

## Conclusion

[We] seek solutions that benefit the environment. A differentiated deal is better for the environment than no deal at all, and time is short . . .

Statement by World Wide Fund for Nature (wwf)<sup>1</sup>

### 8.1 Introduction

The process to regulate the reduction of GHG emissions from international shipping is comprehensive and controversial. It involves political, historical, economic and technical considerations and cuts across international maritime law, international environmental law, and international trade law. It has been necessary to find political compromises and develop innovative regulatory efforts. The purpose of this book is to identify gaps in the current regulatory framework for the reduction of GHG emissions from international shipping, and to identify options and recommendations for improving this framework. This book synthesised applicable international environmental law principles and examined the responses of the main stakeholders.

This concluding chapter consists of three parts. The first part examines the application of selected international environmental law principles to the GHG emissions issue. The second part identifies the responses to this issue from the UN, the IMO, the shipping industry, flag States and port States. The gaps and gap-filling recommendations are provided in the last part.

### 8.2 Applicable International Environmental Law Principles

Chapter 2 examined the applicability of international environmental law principles to the reduction of GHG emissions from international shipping. It was argued that GHG emissions from international shipping, in particular CO<sub>2</sub>, are a type of 'conditional' pollution. From this perspective, GHG emissions are pollutants on the basis that they engender 'deleterious effects' or lead to 'significant' environmental impact. This view is consistent with the definition of

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<sup>1</sup> *Report of the Marine Environment Protection Committee on its 58th Session*, IMO Doc MEPC 58/23 (16 October 2008) annex 9, p. 25.

marine pollution in the *United Nations Convention on the Law of the Sea (LOSC)* and with the national legislation of a number of countries. GHG emissions from international shipping, being a type of pollution, trigger the application of many marine pollution-related treaties. This argument and the principles relating to flag State, coastal State and port State jurisdiction also underpin the application of international environmental law principles to GHG emissions from international shipping.

In customary international law, States are obliged to prevent, reduce and control transboundary harm resulting from activities under their jurisdiction or control where transboundary harm occurs. States also have a duty to cooperate in mitigating transboundary environmental risks and emergencies, through notification, consultation, negotiation, and in appropriate cases, environmental impact assessment. It was argued that GHG emissions from international shipping might lead to transboundary harm under four scenarios, namely:

- The harm is caused to the high seas and the deep seabed, or international airspace which is the airspace above the high seas and exclusive economic zones (EEZ) of coastal States;
- The harm is caused between the flag State and the coastal State or port State;
- The harm is caused between the flag State and a third State; or
- The harm is caused between two flag States.

On this basis, the duties associated with transboundary harm would apply in the context of GHG emissions from international shipping. These include a flag State's primary prescriptive and enforcement jurisdiction and responsibility to prevent, reduce and control transboundary harm resulting from GHG emissions from the ships entitled to fly its flag. To achieve this goal, flag States need to adopt national legislations on the reduction of such emissions, taking into account the amended Annex VI to the *International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)* irrespective of whether they have ratified this amendment. Flag States need to conduct regular surveys, issue or empower other parties to issue the International Energy Efficiency Certificate to ships flying their flags, as well as impose administrative penalties or institute proceedings in relation to offences. Furthermore, coastal States and port States also have a duty to cooperate in mitigating transboundary environmental risks arising from excessive GHG emissions from international shipping.

The precautionary principle is a customary international law principle that has been incorporated into many international treaties. Although GHG emis-

sions from ships have been recognised as harmful, there is not yet scientific proof that they have caused specific impacts. The application of the precautionary principle to this context would justify the action of States in taking proactive steps to tackle shipping GHG emissions. In contrast to the precautionary principle, the polluter-pays principle aims to address three relevant questions, namely: who is the polluter? what should the polluter pay for? and, how to pay? It was argued that in the context of the GHG emissions issue the polluter should include ship owners, ship operators, and flag States under certain circumstances. The cost should be put in a global context through adopting uniform measures, whereas the means of payment could include various technical, operational, and market-based measures (MBMs). In particular, MBMs which involve the global emissions reduction of different sectors may better reflect the polluter-pays principle.

The Common but Differentiated Responsibility (CBDR) principle is an important international environmental law principle, and has been widely incorporated into global climate change regulations. The No More Favourable Treatment (NMFT) principle is a principle which has been consistently applied to all IMO treaty instruments. The reduction of GHG emissions from international shipping involves measures taken by both the global climate change regime and IMO regulations. While the NMFT principle underscores the uniform application of applicable standards to all ships calling at ports of port States, the CBDR principle emphasises differentiated treatment towards developed States and developing States in the course of tackling climate change. It is thus controversial whether the two principles should be applied to the GHG emissions issue because in many respects they conflict. Chapter 2 examined divergent views on these principles and asserted that both principles should be applied to the issue. However, it is difficult to devise methods to incorporate the CBDR and NMFT principles into the IMO's regulation of GHG emissions from international shipping. While it is easier to apply the NMFT principle, the main challenge is in the application of the CBDR principle. It was suggested that differentiated treatment should be broadly interpreted to cover differentiated central obligations, differentiated implementation arrangements, and the granting of assistance including financial and technological assistance. Accordingly, the CBDR principle could be applied to the GHG issue in different ways depending on the nature of various measures for addressing this issue.

The findings in Chapter 2 were then discussed in Chapters 3 to 6 in relation to the responses from the main stakeholders. These responses, together with the findings in Chapter 2, underpinned the identification of gaps and gap-filling options in relation to the regulatory framework for the reduction of GHG emissions from international shipping as discussed in Chapter 7.

### 8.3 Findings on Main Stakeholders in GHG Emissions from International Shipping

The main stakeholders of GHG emissions from international shipping, including the UN, the IMO, the shipping industry, and various flag States and port States, play significant roles in the regulation and enforcement of global regulatory initiatives. Chapters 3 to 6 assessed the responses from these stakeholders to the GHG emissions issue.

The UN has provided legal and institutional responses to the reduction of GHG emissions from international shipping. Chapter 3 focused on these responses. This GHG emissions issue has been discussed under both the international climate change regime (the United Nations Framework Convention on Climate Change (*UNFCCC*) process) and the IMO GHG Emissions regime. Regarding the international climate change regime, the *UNFCCC*'s Subsidiary Body on Scientific and Technological Advice (SBSTA) started to address this problem in 1995 before the IMO received its GHG mandate from Article 2(2) of the *Kyoto Protocol* in 1997. While the SBSTA failed to reach consensus in adopting the allocation of emissions from marine bunker fuels, the subsequent Ad-Hoc Working Group on Long-term Cooperative Action (AWG-LCA) under the *UNFCCC* had not achieved any breakthrough in terms of regulatory principles on this issue before it was terminated at the Doha Climate Change Conference in 2012. Currently regulatory measures to reduce shipping GHG emissions mainly rely on the work of the IMO.

The *Paris Agreement to the UNFCCC* adopted in December 2015 does not address GHG emissions from international shipping. Nevertheless, this Agreement has some important implications for this shipping emissions issue. In particular, it is projected that the subsequent conferences of the *UNFCCC* and its *Paris Agreement* will continue to discuss this GHG matter; during the period of post-2020 and beyond the CBDR principle will still be applicable to the IMO's regulation on shipping GHG emissions although the *Kyoto Protocol* that provided the IMO with a GHG mandate will expire then; the evolved CBDR principle under the *Paris Agreement* will play a role in the IMO's further regulation on the reduction of shipping GHG emissions. It appears that the interaction between the *UNFCCC* process and the IMO GHG regime will continue.

A number of UN institutions have been established to address climate change. Among them, the IPCC has emphasised the necessity and urgency of tackling GHG emissions from shipping by releasing five assessment reports. The United Nations Environment Programme (UNEP) and World Meteorological Organization (WMO) raised public awareness on the need to tackle the issue and implement the outcomes within the international climate change regime;

the *UNFCCC* and its *Kyoto Protocol* and their conferences of the parties of the *UNFCCC* (COPs) and COPs serving as the Meeting of the Parties to the *Kyoto Protocol* (CMPs), as well as the *UNFCCC*'s SBSTA and AWG-LCA, have provided crucial platforms for different countries to negotiate the regulatory principles and reduction targets in relation to global regulation on marine bunker fuels, the main source of emissions from international shipping.

Chapter 4 examined the regulatory initiatives achieved within the IMO. It was argued that the *Convention on the International Maritime Organization* (*IMO Convention*) and the *LOSC* provide the IMO with general competence to regulate GHG emissions from ships, while the *Kyoto Protocol* gives the IMO a specific mandate to regulate this matter. These competences enable the IMO to apply both the CBDR and NMFT principles to address GHG emissions from international shipping, which recalled the discussion of the two principles in Chapter 2. It was also argued that the IMO has an exclusive role in regulating technical and operational measures and non-exclusive role in regulating MBMs, with regard to reducing GHG emissions from international shipping. This chapter continued to examine the amendments to Annex VI to the *International Convention for the Prevention of Pollution from Ships* (*MARPOL 73/78*). These amendments partially regulate this GHG emissions issue by making mandatory the Energy Efficiency Design Index (EEDI) for new ships, and the Ship Energy Efficiency Management Plan (SEEMP) for all ships. It was argued that these adopted technical and operational measures are a significant advance in regulating GHG emissions from ships. These measures were a breakthrough in the lengthy deadlock on negotiations between various countries on shipping GHG emissions within the IMO, and also confirmed the leading role of the IMO in regulating this issue. Scenario modelling has demonstrated that the estimated CO<sub>2</sub> emissions reduction due to combined EEDI and SEEMP will lead to significant emissions reduction, if projected growth in world trade is not taken into account. However, some deficiencies also exist in these technical and operational measures. Their effectiveness needs to be improved and strengthened, and the lack of sufficient support from major developing countries also imposes challenges for their future implementation. Furthermore, it was anticipated that MBMs would in time be adopted by the IMO and/or other competent international institutions as a supplement for the EEDI and SEEMP to reduce GHG emissions from ships. To date seven types of MBM proposals have been submitted to the IMO for further discussion and debate. However, no MBM proposals have been widely accepted.

The shipping industry plays a crucial role in the reduction of GHG emissions from international shipping. The industry puts forward suggestions and provides feedback for the introduction of a new instrument, and develops

initiatives to implement the instrument after it is adopted. Chapter 5 canvassed the response of the shipping industry to this GHG emissions issue. At the international and regional level, global shipping organisations support the leading role of the IMO in regulating GHG emissions from ships, and agree that both technical and operational measures would help to reduce GHG emissions. It was argued that a GHG Fund or levy-related MBM is more acceptable to international and regional organisations. Although most of these organisations assert that the NMFT principle should be solely applied to this GHG emissions issue, the international shipowners association accepts the incorporation of the CBDR principle into proposed MBMs.

At the national level, shipping industries from various countries generally welcome the EEDI and SEEMP except that some insist that the CBDR principle should be incorporated into these measures. The divergence of these shipping industries mainly lies in their differing views on the proposed MBMs. Case studies indicated that *UNFCCC* Annex I States support the adoption of a MBM but disagree on their preferred MBMs. For example, Australia and the UK support a global Emissions Trading System (ETS) for international shipping and accept the application of the CBDR principle in this regard while Greece prefers a GHG Fund or levy relevant MBM. Within the *UNFCCC* non-Annex I States, the Korean shipping industry prefers a GHG Fund or levy-related MBM, whereas China and India believe that it is still premature to adopt any MBM. It was thus argued that the development status of a developing country, in particular its technological capability, determines the willingness of its shipping industry to accept an MBM. Emerging non-Annex I economies possessing better technologies, such as South Korea and Singapore, tend to accept an MBM more easily.

Flag States and port States are two vital stakeholders in the GHG emissions reduction from international shipping issue, and they are involved in both the legislative and implementing processes around this issue. Chapter 6 identified the responses of flag States and port States. Case studies on Greece and Japan revealed that flag States under the *UNFCCC* Annex I have similar positions towards the adoption of technical and operational measures by the IMO. Their attitudes to the proposed MBMs are also positive, although they have different preferences on the form MBMs should take. In comparison with the *UNFCCC* Annex I flag States, non-Annex I flag States have more diverse responses towards this GHG issue due to their differing regulatory interests. Case studies on Panama, China and Vanuatu indicated that major developing flag States and some other developing States are the main supporters of applying the CBDR principle to the regulation of this GHG issue and these States pay more attention to their needs in capacity building and technology transfer rather than the regulation itself. Generally they prefer technical and opera-

tional measures rather than MBMs. Nevertheless, major 'flag of convenience' (FOC) States support the NMFT principle and tend to welcome most relevant regulatory measures.

The role of port States in implementing the adopted EEDI and SEEMP has been limited to verifying the International Energy Efficiency Certificate (IEE Certificate). However, many port States have voiced their views. They have recognised the importance of regulating this issue and asserted that ports should take practical and effective measures to address this problem. While the International Association of Ports and Harbors (IAPH) has taken initiatives in tackling this matter, regional Memoranda of Understanding (MOUs) on port State control have also added the IEE Certificate to their 'List of MOU Deficiency Codes' to support the IMO's work. However, it was argued in Chapter 6 that current port State control on this GHG issue should be strengthened. This is because the current MOUs on port State control are not sufficient in achieving effective reduction of GHG emissions from ships, and disagreements remain among these port States as to the means to achieve this reduction. For instance, some port States under non-Annex 1 to the UNFCCC require more grace periods and assistance in capacity building for implementing the IMO regulations on addressing the GHG issue while other port States disagree with this view.

#### 8.4 Gaps and Gap-Filling Recommendations

The global regulation of GHG emissions from international shipping is a process in which various stakeholders interact and contribute to the formation and improvement of the regulatory framework. The order of importance of these stakeholders from the regulation and enforcement perspectives can be roughly ranked from high to low as the shipping industry, flag States and port States. To date two parallel regimes, namely the global climate change regime under the UNFCCC process and the IMO GHG emissions regime, have contributed to the regulation of this GHG issue. Currently GHG emissions from international shipping have been partially regulated through technical and operational measures in the form of a revised Annex VI to MARPOL 73/78, and seven types of MBM proposals have been submitted to the IMO for intensive discussion and debate.

Based on the analyses in previous chapters, Chapter 7 identified three main deficiencies in the current legal and institutional framework for reducing GHG emissions from international shipping. Firstly, the adopted technical and operational measures do not fully incorporate international environmental

law principles and lack full support from the main stakeholders in GHG emissions reduction from international shipping. Secondly, the absence of MBMs in the current regulatory framework for GHG emissions reduction from ships cannot achieve absolute reductions in the long term and does not reflect the widely held views in support of MBMs among the main stakeholders of the GHG issue. Thirdly, the institutional fragmentation and the imbalance of interests between the *UNFCCC* Annex I States and non-Annex I States exist in current regulatory framework for the reduction of GHG emissions from international shipping. The two factors constitute the main barriers for the international community to regulate this GHG issue.

It was further argued in Chapter 7 that the gaps existing in the current regulatory framework of this GHG emissions issue could be addressed in seven ways. Firstly, to improve the EEDI in three respects, namely: to expand the application scope of the EEDI through technological innovation and other enhanced technical measures based on current EEDI; to improve the EEDI formula; and, to establish a market-based approach for technological transfer. Secondly, to strengthen the effectiveness of the SEEMP through three approaches, which are providing other incentives for ship operators, making the EEOI a mandatory tool, and the granting of more effective financial and technological transfer from developed countries to developing countries. Thirdly, to improve flag State control through attracting more flag States to ratify Annex VI to *MARPOL 73/78* and ensure the smooth enforcement of the mandatory IMO Audit Scheme by flag States, coastal States and port States which are parties to Annex VI. In addition, to strengthen port State control through narrowing the gaps in performance among nine regional MOUs on port State control, allowing certain unilateral actions on port State control and updating the *2009 Guidelines for Port State Control under the Revised MARPOL Annex VI*. Fourthly, to regulate the mandatory data collection system in a prudential manner, taking into account the benefits of and concerns from developing States. Fifthly, to adopt an MBM based on an add-on Rebate Mechanism (RM) built into a global GHG Fund. Sixthly, to optimise institutional arrangements for these adopted technical and operational measures, and a selected MBM to be adopted in the future. In this respect, it is important to strengthen communication and coordination between the IMO, *UNFCCC* and WTO so as to address the institutional fragmentation existing in the regulation and implementation of energy efficiency measures. Whereas under a proposed add-on RM built into a global GHG Fund, it is crucial to clarify the institutional mandates of the *UNFCCC* and the IMO, and merge unnecessary administrative bodies to make this scheme cost-effective. Seventh and finally, to apply both the CBDR and NMFT principles to the further regulation of GHG emissions from international shipping.

It is anticipated that the path toward the improvement of the current regulatory framework of GHG emissions from international shipping, including the enhancement of current energy efficiency measures and the ultimate selection of an MBM for international shipping, would be long. Limiting an increase of 2 or 1.5 degrees Celsius in the global average temperature by 2100 has become the goal of the *Paris Agreement to the UNFCCC*.<sup>2</sup> However, a report by Asian Development Bank reveals that an increase of 2 degrees Celsius by 2050 is 'almost unavoidable'.<sup>3</sup> Given the tight schedule of achieving this goal, the reduction of GHG emissions from international shipping as an important contribution to achieving that target has drawn mounting attention from the international community. To date the IMO has been refining the adopted technical and operational measures. At the 66th MEPC meeting in April 2014, the amendments to Annex VI of *MARPOL 73/78* were adopted to expand the EEDI application to include an extra five types of ships.<sup>4</sup> Meanwhile the Working Group on Further Technical and Operational Measures for Enhancing Energy Efficiency of International Shipping was established to facilitate the enhancement of further technical and operational measures. However, more needs to be done to tackle the rising GHG emissions from international shipping. As more developed countries and global shipping organisations come to accept the application of both the CBDR and NMFT principles to the GHG issue, in particular the MBM proposals, it seems that finding ways to incorporate both principles into the issue under discussion will be the next step.

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<sup>2</sup> *Paris Agreement* art. 2(1)(a).

<sup>3</sup> Michael Westphal, Gordon Hughes and Jorn Brommelhorster (eds), *Economics of Climate Change in East Asia* (Asian Development Bank, 2013) executive summary, xvi.

<sup>4</sup> *Amendments to MARPOL Annex VI and the NOx Technical Code 2008*, IMO Doc Res MEPC.251(66) (4 April 2014) reg. 21. These five added ships are LNG carriers, ro-ro cargo ships (vehicle carriers), ro-ro cargo ships, ro-ro passenger ships and cruise passenger ships having non-conventional propulsion.