STUDENT CONTRIBUTION

Gigantic Shipbuilders under the IMO Mandate of GHG Emissions: With Special References to China, Japan and Korea

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To address greenhouse gas emissions from international shipping, the International Maritime Organization has adopted technical and operational measures, and discussed the possibility of adopting market-based measures. China, Japan and South Korea are major shipbuilding nations in the world, and have differing responses towards the IMO's regulatory initiatives. This paper conducts a comparative assessment of these three countries' positions on regulatory principles of the greenhouse gas issue, and concludes that their differentiated perspectives on this matter reflect their different regulatory interests. It is significant to take their differentiated interests into account in the developing regulatory regime to avoid disproportionate burdens being placed on certain countries, in particular developing countries.

Keywords

Greenhouse Gas, International Shipping, CBDR Principle, China, Japan, South Korea

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I. Introduction

Climate change is one of the most significant challenges to the mankind of the 21st century. This new phenomenon requires "substantial and sustained reductions of greenhouse gas emissions" ("GHGs").[1] Climate change is also related to international shipping, the backbone of global trade and a driving force of the economic globalization.[2] Although often recognized as a relatively environmental sound method of transportation,[3] international shipping has been reported to have significant and growing influence on climate change.[4] Given the urgency of emissions reduction and the global nature of the shipping industry, the international community has responded to this imperative and begun to develop a regulatory framework.

The international regulatory efforts in regulating GHG emissions from international shipping can be traced back to the year 1995 when the United Nations Framework Convention on Climate Change ("UNFCCC")[5]'s Subsidiary Body on Scientific and Technological Advice ("SBSTA") and the Subsidiary Body for Implementation ("SBI") were requested to examine the allocation and control of emissions from international bunker fuels.[6] In 1996, SBSTA identified five options from the eight options provided by the UNFCCC Secretariat as the basis for future work on the allocation of emissions from aviation and marine bunker fuels.[7] In

1 Intergovernmental Panel on Climate Change ("IPCC"), *Fifth Assessment Report: Working Group I Report (2013), Summary for Policymakers*, at 19, *available at* http://www.climatechange2013.org/images/report/WG1AR5_SPM_FINAL.pdf (last visited on Oct. 10, 2014).

2 International shipping generally refers to "shipping between ports of different countries" and excludes military and fishing vessels engaged on such voyages. *See* Øyvind Buhaug et al., Second IMO GHG Study 2009, 13 (2009). International shipping carries around 80% of global trade by volume. *See* United Nations Conference on Trade and Development ("UNCTAD"), *Review of Maritime Transport (2013)*, xi, *available at* http://unctad.org/en/PublicationsLibrary/rmt2013_en.pdf (last visited on Sept. 28, 2014).

3 *See*, *e.g.*, C. Pisani, *Fair at Sea: The Design of A Future Legal Instrument on Marine Bunker Fuels Emissions within the Climate Change Regime*, 33 Ocean Dev. & Int'l L. 57 (2002).

4 In 2007, CO_2 emissions from international shipping reached 870 million tonnes, which covers 2.7% of the global emissions of CO_2. If left unchecked, CO_2 emissions from international shipping may grow by 150-250% by 2050 compared with 2007 due to projected growth in demand for maritime transport service. For details, *see* Buhaug et al, *supra* note 2, at 1.

5 United Nations Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 107, *reprinted in* 31 I.L.M. 848.

6 Methodological Issues, Decision 4/CP.1, Report of the Conference of the Parties on its First Session, art 1(f), at 16, FCCC/CP/1995/7/Add.1 (Apr. 7, 1995).

7 These five options are: (1) no allocation; (2) allocation to the country where the bunker fuel is sold; (3) allocation to the country of the transporting company, the country of registration of registration of the aircraft/vessel, or the country

order to include GHG emissions from international shipping into a State-based convention, the emissions have to be allocated to different countries. However, this approach failed in reaching consensus among States.[8] As a consequence, Article 2(2) of the 1997 Kyoto Protocol to UNFCCC authorized the International Maritime Organization ("IMO") to regulate the GHG emissions from international shipping.[9] Since then, two parallel regimes have been contributing to the international regulatory process of this GHG issue.

The first regime is based on the global climate change where SBSTA worked on marine bunker fuels in 1996, which afterwards has been collaborated with the IMO. The Ad Hoc Working Group on Long-term Cooperative Action ("AWG-LCA") under UNFCCC had been working on the issue of international bunker fuels before 2012.[10] Without substantial outcomes on GHG emissions issue, the AWG-LCA finalized its work in 2012 Doha Climate Change Conference as mandated. Currently the Ad Hoc Working Group on the Durban Platform for Enhanced Action ("ADP") is working on negotiating a global climate change agreement that is expected be adopted by 2015 and entered into force from 2020. Nevertheless, whether or to what extent that the 2015 climate change agreement will involve the GHG emissions from international shipping remains unclear.

The second regime is related to the IMO GHG emissions where the IMO has adopted relevant conventions, codes, resolutions and guidelines to regulate GHG emissions issue. Of these various regulative initiatives, Resolution 8[11] and Resolution

of the operator; (4) allocation to the country of departure or destination of the aircraft/vessel; and (5) allocation to the country of departure or destination of the passenger/cargo. For details, *see* S. Oberthür, *Institutional Interaction to Address Greenhouse Gas Emissions from International Transport: ICAO, IMO and the Kyoto Protocol*, 3 Climate Pol'y 193 (2003).

8 *Id*.

9 Article 2(2) of the Kyoto Protocol provides that: "The Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively." *See* Kyoto Protocol, Mar. 16, 1998, 2303 U.N.T.S. 148, *reprinted in* 37 I.L.M. 22. (The 1997 Kyoto Protocol only listed six types of GHGs, namely CO_2, CH_4, N_2O, HFCs, PFCs and SF_6, but a seventh type of GHG, NF_3 was added to the category in the Durban Climate Change Conference in 2011). The GHG emissions from international shipping mainly constitute CO_2, CH_4, N_2O and HFC. *See* Outcome of the Work of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its Sixteenth Session, Decision 1/CMP.7, Report of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol on its Seventh Session, FCCC/KP/CMP/2011/10/Add.1 (Mar. 15, 2012), *available at* http://unfccc.int/resource/docs/2011/cmp7/eng/10a01.pdf (last visited on Oct. 10, 2014).

10 AWG-LCA discussed the issue of international bunker fuels under paragraph 1b (iv) of the Bali Action Plan. *See* UNFCCC, *Bali Action Plan*, *Report of the Conference of the Parties on its Thirteenth Session Decision*, 1/CP.13, FCCC/CP/2007/6/Add.1 (Mar. 14, 2008), *available at* http://unfccc.int/files/meetings/cop_13/application/pdf/cp_bali_action.pdf (last visited on Oct. 22, 2014).

11 Resolution 8 on "CO_2 emissions from ships" requests the IMO to undertake a study on GHG emissions from ships

A.963 (23)[12] were adopted by the IMO in 1997 and 2003, respectively, which have underpinned the subsequent actions of the IMO. To date, three categories of measures have been discussed within the Organization in order to address the GHG emissions from ships, namely technical measures, operational measures, and market-based measures ("MBMs").[13] After lengthy deadlock of negotiations on shipping GHG emissions within the IMO, shipping GHG emissions were partially regulated by technical and operational measures on July 15, 2011. This regulation takes the form of amended Annex VI to the International Convention for the Prevention of Pollution from Ships (hereinafter MARPOL 73/78).[14] By adding a new Chapter 4 to Annex VI on the regulation on energy efficiency for ships, this amendment makes mandatory the Energy Efficiency Design Index ("EEDI") for new ships,[15] and the Ship Energy Efficiency Management Plan ("SEEMP") for all ships.[16] As this regulation was adopted by a majority vote rather than consensus, it is predicted that the future enforcement of this regulation will face certain challenges and uncertainties.[17] To date seven types of MBM proposals,[18] which aim to complement the technical and

and consider feasible CO_2 reduction strategies. For details, *see* IMO, Main Events in IMO's Work on Limitation and Reduction of Greenhouse Gas Emissions from International Shipping (2011), ¶12, *available at* http://www.imo.org/MediaCentre/resources/Pages/Greenhouse%20gas%20emissions.aspx (last visited on Sept. 28, 2014).

12 IMO, Policies and Practices Related to the Reduction of Greenhouse Gas Emissions from Ships, IMO Assembly 23rd Sess., Agenda Item 19, IMO Doc. Res A.963(23) (Dec. 5, 2003), *available at* http://www.imo.org/blast/blastDataHelper.asp?data_id=26597&filename=A963(23).pdf (last visited on Oct. 22, 2014).

13 IMO, *supra* note 11, ¶ 50.

14 International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), Nov. 2, 1973, 1340 U.N.T.S. 61, *reprinted in* 12 I.L.M. 1319, as amended by the 1978 Protocol to the 1973 Convention, 1341 U.N.T.S. 3, 17, *reprinted in* I.L.M. 546. To date, MARPOL 73/78 has adopted 6 annexes and their revisions, and Annex VI (Air Pollution from Ships) entered into force on May 19, 2005. For details, *see* Amendments to MARPOL, Annex VI and the NO_X Technical Code 2008, IMO Doc Res MEPC.251(66) (Apr. 4, 2014).

15 As the main technical measure, the EEDI provides a specific figure representing a minimum energy efficiency level or technological threshold for certain ship types and size segments. Ship designers and shipbuilders are free to choose the most cost-efficient technological solutions for the ship once the minimum energy efficiency level required by the EEDI is achieved. *See* IMO, *supra* note 11, ¶ 57.

16 The SEEMP is an operational measure. As a ship-specific energy management plan, SEEMP provides a flexible mechanism for shipowners and ship operators to monitor ship and fleet efficiency performance over time in a cost-effective manner. The Energy Efficiency Operational Indicator ("EEOI") is often utilized as a monitoring tool and to establish benchmarks related to ships' energy efficiency. For details, *see id*. at 59.

17 *See*, *e.g.*, J. Harrison, *Recent Developments and Continuing Challenges in the Regulation of Greenhouse Gas Emissions from International Shipping*, 2 University of Edinburgh Research Paper Series (2012), *available at* http://ssrn.com/abstract=2037038 (last visited on Oct. 2, 2013). *See also* Md. Saiful Karim, *IMO Mndatory Eergy Efficiency Measures for International Shipping: The First Mantory Global Greenhouse Gas Reduction Instrument for an International Industry*, 7 Macq. J. Int'l & Comp. Envtl. L. 113 (2011).

18 These seven types of MBM proposals are International GHG Fund, port State levy, Efficiency Incentive Scheme (EIS), Ship Efficiency and Credit Trading ("SECT"), Global Emissions Trading System ("ETS") for international shipping, Penalty on Trade and Development, and Rebate Mechanism ("RM"). Among them, the SECT and Penalty on Trade and Development have been modified to be strengthened technical and operational measures. However, as options for

operational measures in reducing shipping GHG emissions,[19] have been submitted to the IMO for discussions.

China, Japan, and South Korea are main flag States and shipping nations of the world. In particular, the shares of the global shipbuilding order book (in Gross Tonnage) by these three countries accounted for 88.49 percent in 2012.[20] Therefore, the responses of these three countries to the IMO's regulatory initiatives, in particular the applicable regulatory principles, to a significant extent determine whether these measures could be effectively enforced by global shipping industries, and are thus worthy of an assessment. Different from China and Japan who are widely accepted as a developing and a developed country respectively, the status of South Korea is a bit ambiguous; she has been regarded as a developed country by the Organisation for Economic Co-operation and Development ("OECD") and other international organisations.[21] However, South Korea is also a UNFCCC non-Annex I State; it means she has been identified as a developing country under the global climate change regime. For these reasons the views of Korean Government, as well as its shipping industry, on the reduction of GHG emissions from ships are different from those of Japan. In this sense, China, Japan, and South Korea represent a major developing country, a typical developed country, and a developed but treated as a developing country, respectively. A comparative assessment of these three countries' perspectives on GHG emissions from ships can reflect the positions of many other developing countries and developed countries.

The primary purpose of this paper is to examine and compare the perspectives of China, Japan, and South Korea on regulatory principles of GHG emissions from international shipping. These countries' positions on the IMO's mandate

possible MBMs, these two MBM proposals are still on the table. *See* Further Details on the US Proposal to Reduce Greenhouse Gas Emissions from International Shipping, submitted by the United States, MEPC 61st Sess., Agenda Item 5, IMO Doc. MEPC 61/INF.24 (July 23, 2010). *See also* How Technical and Operational Measures are the Only Direct and Effective Means to Deliver Cuts in CO_2 Emissions, submitted by the Bahamas, Inter-sessional Meeting of the Working Group on GHG Emissions from Ships 3rd Sess., Agenda Item 2, IMO Doc. GHG-WG 3/2 (Dec. 22, 2010).

19 Recent research indicates that to achieve absolute emissions reduction using the EEDI and SEEMP alone is not possible due to the projected growth in international seaborne trade. *See* Z. Bazari & T. Longva, Assessment of IMO Mandated Energy Efficiency Measures for International Shipping 8, IMO Doc. MEPC 63/INF.2, Annex (Oct. 31, 2011).

20 Council Working Party on Shipbuilding, Peer Review of Japanese Government Support Measures to the Shipbuilding Sector 29 (2013), *available at* http://www.oecd.org/sti/ind/C-WP6%282012%2926-FINAL-ENG.pdf (last visited on Oct. 2, 2014).

21 *See*, *e.g.*, Australian Government: Ministry for Foreign Affairs, List of Developing Countries as Declared by the Minister for Foreign Affairs (2013), *available at* http://www.ausaid.gov.au/ngos/Documents/list-developing-countries.pdf. *See also* American Mathematical Society, Developing Countries List, *available at* http://www.ams.org/membership/individual/types/mem-develop; International Monetary Fund ("IMF"), World Economic Outlook 172 (2011), *available at* http://www.ioha2012.net/?page_id=1945 (all last visited on Sept. 28, 2014).

and competence to regulate GHG emissions from ships are also analyzed for their relevance with applicable principles of this GHG issue. This article is divided into four parts including Introduction and Conclusion. Part two will investigate the shipping industries of China, Japan and South Korea. Part three will compare the perspectives of those three countries on regulatory principles of GHG Emissions from international shipping.

II. The Shipping Industries in China, Japan and South Korea

A. China

Although China's first international shipping company was established in 1961, the benign development of China's international shipping sector, as well as its shipbuilding sector, only started in 1978 when its reform and opening up policy was adopted.[22] China's shipping industry has achieved rapid development after three decades' development. As of January 1, 2013, China ranked ninth in the world among the flags of registration with the largest registered deadweight tonnage.[23] In the same year, China owned the third largest fleet in the world with 190,078,835 deadweight tonnages, which covered 11.78 percent of the world fleet.[24] However, 64.79 percent of these Chinese owned fleets (in terms of deadweight tonnage) sailed under the flags of foreign States. In 2010, China's shipbuilding sector ranked first in the world in three categories, namely, its accomplished shipbuilding output, volume of new ship orders, and holding orders, which covered 43 percent, 54 percent, and 41 percent of the world market, respectively.[25]

B. Japan

Japan is a traditional maritime power in the world as well as important flag State. As of January 1, 2013, Japan ranked 14th in the world among the flags of registration

22 Gao Weijie, Development Strategy of Chinese Shipping Company under the Multilateral Framework of WTO 2 (2003), *available at* http://www.docin.com/p-428858926.html (last visited on Oct. 10, 2014).

23 UNCTAD, *supra* note 2, at 56.

24 *Id*. at 41.

25 Yuzhen Xie et al. [解玉真等], *The Impacts of the EEDI on the Chinese Shipbuilding and Shipping Industries* EEDI [对中国造船及航运业的影响] <available only in Chinese> 11 China Maritime [中国海事] 24 (2011).

with the largest registered deadweight tonnage.[26] Meanwhile, Japan owned the second largest fleet in the world with 223,815,008 deadweight tonnage, which accounted for 13.87 percent of the world fleet.[27] Of these Japanese owned fleets, 92.31 percent of them (in terms of deadweight tonnage) flew the flags of foreign States.[28] Japan is one of the most advanced UNFCCC Annex I States and has pioneered most energy-efficient shipping technologies. Consequently, although Japan's share of world shipbuilding output has fallen from around 34 percent in 1999 to 18 percent in 2011, due to worsening global economic conditions,[29] Japan is still receiving many international orders for building larger and more complicated vessels with more added values. Japan's shipping industry is competitive in the international high-level or energy efficient shipbuilding market.[30]

C. South Korea

The South Korean shipbuilding sector only began its development in the early 1970s. Nevertheless, to date, South Korea has become one of the main shipping nations of the world. As of January 1, 2013, South Korea controlled the fifth largest owned fleets (dwt) in the world with 764 vessels registered under Korean flags and 812 registered in other flag States.[31] The deadweight tonnage it owned in that year accounted for 4.65 percent of the world total.[32] The South Korean shipbuilding sector has ranked first among South Korean exports since 2008,[33] and is now home to seven of the world's ten largest shipbuilding companies. Among the seven top shipbuilders, Hyundai Heavy Industries ("HHI"), Samsung Heavy Industries ("SHI") and Daewoo Shipbuilding ("DSB"), also called the 'Big 3,' are believed to have dominated the global market in terms of output.[34]

D. Assessment

Given that China, Japan and South Korea are all important players of international

26 UNCTAD, *supra* note 2, at 56.

27 *Id*. at 43.

28 *Id*.

29 During this period, China and South Korea both increased their shares of world shipbuilding output and reached 39% and 31%, respectively. *See supra* note 20, at 23.

30 *Id*. at 30.

31 UNCTAD, *supra* note 2, at 43.

32 *Id*.

33 M. Porter et al., Shipbuilding Cluster in the Republic of Korea 18 (2010), *available at* http://www.docin.com/p-373755421.html (last visited on Oct. 10, 2014).

34 *Id*.

shipping trade, these three countries are also competitors in global shipping market, particularly in shipbuilding market. With its booming shipbuilding capability, South Korea overtook Japan to be the world's largest shipbuilding nation in 2000, after Japan surpassed its European counterparts in 1956. This title was taken over by China in 2010 due to China's better performance in exports of ships, but in 2011 South Korea regained the top spot as global shipowners ordered more complex high-technological vessels, in the production of which currently South Korea has absolute advantages over China.[35] Against this backdrop, China, Japan and South Korea have made differentiated responses to the IMO's regulatory initiatives.

III. China, Japan and South Korea's Perspectives on Regulatory Principles of GHG Emissions from International Shipping

It is generally accepted that the varying interpretations of Article 2(2) of the Kyoto Protocol by various countries has been the core obstacle in the regulation of shipping GHG emissions by the IMO. In other words, it is still open to debate whether the IMO has a mandate from the Kyoto Protocol to regulate the GHG issue.[36] This discussion is significant in the sense that the generally-accepted origin of the IMO's GHG mandate determines what kind of regulatory principles and measures apply to the regulation of this GHG issue.[37] Generally speaking, if an international treaty gives the IMO a mandate, the principles incorporated into the treaty should also apply to the IMO's regulation of the GHG issue.[38] Therefore, if the IMO gets its

35 A. Lee, South Korean Shipbuilding Faces Hard Times, Hyundai Heavy Reflects (Feb. 2, 2012), *available at* http://gcaptain.com/south-korean-shipbuilding-faces (last visited on Sept. 28, 2014).

36 There are two views contributing to this debate. One view is that the IMO's mandate to regulate GHG emissions from ships is solely from the Kyoto Protocol. *See* A. Miola, M. Marra & B. Ciuffo, *Designing A Climate Change Policy for the International Maritime Transport Sector: Market-Based Measures and Technological Options for Global and Regional Policy Actions*, 39(9) Energy Pol'y 5492 (2011). *See also* J. Moffat, *Arranging Deckchairs on the Titanic: Climate Change, Greenhouse Gas Emissions and International Shipping*, 24 A & NZ Mar L. J. 105 (2010). The other view attributes the IMO's mandate in regulating GHG emissions from ships to the IMO Convention, the United Nations Convention on the Law of the Law, and IMO Resolution 8. *See* Md. Saiful Karim & Shawkat Alam, *Climate Change and Reduction of Emissions of Greenhouse Gases from Ships: An Appraisal*, 1 Asian J. Int'l L. 147-148 (2011). For further details, *see* Oberthür, *supra* note 7, at 195.

37 Yubing Shi, *Greenhouse Gas Emissions from International Shipping: The Response from China's Shipping Industry to the Regulatory Initiatives of the International Maritime Organization*, 29 Int'l J. Marine & Coastal L. 82 (2014).

38 *Id*. *See* Vienna Convention on the Law of Treaties, art. 31, May 23, 1969, *reprinted in* 8 I.L.M. 679. *See also* Convention on the Inter-Governmental Maritime Consultative Organization, art 41, Mar. 6, 1948, 289 U.N.T.S.

mandate to regulate GHG emissions from international shipping from the Kyoto Protocol, the Common but Differentiated Responsibility ("CBDR") principle[39] which runs through the Kyoto Protocol[40] should apply to GHG emissions reductions from ships. Similarly, if the Convention on the International Maritime Organization (hereinafter IMO Convention) and the United Nations Convention on the Law of the Sea ("UNCLOS")[41] give the IMO this GHG mandate, the No More Favourable Treatment ("NMFT") principle,[42] which has been consistently incorporated by all IMO agreements, should apply to this issue. Meanwhile, once the origin of the IMO's GHG mandate is agreed, the measures beyond the IMO's competence should not be adopted by the IMO to regulate this GHG issue. Alternatively, the IMO may collaborate with other competent international organizations in adopting these measures.[43] China, Japan and South Korea have expressed their positions and provided theoretical analysis to underpin their arguments due to the significance of the IMO's mandate issue.

A. China's Perspective

China has expressed its views on this GHG issue by submitting a number of proposals and statements to the IMO since the 52nd Marine Environment Protection Committee ("MEPC") meeting in 2004.[44] Through submitting these documents, China has attempted to address three concerns such as: (1) what is the scope of the IMO's mandate and competence in regulating the GHG issue?; (2) why the CBDR principle should be applied to the GHG issue?; and (3) how the CBDR principle could be applied to this issue?[45]

3, amended and renamed as Convention on the International Maritime Organization, Nov. 14, 1975, 9 U.T.S. 61 (hereinafter IMO Convention).

39 The CBDR principle requires both developed and developing States to contribute to addressing environmental problems, but imposes the primary responsibility on developed States due to their different historical contribution to the problems and the differentiated capability of developed and developing States. This principle was first explicitly formulated in Principle 7 of the 1992 Rio Declaration on Environment and Development, and has been widely accepted and endorsed in many conventions and treaties, including the UNFCCC and its Kyoto Protocol. *See* P. Sands, Principles of International Environmental Law 287 (2d ed. 2003).

40 Kyoto Protocol art 10.

41 United Nations Convention on the Law of the Sea, Dec. 10, 1982, 1833 U.N.T.S. 3.

42 The NMFT principle refers to "port States enforcing applicable standards in a uniform manner to all ships in their ports, regardless of flag." *See* Buhaug et al., *supra* note 2, at 20; MARPOL 73/78, art 5(4).

43 *Supra* note 37.

44 The MEPC is responsible for the regulation of GHG emissions from international shipping. *See* IMO Convention, *supra* note 38, arts. 11 & 38; IMO Resolution A.963(23), *supra* note 12, art 1.

45 *See*, *e.g.*, Report of the Marine Environment Protection Committee on its 59th Session, 2, Statement by the Delegation of China on GHG Issues, IMO Doc. MEPC 59/24/Add.1 Annex 13 (2009); Application of the Principle of "Common

China took the view that the scope of the IMO's competence in regulating the GHG issue should be limited to technology or methodology related matters,[46] and the proposed MBMs under discussion are beyond the competence of the IMO.[47] Supporting the IMO to regulating technical issues, however, China thus asserted that MBMs should be decided by UNFCCC if they are to be regulated in the future.[48] Although this view has been supported by a number of developing countries,[49] China did not provide legal basis for its assertion in its submitted documents. Indeed, the IMO Convention provides the Organization with economic purpose.[50] However, in practice, the purposes of the IMO have been limited to technical aspects only,[51] and its economic mandate has never been allowed to be exercised.[52] Meanwhile, China and its shipping industry are opposed to any unilateral actions, in particular, the proposed inclusion of GHG emissions from international shipping into a European Union Emission Trading Scheme ("EU ETS").[53]

China has put forward five reasons to underpin the application of the CBDR principle to GHG emissions from international shipping. First, the IMO received its mandate to regulate the GHG issue from Article 2(2) of the Kyoto Protocol; this is the only mandate in regulating the GHG issue, too.[54] Therefore, the fundamental principles that UNFCCC and the Kyoto Protocol have set for regulating climate change, including the CBDR principle, should also apply to the IMO in addressing GHG emissions from international shipping.[55]

but Differentiated Responsibilities" to the Reduction of Greenhouse Gas Emissions from International Shipping, ¶ 5, submitted by China and India, MEPC 58th Sess., Agenda Item 4, IMO Doc. MEPC 58/4/32 (Aug. 15, 2008); Comments on the Proposed Mandatory Energy Efficiency Regulations, ¶ 14, submitted by China, Saudi Arabia and South Africa, MEPC 62nd Sess., Agenda Item 5, IMO Doc. MEPC 62/5/10 (May 5, 2011).

46 *See* Report of the Marine Environment Protection Committee on Its Fifty-Sixth Session, ¶ 4.58, MEPC 56th Sess., Agenda Item 23, IMO Doc. MEPC 56/23 (July 30, 2007); Report of the Marine Environment Protection Committee on its 59th Session, 2, Statement by the Delegation of China on GHG Issues, IMO Doc. MEPC 59/24/Add.1, Annex 13 (2009).

47 Report of the Marine Environment Protection Committee on Its Sixtieth Session, Annex 4, ¶ 2, MEPC 60th Sess., Agenda Item 22, IMO Doc. MEPC 60/22 (Apr. 12, 2010).

48 *Id*.

49 *E.g*., this view was also held by Brazil, Venezuela and Malaysia. *See* Report of the Marine Environment Protection Committee on Its Sixty-First Session, Annex 3, ¶¶ 5-7, MEPC 61st Sess., Agenda Item 24, IMO Doc. MEPC 61/24 (Oct. 6, 2010).

50 IMO Convention art. 1(b) & (c).

51 G. Pamborides, International Shipping Law: Legislation and Enforcement 83 (1999).

52 Alan Khee-Jin Tan, Vessel-source Marine Pollution: the Law and Politics of International Regulation 75 (2006).

53 *Supra* note 37, at 112.

54 Report of the Marine Environment Protection Committee on its 59th Session, 1, Statement by the Delegation of China on GHG Issues, IMO Doc. MEPC 59/24/Add.1, Annex 13 (2009).

55 *Id*. *See also* Report of the Marine Environment Protection Committee on its 58th Session, IMO Doc. MEPC 58/23

Second, the CBDR principle is not just the principle drawn from UNFCCC and its Kyoto Protocol; it rather represents the fundamental consensus of the international community in tackling climate change.[56] Thus, all relevant international organizations should give due respect to the CBDR principle when they contribute to addressing climate change. The IMO is no exception.[57]

Third, the IMO Assembly rejected a recommendation that Resolution A.963 (23) on the reduction of GHG emissions from ships "should be based on a common policy applicable to all ships rather than based on the provisions of the Kyoto Protocol" in 2003.[58] China is opined that the above assertion by MEPC was proved 'wrong.' The IMO's Legal Division interpreted that its GHG mandate was not from Article 2(2) of the Kyoto Protocol, but from the UNCLOS and the IMO Convention.[59] However, China argued that Article 2(2) shall only be interpreted by the Conference of the Parties ("COP") and the COP serving as the Meeting of the Parties to the Kyoto Protocol ("CMP"), which are the competent bodies of the Protocol rather than any other body.[60] China agreed that Articles 1 and 64 of the IMO Convention give the IMO competence in regulating the GHG issue, but underscored that the Kyoto Protocol is still "the most direct and authoritative" for such authorization.[61] From the perspective of international law, China's rebuttal on the interpretation of Article 2(2) of the Kyoto Protocol by the Legal Division of the IMO is persuasive in the sense that the IMO is not the competent organization for such interpretation.[62] However, China's argument on the relationship between the Kyoto Protocol and the IMO Convention in authorizing the IMO this regulatory work is lack of sufficient legal basis. This is because the Kyoto Protocol and the IMO Convention are two parallel treaties; it is thus unlikely to tell which treaty should prevail when there is a conflict between them.[63] For this reason, it is not convincing for China to claim that the Kyoto

(Oct. 16, 2008).

56 Report of the Outcome of the First Intersessional Meeting of the Working Group on Greenhouse Gas Emissions from Ships, Annex 4, ¶ 3, MEPC 58th Sess., Agenda Item 4, IMO Doc. MEPC 58/4 (July 4, 2008).

57 *Id*.

58 Report of the Marine Environment Protection Committee on Its Fifty-Second Session, ¶ 4.44, MEPC 52nd Sess., Agenda Item 24, IMO Doc. MEPC 52/24 (Oct. 18, 2004).

59 IMO, *supra* note 11, ¶ 121.

60 Report of the Marine Environment Protection Committee on its 58th Session, Annex 9, ¶ 2, IMO Doc. MEPC 58/23 (Oct. 16, 2008).

61 Report of the Marine Environment Protection Committee on Its Sixtieth Session, annex 4, ¶ 2, MEPC 60th Sess., Agenda Item 22, IMO Doc. MEPC 60/22 (Apr. 12, 2010).

62 Under international law, competent organizations to interpret a treaty include the treaty Parties, an *ad hoc* tribunal or the International Court conferred by the treaty, and the organs of the competent international organisation. *See* I. Brownlie, Principles of Public International Law 630 (7th ed. 2008).

63 *Supra* note 37, at 85.

Protocol is the "most direct and authoritative" for the IMO's work in regulating this GHG issue.[64]

Fourth, to apply the NMFT principle and exclude the application of the CBDR principle to the GHG issue would be unfair for developing countries. The largest share of GHG emissions from international shipping is attributed to the historical development of the shipping industry in developed countries,[65] currently controlling the majority of the world deadweight tonnage.[66] That is why the application of the NMFT principle would place the technologically disadvantaged developing countries in a worse position for development due to their lack of 'survival emissions.'[67]

Fifth, as a response to a criticism that the application of the CBDR principle to the GHG issue would possibly make most ships exempt from the global reduction regulations due to the existence of Flag of Convenience ("FOC"),[68] China asserted that this concern could be addressed. In China's view, the beneficially-owned tonnage could be targeted in a way that was utilized by the Review of Maritime Transport by the UNCTAD, based on the data supplied by Lloyd's Register-Fairplay.[69] China suggested that the nationality of ships (flag State) be defined as the nationality of shipowners for the purpose of applying the CBDR principle in the context of GHG emissions from international shipping.[70] In this way, the application of the CBDR principle would not seemingly make the ships, which are owned by the nationals of developed States but are flying the flags of developing States, be exempt from compulsory reduction commitments. However, shipowners may be companies or other business entities in law. It is thus possible that the nationals of developed States register their companies in developing States investing in ships so as to avoid the stringent regulations. China maintained that the CBDR principle should be applied to all three routes of reduction measures such as technical, operational measures and MBMs.[71] In a broad sense, the 'differentiated responsibility' element

64 However, it can be argued that the mandate that the IMO gets from the Kyoto Protocol is more specific than it gets from the IMO Convention. *See id*.

65 IMO Doc. MEPC 58/4/32, s*upra* note 45.

66 *Id*. ¶ 5.

67 *Id*. ¶ 4. In this context, the 'survival emissions' refer to the heavy reliance of many developing countries on necessary emissions associated with their shipping industry. *See* M. Mwandosya, Survival Emissions: A Perspective from the South on Global Climate Change Negotiations (2000).

68 *See* A. Griffin, *MARPOL 73/78 and Vessel Pollution: A Glass Half Full or Half Empty?*, 1 Ind. J. Global L. Stud. 506 (1994).

69 IMO Doc MEPC 58/4/32, s*upra* note 45.

70 *Id*.

71 *Id*. ¶ 7.

of the CBDR principle consists of the following three categories: (1) differentiated central obligations; (2) differentiated implementation arrangements; and (3) the granting of assistance including financial and technological assistance.[72] China suggested all these three scenarios to the energy efficiency measures being discussed within the IMO, although two of these proposals have not got positive responses by other IMO member States. At the 61st MEPC meeting, China proposed that EEDI "should be mandatory to developed countries and voluntary to developing countries."[73] This proposal reflects China's interpretation on applying the CBDR principle to this GHG issue. That is to impose differentiated central obligations on various States. At the 62nd MEPC meeting, China proposed a phased-in approach for developing countries in implementing EEDI and SEEMP.[74] This approach belongs to the "differentiated implementation arrangement" element of the CBDR principle. Neither of them was, however, accepted by most countries. Under these circumstances, after the adoption of the revised MARPOL Annex VI, China turned to the last opportunity of partially incorporating the CBDR principle to the energy efficiency measures.[75] The recognition of the CBDR principle was eventually written into the MEPC resolution on technical cooperation and transfer of technology. As a result, China was getting more enthusiastic to participating in related discussions under the guidance of the CBDR principle.[76] Considering that many developed countries reserved their positions on this provision, however, whether the CBDR principle can be reflected in the implementation of this resolution is still doubted.

China has been a persistent opponent of MBMs to be applied to this GHG issue. However, China has suggested that, if a MBM is to be adopted, the CBDR principle should apply in a manner that "no extra financial responsibility" will be brought to developing countries.[77] She proposed two principles to achieve this goal. First, the

72 L. Rajamani, Differential Treatment in International Environmental Law 191 (2006).

73 Report of the Working Group on Energy Efficiency Measures for Ships, ¶ 4.31, MEPC 61st Sess., IMO Doc. MEPC 61/WP.10 (Sept. 30, 2010).

74 Comments on the Proposed Mandatory Energy Efficiency Regulations, ¶ 14, submitted by China, Saudi Arabia and South Africa, MEPC 62nd Sess., Agenda Item 5, IMO Doc. MEPC 62/5/10 (May 5, 2011).

75 For details, *see* Draft MEPC Resolution on Promotion of Technical Cooperation and Technology Transfer Relating to the Improvement of Energy Efficiency of Ship*s*, annex, submitted by Angola, Argentina, China, India, Jamaica, Nigeria, Peru, South Africa and Venezuela, MEPC 64th Sess., Agenda Item 4, IMO Doc. MEPC 64/4/30 (July 27, 2012).

76 Report of the Marine Environment Protection Committee on Its Sixty-Fifth Session, Annex 5, ¶ 4, MEPC 65th Sess., Agenda Item 22, IMO Doc. MEPC 65/22 (May 24, 2013).

77 Report of the Marine Environment Protection Committee on Its Sixty-First Session, Annex 3, ¶ 3, MEPC 61st Sess., Agenda Item 24, IMO Doc. MEPC 61/24 (Oct. 6, 2010).

basic principles and key elements of MBMs should be determined by UNFCCC.[78] Second, any funds generated from any MBM should be provided only to the shipping sector in developing countries.[79] If comparing China's claims with the current MBM proposals, it would not be straightforward to meet China's proposal.

B. Japan's Perspective

In comparison with these large developing countries like China and India which frequently reiterated their positions on the CBDR principle by lodging their statements to the IMO, Japan formally expressed its views on the regulatory principles for addressing GHG emissions from international shipping at the 58th and 59th MEPC meetings. First, Japan supported the role of the IMO in regulating the GHG issue asserting that there should be adherence to the NMFT principle.[80] It supported the nine fundamental principles agreed at the 57th MEPC meeting.[81] In view of strong opposition from many countries on the second principle (hereinafter NMFT principle), however, Japan, together with some other States, suggested an improved expression of this principle in order to reach consensus. It proposed that the future IMO framework should be "binding and equally applicable to all ships" rather than "binding and equally applicable to all flag States."[82] However, this proposal was not accepted by those delegations not supporting the second principle.[83] It was probably because this proposal still applied the NMFT principle, and thus was opposed by major developing countries, particularly major shipbuilding developing countries. Although these developing countries can flag their ships with FOC States, various regional Memoranda of Understanding ("MOUs") on port State control will make it very difficult to operate and trade with substandard ships.[84]

78 *Id*.

79 *Id*.

80 Report of the Marine Environment Protection Committee on its 58th Session, Annex 9, ¶ 19, IMO Doc. MEPC 58/23 (Oct. 16, 2008).

81 At the 57th MEPC meeting, the nine fundamental principles were agreed by "an overwhelming majority," but the second principle was opposed by some States. *See* Report of the Marine Environment Protection Committee on Its Fifty-Seventh Session, ¶ 4.77, MEPC 57th Sess., Agenda Item 21, IMO Doc. MEPC 57/21 (Apr. 7, 2008).

82 *See* Identifying Consensus on IMO Principles on Addressing Greenhouse Gas Emissions from International Shipping, MEPC 58th Sess., Agenda Item 4, IMO Doc. MEPC 58/4/16 (Aug. 1, 2008).

83 Report of the Marine Environment Protection Committee on Its Fifty-Seventh Session, ¶ 4.76, MEPC 57th Sess., Agenda Item 21, IMO Doc. MEPC 57/21 (Apr. 7, 2008).

84 The MOUs on port State control have become a dominant means of facilitating effective port State control at the regional level. Currently, there are nine MOUs. The reasons why regional MOUs have achieved rapid development include: the elimination of 'port shopping'; improving inspection efficiency by means of harmonization between port

Second, Japan supported the American view that "the IMO's mandate on GHG emissions from shipping predates, and does not derive from the Kyoto Protocol."[85] Indeed, if this assertion is generally agreed, the CBDR principle will "[have] no place in the IMO."[86] This view has been supported by many developed countries, however, such as Norway, New Zealand, and Denmark.[87]

Third, Japan respects the CBDR principle applied in UNFCCC; she argued that the CBDR principle could be reflected in other ways including through technical cooperation in the regulation of the GHG issue.[88] Compared to many other developed countries' positions,[89] Japan's view reveals its willingness of cooperation and compromise. As already discussed, based on a broad interpretation of the CBDR principle, an effective technical cooperation including the transfer of technology, in addition to financial assistance from developed countries to developing countries, could constitute a type of 'differentiated responsibility' of the CBDR principle. In May 2013, however, the IMO adopted a resolution on Promotion of Technical Co-operation and Transfer of Technology relating to the Improvement of Energy Efficiency of Ships, which, in the preamble, recognized both the CBDR and NMFT principles.[90] Although the expressions utilize the words 'being cognizant' to replace the proposed 'acknowledging' by other countries, it was encouraging for most developing countries to expect more beneficial measures in facilitating the transfer of technologies as regulated in the amended Annex VI to the MARPOL.[91] As a response to this adoption, Japan, together with Australia and the US, lodged a statement to the meeting report; it clarified that the CBDR principle applies in UNFCCC, while the NMFT principle does in the IMO and under the MARPOL 73/78.[92] This statement indicates that Japan did not welcome the application of the

States; and the reduction of the foreign ship's burden of repetitive inspections. *See* Ho-sam Bang, *Is Port State Control an Effective Means to Combat Vessel-Source Pollution? An Empirical Survey of the Practical Exercise by Port States of their Powers of Control*, 23 Int'l J. Marine & Coastal L. 726 (2008).

85 Report of the Marine Environment Protection Committee on its 58th Session, Annex 9, ¶¶ 11 & 19, IMO Doc. MEPC 58/23 (Oct. 16, 2008).

86 *Id*. at 10.

87 *Id*.

88 Report of the Marine Environment Protection Committee on its 58th Session, Annex 9, ¶ 19, IMO Doc. MEPC 58/23 (Oct. 16, 2008).

89 The US asserted that the CBDR principle "has no place in the IMO" and is inconsistent with the actions taken by the IMO. *See id*. at 10.

90 Report of the Marine Environment Protection Committee on Its Sixty-Fifth Session, Annex 4, IMO Doc. Res MEPC.229(65), at 1, MEPC 65th Sess., Agenda Item 22, IMO Doc. MEPC 65/22 (May 24, 2013).

91 MARPOL 73/78 Annex VI reg. 23.2.

92 Report of the Marine Environment Protection Committee on Its Sixty-Fifth Session, Annex 5, ¶ 3, MEPC 65th Sess., Agenda Item 22, IMO Doc. MEPC 65/22 (May 24, 2013).

CBDR principle to this issue from any perspective, although it asserted earlier at the 58th MEPC meeting that this principle could be reflected in certain ways.

C. South Korea's Perspective

South Korea is a highly-developed shipbuilding country and has actively participated in the discussions on proposed technical, operational measures and MBMs within the IMO. At the 61st MEPC meeting in 2011, South Korea asserted that the IMO is "the appropriate body to develop and enact regulations for emissions from international shipping."[93]

Unlike its Chinese counterparts, the South Korean shipbuilding sector, in particular its large-sized shipbuilding companies, welcomes the planned unilateral actions by the EU to strengthening environmental regulations.[94] South Korea's large shipbuilders believe that they can gain more orders for constructing high-efficiency, eco-friendly ships once various EU technical, operational and market-based measures are in place.[95] In contrast to the positive attitudes to reducing GHG emissions from ships by Korean shipping associations and large-sized shipbuilding companies, small and medium-sized shipping companies, however, are not so supportive of this kind of regulation. A survey in 2011 revealed that Korea's small and medium-sized shipping firms were concerned that stricter environmental regulations on ships might further increase their manufacturing costs and weaken their price competitiveness, while their Chinese counterparts might not be influenced in this way.[96] Due to the existence of such a gap between different shipping firms, many small and medium-sized companies have not started their preparation for incorporating EEDI and SEEMP measures,[97] while large size companies have responded quickly to meet new requirements. *E.g.*, HHI has been keen to develop its environmentally friendly high-value vessels, including drillships, liquefied natural gas ("LNG") carriers, mega containerships, and those using LNG as a fuel.[98] With

93 Comments on the Use of Credits of the Clean Development Mechanism in Market-based Measures for International Shipping, ¶ 2, submitted by the Repbulic of Korea, MEPC 61st Sess., Agenda Item 5, IMO Doc. MEPC 61/5/28 (Aug. 6, 2010).

94 Asia Shipbuilding & Offshore Information Service ("ASIASIS"), Korea Welcomes EU Environmental Regulations (Nov. 17, 2010), *available at* http://www.simic.net.cn/news_show.php?lan=en&id=80211 (last visited on Sept. 28, 2014).

95 *Id*.

96 Sang-yoon Lee & Young-tae Chang, *Shipping Companies' Awareness and Preparedness for Greenhouse Gas Regulations: A Korean Case*, *in* Current Issues in Shipping, Ports and Logistics 47 (T. Notteboom ed., 2011).

97 *Id*.

98 *Supra* note 35.

this strategy, HHI has achieved remarkable success in getting new orders.

With regard to the CBDR principle, South Korea acknowledged it as a significant political matter which needs 'deep consideration'; she pointed out that the matter would be addressed by 'various options'[99] Additionally, South Korea limited these 'various options' to "financial arrangement for technical cooperation and capacity building for less developed countries."[100] These expressions indicate that South Korea supported the application of the CBDR principle to GHG emissions issue based on her broad interpretation on the CBDR principle; it means that this principle could be applied to this GHG issue by the granting of financial assistance and technical cooperation to developing countries. At the 61st MEPC meeting, South Korea asserted that the IMO is the appropriate body to regulate GHG emissions from international shipping 'with harmonization' between the CBDR principle and the NMFT principle.[101] It can be inferred that South Korea supported the application of both the CBDR and NMFT principles to the GHG issue, although her interpretation on the CBDR principle is different from that of China. South Korea has not explicitly expressed her views on the origin of the IMO's mandate. However, it supported the nine fundamental principles adopted by the 57th MEPC meeting.[102] The incorporation of the NMFT principle into the second principle reveals South Korea's support for applying the NMFT principle to GHG emissions from ships. This position makes South Korea distinct from many other UNFCCC non-Annex I States, such as Brazil, South Africa and India.

D. A Comparative Appraisal

China, Japan and South Korea all support the leading role of the IMO in regulating technical and operational measures to reduce shipping GHG emissions. They all agree the role of the CBDR principle in the global climate change regime under UNFCCC and its Kyoto Protocol. However, their views towards the IMO's role in regulating MBMs and the application of the CBDR principle to GHG emissions issue are divergent.

While China doubted the IMO's competence in regulating MBMs and asserted

99 Report of the Marine Environment Protection Committee on its 58th Session, Annex 9, ¶ 12, IMO Doc. MEPC 58/23 (Oct. 16, 2008).

100 *Id*.

101 Comments on the Use of Credits of the Clean Development Mechanism in Market-based Measures for International Shipping, ¶ 2, submitted by the Repbulic of Korea, MEPC 61th Sess., Agenda Item 5, IMO Doc. MEPC 61/5/28 (Aug. 6, 2010).

102 Report of the Third Intersessional Meeting of the Working Group on Greenhouse Gas Emissions from Ships, ¶ 3.4.3, note by the Secretariat, MEPC 62nd Sess., Agenda Item 5, IMO Doc. MEPC 62/5/1 (Apr. 8, 2011).

that this work should be determined by UNFCCC, both Japan and South Korea supported the IMO's role in regulating MBMs. The NMFT principle is the real ground behind the different positions of these countries. Since it is open to debate whether the Kyoto Protocol is the sole mandate that the IMO has received so far in regulating GHG emissions issue, it becomes reasonable for countries to interpret Article 2(2) of the Kyoto Protocol to meet their regulatory interests. If Chinese argument on the IMO's competence is accepted by most IMO member States, the NMFT principle will not be applied to the proposed MBMs in further regulating this GHG issue. Considering their comparative advantages in energy efficient technologies, nevertheless, the shipping industries in Japan and South Korea would be less negatively affected by the increased transportation cost due to possible adoption of MBMs than that in China.[103] Table 1 provides the divergent views of China, Japan, South Korea and their shipping industries on the regulation of GHG emissions from international shipping.

Table 1: Positions of China, Japan, South Korea and their shipping industries on the regulation of GHG emissions from international shipping

Positions	IMO competence in regulating technical & operational measures	IMO competence in regulating MBMs	Application of the CBDR principle	Application of the NMFT principle	Unilateral actions by the EU
China	support	oppose	support	oppose	oppose
Chinese shipping industry	support	oppose	support	oppose	oppose
Japan	support	support	oppose	support	unknown
Japanese shipping industry	support	support	oppose	support	unknown
South Korea	support	support	*conditional* recognition	support	unknown
S. Korean shipping industry	support	support	unknown	support	support

Source: Compiled by the author.

The shipping industries in China and South Korea have opposite views on possible unilateral actions by the EU. The EU generally launches its unilateral actions when

[103] *Supra* note 20, at 29.

the regulatory process of competent international organizations is slow, and these unilateral actions are usually more stringent than the proposals being discussed within the international organization.[104] For this reason, these different views from Chinese and South Korean shipping industries probably reveal that under proposed IMO regulations the technologically-advantaged Korean shipping industry would be more competitive when compared to its Chinese competitors. Although Japan's shipping industry has pioneered most energy efficient technologies, it remains unclear whether she supports possible unilateral actions by the EU.[105]

China has continuously supported the application of the CBDR principle to GHG emissions from ships. Although China interpreted this principle as differentiated central obligations between developed countries and developing countries, she also attempted to apply other options to partially adopt the principle. They are: differentiated implementation arrangement; the granting of financial assistance; and transfer of technology. Compared with China, Japan opposed the application of the CBDR principle to the GHG issue from any perspective. Actually, this comparison reflects the conflict between major developing and developed countries as to the approaches of appropriately balancing equity and fairness in combating climate change; today there is a trend of weakening the CBDR principle in global climate change negotiations.[106]

While China supported the application of the CBDR principle to the GHG issue rather than the NMFT principle, South Korea welcomed the application of both principles in this regard. In addition to their different views towards the NMFT principle, the divergence of China and South Korea also lies in their differing interpretation of the CBDR principle. To some extent, the CBDR principle that South Korea interpreted is not the same one that China understood. This indicates that there are differing regulatory interests between States which are not listed under

[104] In January 2012, *e.g.*, the EU included the emissions from international aviation into the EU Emission Trading Scheme due to slow progress within the International Civil Aviation Organization ("ICAO"). This unilateral action significantly increased the cost of many airlines and was thus opposed by many countries. Consequently, this policy suspended in December 2012. In October 2013, an EU proposal on its unilateral ETS was rejected by the 38th ICAO Assembly since the ICAO adopted its own MBM agreement based on which a proposal for a global MBM scheme would be agreed in 2016 and be implemented by 2020. *See* Information Relevant to Emissions from Fuel Used for International Aviation and Maritime Transport, Executive Summary, 3, UNFCCC SBSTA 39th Sess., Warsaw, Doc. FCCC/SBSTA/2013/MISC.20 (Nov. 10, 2013).

[105] For details, *see* R. Anuradha, *Unilateral Measures and Climate Change* (Centre for WTO Studies, IIFT Bhawan, May 25, 2012) at 11, *available at* http://wtocentre.iift.ac.in/Books/Anuradha%20Unilateral%20measures.pdf ; Per Kågeson, *Linking CO_2 Emissions from International Shipping to the EU ETS* (July 2, 2007) at 32, *available at* http://www.natureassociates.se/pdf/nya/CO2%20shipping%20final.pdf (all last visited on Sept. 28, 2014).

[106] L. Rajamani, *The Climate Regime in Evolution: The Disagreements that Survive the Cancun Agreements*, 5 Carb & Clim. L. Rev. 144 (2011).

Annex I to UNFCCC. Aside from large developing countries which are also main importing countries, main FOC States, both least developed countries and small-island developing States have differentiated regulatory interests.[107] Such difference determines that these UNFCCC non-Annex I States take their own positions on this CBDR issue.

In comparison to Japan's opposition to the application of the CBDR principle to the GHG issue, South Korea adopted a 'conditional' recognition of this principle. Although both Japan and South Korea are the members of OECD, their different legal affiliations under the Kyoto Protocol may lead to the differentiated regulatory interests and responses.

IV. Conclusion

The international community has a goal of limiting an increase of two degrees Celsius in the global average temperature by 2100 in tackling climate change.[108] However, a recent report by the Asian Development Bank reveals that an increase of two degrees Celsius by 2050 is 'almost unavoidable'[109] Compared with the average of 1961-1990, mean temperatures is expected to be 1.9-2.6 degrees Celsius higher across the East Asian region in 2050 and 3.8-5.2 degrees Celsius higher in 2090.[110]

Owing to the significant contributions of China, Japan and South Korea to global climate change,[111] it is vital for these three countries to ensure the compliance of their ships with the adopted energy efficiency measures. Nevertheless, EEDI has had and will continue to have more negative impacts on Chinese shipbuilding industry than on the shipping industries in Japan and South Korea; the Index may even "trigger another migration of shipbuilding industry in the future."[112] It will be

[107] For details, *see*, *e.g.*, Possible Incompatibility between WTO Rules and A Market-based Measure for International Shipping, submitted by India, MEPC 62nd Session, Agenda Item 5, IMO Doc. MEPC 62/5/27 (May 20, 2011); Report of the Marine Environment Protection Committee on its 58th Session, Annex 9, Statement by the Delegation of Vanuatu, at 21, IMO Doc. MEPC 58/23 (Oct. 16, 2008).

[108] L. Rajamani, *The Cancun Climate Change Agreements: Reading the Text, Subtext and Tea Leaves*, 60 Int'l & Comp. L. Q. 501 (2011).

[109] M. Westphal, G. Hughes & J. Brommelhorster eds., *Economics of Climate Change in East Asia*, executive summary, xvi (Asian Development Bank, 2013), *available at* http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1305 (last visited on Oct. 29, 2014).

[110] *Id*.

[111] *Id*.

[112] Jianing Zheng, Hao Hu & Lei Dai, *How would EEDI Influence Chinese Shipbuilding Industry?* 40 Mar. Pol'y &

thus more important for China to secure the incorporation of the CBDR principle in certain ways for the future improvement of the EEDI and SEEMP, as well as future adoption of MBMs.

As discussed throughout this paper, the differentiated perspectives of these three countries on the regulation of GHG emissions issue generally reflect their differing regulatory interests. Therefore, it is significant to take their differentiated interests into account in the developing regulatory regime to avoid disproportionate burdens being placed on certain countries, in particular developing countries.