closely regulated both in terms of the actors (ship owner, charterer, manager and crew) and the services they provide. Ships therefore operate under a variety of legal regimes — including global (IMO), regional (European Union), national and subnational — with layers of authority (flag, port and coastal state). The IMO is the principal organization for the regulation of international shipping. However, ships are quite mobile. A ship can be owned by several corporate and individual actors and its nationality can be changed quite easily by utilizing open registers, also known as flags of convenience. As well, a ship could be registered in a state without ever entering into its ports. The regulation of the industry thus cuts across several legal jurisdictions.

Participants thereafter considered the forum, principles and processes underlying the governance

3 *On Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (2011), Advisory Opinion, Seabed Disputes Chamber of ITLOS No 17.

4 *Request for an Advisory Opinion Submitted by the Sub-Regional Fisheries Commission* (2015), Advisory Opinion, ITLOS No 21.

5 *In the Matter of the South China Sea Arbitration, The Republic of the Philippines v The People's Republic of China* (2016), Advisory Opinion, PCA No 2013-19 at para 956. For additional background and context, see Ted L McDorman, "The South China Sea Arbitration" (2016) 20:17 ASIL Insights, online: <www.asil.org/insights/volume/20/issue/17/south-china-sea-arbitration>.

of international shipping. On forum, the suggestion was that the IMO is the competent organization to regulate international shipping. The shipping industry is governed by IMO rules and standards, which may be adopted by majority vote of the members but in practice are adopted based on consensus. The principles of universality and uniformity guide its processes. The International Convention for the Prevention of Pollution from Ships (MARPOL),[6] part VI, is the key instrument for the regulation of air pollution and GHG emissions from ships.

On compliance, the IMO Instruments Implementation Code (III Code), adopted by Resolution A.1070 (28),[7] has introduced a new level of compliance. It calls for mandatory audits of flag, coastal and port states as a means of detecting and eliminating causes of non-compliance with IMO instruments within domestic legal regimes.

In addition to the IMO instruments, there is also a global system of memoranda of understanding on port state control. These are agreements among marine administrations and are used to coordinate the implementation of international maritime conventions important for the enforcement of standards and regulations, including on GHG emissions. Port state control plays an important role in promoting compliance with IMO conventions. The "no more favourable treatment" principle means that when a ship calls into a port it is subject to inspection with respect to key safety and vessel source pollution conventions, even when the state of registry may not be party to those instruments. The principle is based on the idea that when a ship enters a foreign port voluntarily, it thereby submits to the host port state's jurisdiction.

Participants also discussed the significant challenges in regulating GHG emissions and determining the fair contribution of the shipping industry in reducing emissions. These challenges include the fact that ships come in a variety of specifications, with diverse efficiency levels and a range of fuel sources. Addressing the operations of a ship has implications for speed controls. A ship may sail slower and use less fuel. This could, however, lengthen the voyage and lead to additional costs. As well, retrofitting, new ship builds and amortization are all relevant factors in the cost structures of shipping and have implications for freight rates and overall consumer prices. Export economies tend to be more vulnerable to higher freight rates and consumer prices — as are states that lie farther away from the markets and tend to be importers, and the least developed in economic terms. One issue that would arise, if market-based measures (MBMs) were to be introduced in international shipping, is whether the carbon market should be structured as intra-shipping or inter-sector — that is, whether emissions trading should be focused specifically within the shipping industry or be created in conjunction with other sectors.

A participant provided an overview of the activities of the IMO in relation to regulating GHG emissions from international shipping. Two important initiatives were launched at the seventieth session of the Marine Environment Protection Committee (MEPC) in October 2016. The first was an amendment to MARPOL, to establish a data collection system for fuel consumption. This system will support the IMO process of collecting and analyzing information on the contribution of the shipping industry to GHG emissions, to enable the future adoption of a plan for emissions reduction. The second is an industry-proposed road map and comprehensive strategy for emission reductions for international shipping, to guide the IMO in eventually adopting the emissions strategy. The initial strategy will be adopted in 2018 and will remain under review for final adoption by 2023. Shipping is the first global industry subject to specific international regulations for GHG emissions, specifically, under MARPOL, in terms of rules for energy-efficiency management. The IMO road map was accompanied by the establishment of an intersessional working group on the reduction of GHG emissions from ships, with its first meeting scheduled for the last week of June 2017. In anticipation of this meeting, the IMO released a working paper, which does not contain any MBMs for reducing emissions.

One participant noted the perception that the shipping industry is not doing as much as others, such as the aviation industry, to regulate shipping emissions; the participant suggested that this portrayal was inaccurate. It was emphasized that the "IMO system" is a complete international regime that is most effective when states act in harmony. It was noted that in cases where unilateral or regional action has been taken ahead of the IMO, the country or group of states acting unilaterally has often been left behind the curve. A recent example was the US move to phase out single-hull

6 *The International Convention for the Prevention of Pollution from Ships*, 2 November 1973, 1340 UNTS 184 (entered into force 2 October 1983).

7 *Instruments Implementation Code (III Code)*, Res A 28/Res 1070, IMO, 28th Sess (2013).

ships by January 1, 2015, after the *Exxon Valdez* disaster. The IMO did not immediately respond, but eventually put out some measures that were ultimately more ambitious than the US standards.

A similar situation seems to be developing with the European Union, which recently adopted a resolution requiring the shipping sector to be included in its regional/unilateral emissions trading scheme by 2023, if the IMO does not act by 2021. This move has been viewed by some as undermining IMO efforts to develop standards for all parties.

A concern was raised regarding the openness of the IMO governance process, particularly for civil society. Contributors noted, on the one hand, that participation by NGOs could be helpful, given that civil society contribution might push the shipping industry to take a greater share of responsibility for reducing emissions by the sector. On the other hand, the high level of technical competencies required to effectively participate in the work of the IMO would inevitably lead to its meetings being somewhat restricted. Non-governmental international organizations that have been granted consultative status can observe and participate and, theoretically, intervene in the discussions. Currently, there are 75 NGOs and 64 intergovernmental organizations (IGOs) with consultative status at the IMO. This gives them a right to participate in the plenary during technical negotiations, but they cannot vote. In fact, NGOs and IGOs must participate in the sessions to retain their consultative status.

The role of the European Union in driving the agenda of the IMO was discussed, in particular in relation to discussions for market-based reduction measures. The role of the European Union in pushing the aviation sector into its agenda of reducing GHG emissions was discussed. However, it was suggested that the biggest fear of the shipping industry is the prospect of a fragmented system of regional or unilateral regimes. EU threats have pushed the international shipping industry to seriously consider what a global market-based carbon emissions reduction measure could look like.

Participants felt a need also to discuss the economics of international shipping, particularly at a time when the shipping industry is suffering some economic decline. The potential negative impact of climate MBMs on the energy transition for one of the single largest energy-using industries in the world was raised. Another impact of climate change on shipping is rising sea levels.

Participants stressed that the shipping sector is unique and that, as such, experiences from other sectors may not always be applicable. Economic issues raised revolved around competition or choice, and whether and how to reduce transport of goods by ships or internalize the costs. Another issue raised was the overall impact of slow steaming, which could translate to lower emissions but longer travel times. As well, "stranded assets," resulting from keeping fossil fuels in the ground, could impact tankers, given that the movement of fossil fuels, especially crude oil and gas, accounts for a substantial segment of that market.

On economic issues more generally, it was suggested that it would be useful to study the impact of climate regulations on different sectors — for example, aviation and shipping — and on segments within these sectors that are not uniformly affected by regulations. On regulatory compliance, an important question would be whether the cost of complying with new regulations, in combination with other economic factors, could make the shipping business less viable going forward. For example, if climate regulations were to introduce additional costs in the shipping sector, what would be the financial and social impacts on equity investors in the sector, and on consumers generally?

Participants acknowledged the importance of recognizing the tension between the IMO maritime convention system, built on the principle of "no more favourable treatment," and the climate regime and international environmental law view of CBDR. A question arose as to what kinds of risks to maritime regulation could be triggered if the IMO were to import the CBDR into its regulatory processes. The Paris Agreement, for example, reflects the differentiated treatment between advanced and developing states, in particular regarding their respective technological capabilities. One question is whether self-differentiation could provide a helpful solution. Some participants argued that this could be the case. Among the concerns in this area is that most open-register states are developing, and asking them to carry the burden of additional regulation is, in the exact words of one participant, like "asking a dragonfly to lift a stone." As a practical issue too, there is no generally accepted list of states — whether developing or developed — that could benefit from CBDR. In addition, the capacity of states continues to evolve, such that a static list is not likely to be helpful. Another challenge is to search for solutions at the level of business operators.

International Regulatory Processes: Main Issues

A session during the workshop was devoted to studying the opportunities and challenges of using the processes of the IMO to articulate the response of international shipping to the carbon challenge. A participant noted that the IMO is often criticized as being slow to act. While the IMO may indeed move slowly through its processes, this pace might have some benefits. For example, the IMO is, for the most part, a consensus-based organization, which helps to ensure that its agreements will be implemented by member states. However, the speaker noted, a concern in consensus-based multilateral treaty diplomacy is that the outcome may be founded on "the lowest common denominator."

As noted earlier, the adoption of a new rule or standard is rarely taken to a vote; if it were, there would be winners and losers, and the losers would be reluctant to implement whatever measures were agreed. The IMO operates a tacit acceptance procedure for the adoption of technical amendments to several of its maritime conventions. The procedure means the proposed amendment does not require ratification by member states to enter into force.

The IMO could also utilize the usual treaty amendment procedure guided by the Vienna Convention. Under MARPOL, for example, the fastest possible time for adoption of amendments is 22 months and one day, unless the MEPC reduces the time for acceptance. It could, however, also use the "provisional adoption" procedure under the Vienna Convention, which would allow for more rapid entry into force of any amendments. The IMO has been reluctant to use this procedure.

It was pointed out that sluggishness in crafting transnational regulatory instruments is not a problem unique to the IMO but one that appears across all levels of international multilateral organizations. Various techniques exist to address this concern, but states have largely resisted them. The result is that treaties — although, in theory, hard law instruments — tend to include commitments that are softer in nature, as appears to be the case with the Paris Agreement. The advantage may be that opportunities are created to update the terms of an instrument without a prolonged formal procedure. The issue of regulating emissions from shipping may offer a platform to think about efficient approaches to the making of rules and standards. The IMO works based on a strategic plan issued every five to six years and updated every two years. It is accompanied by the IMO's "High-Level Action Plan," which translates the strategic plan into specific actions and priorities and contains outputs for all the committees. The normal process for entering ideas as priority items requires a mini analysis conducted by the proponent of the idea. If the IMO Council approves, the IMO Assembly adopts the idea and includes it in the action plan. In some cases, pre-agreed assessment criteria are applied to the suggested idea. However, in the case of proposals for significant regulations, a formal assessment is done. This usually is a complex process requiring a high level of regulatory assessment, as well as discussion around a range of issues, including likely administrative burdens of the new idea, the impact of human factors and so on. Such assessments often take years to complete.

Because of the highly technical nature of formal assessments, a concern is that there would be less participation from developing countries, because usually only the largest developed countries have the necessary technical capacity to initiate such formal assessments. This concern underscores the issue of inclusiveness in the work of the IMO and other international bodies. What might help, it was suggested, is increased efforts in building capacity for more effective participation at the IMO, by offering technical assistance and training through the World Maritime University and International Maritime Law Institute, both of which are training arms of the IMO.

The IMO's concern about climate change and sustainable development is captured in its strategic plan for 2016–2021, adopted in November 2015.[8] Paragraph 2.7 of the plan emphasizes a "heightened environmental consciousness" in the activities of the IMO and states that "the enhancement of a sustainable environmental policy for the shipping industry remains a high-profile matter." It promises to "make new ships more environmentally friendly by implementing the 'cradle to grave' concept for new ships, while further facilitating practicable solutions for the recycling of existing ships."[9] The plan contains 14 strategic directions.

8 See IMO *Strategic Plan for the Organization (For the Six-Year Period 2016–2021)*, 1 December 2015, Res A. 1097(29), online: <www.imo.org/en/About/strategy/Documents/A%2029-Res.1097%20-%20Strategic%20Plan%20for%202016-2021.pdf>.

9 *Ibid* at 5.

The seventh of these focuses on developing measures to mitigate the impact of shipping on the environment and seeks to address climate change.

The IMO's strategic plan identifies technology as the major driver for change in the maritime transport sector.[10] Its goal is a regulatory regime that is flexible enough to accommodate technological innovations without hindering current practices. The tenth strategic direction indicates a preference for goal-based standards for maritime safety and environmental protection, rather than directives.

Learning from Comparable Initiatives

The purpose of this session was for participants to briefly examine other climate regulatory initiatives in sectors outside of shipping and how those initiatives could inform choices in the shipping field. The first area studied in this regard was ocean governance under UNCLOS, which is recognized globally as a "constitution for the world's oceans" and established the framework for subsequent marine environmental and sustainable development treaties. UNCLOS was developed based on a package deal adopted through consensus, providing a model for future conference diplomacy. A major achievement of UNCLOS was the establishment of jurisdiction for coastal, flag and port states to act.

UNCLOS was adopted as a broad-based agreement to provide the framework for regulation of ocean uses and has been enhanced through supplementary agreements to enable it to keep in step with new developments. To date, such agreements have included adjustments to part XI, on the international seabed area, and part VII, with respect to straddling fish stocks and highly migratory species. More recently, negotiations have commenced with respect to a future new agreement on the conservation of marine areas beyond national jurisdiction.

The UNCLOS framework is problematic. For example, with respect to part XI, some observers have complained that the UNCLOS approach to seabed mining activities in the area is built around industry and single ocean-use silos. In the contemporary era of integrated ocean management, a need exists to pull together the various "sectoral silos" and international organizations charged with regulating subject-specific issues. Another issue is that UNCLOS is based on the science and technology of the 1970s, resulting in legal text that is outdated and inappropriate for present times. As an example, if states today actually did what UNCLOS literally mandates, many would be applying outdated and wrong science to manage fisheries. Accordingly, UNCLOS, although a fundamental instrument, should not be approached as an exclusive or complete regime. It has not addressed all present and foreseeable future issues, and will need to be supported by supplementary agreements and other international law instruments to ensure its continued relevance.

The discussion also considered regionalism in UNCLOS. Parts of UNCLOS require regional cooperation and even rule development at that level. For example, with respect to part VI, regional fisheries management organizations have been largely successful examples of regional cooperation. Regionalism will continue to be of importance to the regulation of the oceans.

Dispute settlement under the UNCLOS process has been a major development in international conflict resolution, but not without controversy. On the one hand, many are of the view that international law cannot be considered as law, properly speaking, until there is a method not just for rule making but also for enforcement and the resolution of disputes. UNCLOS was hailed for massively expanding the process for international dispute resolution in the law of the sea, in particular with the establishment of ITLOS. While the Tribunal's early work in settling disputes under UNCLOS featured mostly the prompt release of captured vessels, its work has gradually increased to include advisory opinions to international organizations and on maritime boundary disputes. The potential of ITLOS in dispute settlement in the law of the sea has not yet been fully exploited by states engaged in disputes.

In reality, part XV of UNCLOS concerning dispute settlement provides a range of options for the management and resolution of international disputes by experts in the field. This range may provide the impression of fragmentation and dispersal of international law, due to multiple dispute resolution options. The approach under UNCLOS is more effective for actions relating to prohibitions under UNCLOS than it is for positive obligations

10 *Ibid* at para 2.12.

— which will most likely be a continuing problem regarding the enforcement of positive obligations.

The aviation sector also provided useful examples for discussion, in particular the ICAO's adoption of a global MBM for carbon offsetting of international aviation emissions.[11] A participant noted that aviation and maritime transport account for five percent of global GHG emissions. To this figure, aviation contributed 504.3 megatonnes of carbon dioxide (Mt CO_2), or a 95 percent increase from 1990, and the contribution from aviation is expected to increase by another 142–174 Mt CO_2 by 2025, and 288–376 Mt CO_2 by 2030. On its part, maritime transportation accounted for 626.1 Mt CO_2 in 2014, which is a 68.5 percent increase from 1990.[12] Under its Carbon Offsetting and Reduction Scheme in International Aviation (CORSIA) framework, the ICAO has established a multi-faceted approach in terms of curbing emissions from aviation, with the overall goal of achieving carbon-neutral growth.

In addition to this scheme, there are other measures, including green technology, alternative fuels and operational improvements. CORSIA will cover operators that emit 10,000 tonnes or more of CO_2 annually. Its implementation will occur in phases, starting with a voluntary pilot phase (2021–2023) and first phase (2024–2026), followed by a mandatory second phase (2027–2035). CORSIA will not apply to small island states, least developed countries or landlocked developing countries.

Central to the ICAO's strategy is the increased recourse to alternative fuels, a plan that gained momentum in 2009 after its first Conference on Aviation and Alternative Fuels[13] and the launch of the ICAO Global Framework on Aviation and Alternative Fuels,[14] with five pathways for its approval. One of the major challenges for the ICAO is the ability to mobilize global capital. On the positive side is the plan's nexus to sustainable development with its ecosystem-based approach to development of biofuels, including its linkage to the Integrated Seawater Energy and Agriculture System. Nonetheless, strong institutional commitment and legal certainty are needed to initiate MBMs.

The next initiative discussed was the EU strategy for regulating maritime transportation. It was necessary to first recognize the difference between domestic and international maritime GHG emissions from, respectively, national and international maritime transportation. The EU strategy covered three distinct landmarks: Directive 2009/29/EC of the EU Parliament and Council,[15] on improving and extending the GHG allowance trading scheme of the European Community; the 2015 monitoring, reporting and verification mechanism;[16] and the pending inclusion of maritime transport in the EU emissions trading scheme, expected to be agreed by the end of 2017. These schemes would seem to be a culmination of the European Union's loss of patience with the IMO.

The series of actions that the European Union has initiated include a 2011 white paper[17] on transportation, containing a plan to cut EU shipping emissions by 40 percent in 2050 compared to 2005 levels; the European Climate Change Program II, intended to reduce GHG emissions from ships; and a communication commission, charged with integrating maritime emissions into the European Union's broad GHG emissions reduction strategy. They also include a 2013 proposal for the monitoring, reporting and verification of CO_2 emissions from maritime transport from 2018 onward, and a 2015 regulation (2015/757) on the monitoring, reporting and verification of CO_2 emissions from maritime

11 See ICAO Assembly, *Draft Text for the Report on Agenda Item 22 (Section on Global Market-based Measure Scheme)*, 5 October 2016, 39th Sess, A39-WP/462, online: <www.icao.int/Meetings/a39/Documents/WP/wp_462_en.pdf>.

12 See International Energy Agency, "Key CO_2 Emissions Trends: Excerpt from CO_2 Emissions from Fuel Combustion" (2016) at 14, online: <www.iea.org/publications/freepublications/publication/KeyCO2EmissionsTrends.pdf>.

13 See ICAO, "Global Framework for Aviation Alternative Fuels" (2009) ICAO Secretariat Working Paper CAAF/09-WP/23, online: <www.icao.int/Meetings/caaf2009/Documents/CAAF-09_WP023_en.pdf>.

14 Philippe Novelli, "Sustainable Alternative Fuels for Aviation" (2014) ICAO Environment, online: <www.icao.int/Meetings/EnvironmentalWorkshops/Documents/2014-Kenya/6-1_AlternativeFuels-ICAO.pdf>.

15 See EC, *Commission, Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community (Text with EEA relevance)*, [2009] OJ, L 140/63, online: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0063:0087:en:PDF>.

16 EC, Commission, *Regulation (EU) 2015/757 of the European Parliament and of the Council of 29 April 2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport, and amending Directive 2009/16/EC (Text with EEA relevance)*, [2015] OJ, L 123/55, online: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015R0757&from=EN>.

17 EC, Commission, *White Paper on Transport: Roadmap to a Single European Transport Area – Towards a Competitive and Resource-Efficient Transport System* (Luxembourg: Publications Office of the European Union, 2011), online: <https://ec.europa.eu/transport/sites/transport/files/themes/strategies/doc/2011_white_paper/white-paper-illustrated-brochure_en.pdf>.

transport. The strategy to achieve these initiatives' goals consist of three steps: monitoring, reporting and verification of CO_2 emissions from large vessels using EU ports; pursuing GHG reduction targets for the maritime transport industry; and further measures, including MBMs in the medium and long terms.

The discussion then shifted to commonalities and differences between shipping and other sectors in terms of various GHG emissions-mitigation contributions. The first issue noted was that not all ships are engaged in international trade: there is a large number of ships engaged in other activities, such as fishing, recreation and domestic vessels. The issue here is how to capture emissions from commercial shipping. Technical and operational considerations also pertain in developing the best strategy to reduce shipping emissions. At the IMO, the discourse has been principally about making major regulatory interventions. At the level of technological innovation, that body was the first to introduce technical requirements for emissions reduction. For example, the establishment of an energy-efficiency plan for ships that are 400 tonnes or more is a goal-based approach that encourages ship owners to search for the best technological solutions and to employ low-carbon practices. As the IMO had previously been plagued by the lack of reliable data, the newly launched fuel-consumption database will provide hard data on how fuel is being used and assist with the development of a GHG emissions-reduction strategy for ships.

Several proposals for MBMs in international shipping have been proposed. The first is to introduce a carbon levy and use the funds to build an international carbon mitigation fund. The second is to create an emissions trading scheme within and across the shipping industry (with a variation that would integrate this market with the larger carbon trading market). The goal is to incentivize ship efficiency, which might require a role for ports servicing international shipping. A participant raised three points that could affect implementation of these strategies. First, the best instrument on paper — a carbon levy — could be the most difficult to implement. For example, the United States would likely resist a supranational instrument, as would other states. There is also no modelling in place to anticipate the risks of an industry transition such as this. Third, CBDR as it has evolved in the climate regime will likely meet opposition in the shipping context.

For these reasons, it was suggested, the aviation and ICAO mechanisms might be difficult to extrapolate to the shipping arena. To understand why, one needed to consider that the bulk of global tonnage is registered in developing states. The two largest registers of ships in the world belong to Liberia and Panama. Such states would be required to manage any international market-based approach adopted by the IMO. Moreover, developing states that are heavily reliant on exports to distant markets might bear a disproportionate share of the cost. This is a potentially controversial scenario, because market-based approaches, if the lessons from the Kyoto Protocol's clean development mechanism are any indication, tend to favour the more developed states of the Global North, and equity questions could therefore be raised.

In addition, any MBMs in the shipping sector would likely impose additional governance and regulatory compliance obligations on developing country flag states that they might not have the capacity to bear. Open-register states enjoy the right (and duty) of primary jurisdiction and control over vessels flying their flags. However, not all open registers (and even some closed registers) are either able or willing to exercise jurisdiction and control.[18] The port state control system has been available in large part to fill the gaps in regulatory enforcement left by open registers.

Participants then discussed the potential role for the insurance industry in deepening regulatory compliance to ensure that ships meet basic legal standards. The insurance contract usually has several warranties that are relevant, including the warranty of legality (meaning that the insured is expected to comply with applicable local laws) and the warranty of seaworthiness (which assures that the ship is fit for its voyage). Historically, these warranties related to safety and pollution prevention concerns. The question was posed as to the role of the insurer in the context of facilitating compliance with GHG emissions from shipping. Both warranties mentioned above could play a role: legality, with respect to compliance with technical regulations, and seaworthiness, with respect to the ability of the ship to embark on the intended voyage in a timely manner. However, with respect to an emissions trading scheme, if the mechanism consists only of the payment of a levy, the insurance industry may

18 See e.g. Craig Allen, "Revisiting the Thames Formula: The Evolving Role of the International Maritime Organization and its Member States in Implementing the 1982 Law of the Sea Convention" (2009) 10:265 San Diego Intl L J at 270.

not have a role to play, because it does not have the same contractual capacity to enforce compliance. However, it may require ship owners to provide proof of compliance with domestic regulations.

The final question in this session was whether technological solutions are available or whether there are constraints to innovation at the domestic level. The *Third IMO Greenhouse Gas Study 2014*[19] noted that technological measures might not be enough, and that an MBM might be necessary for industry to meet the emissions reductions expected of it. However, most new ships since 2013 have been between 25 percent and 30 percent more efficient than the vessels they replaced. A participant noted that, instructively, these strides were made without "pressing the envelope of technology." The potential for providing incentives for technological development is therefore significant.

Fuel quality and availability were specifically seen as areas of opportunity in which consistency is needed at the international and domestic levels. Many ports around the world are taking action to control ship emissions in port, including through clean-air regulations and shore-based power supply to ships while berthed. The question is whether local initiatives will have the effect of constraining the uniform application of IMO rules, or of possibly providing the basis for new IMO initiatives.

Exploring Legal and Governance Issues

This session examined what legal and governance questions could arise from regulating carbon emissions in the shipping industry. It also addressed issues related to the role of the industry itself in developing its contribution to global GHG emissions reduction. Specifically, the session debated the role of ports, NGOs and industry regulatory compliance. There was a sense that exploring these issues presented significant and unique challenges. The first issue explored was the role of the shipping industry in developing its contribution to global GHG emissions reduction. As one of the presenters noted, the issue is both complex and politically charged. From a historical perspective, state members of the IMO active on the issue are split into two groups — those interested in addressing the problem of emissions arising from shipping, and those less committed to this goal. In addition, the former group lacks consensus on what exact policies are needed and how to effectively structure them.

Within the IMO, the major challenge is whether to formulate a binding framework to deal with GHG emissions from shipping or to pursue a non-binding framework. Several successive MEPC sessions have debated emissions from shipping, and the question has always been how to achieve the goal of reducing emissions. To date the outcome has not been impressive, owing to a preference for what a contributor called "boutique projects" rather than a major concerted research and development program.

There has been an industry proposal on the table to create an international maritime research and development board to mobilize funding and pursue research on such subjects as propulsion, fuels, vessel design and operational expertise. The belief is that moving in this direction would produce immediate incremental improvements in vessel efficiency, and therefore some immediate payback, but likely most results will only be realized in the long term. The institution of such a board would also lead to creating some form of international legal obligation centred around the ships and the quantum of investment needed to upgrade their operational efficiencies. In summary, the objective is to spend on discovering new ideas versus the alternative, which is the mobilizing of funds to offset emissions. Invariably, the question is: what could be the right environmental policy, other than collecting amounts of money for carbon offsets?

The discussion then pivoted to why regulating GHG emissions from shipping makes a significant contribution to the global climate regime. From a historical standpoint, it was noted, the Kyoto Protocol of 1997 required Annex 1 countries to address emissions from shipping and aviation through the mechanisms of the IMO and the ICAO. From 2006 to 2013, various MBMs, containing proposals at times for levies and at other times for alternative emissions trading schemes, have been debated.

The idea of what environmental sustainability could mean in the context of port management was also highlighted. It was suggested that it could

19 IMO, *Third IMO Greenhouse Gas Study 2014: Executive Summary and Final Report* (London: Micropress Printers, 2015), online: <www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Documents/Third%20Greenhouse%20Gas%20Study/GHG3%20Executive%20Summary%20and%20Report.pdf>.

mean creating a healthy environment of thriving communities in which effective trade produces economic prosperity. The "healthy environment" component of this description was further broken down to comprise supporting healthy ecosystems, taking climate action and instituting responsible practices. For the ports, climate action in this context would involve leading in energy conservation; applying alternative energy sources to minimize GHG emissions; and protecting port assets against the potential impacts of climate change.

The workshop received a case study in sustainable port management that includes adherence to the Global Reporting Initiative's requirements and follows the organization's sustainability reporting standards. The case describes a program called the Northwest Ports Clean Air Strategy, which involves collaboration among proximate ports — Vancouver, Seattle and Tacoma — with participation from Canadian and US regulatory agencies. The initiative is aimed at curbing port-related GHG emissions in the Puget Sound–Georgia Basin airshed. Its goal is to reduce diesel particulate matter emissions by up to 80 percent per tonne of cargo, and GHG emissions by 15 percent per tonne of cargo, by 2020.

The ports involved in this strategy submit annual sustainability reports to the Global Reporting Initiative, through which they track progress in relation to the objectives of their clean air strategy. The report shows how the ports promote cleaner ships, such that ship operators can achieve up to 47 percent reduction in harbour dues for meeting voluntary industry best practices. There is also a trucking component that promotes engine age limits and institutes opacity limits.

Conclusions and Research Opportunities

At the conclusion of the workshop, final observations and questions pointed to opportunities for further research:

- Attention should be paid to the role of effective enforcement of regulations, which is a function for port states. Is there a need to study the status quo and conduct an objective analysis of how to improve the role that could be played by ports and port-state inspection? What is the comparative state practice regarding port states?
- How can states agree an international levy or trading scheme without having it imposed by a supranational entity such as the IMO? It was suggested that a possible option is to introduce the scheme at the bilateral level between willing states and then move it up to the multilateral level for further exploration.
- Are there compliance parallels to the World Trade Organization's requirements for agricultural trade — for example, customs inspection — that could be considered in the context of international shipping?
- It could be useful to study comparative compliance rates of flag states, including open-register states, with IMO regulations.
- It could be useful to research capacity building with respect to the maritime regulatory capacities of developing states, and the roles that could be played by the IMO and regional institutions in strategizing and delivering capacity building.
- What would be the impact on international trade of MBMs for regulating GHG emissions from shipping? Could MBMs be a barrier to trade from the perspective of developing countries, and if so, how?
- What is the public-private interface in regulating shipping emissions? Are there possibilities to develop voluntary measures and processes in this field?
- How would new climate regulations impact investments and financing in the shipping industry? What environmental, social and governance considerations could be implicated in project financing decision making?
- How could governance under the IMO be improved to overcome regulatory delays and increase the capacity of the IMO to respond to environmental challenges, technological innovations and market issues in a timely manner?

Agenda

March 6, 2017

The Prince George Hotel, Windsor Room I
1725 Market Street, Halifax, Nova Scotia

10:00–10:10 a.m.	Registration and Coffee
10:10–10:30 a.m.	Session 1: Welcome and Introductions
10:30 a.m.–12:00 p.m.	Session 2: Scoping of the Issue and the Governance Framework
	→ UN climate regime and the Paris Agreement
	→ Law of the Sea
	→ Overview of the shipping industry
	→ The Contribution of the IMO
12:00–1:00 p.m.	Lunch and Keynote Address on International Regulatory Processes
1:00–2:30 p.m.	Session 3: Learning from Comparable Initiatives
	→ Approaches to GHG contributions under ICAO
	→ EU strategy to reduce maritime transport emissions
	→ Sectoral commonalities and differentiators of maritime transport relating to mitigation contributions
2:30–3:00 p.m.	Health Break
3:00–4:30 p.m.	Session 4: Exploring Legal and Governance Issues
	→ The role of industry in developing its contribution:
	→ Role of Ports
	→ Role of NGOs
	→ Compliance
4:30–5:30 p.m.	Session 5: Conclusions and Next Steps
	→ Open discussion on policy and legal constraints and opportunities
	→ Research opportunities to further develop the issue
6:00–8:00 p.m.	Private Dinner for Round Table Participants

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