THE CHALLENGE OF REGULATING GREENHOUSE GAS EMISSIONS FROM INTERNATIONAL SHIPPING AND THE COMPLICATED PRINCIPLE OF 'COMMON BUT DIFFERENTIATED RESPONSIBILITIES'

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I. INTRODUCTION

Climate change, one of the most significant issues that man faces in our day and age, has taken on a new dimension which causes anxiety. The increase in greenhouse gas (GHG) emissions, which is one of the major factors of global warming and therefore climate change, is an issue that requires all international community to campaign against. Despite the fact that international shipping is the most environment friendly mode of transport, in terms of GHG emissions, it still is a notable and growing factor. So and so, in the absence of new reduction policies and due to the expected growth in shipping, it is estimated that ship emissions will grow at a higher rate in the future. Therefore, the shipping industry is expected to take action to control GHG emissions.

A comprehensive approach to mitigate GHG emissions from all sectors was adopted by the regulatory regime of climate change, which was formalized in the *United Nations Framework Convention on Climate*

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Change[1] (UNFCCC) and the *Kyoto Protocol to the United Nations Framework Convention on Climate Change*[2] (Kyoto Protocol). However, the Kyoto Protocol excludes emissions from bunker fuels used in international aviation and shipping.

The Kyoto Protocol mandates International Maritime Organization (IMO) to address the issue of mitigating GHG emissions from international shipping[3]. Towards this end, under the auspices of the IMO, the shipping industry has been working intensively to foster a future GHG reduction regime for shipping. However, a number of factors hinder the emergence of such a regime. On the one hand 'common but differentiated responsibility' (CBDR), the core principle of UNFCCC and Kyoto Protocol, recognizes the differences in the contributions of developed and developing countries in addressing the problem of climate change. On the other hand, under IMO's regulatory framework, conventions and other instruments are applied to all ships regardless of flag state with respect to the principle of 'no more favourable treatment' (NMFT). These conflicting principles, along with the different interpretations of the application among states, and the unique characteristics of international shipping, impede the evolution of a consensus and further progress on the future GHG regime for international shipping.

This article aims to analyse the legal matters and complications related to the regulation of GHG emissions from international shipping and tries to examine other ways of reconciling the different views of developed and developing countries in addressing the principle of CBDR. In the article, after examining the impact of GHG emissions on climate change in the first section, the legal framework concerning the regulation of GHG emissions caused by international shipping will be analysed in the second section. In this section, IMO's efforts regarding GHG reduction measures and the latest developments will be examined. In the third section, the CBDR principle and

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1 *United Nations Framework Convention on Climate Change*, opened for signature 9 May 1992, 1771 UNTS 107 (entered into force 21 March 1994).

2 *The Kyoto Protocol to the United Nations Framework Convention on Climate Change*, opened for signature 11 December 1997, 2303 UNTS 148 (entered into force 16 February 2005). <http://unfccc.int/resource/docs/convkp/kpeng.pdf>.

3 Kyoto Protocol, art 2(2).

the debates surrounding this principle will be explored. In the final section, a general overview will be presented concerning how the differences of opinion among states in addressing the principle of CBDR can be reconciled.

II. GHG EMISSIONS, GLOBAL WARMING AND CLIMATE CHANGE

A. THE IMPACT OF GHG EMISSIONS ON CLIMATE CHANGE

The term 'climate', which is often defined as average weather is described in terms of the mean and variability of temperature, precipitation and wind over a period of time. The climate system which is a complex and interactive system, consists of the atmosphere, land surface, snow, ice, oceans, other bodies of water and living things. The climate system evolves in time due to both its own internal dynamics and the changes in external factors that affect climate. The external factors comprise natural events, such as volcanic eruptions and solar variations, and human-induced changes in atmospheric composition[4].

In 1988 Intergovernmental Panel on Climate Change (IPCC) was set up by the World Meteorological Organization and the United Nations Environment Program (UNEP) to provide scientific information regarding the climate change[5]. The importance of climate change was first brought into the open with the first IPCC Assessment Report of 1990 and thus, pioneered the preparation of the UNFCCC.

The IPCC's First Assessment Report stated that:

There is a natural greenhouse effect which already keeps the Earth warmer than it would otherwise be. Emissions resulting from human activities are substantially increasing the atmospheric concentrations of the

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4 S Solomon et al (eds.), *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, (Cambridge University Press, 2007) 96 <http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter1.pdf>.

5 Intergovernmental Panel on Climate Change ('IPCC'), *History*, <http://www.ipcc.ch/organization/ organization_history.shtml>.

greenhouse gases...These increases will enhance the greenhouse effect, resulting on average in an additional warming of the Earth's surface[6].

IPCC's 2007 Fourth Assessment Report, which includes exceedingly dramatic findings and estimates regarding global warming and climate change issues, also points to the need for the international community to start actively combating climate change without delay[7].

In the struggle against climate change, it is of great importance to mitigate GHG emissions, because one of the leading causes of climate change is the impact of the changes in atmospheric concentrations of GHGs on the energy balance of the climate system[8]. Among long-lived GHGs which lead to global warming by producing a positive 'radiative forcing'[9] effect, the most prominent is human-induced GHG carbon dioxide (CO2)[10].

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6 IPCC, *First Assessment Report* (1990) 52 <http://www.ipcc.ch/ipccreports/1992%20IPCC%20Supplement/IPCC 1990 and 1992 Assessments/English/ipcc_90_92_assessments_far_overview.pdf>.

7 There has been an increase of around 0.74° C in the global average surface temperature and of 0.17 m in the average global sea level in the course of the last hundred years. Without active policies that produce results, another increase of 1.1-6.4° C in temperature is expected to occur in the twenty-first century. See, IPCC, *Climate Change 2007:Synthesis Report*, 30-33 <http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf>; Derya Aydin Okur, 'Climate Change and the Maritime Industry: An Evaluation of the International Legal Framework for Climate Change and Its Impacts on Maritime Industry' in Nil Guler et al (eds) The First Global Conference on Innovation in Marine Technology and the Future of Maritime Transportation - Conference Proceedings Book (Sena Ofset, November 2010) 478.

8 Six major GHGs covered by UNFCCC are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphurhexafluoride (SF6).

9 A common metric to quantify impacts on climate from different sources is 'radiative forcing', in units of W/m2. See, International Maritime Organization ('IMO'), *Second IMO GHG Study 2009*, 8 <http://www.imo.org/blast/blastDataHelper.asp?data_id=27795&filename=GHGStudyFINAL.pdf>.

10 The root cause of human-induced global warming is burning of fossil fuels. Human activities result in emissions of four long-lived GHGs: CO2, CH4, N2O and halocarbons. See, IPCC, *Climate Change 2007:Synthesis Report*, above n7, 37.

Research shows that global emissions of anthropogenic GHGs have escalated to a considerable extent since pre-industrial times, with a 70% increase from 1970 to 2004[11]. It is expectative that; with current climate change policies and practices, in the absence of a new significant policy action, the global GHG emissions will continue to increase over the next few decades[12].

B. GHG EMISSIONS FROM INTERNATIONAL SHIPPING

Inasmuch as the constantly developing and ever-expanding field of international shipping[13] is mentioned as an environment-friendly means of transportation[14], it is also a growing source of GHG emissions. The burning of fossil fuels for overseas transport operations accounts for most of the GHG emissions from shipping. The shipping industry opts to use mostly degraded residue heavy fuel oil, known as 'bunker fuel', since it is cost-efficient[15]. Pollutants from shipping not only have detrimental regional

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11 Ibid 36, 53-54.

12 The IPCC report estimates a warming of about 0.2°C per decade for the next twenty years. What's more, even if GHG concentrations had been fixed at their year 2000 levels, a further rise of about 0.1°C per decade would still be expected. Moreover, as accepted by the same report, that even though GHG concentrations are stabilized, deucedly anthropogenic warming will continue for centuries due to climate processes and feedbacks See, ibid 45-46,72.

13 International shipping carries over 80 per cent of world trade by volume. See, United Nations Conference on Trade and Development ('UNCTAD'), *Maritime Transport and Climate Change Challenge*, UNCTAD/DTL/TLB/2009/1 (1 December 2009) 2 <http://www.unctad.org/en/docs/dtltlb20091_en.pdf >.

14 Ibid 7.

15 The combustion of fossil fuels creates emissions such as nitrogen oxides (NOx), sulphuric oxides (SOx), and CO2. Ships also produce emissions of volatile organic compounds (VOC), methane (CH 4), black carbon (BC), organic carbon particles (OC), nitrous oxide (N 20) and carbon monoxide (CO). See, James J Corbett and James J Winebrake, 'The Role of International Policy in Mitigating Global Shipping Emissions', (2010) 16 (2) *The Brown Journal of World Affairs*, 145.

impacts on air quality, environment and human health, but also contribute to important climate-scale effects[16].

The major GHG emitted by ships is CO2, in regard to its quantity and global warming potential. The Second IMO GHG Study rates the CO2 emissions from shipping to have been at 870 million tonnes of CO2 in 2007, which is equal about 2.7% of the global emissions of CO2 that year. Emissions scenarios show that, due to the expected continuous growth in shipping, in the lack of new reduction policies, ship emissions might grow by 150% to 250%, by 2050, compared to the emissions in 2007[17].

III. THE REGULATION OF GHG EMISSIONS FROM INTERNATIONAL SHIPPING

A. THE LEGAL FRAMEWORK

The regulatory regime regarding climate change essentially envisions an international process aimed at evolving policies and measures to reduce climate change[18]. At its core, the objective of the UNFCCC and the Kyoto

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16 These effects are primarily associated with aerosol emissions (cooling effects) and black carbon (short-lived climate forcers). Since sulfur emissions act as global cooling agents, expected impacts of IMO regulations aimed at reducing sulfur content in marine fuels will make maritime industry to have a greater warming effect over the coming decades. Corbett states that 'reducing harmful air pollutants from shipping unmasks the underlying warming effects of long-lived greenhouse gases, and may result in observed increases of climate change effects-both regionally and on a global average.' Ibid.

17 IMO, *Second IMO GHG Study 2009*, above n 9, 7.

18 The institutional structure for the intergovernmental efforts comprises the following: 1. Conference of the Parties (COP) and Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol (CMP), 2. The Subsidiary Body for Scientific and Technological Advice (SBSTA), 3. The Subsidiary Body for Implementation (SBI) . See <http://unfccc.int/bodies/items/6241.php>; Aydin Okur, above n 7, 479. For the history of the climate change regime, see Daniel Bodansky, 'The History of the Global Climate Change Regime' in Urs Luterbacher and Detleft F. Spriz. (eds), *International Relations and Global Climate Change* (MIT Press, 2001) 23-40.

Protocol, which form the basis of this regulatory regime, is to stabilize atmospheric GHG concentrations at such a level that the climate system is shielded from dangerous human interference[19].

The principle of CBDR lies at the heart of both the UNFCCC and the Kyoto Protocol. The CBDR principle takes the differences of developed and developing countries in consideration in terms of contributions, and lays a heavier burden on developed countries in addressing the problem of climate change[20].

The UNFCCC, which offers a general policy framework to combat climate change, promotes the developed (Annex I)[21] countries for the reduction of GHG emissions. On the other hand, the Kyoto Protocol, which brings more concrete goals and obligations compared to the UNFCCC, imposes on the developed countries mandatory quantified emissions limitation and reduction (QELAR) targets to mitigate their overall GHG emissions by an average of 5.2% below the levels of 1990 over the five-year period, 2008-2012[22]. Developing countries, however, are not bound by any specified emission reduction targets.

As the first commitment period of the Kyoto Protocol is due to expire at the end of 2012, the international community has had to reach an agreement as to the kind of regime to be implemented regarding post-2012 mitigation commitments. At the most recent UN Climate Change Conference, which was held in Durban, South Africa, in December 2011, it was decided that

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19 UNFCCC, art 2.

20 See below Part IV.

21 The UNFCCC categorizes the UN member states as the developed (Annex I) and developing (non-Annex I) countries.

22 So as to reach these targets, Annex I countries can either adopt command-and-control regulations domestically or use the market-based mechanisms stated in the Kyoto Protocol. The Kyoto mechanisms are intended to provide flexibility to parties to meet their mandatory targets in the most cost-effective manner and stimulate green investments. These mechanisms are: 1. Emissions trading (Kyoto Protocol, art 17), 2. Clean development mechanism (Kyoto Protocol, art 12), 3. Joint implementation mechanism (Kyoto Protocol, art 6).

there will be a second commitment period under the Kyoto Protocol, to run from 1 January 2013[23]. At the Durban conference, UNFCCC signatory states also agreed on a roadmap for drawing up a legally binding agreement that will involve all countries in combating climate change. The new instrument is to be adopted by 2015 and be implemented from 2020[24].

So as to mitigate GHG emissions from all sectors, a comprehensive approach is embraced by the UNFCCC and the Kyoto Protocol. However, the comprehensive approach of the Kyoto Protocol does not comprise emissions from bunker fuels used in international aviation and shipping[25]. Since national emission totals do not include these emissions, they are not subject to countries' emission targets. The Kyoto Protocol entrusts the IMO and International Civil Aviation Organization (ICAO), respectively, regarding maritime and aviation sectors[26].

Although the IMO has been showing intense effort toward reducing GHG emissions from international shipping, it has fallen short of delivering effective solutions. The foremost reason for this is that the CBDR principle, the core principle of the legal regime regarding climate change, is not easily reconcilable with the nature or the legal regime of international shipping[27].

The legal regime of international shipping is being regulated by both the international law of the sea and domestic law of states. The primary resource regarding law of the sea is *The United Nations Convention on the*

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23 <http://unfccc.int/meetings/durban_nov_2011/meeting/6245.php>.

24 <http://unfccc.int/press/news_room/newsletter/in_focus/items/6672txt.php>.

25 <http://unfccc.int/methods_and_science/emissions_from_intl_transport/items/1057.php>.

26 Kyoto Protocol, art 2(2). See generally Sebastian Oberthür, 'The Climate Change Regime: Interactions with ICAO, IMO, and the EU Burden-Sharing Agreement' in Sebastian Oberthür and Thomas Gehring (eds), *Institutional Interaction in Global Environmental Governance - Synergy and Conflict among International and EU Policies* (The MIT Press, 2006), 53-77.

27 Per Kageson, 'Applying the Principle of Common but Differentiated Responsibility to the Mitigation of Greenhouse Gases from International Shipping' (Centre for Transport Studies, Stockholm, CTS Working Paper 2011:5), 12-15.

Law of the Sea (UNCLOS)[28]. UNCLOS is a framework convention which regulates the general legal regime of maritime zones and in this sense defines the rights and obligations of states concerning maritime activities in these zones. UNCLOS regulates interstate relations and does not apply directly to individual ships.

The law of the sea basically constitutes a share of jurisdiction between 'flag states' and 'coastal states'. The aforesaid sharing of jurisdiction is based on the basis of expanding the coastal states' authority when closer to the coast, and expanding the flag states' authority when distanced from the coast. According to law of the sea, the 'flag states' have the primary authority on the ships. A flag state stands for the state whose flag is being flown on the ship (the state where the ship was registered). 'Coastal states', on the other hand, are the states with a coast on the sea and have different jurisdictions in various maritime zones. Therefore, coastal states have certain authority on the ships which are in maritime zones, under their own jurisdiction. The 'port state' concept, with a rise in its importance in recent years, stands for the jurisdiction which the coastal states have over the ships that are in their ports. Owing to the fact that ports are included in internal waters, and that the states have the broadest authority over the ships which are in their ports according to law of sea, port states have significant inspection and enforcement power over the ships in their ports[29].

Since UNCLOS is a framework convention, the detailed regulation process on most of the issues has to be carried out by state parties and

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[28] *United Nations Convention on the Law of the Sea*, opened for signature 10 December 1982, 1833 UNTS 3 (entered into force 16 November 1994). For the relationship between IMO and UNCLOS see Sunil Kumar Agarwal, 'Mitigating Greenhouse Gas (GHG) Emissions from International Shipping in Post-Kyoto Climate Policy: Legal Issues and Challenges', (2009) 5 (1) *Maritime Affairs: Journal of the National Maritime Foundation of India*, 73-96; Christian Pisani, 'Fair at Sea: The Design of a Future Legal Instrument on Marine Bunker Fuels Emissions within the Climate Change Regime', (2002) 33(1) *Ocean Development and International Law*, 62-67.

[29] Ronald R. Rothwell and Tim Stephens, *The International Law of the Sea* (Hart Publishing, 2010) 54-57.

authorized international organizations[30]. All non-commercial aspects of shipping with regard to international trade, such as safety, security, efficiency and environmental performance are regulated by the specialized agency of the United Nations, the IMO[31]. The IMO's primary role is to adopt international rules and standards, while state parties' responsibilities are to implement and enforce these rules through the exercise of flag, port and coastal state jurisdiction.

B. EFFORTS CARRIED OUT BY THE IMO ON GHG EMISSIONS AND THE LATEST DEVELOPMENTS

1. Technical and Operational Measures

IMO started working on the prevention of air pollution and control of GHG emissions from ships in the late 1980s and since 1997, subsequent to the 1997 MARPOL Conference[32] and the Kyoto Protocol; it has been working on the development of viable strategies in order to mitigate GHG emissions[33]. The efforts of IMO to further address the issue of GHG

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30 See also R.R. Churchill and A.V. Lowe, *The Law of the Sea* (Juris Publishing, 1999) 22-24.

31 *Convention on the International Maritime Organization*, opened for signature 6 March 1948, 289 UNTS 48 (entered into force 17 March 1958). <http://treaties.un.org/doc/Treaties/1958/03/19580317%2005-05%20PM/Ch_XII_1p.pdf>. IMO currently has 170 Member States and three Associate Members. <http://www.imo.org/About/Membership/Pages/Default. aspx>.

32 *International Convention for the Prevention of Pollution from Ships 1973* as amended by the 1978 Protocol (MARPOL73/78), opened for signature 17 February 1978, 1340 UNTS 61 (entered into force 2 October 1983). Regulations regarding the "Prevention of Air Pollution from Ships" were adopted in the 1997 Protocol to MARPOL 73/78 and are included in Annex VI of the Convention.

33 Regulations first included outphasing of ozone depleting substances both as refrigerant gases and in fire-fighting systems and later prevention of air pollution from oil cargo vapours and exhaust gases were regulated. IMO, 'Control of Greenhouse Gas Emissions from Ships Engaged in International Trade' (Submission by the IMO, United Nations Climate Change Conference - Eighth Session of the Ad Hoc Working Group on Long-term Co-operative Action (AWG-

emissions from ships, is guided by IMO's Assembly Resolution A.963(23) on IMO Policies and Practices Related to the Reduction of Greenhouse Gas Emissions from Ships, which was adopted in December 2003[34]. The resolution required the Marine Environment Protection Committee[35] (MEPC) to identify and evolve necessary mechanisms and a GHG work plan with timetable to fulfill this purpose. The work plan was adopted by the Committee in October 2006 and since then; IMO has developed technical and operational measures to mitigate GHG emissions from ships[36]. These measures include, inter alia, the Energy Efficiency Design Index (EEDI) for new ships and the Ship Energy Efficiency Management Plan (SEEMP) for new and existing ships. While SEEMP is intended to improve the fuel efficiency operation of existing ships[37], EEDI is intended to encourage innovation and technical development of all factors affecting the energy efficiency of a ship from its design phase forward[38]. EEDI is a non-prescriptive and performance-based mechanism. In other words, the industry

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LCA 8), COP 15, Copenhagen, 7-18 December 2009) 6 http://unfccc.int/files/methods_and_science/emissions_from_intl_transport/application/pdf/imo_awg-lca_8_submission.pdf; Aydin Okur, above n 7, 481.

34 IMO, IMO Policies and Practices Related to the Reduction of Greenhouse Gas Emissions from Ships, Agenda Item 19, A23/Res.963 (5 December 2003) <http://www.imo.org/blast/blastDataHelper.asp?data_id=26597&filename=A963(23).pdf>.

35 The MEPC is the technical body of IMO, which has the authority to develop standards for the prevention and control of pollution from ships. <http://www.imo.org/About/Pages/Structure.aspx#4>.

36 <http://www.imo.org/ourwork/environment/pollutionprevention/airpollution/pages/technical-and-operational-measures.aspx>.

37 The SEEMP is intended to improve performance with regard to various factors that may contribute to CO2 emissions, such as improved voyage planning; speed management; weather routing; optimising engine power, use of rudders and propellers; hull maintenance and use of different fuel types. <http://www.imo.org/ourwork/environment/pollutionprevention/airpollution/pages/technical-and-operational-measures.aspx>.

38 IMO, 'Control of Greenhouse Gas Emissions from Ships Engaged in International Trade', above n 33, 20.

is free to choose among the suitable technologies and methods to use in a specific ship design as long as it meets the energy efficiency requirements stated by EEDI.

Following long lasting work and debates, IMO made a stride concerning the regulation of GHG emissions from international shipping during MEPC's 62nd session[39], held between 11-15 July, 2011, and imposed mandatory technical and operational standards so as to provide greater energy efficiency in shipping by way of making amendments in MARPOL Annex VI 'Regulations for the prevention of air pollution from ships'[40]. With the new amendments made in MARPOL Annex VI, under the new chapter 4 titled 'Regulation of Energy Efficiency For Ships', EEDI and SEEMP, which were applied voluntarily, were made mandatory[41]. EEDI was made mandatory for new ships, whereas SEEMP was made mandatory for all ships[42]. New mandatory measures were adopted by 48 to 5, by Parties to MARPOL Annex VI represented in the MEPC.[43].New amendments to Annex VI are expected to enter into force on 1 January 2013.

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39 IMO, *Report of the Marine Environment Protection Committee on its Sixty-Second Session*, Agenda item 24, MEPC 62/24 (26 July 2011) (Reduction of GHG Emissions from Ships) 31-39.

40 IMO, *Mandatory energy efficiency measures for international shipping adopted at IMO environment meeting* (2011) <http://www.imo.org/MediaCentre/PressBriefings/Pages/42-mepc-ghg.aspx>.

41 For the new amendments see Resolution MEPC 203 (62) <http://www.imo.org/OurWork/Environment/PollutionPrevention/AirPollution/Documents/Technical%20and%20Operational%20Measures/Resolution%20MEPC.203%2862%29.pdf>. New chapter 4 also comprises a new regulation on promotion of technical co-operation and transfer of technology regarding improvement of energy efficiency of ships. The aforementioned regulation requires Administrations to provide technical assistance to requestor states, especially developing states.

42 Consequential amendments to Annex VI add new definitions and the requirements for survey and certification, including the format for a new certificate, the International Energy Efficiency Certificate.

43 Brazil, Chile, China, Kuwait and Saudi Arabia voted "no". <http://www.imo.org/ourwork/environment/pollutionprevention/airpollution/pages/breakthrought-at-mepc-62.aspx>.

The regulations apply to all ships of 400 gross tonnage and above. However, regulation 19 allows 'the Administration' to waive the requirement for new ships of 400 gross tonnage and above from complying with the EEDI requirements[44]. Under EEDI mechanism, new ships are required to be surveyed of fuel efficiency and issued with International Energy Efficiency Certificate. Under SEEMP, during operation, new and existing ships are required to keep a specific energy use management plan on board.

The new regulation is especially significant since it represents 'the first ever mandatory regulation' concerning GHG emissions from international shipping, after long years of work and debate in IMO[45].

2. Market-Based Measures (MBMs)

Since the technical and operational measures for reduction of GHG emissions would not be adequate alone to mitigate the GHG emissions from international shipping, the shipping industry needs to urgently reach a settlement on MBMs. For a while, the MEPC has been working relentlessly on numerous MBMs proposals submitted by governments and observer organizations[46]. The proposals range from a contribution or levy on all CO2 emissions from international shipping (to be collected by fuel oil suppliers

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44 "This waiver may not be applied to ships above 400 gross tonnage for which the building contract is placed four years after the entry into force date of chapter 4; the keel of which is laid or which is at a similar stage of construction four years and six months after the entry into force; the delivery of which is after six years and six months after the entry into force; or in cases of the major conversion of a new or existing ship, four years after the entry into force date." <http://www.imo.org/MediaCentre/PressBriefings/Pages/42-mepc-ghg.aspx>.

45 Daniel Bodansky, *Multilateral Climate Efforts beyond the UNFCCC* (Center for Climate and Energy Solutions (C2ES), 2011) 7-8 <http://ssrn.com/abstract=1963928>.

46 IMO, *Market-Based Measures for International Shipping*, (Note by the International Maritime Organization to the first meeting of the Transitional Committee for the design of the Green Climate Fund) (24 May 2011), Annex I. <http://unfccc.int/files/meetings/awg/application/pdf/imo_all_250511.pdf>.

and transferred to a global fund) or only emissions from ships which do not meet the EEDI requirement, via emission trading systems, to schemes based on a ship's actual efficiency, both by design and operation. Furthermore, there are also proposals, such as 'rebate mechanism' which aim to reconcile socioeconomic capability differences between developed and developing states.

While ships and ship operators are praised in terms of efficient financial contribution in some proposed schemes, in others the concept of investment in energy efficient technologies and operations is brought to the forefront by setting compulsory efficiency standards for all ships and projecting trade of efficiency credits. All in all, proposed MBMs broadly seem like either bunker levy or emissions trading based proposals[47]. Studies have been initiated towards the impact assessment of the MBMs proposals in the 63rd session of the MEPC; these studies will continue in the next session in October 2012[48].

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[47] The proposals put forth so far by governments and observer organizations regarding MBMs are: International Fund for GHG emissions from ships (Proposal by Cyprus, Denmark, the Marshall Islands, Nigeria and IPTA (MEPC 60/4/8)); Leveraged Incentive Scheme (LIS) (Japan (MEPC 60/4/37)); Port State Levy (Jamaica (MEPC 60/4/40)); Ship Efficiency and Credit Trading (SECT) (United Sates (MEPC 60/4/12)); Vessel Efficiency System (VES) (World Shipping Council (MEPC 60/4/39)); Global Emission Trading System (ETS) for international shipping (Norway (MEPC 61/4/22)); Global Emissions Trading System (ETS) for international shipping (United Kingdom (MEPC 60/4/26)); Emissions Trading System (ETS) for International Shipping (France (MEPC 60/4/41)); Market-Based Instruments: a penalty on trade and development (Bahamas (MEPC 60/4/10)); Rebate Mechanism (RM) for a market-based instrument for international shipping (IUCN (MEPC 60/4/55)). <http://www.imo.org/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Market-Based-Measures.aspx>. For a discussion on the MBMs, see Jodie Moffat, 'Arranging Deckchairs on the Titanic: Climate Change, Greenhouse Gas Emissions and International Shipping', (2010) 24 *Australian & New Zealand Maritime Law Journal*, 111-124.

[48] <http://www.imo.org/MediaCentre/MeetingSummaries/MEPC/Pages/MEPC-63rd-session.aspx>.

MEPC needs to speed up the work on MBMs since IMO is expected to make a faster progress regarding suitable MBMs for international shipping. European Union has been issuing a warning stating; provided that IMO cannot come up with a solution regarding MBMs soon, then it will act unilaterally and impose its own GHG market-based regulations in its region. The EU has announced its decision to reduce overall greenhouse gas emissions from all sectors by at least 20% by 2020[49]. In its White Paper on Transport, the Commission recently offered to mitigate emissions from EU shipping by at least 40% compared to 2005 levels by 2050[50]. Furthermore, the European Commission has for some time been carrying out effort to include international maritime emissions into the EU reduction commitment[51].

So and so, the pressure on IMO concerning MBMs is increasing. Making EEDI and SEEMP mandatory does not ease the pressure on IMO. Yet, the technical and operational measures fall short of mitigating GHG emissions to the desired level. However, given the unfortunate lack of agreement as to the kind of MBMs to be adopted, it is uncertain when the MBMs may be adopted in IMO.

IV. THE DEBATES SURROUNDING THE PRINCIPLE OF CBDR AND SOLUTION SEEKING

The most prominent reason why the studies carried out by maritime nations under the leadership of IMO regarding the reduction of GHG emissions have not yielded the desired progress is the differences in opinion among states as to both the interpretation and the application of the Kyoto Protocol Article 2(2) and the principle of CBDR.

According to Article 2.2 of the Kyoto Protocol:

The Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from

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49 <http://ec.europa.eu/clima/news/articles/news_2012011901_en.htm>.

50 <http://ec.europa.eu/clima/news/articles/news_2011071801_en.htm>.

51 For more information on the EU's efforts to reduce greenhouse gas emissions from shipping see <http://ec.europa.eu/clima/policies/transport/shipping/index_en.htm>

aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively.

In all IMO negotiations, while some developing countries' delegations insist on acting in line with CBDR and claim that any mandatory GHG regime adopted by IMO is to be applied only to ships flying the flag of Annex I parties to the UNFCCC and its Kyoto Protocol, other delegations from developed countries, emphasizing the NMFT principle, insist that it should be applicable to all ships, irrespective of the flag state.

A. THE CBDR PRİNCİPLE

A principle of differentiated treatment between developed and developing states did not first emerge with the climate change legal regime[52]. In 1972, the Stockholm Declaration of the United Nations Conference on the Human Environment[53] called for the provision of international assistance to developing countries to help them meet the costs of incorporating environmental safeguards into their development planning.

Differentiated responsibilities for developed and developing states have appeared in certain international environmental agreements following the Stockholm Conference[54]. For example, in the 1987 Montreal Protocol to the Vienna Convention for the Protection of the Ozone Layer[55], developing

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52 Philippe Cullet, Differential Treatment in International Environmental Law (Ashgate Publishing, 2003) 28.

53 *Declaration of the United Nations Conference on the Human Environment*, UN Doc. A/Conf.48/14/Rev.l (1972).

54 See generally P. Cullet, 'Differential Treatment in International Law: Towards a New Paradigm of Inter-state Relations', (1999) (10) *European Journal of International Law*, 549-582.

54 *Declaration of the United Nations Conference on the Human Environment*, UN Doc. A/Conf.48/14/Rev.l (1972).

55 *Montreal Protocol on Substances that Deplete the Ozone Layer*, opened for signature 16 September 1987, 1522 UNTS 3 (entered into force 1 January 1989).

states were both given a grace period for compliance with the convention, and a fund was created to cover the costs arising from its implementation[56].

The clear expression of the CBDR principle, however, was in 1992 with the Rio Declaration. The principle of CBDR is described in the Principle 7 of the Rio Declaration[57], which reads:

In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

The CBDR principle accepts that all states have a common responsibility in protecting the environment, while at the same time acknowledging that most of the burden is on the developed states[58]. The CBDR principle is specified in Article 3 of the UNFCCC, which sets forth a number of principles to guide the Parties in their actions to achieve the objective of the Convention and to implement its provisions. This article also contains the principles of intergenerational equity, the special needs of

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[56] Michael Weisslitz, 'Rethinking the Equitable Principle of Common but Differentiated Responsibility: Differential Versus Absolute Compliance and Contribution in the Global Climate Change Context' (2002) 13 *Colorado Journal of International Environmental Law and Policy*, 481; Rachel Boyte, 'Common but Differentiated Responsibilities: Adjusting the "Developing"/"Developed" Dichotomy in International Environmental Law' (2010) 14 *New Zealand Journal of Environmental Law*, 68.

[57] *Rio Declaration on Environment and Development*, UN Doc. A/CONF.151/26 (Vol. I) (12 August 1992), Principle 7. <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>.

[58] For more information on the principle of CBDR, see Christopher D. Stone, 'Common but Differentiated Responsibilities in International Law' (2004) 98 *American Journal of International Law*, 276-301; see also Tuula Honkonen, 'The Principle of Common But Differentiated Responsibility in Post 2012 Climate Negotiations', (2009) (18/3) *Review of European Community and International Environmental Law*, 257-267.

developing countries, precaution, cost-effectiveness and sustainable development. The UNFCCC states that, since developed states are mainly responsible for the bulk of the GHGs so far, they should take the lead in combating climate change[59].

According to Article 3(1) of the UNFCCC:

The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

The specification in the UNFCCC regarding the CBDR principle contains ambiguities that hinder efforts to efficiently combat climate change. Unfortunately, nor is the Kyoto Protocol of much help regarding the interpretation of the CBDR principle[60].

It is not easy to implement an international convention containing the CBDR principle in a way that is both equitable and effective. Above all, the absence of an adequate definition which would allow for a clear-cut delineation of developed and developing countries, and also the existence of various significant differences among countries classified as developed or developing, are factors that make the implementation of the CBDR principle problematic.

Rajamani, pointing to the fact that the CBDR principle is not an unlimited concept, states that three criteria should be followed in its application[61]. These are: (a) it should not detract from the overall object(s)

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59 For a discussion on this, see Daniel Bodansky, 'The United Nations Framework Convention on Climate Change: A Commentary' (1993) (18) *Yale Journal of International Law*, 498.

60 Mary J. Bortscheller, 'Equitable but Ineffective: How the Principle of Common but Differentiated Responsibilities Hobbles the Global Fight against Climate Change' (2010) 10 *Sustainable Development Law and Policy* 51.

61 Lavanya Rajamani, *Differential Treatment in International Environmental Law* (Oxford University Press Inc, 2006) 162.

and purpose(s) of the treaty; (b) it should recognize and respond to differences across pre-determined political and other categories; and (c) it should cease to exist when the relevant differences cease to exist.

Rajamani holds that the common environmental goal is essential, and that if the actions considered as a whole diminish that goal, then differential treatment has been taken beyond its aims[62]. Halvorssen upholds the same view, saying: "If the major GHG-emitting developing countries are not given binding reduction commitments, the CBDR principle will have been taken beyond the limits of the object and purpose of the Climate Convention."[63]. On the other hand, Halvorssen also adds: "However, it is important to stress that the assumption of binding commitments by major GHG-emitting developing countries is still contingent upon the actions of the developed countries."[64].

As a result, it may be possible to apply differential treatment by setting different standards and obligations for different categories of states, or by giving grace periods and providing various forms of international technical and financial assistance to states which do not have the capacity to implement specific commitments[65]. However, where international shipping is concerned, it is not so easy to apply differential treatment.

B. NMFT PRINCIPLE

Under international shipping regulatory framework, the responsibility to implement the regulations developed by IMO lies on states which have become parties to the instrument that cover the aforesaid regulations. States are obliged to ensure that ships flying its flag honour the international

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62 Ibid.

63 Anita M. Halvorssen, 'Common but Differentiated Commitments in the Future Climate Change Regime - Amending the Kyoto Protocol to include Annex C and the Annex C Mitigation Fund' (2007) 18 *Colorado Journal of International Environmental Law and Policy, 259.*

64 Ibid.

65 Cullet, above n 52, 28.

agreements that they are party to. However, the ever increasing number of flag of convenience (FOC) practices, has deprived international shipping of efficient 'flag state jurisdiction and control'. Hereupon, provisions that include NMFT principle were inserted into international conventions regarding international shipping, and port states were given more significant responsibilities.

Yet, as per international law, states have prescriptive and enforcement jurisdiction over ships in their ports. Under NMFT principle, port states are obliged to apply the conventions that they are party to, without discriminating against foreign ships. In other words, even if the flag state of the ship is not a party to any international conventions, the port states still have jurisdiction and control over the ship and the ship can be detained provided there is a breach.

As a result, the regulatory framework regarding international shipping mandates all international conventions and standards to be applied equally to all ships. Hence, as far as the UNCLOS regulation is concerned, UNCLOS applies the CBDR principle in cases of pollution from land-based sources. However, it does not apply the same principle in cases of vessel-source marine pollution and marine pollution from or through the atmosphere[66] and it does not make a distinction between ships of developed and developing countries[67].

Taking into consideration the fact that about three-quarters of the world's merchant fleet flies the flags of developing (non-Annex I) countries[68], it becomes apparent that, should any future regime apply only to

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66 UNCLOS art 211, 212. For marine pollution from ships, see also Patricia Birnie, Alan Boyle and Catherine Redgwell, *The International Law and The Environment*, 3rd ed. (Oxford University Press, 2009), 398-423.

67 See Saiful Karim and Shawkat Alam, 'Climate Change and Reduction of Emissions of Greenhouse Gases from Ships: An Appraisal' (2011) (1) *Asian Journal of International Law*, 136-138.

68 IMO, *Main Events in IMO's Work on Limitation and Reduction of Greenhouse Gas Emissions from International Shipping*, (October 2011).

ships registered in Annex I countries, clearly, it would not be an effective instrument in combating climate change. Shipping, presumably the most international industry in the world, necessarily requires global standards and regulations that apply to all ships irrespective of flag or ownership if it is to function effectively and efficiently.

V. CONCLUSION

Since the Rio Declaration, the legal interpretation of the CBDR principle has been a contentious issue and is still subject to dispute. Vague as the content of the CBDR principle is, its implementation in international shipping becomes more and more difficult due to the idiosyncratic nature and legal regime of the maritime world. Therefore, the regulatory framework regarding international shipping mandates all international conventions and standards to be applied equally to all ships.

IMO has recently made significant headway in the regulation of the GHG emissions by making technical and operational measures mandatory in its amendments to MARPOL Annex VI. However, due to the fact that these new measures alone will not be enough to reduce GHG emissions, it is urgent that the shipping industry reach a settlement regarding MBMs for the reduction of GHG emissions.

The proposals regarding MBMs in MEPC include mechanisms intended to disentangle the deadlock surrounding the CBDR principle. That is to say, proposals exist which maintain the CBDR principle by taking into account the capacities of developing states, and providing them with financial assistance, while also preserving the NMFT principle by establishing rules which will be valid regardless of flag. Hence, the maritime world has the opportunity to adopt both principles by means of MBMs. Studies aimed at impact assessment of MBM proposals are being carried out by the MEPC. It is very important to look out for the actual capacities and needs of developing states, and among those, states with ‘special-case’ status

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<http://www.imo.org/MediaCentre/resources/Documents/Main%20events%20IMO%20GHG%20work%20-%20October%202011%20final 1.pdf>.

such as ‘Small Island Developing States’ and ‘Least Developed Countries’, while evaluating these proposals.

It is essential to reach reconciliation on proposals which simultaneously preserve both the CBDR principle and the NMFT principle so as to conclude efforts carried out by the IMO and combat against GHG emissions. As mentioned before, applying the CBDR principle or differentiated treatment does not mean leaving developing countries unregulated. Therefore, interpreting Article 2(2) of the Kyoto protocol and the CBDR principle narrowly, and claiming mandatory regulations adopted by the IMO cannot be applied to developing countries, is not conducive to reaching a solution. Consequently, such an interpretation not only goes against the nature and general regulatory regime of international shipping, but also deviates from the general purpose of UNFCCC and the Kyoto Protocol, which may make the CBDR principle cease to be a just argument for developing states**.** However, it should not be forgotten that until developed nations take the lead in a meaningful way, blaming developing countries for the deadlock would also be unjust.

As a result, it is not easy to reconcile the CBDR principle and the NMFT principle, and to provide an effective regulation and an equitable solution concerning the mitigation of GHG emissions**.** However, today the maritime world is urgently expected to overcome just this obstacle. The reason why our earth is called the ‘Blue Planet’ is because two thirds of it is covered by seas. Hence, it is vital that states which benefit from the seas that have so generously served humankind since the dawn of history, urgently reach a compromise for the sake of the ‘Blue Planet’.

Main Acronyms

CBDR	Common but Differentiated Responsibility
CO2	Carbon Dioxide
EEDI	Energy Efficiency Design Index
FOC	Flag of Convenience
GHG	Greenhouse Gases
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
Kyoto Protocol	Kyoto Protocol to the United Nations Framework Convention on Climate Change
MARPOL73/78	International Convention for the Prevention of Pollution from Ships 1973 as amended by the 1978 Protocol
MBMs	Market-Based Measures
MEPC	Marine Environment Protection Committee
NMFT	No More Favourable Treatment
QELAR	Quantified Emissions Limitation and Reduction
SEEMP	Ship Energy Efficiency Management Plan
UN	United Nations
UNCLOS	The United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change