Governing sustainability to international maritime transportation of goods
Towards GHG emissions reductions

University of Helsinki
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Master’s Thesis
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May 2021
ABSTRACT

Faculty: Law

Degree programme: Master of International and Comparative Law

Study track: International Business Law

Author: Tupuna Manner

Title: Governing sustainability to international maritime transportation of goods - Towards shipping GHG emissions reductions

Level: Master

Month and year: May 2021

Number of pages: 60 + 18

Keywords: International maritime law, law and sustainability, greenhouse gas emissions, shipping industry

Supervisor or supervisors: Ellen Eftestøl

Where deposited: Helsinki University Library

Additional information: -

Abstract: International maritime transportation of goods is an inevitable part of global trade and economics. Over 90 percent of global trade are seaborne. Shipping is considered as cost-effective transport mode and it emits less greenhouse gases than e.g. freight or air cargo. Global trade is expected to rise. Shipping industry must be able to answer to the increasing demand of delivering shipping services while adapting to sustainability requirements such as reducing GHG emissions. Shipping interests both public and private sectors and engages complex cross-border supply chain stakeholders from various interest groups. International sustainability and maritime policies are affecting shipping industry from multiple levels. Both the European Union and the United Nations are implementing new normative tools and mechanisms to enhance a sustainability trajectory into all areas of business and society. Traditional treaties and conventions are supplemented by new objectives to meet the overarching sustainable development and economic growth requirements. Three complex subject matters are discussed – the international maritime regulatory scheme, climate and sustainability regulatory scheme and, the wicked problem of reducing shipping industry GHG emissions. An interdisciplinary method is used. The overarching research theme is – what actions and measures are needed in order to safeguard that shipping industry can answer (i) to the increasing demand of delivering shipping services and, (ii) to the increasing sustainability requirements. Two research questions are asked: 1) who governs international maritime affairs and shipping sustainability objectives in the context of shipping GHG emissions reductions, and 2) how to implement the GHG reductions objectives in the shipping industry? In order to attain sustainable development objectives into shipping industry practices, innovative administrative solutions and governance models are needed from the maritime affairs policy makers on both national and international level. Interdisciplinary and innovative solutions are needed to tackle emissions reductions objectives.
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<td>AI</td>
<td>Artificial Intelligence</td>
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<tr>
<td>BC</td>
<td>black carbon</td>
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<td>CISE</td>
<td>The Common Information Sharing Environment (for the EU maritime domain)</td>
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<td>CO</td>
<td>carbon monoxide</td>
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<td>CO2</td>
<td>carbon dioxide</td>
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<td>COP21</td>
<td>Paris Climate Conference</td>
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<td>CSR</td>
<td>Corporate Social Responsibility</td>
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<td>CSRD</td>
<td>Corporate Sustainability Reporting Directive</td>
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<td>DCS</td>
<td>Fuel Oil Data Collection System</td>
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<td>EC</td>
<td>European Commission</td>
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<td>ECMT</td>
<td>the European Conference of Ministers of Transport</td>
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<td>EEDI</td>
<td>Energy Efficiency Design Index</td>
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<td>Energy Efficiency Operational Indicator</td>
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<td>EEXI</td>
<td>Energy Efficiency Existing Ship Index</td>
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<td>EEZ</td>
<td>Exclusive Economic Zones</td>
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<td>EMSA</td>
<td>European Maritime Safety Agency</td>
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<td>EP</td>
<td>European Parliament</td>
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<td>ESSF</td>
<td>European Sustainable Shipping Forum</td>
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<td>ETS</td>
<td>EU Emission Trading System</td>
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<td>EU</td>
<td>European Union</td>
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<td>EU MRV</td>
<td>The EU MRV Regulation (2015/757) on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport</td>
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<tr>
<td>FOC</td>
<td>Flags of convenience</td>
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<td>GHG</td>
<td>Greenhouse Gas</td>
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<td>HELCOM</td>
<td>Baltic Marine Environment Protection Commission</td>
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<td>IMCO</td>
<td>Inter-Governmental Maritime Consultative Organization</td>
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<td>IMO</td>
<td>International Maritime Organization</td>
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<td>IMP</td>
<td>Integrated Maritime Policy</td>
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<td>IMRB</td>
<td>International Maritime Research and Development Board</td>
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<td>IoT</td>
<td>Internet of Things</td>
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<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<td>ITF</td>
<td>International Transport Forum</td>
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<td>IUCN</td>
<td>International Union for Conservation of Nature</td>
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<td>MARPOL</td>
<td>The International Convention for the Prevention of Pollution from Ships</td>
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<td>Market-Based Measures</td>
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<td>Marine Environment Protection Committee</td>
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<td>MRV</td>
<td>Monitoring, Reporting and Verification</td>
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<td>MSC</td>
<td>Maritime Safety Committee</td>
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<td>NDC</td>
<td>nationally determined contributions</td>
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<td>NGO</td>
<td>Non-governmental Organization</td>
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<td>NOx</td>
<td>nitrogen oxide</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and development</td>
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<tr>
<td>PM</td>
<td>particulate matter</td>
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<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
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<td>SDG</td>
<td>Sustainable Development Goals</td>
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<td>SEEMP</td>
<td>Ship Energy Efficiency Management Plan</td>
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<td>Acronym</td>
<td>Full Form</td>
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<td>SME</td>
<td>Small and Medium-Sized Enterprises</td>
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<td>SMS</td>
<td>Safety Management System</td>
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<td>Sox</td>
<td>sulphur oxide</td>
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<td>TFEU</td>
<td>Treaty on the Functioning of the EU</td>
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<td>UN</td>
<td>United Nations</td>
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<td>UN Agenda 2030</td>
<td>The Agenda 2030 for Sustainable Development</td>
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<td>UN Ocean Decade</td>
<td>Decade of Ocean Science for Sustainable Development from 2021 to 2030</td>
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<td>UNCED</td>
<td>United Nations Conference on Environment and Development</td>
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<td>UNCLOS</td>
<td>United Nations Law of the Sea Convention</td>
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<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<td>UNFCCC</td>
<td>United Nations Framework Convention on Climate Change</td>
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<tr>
<td>USD</td>
<td>United States Dollars</td>
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<td>VOC</td>
<td>volatile organic compounds</td>
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<td>World Trade Organization</td>
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INTRODUCTION

1.1 Forewords

Shipping is an inevitable part of global economics. Over 90 percent of global trade are seaborne. By comparison to other modes of transportation, international maritime transportation of goods is considered the most efficient and cost-effective method of international transportation of goods as it emits less greenhouse gas (‘GHGs’) emissions per tonne-kilometer than e.g. freight or air cargo. While energy efficient by comparison, international shipping currently releases approximately three percent of global GHG emissions. Global trade of goods and commodities is expected to rise and this shall directly increase the demand for shipping.

Climate change is a megatrend that is threatening the planetary boundaries. Climate change impact mitigation has increased international attention in concepts of sustainable development and growth. Shipping has not avoided that attention as shipping GHG emissions are subject to an increasing attention and scrutiny. Sustainable economic growth requires efficient, secure and safe transportation of goods. Thus, shipping industry must be able to answer (i) to the increasing demand of delivering shipping services and, (ii) to the increasing sustainability requirements. Shipping industry must deliver sustainable shipping services and simultaneously tackle climate change.

Shipping industry operates in an international business environment. Shipping is subject to multiple international regulatory requirements and soft law. Shipping interests both public and private sectors and engages complex cross-border supply chain stakeholders from various interest groups.

The main legal sources in international maritime regulation have been the UNCLOS and the IMO conventions that have developed the regulatory scheme into a system in which global maritime safety and environmental protection regulations stream into national level and become adopted in domestic

5 Sustainable Development was officially defined by a United Nations endorsed mission, the Brundtland Commission already in 1987 in their famous report ‘Our Common Future’. See more (n 18).
International sustainability and maritime policies are affecting shipping industry from multiple levels. Both the European Union and the United Nations are implementing new normative tools and mechanisms to enhance a sustainability trajectory in all areas of business and society. Traditional treaties and conventions are supplemented by new objectives to meet the overarching sustainable development and economic growth requirements. This research touchpoints three complex subject matters – international maritime regulatory scheme, sustainability regulatory scheme and, the wicked problem of reducing shipping industry GHG emissions.

1.2 Research methods and materials

This research combines legal normative doctrinal and comparative research methods. The legal system sets a theoretical framework and the subject matter to conduct legal research. Since legal research has an inbuilt function for concepts and categories, the legal system operates as a playground on which questions of ‘how’ and ‘what’ are asked. A descriptive approach is used to identify and analyse the international regulatory framework and governance in shipping industry. Empirical legal research approach is utilised when analysing of overlaps and gaps affecting the maritime and sustainability regulatory schemes in an industry. Legal scholars and lawyers need both analytical and practical skills when reflecting research questions in a normative playground. Reflections represent understanding of what should be the purpose of law and how those purposes become achieved. By exploring the subject matters affecting the industry, factual GHG emissions arising from the industry operations and the current and prospect political and legal initiatives and topical discourse around the topic this research fulfils the elements of an explorative research.

Materials used are hard law and soft law tools - international conventions and policy documents, European Union law and policy documents, academic literature and journals. International maritime regulation legal basis lies in international conventions from which they stream into national regulatory

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9 The Writer’s text from University of Helsinki faculty of law course.
11 ibid (n 7)
12 The Writer is a student member in the INTERTRAN Research Group at University of Helsinki. The Writer has participated in academic discussions and events in the field of INTERTRAN Research Group members’ academic research and contributions. The Writer has engaged in telco interviews with climate and maritime affairs specialists at the Finnish Ministry of Transport and Communications. Eero Hokkanen and Laura Sarlins' expertise lie in e.g. Finland's official international relations and representation at IMO, UNFCCC and HELCOM.
International shipping has developed over centuries of seafaring tradition and is regulated in various conventions and national laws. Main legal sources used are the Law of the Sea Convention (‘UNCLOS’, 1982), International Maritime Organization (‘IMO’) conventions, United Nations Framework Convention on Climate Change (‘UNFCCC’) conventions and EU legislation. Policy initiatives and documents by the United Nations (‘UN’) bodies (e.g. IMO and the UNFCCC) and the European Commission (‘EC’) are used. Selected materials represent international legal and political documents governing and regulating global maritime safety, maritime environmental protection, GHG emissions and climate change impact mitigation.

1.3 Research structure, questions and limitations

This research consists of an introduction with forewords (chapter one), two main chapters (chapters two and three) and a summary of findings with further research questions (chapter four). The overarching research theme is – what actions and measures are needed in order to safeguard that shipping industry can answer (i) to the increasing demand of delivering shipping services and, (ii) to the increasing sustainability requirements.

Chapter two ‘Sustainability governance in international maritime transportation of goods’ discusses the first research question – who governs international maritime affairs and shipping sustainability objectives in the context of shipping GHG emissions reductions? Focus lies in the legal-political development and elements of sustainable development and climate change, international maritime law and EU maritime affairs strategy.

Chapter three ‘Shipping GHG emissions reductions mechanisms’ discusses the second research question – how to implement the GHG reductions objectives in the shipping industry? Focus lies in mapping of current and recently proposed mechanisms and maritime emissions reporting systems.

Considering the magnitude of and interdisciplinary complexity of this research – international maritime and sustainability regulations, shipping industry and GHG emissions data – limitations are made. Case law and jurisdictional focus are out of the scope. Practical business cases are not used. Covid-19 impact is recognised but not analysed in further detail. The final section proposes possible further research questions.

13 ibid (n 7)
2 SUSTAINABILITY GOVERNANCE IN INTERNATIONAL MARITIME TRANSPORTATION OF GOODS

2.1 Forewords

This chapter discusses the first research question of who governs international maritime affairs and shipping sustainability objectives in the context of reducing shipping GHG emissions? Focus lies in the legal-political development and elements of sustainable development and climate change, international maritime law and EU maritime affairs strategy. This chapter is divided into three subsections – sustainability and climate change, international maritime regulation, and EU maritime affairs strategy. This chapter starts by introducing the Brundtland Commission’s definition of sustainable development. Then moving towards identifying of main international climate conventions and discussing of both UN and EU policies underlying sustainable development and marine environmental protection. EU environmental law principles are discussed before finalising the chapter with European Green Deal and climate law initiative.

2.2 Sustainability and climate change

2.2.1 The Brundtland Commission

The concept of sustainable development is essential in integration of sustainability policies. Sustainable development was first officially defined by the UN Brundtland Commission report ‘Our Common Future’ (1987). According to the definition “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Further narrative was presented as,

“sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations”.

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16 ibid
The Brundtland Commission appointed sustainability obligations to private international entities. Their report especially indicated that “transnational corporations have a special responsibility to smooth the path of industrialization in the nations in which they operate”.  

Sustainable development is a complex concept. Governance models are needed to coordinate, direct and redirect actions towards achieving this complex concept. Sustainable development governance models should reflect innovation and aim at reliefs of administrative burdens which would risk the stakeholders participation. Climate governance must exist on all levels from national to international. This indicates that in order to attain sustainable development objectives into shipping industry practices, innovative administrative solutions and governance models are needed from policy makers on both national and international level. Interdisciplinary and innovative solutions are needed to tackle emissions reductions objectives.

2.2.2 From Kyoto Protocol to Paris Agreement

International response to sustainable development governance requirement is found e.g. from international climate conventions. While mapping of international regulatory framework of shipping GHG emissions reductions and furthermore, shipping carbon dioxide (‘CO2’) emissions governance, reflections to international climate conventions are needed. It is crucial to understand the international community’s response to climate change impact mitigation as a whole. As an attempt to respond and to mitigate climate change impacts such as global warming, the international community established an Intergovernmental Panel on Climate Change (‘IPCC’, 1988). Following the IPCC the United Nations Framework Convention on Climate Change (‘UNFCCC’) was adopted at the Rio Earth Summit (1992) and it entered into force in 1994. The UNFCCC’s mission is “preventing ‘dangerous’ human interference with the climate system”. International maritime transport

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17 ibid (n 14)
18 Governance can be described as the process of decision making and the process by which decisions are implemented. Sciberras and Silva 2018 (n 14) citing Kemp R and Parto S, ‘Governance for sustainable development: moving from theory to practice’ (Int J Sustain Dev 8 2005)
19 Sciberras and Silva 2018 (n 14) citing Baumgartner RJ (2009) ‘Organizational culture and leadership: preconditions for the development of sustainable corporation’ Sustain Dev 17(2):102–113
20 David C Holmes and Lucy M Richardson, Research Handbook on Communicating Climate Change (Edward Elgar Publishing 2020) 16
22 197 countries have ratified the Convention. See more on UNFCCC, ‘What is the UNFCCC?’ <https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change#:~:text=The%20UNFCCC%20entered%20into%20force,called%20Parties%20to%20the%20Convention> accessed 13 May 2021
23 Ibid
emissions have been on the UNFCCC’s agenda since their first meeting in 1995. Originally, the UNFCCC’s maritime related focus was in emissions originating from the fuel used for maritime transport, (international bunker fuels). 24 The Kyoto Protocol 25 delegated the authority of controlling the limitation and reduction of maritime transport GHG emissions from maritime transport to the IMO. 26

The establishment of the UNFCCC and the Kyoto Protocol were among the first steps of international efforts to bring a universal and multilateral agreement on climate change. The Paris Agreement was adopted at the Paris Climate Conference (‘COP21’) in 2015.

The road from Kyoto Protocol to the adoption of the Paris Agreement had numerous efforts along the way as the UNFCCC aimed at finding an international, universal and multilateral solution to climate change. The Copenhagen Accord (2009) 27 set a non-binding document to be formalized in Cancún (2010). Cancún acknowledged global warming to be kept below two celsius degrees by comparison to pre-industrial temperatures and to agree on rules for monitoring, reporting and verification of emissions and climate finance. A Green Climate Fund was established to support the developing countries. 28 Durban (2011) set a Durban Platform for Enhanced Action to negotiate a new global framework covering all countries by 2015. 29 A work plan for negotiations on the new global agreement was agreed in Doha (2012). Doha operationalized the Cancún establishments and the Durban work program on market mechanisms. 30 A schedule to list the countries’ intended contributions for the new global climate agreement and accelerating of climate efforts prior to 2020 was agreed in Warsaw (2013). Warsaw also enhanced the implementation of agreed measures. 31 The

26 ibid, article 2, para 2

6
countries’ intended contributions were defined further in Lima (2014) when draft elements for the new global climate agreement 2015 were agreed upon. 32

The Paris Agreement entered into force in 2016 33 after becoming ratified by 55 parties to the UNFCCC representing at least 55 percent of total GHG emissions. 34 By the time of writing this research, 191 Parties out of the 197 Parties to the UNFCCC have ratified the Paris Agreement 35, including the European Union. 36 The Paris Agreement is “the first-ever universal, legally binding global climate change agreement”. 37

It is worthwhile to notice that the Paris Agreement does not directly regulate on GHG emissions from ships. 38 Both shipping and aircraft GHG emissions were left out of its scope. 39 Paris Agreement aims at limiting global warming to below two (2), preferably to one point five (1.5) celsius degrees by comparison to pre-industrial levels. This limitation should be reached by the means of implementation of the countries’ nationally determined contributions (‘NDCs’) in accordance with the countries’ long-term low GHG emission development strategies. Countries’ NDCs are the nominating factor for each country’s contributions in limiting their emissions impact on global warming. As noticed, the Paris Agreement sets its long-term global warming targets to countries. It does not set targets to any specific industry, e.g. to maritime transport industry. However, as maritime transport emissions currently account for approximately 3 percent of global emissions, they remain of key importance in reaching the Paris Agreement goals. Furthermore, as shipping is expected to grow, further regulation and policies are needed in order to reduce shipping GHG emissions. 40

2.2.3 United Nations Global Compact

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34 Paris Agreement was adopted by 196 Parties at UNFCCC, COP21 (Paris 2015). Entering into force is defined in article 21, paragraph 1 of The Paris Agreement <https://treaties.un.org/doc/Publication/CN/2016/CN.735.2016-Eng.pdf> accessed 24 April 2021:
35 ibid (n 33)
39 ibid
UN Global Compact (‘Global Compact’) is the world’s largest voluntary corporate sustainability initiative with more than 12,000 companies in more than 160 countries involved, representing almost every sector and size. The Global Compact compromises of ten principles of which three principles fall directly under the scope of environment. Principle seven – “Businesses should support a precautionary approach to environmental challenges” – makes a reference to the Principle 15 of the 1992 Rio Declaration.

“In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation”. The UN Global Compact however refers to this article by leaving the first sentence out, indicating, that the Global Compact shall impose that which was delegated to the States, to the private industry. The Global Compact describes this principle in further and more practical details, appointed at private entities. Principle eight – “Businesses should undertake initiatives to promote greater environmental responsibility” – refers to the Agenda 21, by the UNCED. Principle nine – ” Businesses should encourage the development and diffusion of environmentally friendly technologies” – again referring to the Agenda 21 of the Rio Declaration.

The Global Compact should be regarded as a voluntary soft-law tool that may support businesses to adapt to sustainable development objectives. However, as Global Compact remains voluntary, it does not have a much powerful position in the industry.

2.2.4 The UN Agenda for Sustainable Development 2030

The Agenda 2030 for Sustainable Development (‘UN Agenda 2030’, 2015) continued the work of Millennium Development Goals by announcing 17 Sustainable Development Goals (‘SDGs’) and

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41 UN, ‘UN Global Compact: What is GC’ <https://www.unglobalcompact.org/what-is-gc> accessed 5 April 2021
42 The Ten Principles of the United Nations Global Compact are derived from the Universal Declaration of Human Rights, the International Labour Organization’s Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development, and the United Nations Convention Against Corruption. Ibid, (principles)
43 Ibid
46 Millennium Development Goals were announced by the UN in 2000 and were targeting to become achieved by 2015. See more on UN, ‘Millennium Development Goals’, <https://www.un.org/millenniumgoals/> accessed 16 May 2021

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169 targets to build on the economic, social and environmental targets. The UN Agenda 2030 does not directly refer to maritime transport nor to transport. However, maritime transport is an important factor - both directly and indirectly - to at least eight of the SDGs and 11 sustainable development targets. 47

The IMO is the global authority to set safety, security and environmental standards for the shipping industry. 48 IMO has acknowledged to fully commit to the UN 2030 Agenda’s obligations. 49 Hence, the UN Agenda 2030 has further powers to impact sustainability governance in shipping industry. The SDGs set requirements towards shipping industry through the IMO Member States’ national implementation of the SDGs. IMO has reacted slowly to the SDG implementation work. 50 Therefore, Member States participation activity and commitment to IMO work needs to be enhanced. Also – the IMO stakeholder discussion should be enhanced. 51

While maritime transport is not a core objective of the UN Agenda 2030, the industry is impacted by the SDGs obligations. Thus, the industry is required to navigate through the UN Agenda 2030 while the SDGs remain indirectly obligatory towards the industry. This underlines the necessity of comprehensive governance and tools from either the IMO or national legislation.

2.2.5 The UN Ocean Decade 2021 – 2030

The UN declared a Decade of Ocean Science for Sustainable Development from 2021 to 2030 (‘UN Ocean Decade’, 2017). 52 The Decade will support countries to achieve the UN 2030 Agenda for Sustainable Development. The UN Ocean Decade shall offer a common framework that aims at creating “a cross science-policy interface and a new foundation to strengthen the oceans and coasts management for the benefit of humanity”. It aims at strengthening international cooperation and engaging of stakeholders. 53 The UN Ocean Decade has identified the opportunity to harness, stimulate and coordinate interdisciplinary efforts at all levels. 54 Interdisciplinary research coordination and the role of information have significant part of the UN Ocean Decade vision. One

47 Sciberras and Silva (n 14) citing UNCTAD, ‘Review of maritime transport 2016’
48 ibid
49 ibid
50 ibid
51 ibid
52 UNCTAD, ‘The Science we need for the Ocean we want’ (2020)
<https://www.oceandecade.org/assets/The_Science_We_Need_For_The_Ocean_We_Want.pdf> accessed 25 October 2020
53 ibid
54 ibid
of its strategy cornerstones is to “bridge science, policy and societal dialogues via access to data, information and communication”. 55

The UN Ocean Decade is a new initiative to support sustainable development and achieving of the UN 2030 Agenda by e.g. oceans governance, stakeholder participation, international cooperation, interdisciplinary research and dialogue, and the role of accessible information. Therefore it is interesting to see how and if the recently launched UN Ocean Decade shall impact ocean sustainability governance. It is important enough to conclude that UN policy initiatives have paid increased attention to the oceans and coasts governance in the context of sustainable development.

2.2.6 European Union environmental law

Environmental law must be taken into account when discussing governance models for sustainable development or, the overarching theme of tackling climate change. Environmental law represents a relatively new area of legal study. It is considered a complex, interdisciplinary and international field of law and it has access points to a variety of other areas of legal study. Environmental law originates from the needs (i) to protect the environment by legal means and, (ii) to protect future generations’ rights. 56

The need for environmental protection arises even in the very core values and fundamental rights of the people. Right to health and right to clean environment hold special characteristics that require both the right to something and the responsibility over something. Environmental protection is related to the protection of future generations’ rights and thus, the protection of sustainable development. Environmental law has challenged traditional theories of legal relationships as of who can become subjects to rights or responsibilities. 57

Environmental legislation, conventions and other legal instruments can help in creating information and rules that will have an impact on cutting the negative environmental issues and creating more positive value to the protection of environment. 58 Environmental law principles are directly applicable to the context of addressing the roles and responsibilities related to reducing of shipping GHG emissions.

55 ibid
56 Tupuna Manner, ‘Introduction to European Union environmental law and to the Proposal for a European Union single use plastics directive’ (Tallinn University 2019) citing Anne Kumpula et al., EU:n ympäristöoikeuden perusteet (Painosalama 2010) p 1-4
57 ibid, 70-75
58 Tupuna Manner (n 56) citing Anne Kumpula et al., Näkökulmia monitieteiseen ympäristöoikeuteen (Painosalama 2014) 6-7
European environmental law principles are established in the Treaty on the Functioning of the EU (‘TFEU’). 59 Concepts of precautionary principle and preventive principle are established as a baseline for any work regarding the high level of protection principle. Environmental damages shall be prioritized and rectified at source. A polluter pays principle is defined. 60 Environmental policy is the only EU policy area that is detailed in the Treaty on the Functioning of the European Union. 61 EU environmental law principles are obligatory to all EU organs and institutions and all EU Member States when implementing of EU environmental directives or regulations and when functioning on the scope of application of EU law. 62 Hence, environmental law holds a strong position in the EU and EU Member States. The EU has established these principles in one of its most fundamental treaty. Therefore, when continuing the discussing of EU’s role as a governing body for establishing climate ambitions and regulation aiming at the protection of environment, these principles must be taken into account.

2.2.6.1 A high level of protection

Environmental measures should aim at a high level of protection that considers the variety of situations and regions in the EU. 63 A high level of protection is present also elsewhere in the TFEU as it underlines the significance of this principle in EU law. 64 Interpretations of the requirement of a high level of protection have indicated that an adequate level of high level of protection is determined on a basis of an accepted level of protection in the pioneering countries in environmental protection, in most cases in the Nordic countries. 65

2.2.6.2 Polluter pays principle

The polluter pays principle defines that the polluter is liable for any environmental damages. 66 This principle is one of the first EU environmental policy principles. 67 It does not provide specific rules on how or to what extent the possible liabilities are determined but it has become more relevant as the instruments for the damages control and liabilities have developed. 68 If considering the polluter

59 Tupuna Manner (n 56) citing The Treaty on the Functioning of the European Union, article 191
60 ibid
61 Tupuna Manner (n 56) 76-77
62 ibid
63 Tupuna Manner (n 56)
64 Tupuna Manner (n 56) citing Maria Lee, EU Environmental law, governance and decision-making (2nd ed. Hart Publishing 2014) 5
65 Tupuna Manner (n 58) 77-78
66 ibid
67 The polluter pays principle was first referred to in the First Action Programme on the Environment in 1973. See more (n 58)
68 ibid (n 58) 82
pays principle in the context of reducing of GHG emissions, it is reasonable to determine that the liability over the party who is responsible for emitting the GHGs. However, considering the complex nature of international shipping industry, its stakeholders and its role as an enabler of global trade, it might be unfair to allocate the emissions costs towards the stakeholder who emits, e.g. the ship owner. By default, the polluter pays is a reasonable principle in many other areas of ‘pollution’ – in case of an oil spill or an effluent, it would be feasible to address liability to the subject behind the act or omission leading to that incident. However, when discussing ‘pollution’ arising out of or in connection to different operations in a supply chain, the allocation of liabilities is more difficult. Hence, a comprehensive understanding of multiple complex interdisciplinary issues is required. The polluter pays principle works in case the polluter is identified. If the polluter can not be identified to a subject, the allocation of liabilities over GHG emissions must be defined differently. This is a difficult question when considering the complex shipping supply chains in which stakeholders are acting for ‘a greater cause’ in international transportation of goods that is crucial for a functioning global economy. If the ship owners, in charge of operating their vessels in cost-efficient and sustainable ways, would be considered as the only polluter in the supply chain – it would be likely to affect their pricing. If their prices would increase, it might cause other modes of transportation to become more inviting. Another approach could be to allocate the costs to contributing states. However, this would not differ from the problematics of shipping industry complexity. The emissions can not easily be allocated to one particular state, for example due to flag state principle.

2.2.6.3 Precautionary principle

The precautionary principle is one of the most important access points between environmental law and natural sciences. Natural sciences produce scientific information that help the scientific communities to identify and specify any ecological issues that may need competent environmental or other legislation to help resolve them. Natural sciences produce information from the surrounding environment. In an illegible situation the precautionary principle is interpreted in the favour of environment (in dubio pro natura).

By utilizing natural sciences (such as mathematic modelling of, or new technologies) shipping industry GHG emissions data could be conceptualized into GHG emissions information. This

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70 ibid, 141. See more (n 137)
71 Tupuna Manner (n 58) 82
information would allow shipping industry stakeholders harness the information in order to act accordingly to the precautionary principle. This requires developing of new measures and tools to inbuild the precautionary principle into industry processes.

2.2.6.4 Preventive principle and the source principle

The preventive principle defines that preventive actions protect the environment before actual damages to the environment have occurred. This principle can be justified with the reasoning that prevention of harm is better than after-care of harm, “prevention is better than cure”. The preventive principle applies in all EU environmental regulations. As prevention of harm requires prediction of harm this principle is closely related to the precautionary principle. The source principle is closely linked to the preventive principle as it implies that any environmental damages should be rectified at the very first source of the damages. It recognises that it is more efficient to resolve environmental problems at an early stage.

In order to reduce shipping GHG emissions, understanding of actual allocation of GHG emissions is crucial. Shipping GHG emissions environmental impact must be comprehensive to allow the implementation of emissions reductions mechanisms. Natural scientific methods and the above-mentioned harnessing of new technologies and digital tools could serve a great amount of new solutions to support the interpretation of shipping GHG emissions. Data modelling and processing could provide a better overall understanding of the causalities and the allocation of stakeholders’ contribution to GHG emissions. Ultimately, this would result in a fair distribution of GHG emissions costs. However, the source principle might be more difficult to implement into GHG emissions reduction costs. GHG emissions in shipping industry are a complex set of different substance and pollution which arise out of a number of operations in the supply chain. It might be difficult to allocate the pollution to their original sources as the origin might be difficult or impossible to define. The source principle could work e.g. in taxation but it remains a topic this research shall not resolve.

2.2.7 From European Green Deal to Climate law

73 Tupuna Manner (n 58) 80-81
74 Tupuna Manner (n 64) 11-12
75 Tupuna Manner (n 64) 12; and (n 58) 81
From environmental law, continuing to EU sustainability and climate policies – the EC’s recent climate ambitions strengthen the position of environmental protection in Europe. To meet and exceed the Paris Agreement obligations, the European Parliament (‘EP’) has set an ambition to make Europe the first climate-neutral continent by 2050. 76 Accordingly and to meet this objective, the EC set out the European Green Deal (‘Green Deal’) for the EU and EU citizens. 77 Green Deal represents a new strategy to become inbuilt by default into all EU actions and policies. It aims at building new economic growth with the objectives of transitioning the EU towards a resource-efficient and competitive economy. Green Deal has explicitly referred to improving the quality of life of current and future generations and thus, strengthened both the Brundtland Commission’s approach on sustainable development and the EU environmental law principles. The Green Deal also states that it is an integral part of the EC’s strategy to implement the UN 2030 Agenda and the SDGs. 78

The Green Deal underlines that a transformation towards sustainable future and growth strategy within the EU requires a systemic sustainability transformation in all policy levers – by word, “regulation and standardization, investment and innovation, national reforms, dialogue with social partners and international cooperation”. 79 Main categories to undergo policy rethinking are (i) increasing the EU’s climate ambition for 2030 and 2050, (ii) building and renovating in an energy and resource efficient way, (iv) accelerating the shift to sustainable and smart mobility, (v) designing a fair, healthy and environmentally-friendly food system, (vi) preserving and restoring ecosystems and biodiversity, (vii) creating a zero pollution ambition for a toxic-free environment. 80 Transport -road, rail, aviation and waterborne - account for a 25 percent of the EU’s GHG emissions and the amount is growing. The Green Deal states that a 90 percent reduction in transport emissions is needed by 2050. The EC strategy for sustainable and smart mobility was adopted in order to address this challenge. 81 The Green Deal also recognized a need to investigate possible loopholes in tax exemptions related to maritime fuels, as well as to extend the European emissions trading system from aviation to maritime sector. 82 The Green Deal set out a roadmap that outlined the planned key actions. 83

78 ibid
79 ibid
80 ibid
81 ibid
82 ibid
83 Commission, ‘Annex to the Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions ‘The European Green Deal’ COM (2019) 640 final
The Green Deal explicitly states that EU is economically in a strong position in global value chains operating in global trade sector and that the EU can set “new standards for sustainable growth and use economic weight to shape international standards that are in line with EU environmental and climate ambitions”.  

The EC does not only rely on EU’s power to implement a sustainability transformation into its single market economy but the EC explicitly indicates that the EU possess power to attain rest of the world to follow the EU’s example, or, obligations.

According to the Green Deal roadmap, to establish the Green Deal into EU regulation, the EC gave a proposal for EU Climate Law. The proposal reached a provisional agreement by the EP and Council on the Climate Law Regulation in April 2021 and is currently being prepared for formal adoption. The Climate Law will include, e.g. a legal objective to reach climate neutrality by 2050 and a commitment to negative emissions after 2050. It will include a climate target of at least 55 percent net reductions of GHG emissions and clarification on the reduction and removal contributions. The Climate Law will clarify the recognition of the need to enhance EU’s carbon sink, stronger provisions on adaptation to climate change, strong coherence across EU policies with climate neutrality objective, and a commitment to engage sector-specific climate neutrality roadmaps. From a policy objective to legal instruments, the Climate Law will become an important tool for all EU industries and sectors to address GHG emissions reductions and climate change mitigation objectives into all practices. The EC has expressed that the climate law objectives can best be pursued through a legally binding regulation that will ensure its direct applicability in Member States and, achieving the long-term objectives in EU law.

The Climate Law will strengthen combatting of climate change throughout the EU. When considering private mechanisms such as contract law, Climate Law may invite private industries to start implementing the Climate Law obligations in contractual mechanisms to verify that their (international) contracting parties submit to complying with the Climate Law. This serves as a great opportunity to private entities to start adapting broader sustainability clauses into commercial contracts. On the contrary, a risk of non-compliance with (international) contracting parties may increase. From the point of view that the Climate Law shall support EU internal market and sustainable growth, this is obviously a positive outcome. From the point of view that the clauses in


\[\text{ibid (n 78)}\]


\[\text{ibid}\]

\[\text{ibid (n 86)}\]
Climate Law would be difficult to comply with in international business law, it might also impose a risk of markets selecting contracting parties from outside of the EU. With EC’s determination to “help raise global ambition and to strengthen the global response to climate change” 89 the EC seems to trust in the EU’s power in international communities. The EC believes in its position and capability to attain an international sustainability transformation. Furthermore, it should be reasonable to propose that the EU is able to attain a sustainability transformation into one sector of international relations – the international maritime transport sector.

Article 8 expressly regulates about public participation, where the Commission shall engage with and facilitate an inclusive and accessible process for the exchange of best practice and to identify (necessary) actions to contributing the Climate regulation objectives. 90 This is relevant from the point of view that the Commission undertakes that a sustainability trajectory requires a transformation in both public and private silos and stakeholder discourse is highly relevant.

2.3 International maritime regulation

After discussing sustainability and climate change policies, the following sections shall discover the complex international maritime regulatory scheme. Shipping GHG emissions reductions must be discussed in this specific context. International maritime transport has long traditions starting from centuries back in seafaring tradition where ships were sailed across oceans to e.g. deliver goods. Oceans have served a great deal of marine resources through the development of humanity. 91 A specific point can however be identified from the first half of 20th century during which international maritime regulation took a leap. 92 Following the establishment of the UN (1945), the Convention on the IMO and the UN IMO were established (1948). Later on, the UNCLOS (1982) was adopted.

Structure of international maritime regulation is ‘unusual’ due to its history and international nature. 93 Main legal sources in international maritime regulation have been the UNCLOS and the IMO conventions. 94 International conventions have developed the regulatory scheme to a system in which global maritime safety and environmental protection regulations stream into national levels and

89 ibid
90 ibid, article 8
92 ibid
93 The European Commission discussed on compliance with Flag State requirements and the EC Directive 2009/18 establishing of fundamental principles governing the investigations of accidents in the maritime transport sector. Even that the scope of this working paper was in a different context, the EC expression is relevant. See more on (n 7).
94 ibid (n 7)
become adopted in domestic laws. International maritime regulation is also affected by customary
standard practices. 

International shipping is one of the most regulated global industries. There are more than 50
conventions, agreements and protocols and 160 codes and guidelines (‘subsidiary instruments’). Most of them are governed by the IMO but there are other international organisations such as industry associations who govern international shipping with different standards, guidelines and model contracts. Given the number of different instruments and the widely spread powers of governance adopted by both public and private associations, the instrumental portfolio challenges the global industry and stakeholders in complying with the given regulatory framework.

International maritime regulation encompasses both public and private law. Maritime regulation is applicable to states (public) who govern shipping through national instruments (public). The states also govern the private commercial actors. The industry adopts and applies public standards of conduct and implements them into private business relationships through contracts.

Shipping industry stakeholders reflect maritime law also in other thresholds within international business, strategy and vision. Industry stakeholders follow a number of compliance tools, code of conduct, and other private governance guidelines, principles and business measures. Industry stakeholders are operating in a labyrinth of primary and secondary regulation arising out of international and national, private and public domain. Industry actors are increasingly adapting to sustainability and climate change impact mitigation requirements arising out of stakeholder relations and public pressure. This requires the ability to transform the industry towards identifying and hacking a systemic change across all actors, to enable and secure the large and diverse systemic change in the large and diverse industry.

The regulatory scheme of the global maritime sector is subject to two parallel regulatory subcategories creating a complex regulatory system that directly affect the actual activities of the maritime sector and indirectly affect its other thresholds with other global trade and economy sectors.
These subcategories—(i) the international public subsystem representing the externalities of the transport sector, and (ii) the autonomous subsystem representing the internalities of the transport sector—remain independent and thus not jointly harmonised. In the framework of international public subsystem the maritime transport sector is influenced by a historically developed public international regulatory system expressed in a form of already existing international regulatory scheme. In the framework of the autonomous subsystem the maritime transport sector is influenced by the internal, real system.  

International maritime transport sector is thus, functioning in largely globalised markets where the markets play a significant role in adjusting the real maritime transport processes, ‘the market internal reality’. Simultaneously, the market internal reality impacts the regulatory scheme of the whole transport sector. Thus, it has been argued that the market mechanism represents a factually larger steering role than the public mechanism within the regulatory scheme of the maritime transport sector (fig. 1). According to this theory, maritime transport sector is constantly affecting issues undergoing regulatory debates or new initiatives. Since its parallel regulatory scheme representing a largely practical and empirical approach, maritime regulation is an expression of a legal realist philosophy.

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105 ibid  
106 ibid  
107 ibid
2.3.1 UNCLOS

One of the main international maritime conventions, the United Nations Convention on the Law of the Sea (‘UNCLOS’) was adopted in 1982 after numerous attempts and negotiations which had taken place for almost ten years (1973 – 1982). 109 110 Previous attempts were made in the United Nations Conferences on the Law of the Sea in 1958 and 1960. 111 UNCLOS replaced the previous Conventions that had already concerned the territorial sea and contiguous zone, continental shelf, high seas, fishing and conservation of living resources on the high seas. 112 UNCLOS entered into force in 1994 and as of May 2021, 168 States 113 have ratified it. UNCLOS provides a comprehensive regulatory framework to all ocean space, ocean space usage and its resources. 114 It consists of seventeen Parts and nine Annexes, totalling in approximately two hundred pages. 115

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108 ibid (n 105)
109 ibid (n 92)
112 ibid (n 111)
114 ibid (n 92)
The States Parties were prompted to declare the UNCLOS in order to maintain “peace, justice and progress for all peoples of the world”. This principle is makes a presumption that regulation of the Seas enhances world peace, justice and progress. Presumably, the UNCLOS served as a final outcome of long and difficult negotiations in a time when States were focusing on different aspects, threats and aims than during the time writing this research.

UNCLOS is highly relevant when discussing the governance of, and reductions of shipping GHG emissions. UNCLOS defines that the States were “conscious that the problems of ocean space are closely interrelated and need to be considered as a whole”. Thus, UNCLOS interprets ocean space issues as a general problem that can not be allocated to a subject but rather to everyone. Governance requires international cooperation. UNCLOS continues to describe State sovereignty –

“a legal order for the seas and oceans – will facilitate international communication, and – promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment”.

UNCLOS continues to describe the importance of “a just and equitable international economic order which takes into account the interests and needs of mankind as a whole and, in particular, the special interests and needs of developing countries, whether coastal or land-locked”. UNCLOS recognizes the objective that by codification and development of the law of the sea, the States contribute to “strengthening of peace, security, cooperation and friendly relations among all nations in conformity with the principles of justice and equal rights and will promote the economic and social advancement of all peoples of the world”.

UNCLOS principles are especially specific in the protection and preservation of marine environment, the rights of mankind and a just exploitation of marine resources. An interface between UNCLOS definition of an interlinked and connected ocean environment and international shipping GHG emissions can be drawn. International shipping GHG emissions are interlinked and connected, thus, not subject to allocation of the roles and responsibilities of the industry stakeholders. Shipping GHG emissions are everyone’s concern.

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116 ibid (n 112)
117 ibid (n 125)
118 ibid (n 112)
119 ibid
120 ibid
121 ibid
2.3.2 The flag state principle

IMO Member States implement the IMO international conventions. ¹²² Vessels must have a nationality or flag which determines the vessel’s applicable laws. ¹²³ Flag state and flag state control are regulated in the UNCLOS. Most important flag state articles are the Right of navigation (article 90), Nationality of ships (article 91), Status of ships (article 92) and Duties of the flag State (article 94).

By principle, all states whether located on a coastal or landlocked area have the right to sail ships flying their flag on the high seas (article 90). Ships shall sail under one flag only. Ships are subject to the flag state’s exclusive jurisdiction on the high seas (article 92.1). States have the right to decide on the conditions for the grant of its nationality to ships, for the registration of ships in its territory, and for the right to fly its flag, as long as a genuine link between the State and the ship exists (article 92). Duties of the flag state are related to the effective exercise of its jurisdiction and control in administrative, technical and social matters over ships flying its flag (article 94.1). Operational safety and seaworthiness are explicitly recognised (article 94.3). Prevention, reduction and control of marine pollution by ship master, officers and crew is also explicitly recognised (article 94.4 (c)).

Flag state principle governs ships when they sail on the high seas. Enforcement by flag states is regulated in article 217. In addition to flag state jurisdiction, port state and coastal state jurisdictions apply in international maritime law as ships e.g. arrive to a port of a State, or sail in territorial sea or Exclusive Economic Zones (‘EEZ’). Enforcement by port States is regulated in article 218 and enforcement by coastal States is regulated in article 220. ¹²⁵

Port states have e.g. an active role in controlling of ship standards. ¹²⁶ This gives port states control over e.g. ships’ anti-pollution standards ¹²⁷ which emphasizes the jurisdictional value of the port state. Coastal states do not possess such strong position to enforce anti-pollution standards. ¹²⁸ In the context of international maritime regulation and its implications addressing shipping GHG emissions reductions, the flag state principle holds a special role. Are the flag state principle, once established

¹²² ibid (n 7)
¹²³ ibid
¹²⁴ ibid (n 112)
¹²⁵ ibid
¹²⁶ Yaodong Yu, Yue Zhao and Ye-Chiang Chang, ‘Challenges to the Primary Jurisdiction of Flag States Over Ships’ Ocean Development & International Law 2018) volume 49, 8
¹²⁷ ibid
¹²⁸ ibid, 10
under the Convention on the High Seas (1958) and ratified in UNCLOS (1982), still convenient enough to tackling the overarching issue of climate change?

<table>
<thead>
<tr>
<th>Flag</th>
<th>Country</th>
<th>Gross tonnage</th>
<th>Deadweight tonnage</th>
<th>No of vessels</th>
</tr>
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<td>350,511,465</td>
<td>9,596</td>
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<td>299,328,061</td>
<td>4,295</td>
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<td>276,364,868</td>
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<td>206,273,017</td>
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<tr>
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</tr>
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</tr>
</tbody>
</table>

Figure 2: Top 10 flag states (gross tonnage) in 2020. Source: Lloyd’s List Intelligence. Note: Includes all vessel types above 500 gt. ¹²⁹

The flag state principle might be a barrier in tackling of maritime emissions and climate change.¹³⁰ A commonly known phenomenon in international maritime law, the *Flags of convenience* (‘FOC’), is undermining the flag state principle.¹³¹ FOC dates back to the end of first World War when some countries with no traditional maritime affairs such as Panama and Liberia, started to “register foreign-owned vessels under their flags for economic reasons and exercised minimal control over the ships’ operations”.¹³² The UNCLOS flag state articles define that a *genuine link* between the ship and the flag state must exist. The problematics in interpreting the *genuine link* has created a magnifying phenomenon in which thousands of ships are registered to flag states that offer cheaper and easier obligations to the vessel owners.¹³³ Panama, Liberia, Marshall islands, Hong Kong and Singapore are currently the leading flag states of registered vessels. Of them, Liberia and the Marshall islands have recorded most increases in registrations over recent years.¹³⁴ More effective and efficient ship management by flag state control is crucial in reducing shipping emissions.¹³⁵

¹³⁰ The Writer’s opinion.
¹³² ibid
¹³³ ibid
¹³⁵ ibid (n 127) 14
Even though port states and coastal states have jurisdiction in territorial waters, the impact which flag state control represents over their fleet is significant. As flag states have the right to determine the conditions on which they grant ships permits to sail their flag, the flag states hold enormous potential in regulating their fleets towards adapting to more energy-efficient, environmentally friendly and emissions free solutions. Hence, international cooperation and governance is required to alter the FOC phenomenon towards an effective system in which the flag state control over maritime transport emissions would be effective and comparable.

2.3.3 International Maritime Organization

While the UNCLOS regulates the legal order for the seas and oceans, the IMO is a convention established to cover international relations in shipping. The IMO is a leading body, a specialised agency of the UN and holds significant powers.\footnote{IMO, ‘Brief History of IMO’ <www.imo.org/en/About/HistoryOfIMO/Pages/Default.aspx> accessed 25 April 2021} IMO is responsible for maintaining and improving international shipping safety and security as well as pollution prevention. Following the establishment of the UN (1945)\footnote{Following the World War II, nations were in ruins and the world longing for peace. The UN officially started on 24 October 1945 after its Charter had been ratified by China, France, the Soviet Union, the United Kingdom, the United States and a majority of other signatories. See more on UN, ‘History of the United Nations’ <www.un.org/en/about-us/history-of-the-un> accessed 25 April 2021}, an international conference established a UN body organization for shipping. The Geneva conference adopted the original establishment of the Convention on the International Maritime Organization in 1948.\footnote{IMO, ‘Convention on the International Maritime Organization’ <www.imo.org/en/About/Conventions/Pages/Convention-on-the-International-Maritime-Organization.aspx> accessed 25 April 2021} The IMO was originally called the Inter-Governmental Maritime Consultative Organization (‘IMCO’) until the name was changed in 1982.\footnote{ibid (n 137)} International trade had improved as industrialization gave rise in the 18\textsuperscript{th} and 19\textsuperscript{th} centuries which affected the international shipping and called for a development of international rules.\footnote{The International Civil Aviation Organization (1944), the Food and Agriculture Organization (1945), the UN Educational, Scientific and Cultural Organization (1945), the World Health Organization (1947). See more on ibid (n 153).} Seafaring tradition and shipping had been identified as an important field of international cooperation for centuries prior to that but since there were a number of international organizations founded for different subjects\footnote{ibid (n 138)}, the time might have been right.

The Convention of the IMO entered into force after a decade since its adoption in 1958\footnote{ibid (n 137)} following the acceptance by Egypt and Japan\footnote{ibid (n 138)} as stated in the Convention which “shall enter into force on the date when 21 States, of which seven shall each have a total tonnage of not less than 1,000,000 gross
tons of shipping, have become parties to the Convention in accordance with Article 71.” 144 It had been anticipated that the Convention of the IMO would have entered into force more quickly but it was delayed due to many reasons. First, some states would not accept a majority of Article 1 (Purposes of the Organization) as they were concerned that the Convention would threaten the status of their national industries and laws. 145 This concern is still present in IMO work. 146

The purposes of the IMO were, (the following text is original wording and has since been amended)

(a) To provide machinery for co-operation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade, and to encourage the general adoption of the highest practicable standards in matters concerning maritime safety and efficiency of navigation;

(b) To encourage the removal of discriminatory action and unnecessary restrictions by Governments affecting shipping engaged in international trade so as to promote the availability of shipping services to the commerce of the world without discrimination; assistance and encouragement given by a Government for the development of its national shipping and for purposes of security does not in itself constitute discrimination, provided that such assistance and encouragement is not based on measures designed to restrict the freedom of shipping of all flags to take part in international trade;

(c) To provide for the consideration by the Organization of matters concerning unfair restrictive practices by shipping concerns in accordance with Part II [Functions];

(d) To provide for the consideration by the Organization of any matters concerning shipping that may be referred to it by any organ or specialized agency of the United Nations;

(e) To provide for the exchange of information among Governments on matters under consideration by the Organization. 147

Second, some states would consider that the text was representing the voice of a few states who controlled the shipping by dominance during then.148 These uncertainties and lack of trust towards the new Organization resulted as reservations and declarations from many of the Parties adopting the Convention, attempting to secure their position and power in commercial and economic questions. 149 These uncertainties and lack of trust still affect IMO work. 150

145 ibid (n 141)
146 Based on the Writer’s opinion and affirmed in discussions with LVM specialists.
147 ibid (n 139)
148 ibid
149 ibid
150 Based on the Writer’s opinion and affirmed in discussions with LVM specialists.
When considering the IMO’s tasks, powers and position in the international maritime sector today, the controversy and the difficult and ongoing preliminary steps of the IMO still echo today.

The IMO was granted the power to ensure that IMO conventions are up to date and to develop new conventions whenever needed. Part II – Functions of the Convention define IMO’s functions—*the Organization shall:*

(a) Subject to the provisions of Article 3, consider and make recommendations upon matters arising under Article 1 (a), (b) and (c) that may be remitted to it by Members, by any organ or specialized agency of the United Nations or by any other intergovernmental organization or upon matters referred to it under Article 1 (d);

(b) Provide for the drafting of conventions, agreements, or other suitable instruments, and recommend these to Governments and to intergovernmental organizations, and convene such conferences as may be necessary;

(c) Provide machinery for consultation among Members and the exchange of information among Governments;

(d) Perform functions arising in connexion with paragraphs (a), (b) and (c) of this Article, in particular those assigned to it by or under international instruments relating to maritime matters and the effect of shipping on the marine environment;

(e) Facilitate as necessary, and in accordance with part X, technical co-operation within the scope of the Organization.

This raises a question of how much has changed since the Convention of the IMO was first adopted in the Geneva Conference in 1948? As reasoned above there were two major barriers which prolonged the Convention entering into force—*fear* that the Convention would threaten the status of the State’s national industries and laws, and that the Convention was representing the voice of a few dominant states in shipping.

It is worth noticing that in the original Convention text *the emphasis was on economic action to promote "freedom" and end "discrimination"*, maritime safety was mentioned but not to be regarded as a guiding principle. The text did not refer to environmental concerns, and as a comparison to the current Convention Article 1 text, as amended -

(a) To provide machinery for co-operation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning

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151 ibid (n 139)
152 ibid (n 145)
153 ibid
154 ibid (n 139)
the maritime safety, efficiency of navigation and prevention and control of marine pollution from ships; and to deal with administrative and legal matters related to the purposes set out in this Article;

(d) To provide for the consideration by the Organization of any matters concerning shipping and the effect of shipping on the marine environment that may be referred to it by any organ or specialized agency of the United Nations.; 155

The bolded text above in article 1 (a) shows the amended text. The prevention and control of marine pollution from ships was adopted later into the Convention. Also the bolded text above in article 1 (d) shows that the effect of shipping on the marine environment was also adopted later into the Convention.

This research does not further elaborate the causalities or relations which caused these amendments. Yet it is reasonable to state that as marine pollution prevention and control and shipping effects on the marine environment were adopted into the Convention, they had to be of importance arising out of international maritime regulatory level.

2.3.3.1 The International Convention for the Prevention of Pollution from Ships (MARPOL)

The International Convention for the Prevention of Pollution from Ships (‘MARPOL’) is the main international convention that covers prevention of pollution from ships. The MARPOL Convention was first adopted at IMO (1973), then supplemented by the Protocol (1978) and entered into force as a combined instrument (1983). It was amended to (i) the Protocol and (ii) a new Annex VI (1997), which entered into force in 2005 and is currently in force and has been amended since. 156 When discussing shipping GHG emissions reductions, MARPOL Annex VI is the most important of the MARPOL documents as it covers mandatory technical and operational energy efficiency measures aimed at reducing GHG emissions from ships. 157 Other MARPOL Annexes cover Regulations for the prevention of pollution by oil (Annex I, entered into force in 1983), Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk (Annex II, entered into force in 1983), Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form (Annex III, entered into force in 1992), Prevention of Pollution by Sewage from Ships (Annex IV, entered into force in 2003) and Prevention of Pollution by Garbage from Ships (Annex V, entered into force in 1988). MARPOL

155 ibid (n 145)
157 ibid
Annex VI sets specific limits on designated emissions and prohibits emissions of ozone depleting substances. 158

2.3.3.2 Marine Environment Protection Committee

Convention on the International Maritime Organization set out the Marine Environment Protection Committee (‘MEPC’) (Part IX, articles 37 – 41). 159 The MEPC consists of all IMO Members (article 37) and it meets at least once a year (article 40). The MEPC considers any matters within the scope of the IMO that are concerned with the prevention and control of marine pollution from ships (article 38). In particular, the MEPC tasks include the prevention and control of ship-source pollution covered by the MARPOL treaty. 160 The MEPC submits their recommendations and guidelines, work reports and proposals for regulations or amendments to regulations for the prevention and control of marine pollution from ships to the IMO Council (article 39). 161 By the time of writing this research, the last meeting MEPC 75 was in November 2020 and the next meeting MEPC 76 shall be in June 2021.

2.3.3.3 IMO governance model

The IMO governance model is established in parts IV to XI of the Convention on the International Maritime Organization. Organs are the Assembly, the Council, the Maritime Safety Committee (‘MSC’), the Legal Committee, the MEPC, the Technical Co-operation Committee (“and such subsidiary organs as the Organization may at any time consider necessary”, Art. 11) and the Secretariat. 162 In addition to these governance organs, the IMO lists ‘Sub-Committees’ and a ‘Facilitation Committee’ in its structure. 163 Most likely the category of possibly necessary subsidiary organs in article 11 are categorized under the seven ‘Sub-Committees’ which assist the MSC and the MEPC in their work and which are open to all Member States. 164 Sub-Committees working documents, as well as other IMO documents, are published online in the IMODOCS database. 165

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158 ibid
159 ibid (n 145)
160 IMO, Marine Environment Protection Committee (MEPC) <www.imo.org/en/MediaCentre/MeetingSummaries/Pages/MEPC-default.aspx> accessed 11 May2021
161 ibid (n 145)
162 ibid
164 Sub-Committee on Human Element, Training and Watchkeeping (HTW); Sub-Committee on Implementation of IMO Instruments (III); Sub-Committee on Navigation, Communications and Search and Rescue (NCSR); Sub-Committee on Pollution Prevention and Response (PPR); Sub-Committee on Ship Design and Construction (SDC); Sub-Committee on Ship Systems and Equipment (SSE); and Sub-Committee on Carriage of Cargoes and Containers (CCC). See more on IMO Structure (n 175).
165 IMODOCS is a database which is provided for IMO Member Governments, Intergovernmental agencies, and organizations in consultative status with the IMO with the principal purpose to prompt and easy access to IMO documents <docs.imo.org>
The Assembly represents all IMO Member States and holds the highest governance position of the IMO with its main tasks of approving the work program, budget, financial arrangements and election of the Council. The Council works in bienniums and represents 40 Member States. The selection for Council member is highly interesting as according to the Convention art. 17 the Assembly shall elect the Members by following three criteria: (a) ten States with the largest interest in providing international shipping services; b. ten other States with the largest interest in international seaborne trade; and (c) twenty States not elected under criteria (a) or (b) which have special interests in maritime transport or navigation, and whose election to the Council will ensure the representation of all major geographic areas of the world.

Current Council members are China, Greece, Italy, Japan, Norway, Panama, Republic of Korea, Russian Federation, United Kingdom, United States (criteria (a)); Argentina, Australia, Brazil, Canada, France, Germany, India, the Netherlands, Spain and the United Arab Emirates (criteria (b)); and Bahamas, Belgium, Chile, Cyprus, Denmark, Egypt, Indonesia, Jamaica, Kenya, Kuwait, Malaysia, Malta, Mexico, Morocco, Peru, the Philippines, Singapore, South Africa, Thailand and Turkey (criteria (c)).

The Council holds the executive power of the IMO and its vast responsibilities are regulated in articles 19 – 26 of the Convention. The Council’s main tasks are to supervise the IMO (article 21), to execute the Assembly functions (between Assembly’s sessions) (article 26), to appoint the IMO Secretary-General (article 22), and represent the IMO in external relations by e.g. entering into contracts (article 25).

The Council 40 Member States, although working in two-year terms, represent a majority of stakeholder interests in the industry. This can be understood as in the context of winning over the major players in the industry which prolonged the adoption period of the Convention entering into force. It would be important to understand the reasoning leading to the establishment of this division of the IMO governance. Perhaps it was reasoned that inviting 25 percent of the Council Members to represent their highest interest in the shipping services sector, 25 percent to represent their highest interest in international seaborne trade, and supplementing them by allowing 50 percent to represent other and all major geographic areas of the world (also land-locked areas) with further

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166 ibid (n 164)
167 Biennium; lat. for a period of two years. Oxford reference 
168 ibid (n 145) article 17
169 ibid (n 164)
170 The Convention (n 145)
171 Based on the Writer’s opinion and affirmed in discussions with LVM.
other special interests in maritime transport or navigation, the organ would represent a truly objective, transparent and diverse sample of Member States.

The complexity of this organ’s decision-making process lies in the interests of the parties to that consortium. Can the processes be executed in a balanced, objective or resistant way of performing? Arguably not, as half of the Council members always represent the Member States who possess the most interest. By possessing most interests they possess most powers either in shipping services sector or international seaborne trade. The organ powers are imbalanced.

The IMO governance model has been criticised by NGOs. A recent study from 2018 focused in researching whether that governance structure, as presented above, would constitute a barrier on the journey towards reducing of shipping industry emissions. The study evaluated “the existence and effectiveness of transparency, accountability and integrity within the IMO” by conducting a method based on their Climate Finance Integrity Assessment, a desk study focusing on IMO publications and some interviews with stakeholders from Member States. The study concluded that four key issues were identified as barriers arising out of the IMO governance model. These barriers negatively impact IMO’s work on climate policies. Ultimately, the barriers disable IMO from being able to implement an effective GHG emissions reduction strategy.

The main research outcomes underline the negative impact of (i) the uneven influence of IMO Member States, (ii) the influence of open registries, (iii) the disproportionate influence of industry, and (iv) the lack of delegate accountability. As a sign of uneven influence of the Member States a serious concern was raised as (1) two thirds of the IMO’s financial contributions come from just 10 countries which make contributions based on the size of their fleets (measured in deadweight tonnage). (2) Nine of ten biggest contributors were holding positions at the IMO Council. (3) The Council does not publish transparent and substantive information of its regular activities. (4) “The Member States who finance the IMO have an advantage in the policymaking process” as IMO

172 The study was conducted by the Transparency International, a non-governmental organization with 100 chapters globally and an international secretariat in Berlin, Germany, focusing in fighting against corruption by promoting transparency, accountability and integrity. Transparency International, ‘Our organisation’ <www.transparency.org/en/the-organisation> accessed 27 April 2021.
174 ibid
175 ibid
176 ibid (n 174)
177 ibid
178 ibid
179 ibid
180 ibid
policies require ratification from “a specified percentage of the world’s shipping fleet”. \(^\text{181}\) This causes a practice where the Member States with greater fleets make greater contributions to the IMO, hold dominant positions in the IMO and have a greater say on whether and when a policy comes into effect. \(^\text{182}\)

Hence, it is reasonable once more to underline that the above-mentioned fear is a dark shadow on the IMO’s work. IMO’s position as an internationally leading body, responsible for maintaining and improving international shipping safety and security as well as pollution prevention does not reflect transparency, objectivity or sovereignty. \(^\text{183}\) The Convention originally focused in maritime safety and not in environmental issues. IMO seems powerless to take sufficient actions in reducing of shipping emissions and thus, mitigating the industry’s climate impact.

2.4 European Union maritime transport strategy

The EC has recognized maritime transport as a crucial part of European economic development and has acknowledged maritime transport as the main provident of both import and export of goods in all European nations. \(^\text{184}\) In addition to shipping industry’s role as a provider of trade and being the link to global trade, the EC has recognized that shipping services transfer more than 400 million passengers at European ports on a yearly basis. Shipping industry is a significant employer and source for European economy. The EC has set objectives, strategic goals and recommendations to ensure the long-term performance of the European maritime transportation system that would result for the benefit of all economic sectors and the final consumer. The EC objectives seek to promote safety at sea by protecting the health and safety of passengers and by reducing the risks of maritime accidents, to minimize maritime transportation environmental impacts, to safeguard access to maritime transportation market, and to promote digitalization as a tool for simplifying of administrative formalities. EC maritime transportation policies are defined to the European Union in the EC’s Strategy (2009-2018). The Staff Working Document on the implementation of the Strategy focuses on five areas:

\(^{181}\) ibid
\(^{182}\) ibid
\(^{183}\) The Writer’s opinion.
\(^{184}\) Commission, ‘Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Strategic goals and recommendations for the EU’s maritime transport policy until 2018’ COM/2009/0008 final <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52009DC0008> accessed 1 April 2021
(i) Maritime Safety and Security; (ii) Digitalisation and Administrative Simplification; (iii) Environmental Sustainability and Decarbonisation; (iv) Raising the Profile and Qualifications of Seafarers and Maritime Professions and (v) EU Shipping: A stronger global player. 185

The policy objectives of minimizing maritime transportation environmental impacts and promoting digitalization. Accomplishments in enhancing maritime environmental sustainability and decarbonisation have happened e.g. in the adoption of an EU policy for reducing domestic GHG emissions 186, establishment of the Monitoring, Reporting and Verification (‘MRV’) of CO2 emissions and of the European Sustainable Shipping Forum (‘ESSF’). 187

2.4.1 The European Maritime Safety Agency and the Sustainable Shipping Forum

The EC has strengthened European maritime safety and sustainable shipping by establishing new administrative agencies. The European Maritime Safety Agency (‘EMSA’, 2002) was established with the objectives (i) to ensure a high, uniform and effective level of maritime safety and prevention of pollution by ships within the Community, and (ii) to provide the Member States and the Commission with the technical and scientific assistance needed and with a high level of expertise, in order to help them to apply Community legislation properly in the field of maritime safety and prevention of pollution by ships, to monitor its implementation and to evaluate the effectiveness of the measures in place. 188

EMSA’s serves EU maritime interests for a safe, secure, green and competitive maritime sector and act as a reliable and respected point of reference in the maritime sector in Europe and worldwide. EMSA provides services to EU Member States and the EC and acts with its partnering network and as an information hub for the European maritime transport sector. EMSA aims at being the centre of excellence for a safe and sustainable EU maritime sector, acting as a facilitator for the wide variety of sustainable shipping initiatives relating to decarbonisation and smart mobility targets in the maritime transportation sector. EMSA’s expert services are provided to the EC and EU Member States. 189

189 EMSA, ‘This Is EMSA’ <http://www.emsa.europa.eu/about.html> accessed 4 April 2021
EMSA acts as the technical secretariat of the ESSF and contributes to the development work, including e.g. measures for decarbonisation of shipping and energy efficiency, at the IMO. EMSA is cooperating with the European Environmental Agency to finalize an overview of maritime industry status report and the sector’s environmental impact. \(^{190}\)

The ESSF\(^{191}\) is an organ consisting of experts on maritime transport sustainability. ESSF’s duties lie in facilitating the implementation and compliance with marine sector sustainability and environmental legislation, e.g. by providing advise and expertise to the EC, by enhancing a structural dialogue and coordinating knowledge-sharing and information exchange with stakeholders on initiatives. \(^{192}\)


\(^{192}\) ibid (n 188)
3 SHIPPING GHG EMISSIONS REDUCTIONS MECHANISMS

3.1 Forewords

Shipping energy efficiency benefits e.g. from the vessel cargo capacity. Largest containerships today may transport containers filled with different categories of goods from consumer goods to chemical substances and raw materials in more than 23,000 containers on board. International shipping exploits global sea routes and operates under international maritime laws while uniting states and economies in delivering of cargo.

Recent megatrend impacts such as the rapid expansion of e-commerce activities has been regarded as of having high relevance to shipping, as cross-border e-commerce shall directly affect the demand for transport and logistics, including maritime transportation. Even though the covid-19 crisis set a shadow above global trade, recent estimates show that after having declined by five percent in 2020, global trade is expected to increase by eight percent in 2021.

Shipping industry engages a variety of stakeholders from all over the world - ship owners, ship operators, crews, shipbuilders, financiers, insurers, suppliers, designers, product manufacturers, cargo carriers, port operators, end customers, consumers, states, organisations, non-governmental organisations and other interested groups. The vast and versatile stakeholder network engages attention from consumers to businesses, citizens to policy makers, legislators and states, international communities and NGOs.

Shipping emits various pollutants. The most significant GHG released by ships and thus, the biggest contributor to shipping related GHG emissions is carbon dioxide (‘CO2’) and it is followed by the second most significant shipping emission of black carbon (‘BC’). Carbon monoxide (‘CO’), volatile organic compounds (‘VOC’), particulate matter (‘PM’) and black carbon...
(‘BC’) as well as sulphur oxides (‘Sox’) and nitrogen oxides (‘NOx’) may cause harm to human health. 200

Shipping GHG emissions data exists. International attention has been drawn to sustainability, climate and ocean policies. Maritime transportation strategies have been introduced and international environmental and maritime regulation exists. The causalities between maritime transportation industry emissions and climate change are understood. A consensus over the subject matter of something must be done seems to be at hand but the what should be done is missing. The industry and policymakers in the international communities seem to struggle of a paradox of a monumental knowledge-action gap. This paradox indicates that while understanding that climate change represents as a fundamental threat to mankind and biodiversity, actions remain inadequate. 201

This chapter discusses the second research question – how to implement the GHG reductions objectives in the shipping industry? Focus lies in mapping of current and recently proposed mechanisms and maritime emissions reporting systems.

3.1.1 The Fourth IMO GHG Study 2020

The IMO conducted the First IMO GHG Study in 2000 estimating that international shipping vessels contributed approximately 1.8 percent of the world CO2 emissions, with the year 1996 emissions. The Second IMO GHG Study in 2009 estimated that international shipping contributed approximately 2.7 percent of the world total CO2 emissions, as of 2007 emissions. The Third IMO GHG Study estimated that international shipping emissions contributed approximately 2.2 percent of global emissions, as of 2012 emissions and this study also updated the Second study’s CO2 emissions to 2.8 percent. 202

The Fourth IMO GHG Study 2020 (‘the Study’) was published in 2021 203 making it the first IMO GHG Study published after the release of the Initial IMO Strategy on reduction of GHG emissions

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200 ibid
201 Holmes and Richardson (n 23) citing IPCC 2013, pp. 1183,1188
from ships (2018). However, the Study focuses in emissions data reported and collected during 2012 – 2018 which does not yet become impacted of the Strategy from 2018. 204

The Study estimates that GHG emissions of total shipping have increased by 9.6 % from 977 million tonnes in 2012 to 1,076 million tonnes in 2018. 205 The Study acknowledges to be the first IMO GHG Study which has had the possibility to utilize new developments in data and inventory methods which has enabled the distinguishing of domestic from international shipping emissions on a voyage basis. By that applicable new data and inventory methods, the Study estimates that the overall carbon intensity was 21% and 29% better than in 2008 (and 22 – 32 % better in the vessel-based allocation. 206

Three ship types – container shipping, bulk carriers and oil tankers – remain the dominant source of international shipping’s GHG emissions. When calculating also chemical tankers, general cargo ships and liquefied gas tankers among, they constitute 86.5% of international shipping total emissions when calculated on a voyage-based allocation. 207 This shows that other ship types – such as cruise ships, ferries, vehicles, yachts, offshore and services – constitute the remaining 13.5% of international shipping total emissions.

Hence, it would be reasonable to focus in the largest polluters, vessel types currently responsible for over 86 percent of shipping total emissions with more powerful measures to influence the reductions. The dilemma remains however, that the uppermost governing bodies lie within the IMO – governed by the most influential shipping countries. Alternative mechanisms must be discussed.

3.2 Voluntary mechanisms

3.2.1 Commercial contracts

Shipping GHG emissions may be reduced by engaging sustainability clauses into commercial contracts. When considering the distribution of powers between private and public sector, if there is a lack of existing obligatory regulation relating to GHG emissions and stakeholders, private mechanisms might overtake the power of negotiating sustainability clauses into contracts. Reflecting to business law practices it is very much daily routine to accept other sustainability clauses such as

\[\text{\textsuperscript{204}}\text{The Fourth IMO GHG Study 2020 contains an overview of GHG emission from shipping 2012-2018, developments in carbon intensity and emission projections towards 2050 (n 205)}\]

\[\text{\textsuperscript{205}}\text{ibid (n 205)}\]

\[\text{\textsuperscript{206}}\text{Vessel-based allocation “defines emissions according to ship types” ibid}\]

\[\text{\textsuperscript{207}}\text{ibid}\]
voluntary code of conducts, typically setting up expectations to contracting parties, e.g. in the fields of appreciating human rights or complying with international conventions such as the UN Global Compact. When agreeing on shipping terms, typically the parties select an INCOTERMS clause and include clauses to agree upon certain liabilities, indemnifications or waivers. However, shipping emissions or sustainability clauses are rarely directly agreed upon in commercial contracts. 208

Four key requirements for a good sustainability clause have been identified: (i) precision, (ii) verifiability, (iii) enforceability, and (iv) coverage depth. 209 In order to adhere information requirements to sustainability clauses in commercial contracts, it would be worth discussing if private entities could set mandatory obligations to respective business partners in order to report, monitor and verify GHG emissions of own operations and comply with mutually agreed GHG emissions limit targets. However, as long as corporations are not obligated to monitor and report own shipping emissions, either direct or indirect, this scenario most probably shall not succeed.

3.2.2 Market-Based Measures

The IMO attempts to reduce GHG emissions through Market-Based Measures (‘MBMs’). It appears that the EC has expressed some criticism towards the IMO’s attempts with relation to lead the discussions on MBMs. The EC address their concern over IMO’s capability (through the MEPC sessions) in chairing the difficult discussions relating to the MBMs. Additionally, the EC particularly noted “the MEPC had failed” 210 when delivering terms of reference to conduct MBM impact assessment study. 211 Alongside expressing their concern, the EC seems to declare their dissatisfaction e.g. by stating that the EU is actively engaged in developing of new MBMs, seen as a promising emissions reduction tool in bringing new efficiency standards to vessels. The EC states that should the IMO discussions lead to a consensus, the EU legislator shall amend the EU based systems accordingly. 212 Consequently, EU maritime strategy lead to the adoption of the EU-MRV system as discussed in while the latest MBM related update from IMO notices in short that the MEPC 65 had agreed “to suspend discussions on MBMs and related issues to a future session”. 213

208 The Writer’s opinion.
210 ibid (n 187) 4
211 ibid
212 ibid
3.2.3 Enhancing competitive advantage

By examining over 90,000 press releases over the period of 2005-2014 of the largest global corporations which are listed in the S&P 500 index, it was evidenced that they have adopted to environmentally oriented practices or strategies to a greater extent than to the societal or organizational sustainability themes. Instead of adopting a proactive model to innovate in sustainable business models, the S&P 500 companies trend in profitable societal and environmental themes. Enhancing a sustainability trajectory into large global corporations would need a systemic change for big corporations to identify sustainability business models and the profitability and cost savings this trajectory could issue. Also a larger sustainability trajectory can be recognized as much needed from large initiatives arising out of policy implications. This supports the idea of sustainability as a competitive advantage. Large global corporations require more sufficient sustainability strategies to enable them to transform a systemic change in their businesses.

Organizations are facing more pressure from their internal and external stakeholders and to a larger sense, from the society to provide further social and environmental initiatives as well as a systemic sustainability integration resulting in sustainable solutions to market and sustainable organizational decision making processes. Companies’ relation to sustainability integration can be based on the integration value creation it generates in the agenda of maximizing profits and hence, maximizing the benefits for all its stakeholders. This underlines the correspondence between traditional purpose of a company ‘to maximize profit for shareholders’ and an alternative purpose of a company ‘to maximize profit for all stakeholders’.

3.2.3.1 Purpose of a company

While assessing the overarching research questions relating to climate change mitigation by reducing of maritime shipping GHG emissions and as discussed above, governance plays a significant role. While discussing questions of governance and powers, the interests affect the selection of objectives

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216 Writer’s own text from a research seminar course at University of Helsinki, ‘Purpose of a Company’, a group work with co-authors Vanessa Hotta and Tuomas Nieminen.

217 ibid (n 217)
and tools towards achieving such goals. Balancing between voluntary and regulatory, primary and secondary legislations is required. What happens if the highest international authorities do not find a consensus in GHG emissions reductions of the industry? One hypothesis could be that sustainability forerunners in private industry shall with their example, set new norms to industry practices which others shall follow. Either good or bad, it would de facto affect the legislator once perhaps establishing new regulation to tackle the same objectives. Corporations have increasingly started to voluntarily report on CSR matters, which has not until recently been regulated by the EC. 218. Researching the CSR directive and its preliminary materials would serve a fruitful research topic. Could it be said that a trajectory is at hand from what is commonly known as a ‘traditional’ market economy serving the shareholders’ interests, towards a ‘new kind of sustainable market economy’ serving the sustainability interests, or if not at hand, possible? Without sustainability transformation, there would be a conflict of interest between shareholders and environmental interests. Is there a conflict between shareholders’ interests and CSR obligations of a company? The potential of corporate law has been noticed by academics and legislators as there seems to be a vivid debate on whether the purpose of a corporation maximizing shareholder profit should be rethought to be more aligned with other public interests. 219

Shareholders’ interests and companies’ CSR obligations are not necessarily in a conflict as empirical evidence has shown that corporations who pay focus to CSR issues also have healthy financial profits. 220 The reasons and causalities may be worth further law and economics focused research but evidently, acting accordingly to CSR obligations, voluntarily or not, should at least not negatively impact the business profits of a company. On the contrary, it might be that contemporary companies are expected to adhere to CSR principles in order produce profits to shareholders. 221 However, the norm of shareholder primacy in limited liability companies has been identified as ‘a systemically entrenched barrier to corporate sustainability’. 222

The current framework based on soft law is clearly inadequate, as the study by the European Commission suggests. The modern corporate law fixated on shareholder rights, which enjoy a near ‘common-sense’ status. These rights, however, should be a result of a detailed normative discussion. Corporate Law should be reformed to mirror what we want our society to look like. Currently, for instance, the Finnish Limited Liabilities Companies Act (981/2011) (‘Companies Act’) explicitly

218 See more in (n 288)
220 Ritala, Huotari et als (n 217)
221 ibid (n 218)
states that the purpose of a company is to make profit for the shareholders unless decided otherwise in the Articles of Association. 223

Duty of care and loyalty only exist to protect shareholders. Social Corporate Responsibility Goals are secondary, and they can only be considered if they are proven to maximise corporate profits. In order to address the general need to change Corporate law it has been suggested that the SMART Reform Proposals would serve the need. 224

3.2.4 The Partnership Paradigm 225

The United Nations Conference on Environment and Development (UNCED) in Rio in 1992 can be regarded as a turning point towards adopting a public and private shared interest in public affairs which have led to shared responsibilities, new governance practices and institutional arrangements. 226 More flexible incentive-based and market-oriented policy systems were adopted, public administrations invited private sector to cooperate with policies, some business led development promoting sustainable business models and NGOs strengthened their direct cooperation with businesses. 227 This created a systemic change in which the roles of private parties were mixing up in the new dialogue between public and private parties in a joint effort to of solving [sustainability] issues – once considered as public problems, now requiring both public and private efforts. 228

This change can be described as a normative change, which does not follow only an idealistic change but also is affected by a structural transformation in which the partnerships between public and private have risen towards becoming indisputable. Hence, outlining a situation in which public governance model is no longer autonomous but a shared responsibility with the private sector. 229

Main aspects of the partnership paradigm are

(i) private and public parties have a shared interest in sustainable development and partner dialogue can be supported by exclusion of hierarchy and authority and, (ii) the partnership dialogue can create a shared normative belief to support a value-based rationale towards joint actions, and (iii) the voluntary joint actions, joint resource

223 Finnish Limited Liabilities Companies Act (981/2011), s 5
224 Mähönen et al (n 224)
225 Pieter Glasbergen, ‘Setting the scene: the partnership paradigm in the making’ 3-5 in James E Austin, ‘Sustainability through Partnering: Conceptualizing Partnerships between Businesses and NGOs’ (Edward Elgar Publishing Limited 2007)
226 ibid
227 Prior to, NGOs had exclusively directed their sustainability efforts towards the public sector. ibid 4
228 ibid 4
229 ibid 4
commitments and shared responsibilities can serve both public and private interests, and (iv) the joint actions can de facto be commercial whereas the market mechanism can promote sustainable practices through the leverage and spin-off of private-sector investments. 230

Partnerships may arise from three alternative positions – (i) by government (public) initiatives when public forces seek to ally with private or civil society forces, in which the partnership remains under authoritative position. (ii) By business (private) initiatives when the public participates in partnership as one of many partners, in which the powers remain more balanced. (iii) By business (private) initiatives when they collaborate with the civil society, in which there is no governmental authority powers at hand. 231

What could be argued is whether partnerships for collaboration (iv) by public and civil societies arise, or (v) between private and public and civil societies arise. However, specification is made as to the (i) local – national scope, and (ii) international – global scope of partnerships. Further to, differences may occur in the size of the partnerships and in their geographic scope, as well as timing, functions and available funding. 232

The partnership paradigm might have become even further present and thus important in the current dialogue between public sector administrators, private sector businesses and representatives of the civil society (or even the environment), seek to find new normative and practical solutions in tackling overarching threat of climate change. By promoting and supporting a partnership dialogue locally and internationally, breaking the boundaries and changing the discourse towards a genuinely open, inviting and collaborative discussion which outlines the interests of all parties, adapting to sustainability change may be more efficient. When considering the Partnership Paradigm in Shipping Industry the dialogue becomes even more important. Shipping Industry stakeholders should be invited to collaborate on the policymaking, thus, normative tools and other incentives, which would better support the Industry towards adopting new tools and practices (depending on the set of regulation or incentives of course). Engaging industry stakeholders to participate in the discussion regarding of complex industry practices and climate related emissions, the adaption to change may be significantly helped.

However, this brings us to the other possible barrier – how this can be done in a balanced way, e.g. how to secure that the dialogue actually seeks to find sufficient solutions. What could be identified

230 ibid 4-5
231 ibid 5
232 ibid 5
as a risk is that the dialogue becomes void if the partnerships are not balanced equally and thus, the party with most powerful position\textsuperscript{233} dominates the dialogue. Another risk could be that the parties’ powers and position in the dialogue remains equally balanced but their objectives are in collision which could prevent the partnership from finding sufficient or fruitful solutions from their collaboration.

3.3 From paper documents to digitalisation

Digitalisation and new technologies impose new requirements to industry stakeholders in many thresholds. By implementing new technologies into vessel technology, at least two direct impacts affect the crews on board, as (i) human operations and input can become replaced by technologies and therefore crews are becoming smaller, and (ii) crews must be able to acquire new skills. This creates a need to attract and train crew with the right skills and competences.\textsuperscript{234} This requires resources in investments. The vessels might need to be sailed to docks for maintenance and repair, which requires resource planning and direct costs such as from operating the vessel operating to and from the dock (including fuel and personnel costs) purchasing price and assembling costs of new and dissembling of old technology. Indirect costs arise out of the fact that during assembly and maintenance, the vessel cannot sail and transport of goods. Shipping industry stakeholders are still using e.g. paper documents that makes the gap towards implementing of digitalisation even bigger.

The International Transport Forum (the ‘ITF’) is an intergovernmental organisation, founded in 1953 (as the European Conference of Ministers of Transport, the ECMT) and currently has 62 member countries. It is politically autonomous and is integrated within the Organisation for Economic Co-operation and Development (‘OECD’). The ITF contributes to working for improving peoples’ lives through transport policies and is on a mission towards raising transport policy’s public profile and underlining that transport holds a position in economic growth, environmental sustainability and social inclusion.\textsuperscript{235} The ITF, with the support from the Global Shippers Forum, conducted an OECD report ‘Information sharing for efficient maritime logistics’ (the ‘Report’) in 2018 which identified trends and opportunities for information sharing, challenges in digitalization, data collection and governance, preconditions for efficient, digitally enabled maritime logistics, and questions for future development.

\textsuperscript{233} The different rationalities of the parties has been recognized as an opportunity, not as a barrier. ibid 5
\textsuperscript{234} ibid (n 187)
\textsuperscript{235} ITF, ‘About ITF’ and ‘Our History’ <www.itf-oecd.org/about-itf> accessed 10 April 2021
research and discussion. The report based on desk research and interviews with selected stakeholders and discussions of the Global Maritime Logistics Dialogue, to assess the data opportunities and challenges of data sharing in the maritime logistics chain. The Report indicated that sharing of information might improve resource efficiency, cut delivery times and reduce costs, as well as open up business opportunities.

While new technologies have been developed and evidently keep growing in all industry areas, such as data collection and analytics tools, the Internet of Things (‘IoT’), block chain technology and artificial intelligence (the “AI”), there is an apparent gap in harnessing the new technologies in practice. While the international discourse seems to identify the prospect possibilities with relation to cost-efficiency and GHG emissions reductions, a lack of utilizing the use of these new technologies efficiently – or even utilizing digitalization – is present in the shipping industry.

While the IMO and the EU have identified the need for digitalized tools, this gap should be regarded as a real practical barrier currently disabling a paradigm shift towards a digital transformation in the shipping industry. To underline the importance of this gap even further, shipping industry is already harnessing data via different digital technologies and it has even been expressed that all the GHG emissions reductions related data already exists but remains unavailable. The systematic integration of new technologies and systems should be implemented in a more efficient way and utilizing the discussion or collaboration between the industry stakeholders specifically in the logistics chain. This should be done by agile means, by building and implementing of digital data management platforms and tools by default into industry operations. From a market economy point of view, the perhaps most effective driver towards this change would be financial benefit, or, mandatory requirements. This brings an enormous challenge to the legislators, as new solutions in order to attract private entities towards adopting digitalization into operations.

Additionally to the barrier of digital transformation in the industry, a second barrier has been identified as the lack of trust between stakeholders is disabling sharing of operational data. As the industry stakeholders represent different sized actors who are operating under different objectives, trust limitation occurs. Lack of trust might still echo from the complex nature and historical

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237 ibid
238 ibid
240 ibid (n 238)
241 Heilig and Voss (n 241)
242 OECD (n 238)
development of international maritime regulatory scheme. Additionally to the lack of trust is a crucially important question from market economy point of view. Private entities have an interest towards the right to data and data ownership. Sharing an open access to privately own operational or management data might trigger internal procedures and protocols of protecting company trade secrets or financials or even intellectual property rights. Therefore, the barrier of data ownership should be addressed legal discussion to. Perhaps a fear of losing proprietary rights of data to e.g. a bigger actor in the industry or, to the most important competitor in the industry, arises.

This barrier was also identified in ITF’s Report. Sharing and exploitation of data while lacking of data governance within the industry systematically disables private entities from wanting to share their operational data as issues of commercial sensitivity and data ownership arise. The Report indicates that when entering to adoption of new technologies aiming at enabling of data flows in system integrations, the industry stakeholders throughout the global supply chain might become exposed to cyber security threats.

Whereas the size of actors might be one driver to impose fear another driver might be resources. Despite the differences in size of the actors, the more important aspect is related to investments. Utilising of data does not necessarily require much resources but investments to implement new technologies into operations do. However, building on the premises that at least technological hardware solutions (such as computers and the internet) are already at hand and employees are skilled enough in using them, and the data already exists, it would be reasonable to ask what is still preventing the industry from attaining a paradigm shift towards digitalization? A solution can be found from a combination of incentives and regulation. Both by funding all operators despite the size, to invest in digital solutions, and by relieving industry actors who systematically share operational and thus, emissions data to commonly shared databases, and by legislation, e.g. mandatory requirements to start reporting data into such database.

\[\text{ibid}\]
\[\text{ibid}\]
3.3.1 Emissions reporting schemes, systems and indexes

3.3.1.1 The EU MRV Regulation

The EU MRV Regulation (2015/757) on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport entered into force in 2015. \(^{245}\) It sets rules

“for the accurate monitoring, reporting and verification of carbon dioxide (CO2) emissions and of other relevant information from ships arriving at, within or departing from ports under the jurisdiction of a Member State, in order to promote the reduction of CO2 emissions from maritime transport in a cost effective manner” (article 1).

What is notable in the subject matter as set out in article 1 is that the EU MRV rules are applicable despite of the flag state. The determining factor remains on the arrival or departure from an EU Member State jurisdiction. In addition to that, the scope of application must otherwise be met in order for the vessel owning company \(^{246}\) to become subject to EU MRV. The EU MRV applies

“to ships above 5 000 gross tonnage in respect of CO2 emissions released during their voyages from their last port of call to a port of call under the jurisdiction of a Member State and from a port of call under the jurisdiction of a Member State to their next port of call, as well as within ports of call under the jurisdiction of a Member State”(article 2.1).

What is notable in the scope is that it leaves ships less than 5 000 gross tonnage in respect of CO2 emissions released during their last voyage outside of the application of the EU MRV. Also warships, naval auxiliaries, fish-catching or fish-processing ships, wooden ships of a primitive build, ships not propelled by mechanical means, or government ships used for non-commercial purposes (article 2.2) are left out of scope.

The monitoring obligation is addressed to the Company. The Company is given the choice of determining the CO2 emissions in accordance with different methods for monitoring of the CO2 emissions, as defined in annex 1 of the EU MRV (articles 4 and 5). Companies are required to monitor either on a per-voyage basis or on an annual basis. The parameters differ by the choice of monitoring basis.


\(^{246}\) ‘Company’ means the shipowner or any other organisation or person, such as the manager or the bareboat charterer, which has assumed the responsibility for the operation of the ship from the shipowner, Art. 3 (d) of EU MRV.
The parameters for monitoring on a per-voyage basis are - port of departure and port of arrival including the date and hour of departure and arrival, amount and emission factor 247 for each type of fuel consumed in total, CO2 emitted, distance travelled, time spent at sea, cargo carried, transport work and if applicable, the ship’s ice class and navigation through ice (article 9).

The parameters for monitoring on an annual basis are - amount and emission factor for each type of fuel consumed in total; total aggregated CO2 emitted within the scope of this Regulation; aggregated CO2 emissions from all voyages between ports under a Member State's jurisdiction; aggregated CO2 emissions from all voyages which departed from ports under a Member State's jurisdiction; aggregated CO2 emissions from all voyages to ports under a Member State's jurisdiction; CO2 emissions which occurred within ports under a Member State's jurisdiction at berth; total distance travelled; total time spent at sea; total transport work; average energy efficiency and if applicable, the ship’s ice class and navigation through ice (article 10).

The data is verified by a verifier who fulfils the requirements set out in the general obligations and principles for the verifiers. The verifier shall by principle carry out their tasks in the public interest, and be an independent entity from the Company or the operator of a ship (article 14).

If the emissions report fulfils the requirements of the EU MRV the verifier issues a document of compliance for the ship as well as informs both the EC and the authority of the flag State of the issuance of a document of compliance (article 17).

### 3.3.1.2 IMO Data Collection Scheme

Similar to the EU MRV the IMO adopted an amendment to MARPOL Annex VI on a Data Collection System (‘DCS’) for fuel oil consumption of ships. It entered into force in 2018. 248 The IMO DCS requires ships of 5 000 gross tonnage and above to “collect consumption data for each type of fuel oil they use, as well as other, additional, specified data including proxies for transport work”. 249 The Company 250 reports data at the end of a calendar year in accordance with the flag state principle to

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247 ‘Emission factor’ means the average emission rate of a greenhouse gas relative to the activity data of a source stream, assuming complete oxidation for combustion and complete conversion for all other chemical reactions, Art. 3 (e) of EU MRV.


249 ibid

250 “Company” means the owner of the ship or any other organization or person such as the manager, or the bareboat charterer, who has assumed the responsibility for operation of the ship from the owner of the ship and who on assuming such responsibility has agreed to take over all the duties and responsibilities imposed by the International Management Code for the Safe Operation of Ships and for Pollution Prevention, as amended. Definitions, MARPOL Annex VI (n 157)
the flag state. The flag states issues a Statement of Compliance document to the ship upon having determined that the data report meets the requirements.\footnote{ibid (n 250)}

The DCS information requirements cover identity of the ship, calendar year start and end date, technical characteristics of the ship (ship type, gross tonnage, net tonnage, deadweight tonnage, power output of main and auxiliary reciprocating internal combustion engines over 130 kW, EEDI if applicable, ice class, Fuel oil consumption by fuel oil type in metric tonnes and methods used for collecting fuel oil consumption data, distance travelled as per over ground, and hours underway (Appendix IV).\footnote{MEPC 70/18/Add. 1, annex 3 <www.wcdn.imo.org/localresources/en/OurWork/Environment/Documents/278(70).pdf> accessed online 16 May 2021}

By comparison, both the EU MRV and the IMO DCS both intend to capture vessel emissions data in order to collect vessel CO2 emissions information and in order to monitor the Companies and thus, the ship usage from an emissions regulation perspective. The Companies must fulfil the data monitoring and reporting requirements of both systems when vessels are sailing to or from European ports. This is an administrative burden to the Companies.

3.3.2 Databases

In front of the overarching policies indicating that utilizing of data through digitalization and new technologies would serve the GHG emissions reduction aims, an overview of some other current databases and systems into which data is being reported and from where it is monitored and verified, needs to be conducted. Several indicators and indexes are in use simultaneously in the industry.

3.3.2.1 Energy Efficiency Design Index

IMO has introduced an Energy Efficiency Design Index (‘EEDI’) in 2011 which imposed mandatory standards for new ships. The EEDI aims at improving the energy efficiency of certain categories of new ship design and sets technical standards for shipbuilding since 2013. Introduction of EEDI (and simultaneously, the SEEMP as discussed in the next section) was the first mandatory climate related regulation to the shipping industry since the Kyoto Protocol.\footnote{Sigma Hellas, ‘MARPOL Annex VI explained – EEDI&SEEMP’ <www.marpol-annex-vi.com/eedi-seemp/> accessed 8 May 2021} The EEDI does not cover specific instructions or obligations to address the question how the energy efficiency should be achieved but
leaves the choice of methods open to shipbuilders. The EEDI scope of vessels currently cover the “most energy intensive segments of the world merchant fleet”, incorporating approximately 85 percent of international shipping CO2 emissions. The vessels under the EEDI regime include e.g. tankers, bulk and gas carriers, general cargo ships, LNG carriers, ro-ro cargo and passenger ships etc. Notably, the EEDI regulates new large merchant vessels built after 1st January 2013 but leaves older merchant fleet out of scope. Considering (merchant) vessels’ relatively long lifecycles, addressing further attention to how older fleet energy efficiency is regulated (if) should be conducted. Also what is notable is that e.g. cruise ships and smaller vessels such as ferries are left out of the EEDI scope.

3.3.2.2 Ship Energy Efficiency Management Plan

Simultaneously to introducing the mandatory EEDI, the IMO introduced a voluntary system, the Ship Energy Efficiency Management Plan (‘SEEMP’) for all ships. SEEMP was later amended to a mandatory requirement for all ships to have on board a vessel-specific SEEMP. The SEEMP establishes a mechanism to improve energy efficiency cost-effectively. SEEMP scope of application covers already existing ships and new ships and it does not differentiate vessel type or size, nor the flag under which it sails. “Each ship shall keep on board a ship specific Ship Energy Efficiency Management Plan. This may form part of the ship’s Safety Management System (‘SMS’).

Notably, evaluating the requirement to carry on board a SEEMP indicating the vessel specific energy efficiency management plan, it may be reasonable to state that it is one thing to prepare a document, print it out and keep it on board and another thing to act accordingly to the information indicated in it. Not underestimating its significance but it may be controversial to discuss the legitimacy of the SEEMP in the context of GHG emissions reductions.

3.3.2.3 Energy Efficiency Operational Indicator

256 As required by MARPOL Annex VI, Regulation 22 entered into force 1 January 2013. MEPC.203(62). ibid (n 279)
SEEMP offers a separate monitoring tool called the Energy Efficiency Operational Indicator (‘EEOI’) to shipping companies to support fleet efficiency by e.g. incorporating best practices for fuel efficient vessel operation. \(^{259}\) In the guidelines for voluntary use of the ship EEOI, it is declared that the use of the guidelines will “assist ship owners, ship operators and parties concerned in the evaluation of the performance of their fleet with regard to CO2 emissions”. \(^{260}\) Further to, the guidelines indicate that a vessel’s CO2 emissions are directly related to the consumption of bunker fuel oil and thus, fuel efficient performance would be advisable. \(^{261}\) The practical guidelines in the EEOI address fuel consumption, distance sailed, ship types and cargo types, cargo mass carried or work done, and voyage. Ship types cover dry cargo carriers, tankers, gas tankers, containerships, ro-ro cargo ships, general cargo ships and passenger ships including ro-ro passenger ships. Cargo types cover e.g. all gas, liquid and solid bulk cargo, general cargo, containerized cargo, and so on. \(^{262}\) Data requirements impose elements of data uniformity and easy collection of data, allowing the data to be analysed and extracted.\(^{263}\)

What is notable when discussing of utilizing digitalization in the data collection, monitoring and verification is, that the EEOI recommends that shore staff should be carrying out the EEOI monitoring of data, allowing the on board crew to relief from administrative burdens. The shore staff should utilize data from “existing required records such as the official and engineering log-books and oil record books” and that further monitoring should be conducted during internal audits. \(^{264}\) EEOI further provides calculation models based on ship operative data. It appears that the SEEMP with this EEOI model are of valuable interest to generating vessel specific CO2 data and further to generating industry specific GHG emissions data but the underlying issue is that the mechanisms presented herein are voluntary. Additionally, operations both on board a vessel and on shore operations might differ and furthermore, it would be interesting to know how the reporting is conducted in practice. If the shipping companies tend to use hand-written paper documents, how likely is it that the reports end up on someone’s desk in on land offices and how likely is it that this document is promptly handled by calculations and data recording to data management systems? Hence, developing and designing new and agile solutions to serve the data reporting means not only to relief the administrative burdens but also to support timely and error-free reporting of emissions data. Data could be stored in cloud-based systems from where it would be easily accessible to anyone given the

\(^{259}\) OECD (n 238)


\(^{261}\) ibid

\(^{262}\) ibid, s 3

\(^{263}\) ibid, s 5

\(^{264}\) ibid, s 6.1
access to, by comparison to the old-fashioned paper reports in paper archives. In the end, some shipping companies might already use such digitalized tools but it would serve a great empirical research to engage shipping companies into interviews of their emissions data reporting practice.

3.3.2.4 Energy Efficiency Existing Ship Index

Whereas the EEDI imposed mandatory standards for new ships the IMO recently approved new amendments to MARPOL Annex VI, introducing an Energy Efficiency Design Index for *existing ships* (‘EEXI’). 265 EEXI shall impose similar requirements as EEDI to all existing ships. MEPC 76 meeting in June 2021 shall most likely finalize EEXI guidelines. The guidelines shall include baselines, methods of calculation and ship-segment-specific requirements. 266

3.3.2.5 The Common Information Sharing Environment for the EU maritime domain

Following the adoption of Integrated Maritime Policy (‘IMP’) (2007) and the acknowledgments in the IMP to enhance the use of data as a relevant factor in tackling of maritime GHG emissions, the EC set out guiding principles towards establishing an integrated maritime surveillance system in the EU, the Common Information Sharing Environment (‘CISE’). 267 The aim of integrated maritime surveillance is to “generate a situational awareness of activities at sea, impacting on maritime safety and security, border control, *maritime pollution and marine environment*, fisheries control, general law enforcement, defense as well as the economic interests of the EU, so as to facilitate sound decision making.” 268 In practice, the CISE is an initiative “fostering sharing of information between maritime authorities, across sectors and borders, aiming to enable their enhanced maritime awareness and more effective action at sea”. 269 The EC acknowledged that due to a significant amount of potential participants as well as the diversity of legal frameworks, the CISE would not adapt to one single solution to fit all information exchange in the CISE. 270

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265 EEXI was approved in MEPC 75 (11/2020) and it shall be finalised in MEPC 75 (upcoming, 06/2021).
268 ibid
270 ibid (n 269)
The EC framed six steps to build a roadmap towards the establishment CISE – (i) identifying all user communities, by identifying the parties to the information exchange; (ii) mapping of data sets and conducting a gap analysis for data exchange to ensure that there is an added value to the CISE, by mapping data exchanges already present as well as data exchange gaps; (iii) common data classification levels, outlining the issue of same data being handled differently in different user communities; (iv) developing the supporting framework for the CISE, establishing of interoperable services and a common technical language to exchange data; (v) defining of access rights by determining user communities’ access rights to others’ data; and (vi) providing a coherent legal framework, in order to secure the exchange of data under the proper legal framework. 271

CISE aims at enhancing the interoperability between already existing systems. 272 It also aims to develop adequate “semantic, technical, organizational and legal solutions and recommendations”. 273 The amount of already existing systems of maritime public authorities in the European countries is approximately 400. 274 CISE development builds on the premise that the currently separate systems will undergo a systemic change towards resulting in one compatible system. CISE qualitative and quantitative features increase speed and reliability of information exchange. 275 A shift towards optimized information exchange is achieved. 276 This shall serve a great improvement in maritime security and sustainability. 277

CISE has been under development ever since its adoption in 2009 and it is currently in a transitional phase under the EMSA management 278 as the EC in 2018 set the grounds for the full implementation of CISE. 279 The transitional phase consists of

“(i) evaluating, and if appropriate streamline, maintain and consolidate the CISE network and interoperability building blocks -- ; (ii) work towards complementarity of information sharing and interoperability with existing EU maritime surveillance systems; (iii) define and configure additional data exchange services required in the

271 ibid
273 ibid
274 ibid
275 ibid
276 ibid
277 ibid
279 ibid (n 293)
current preoperational CISE network; and on the basis of (i to iii), (iv) define the baseline for CISE for post-2020 operation.”

Specified objectives for the transition period include actions such as coordination facilitation among the CISE stakeholders, enabling the deployment of relevant CISE services with existing EU maritime surveillance systems, defining of CISE operating procedures and supporting the CISE standardization process. Next steps with CISE implementation are already ongoing.

3.4 Financing the sustainability transformation into international shipping industry

Considering the maritime shipping sector stakeholders’ varying interests and multidimensional supply chains, and the evidently difficult international negotiations around the theme of GHG emission reduction options in the industry, it is almost self-evident to conduct some research around the financing of sustainability transformation in international maritime transportation industry. Building on the premises that comprehending the industry finances shall result in comprehending also the allocation of costs in the industry’s GHG emissions reductions.

Shipping causes GHG emissions de facto, thus shipping causes environmental harm, more specifically shipping GHG emissions cause global warming; climate change. Wouldn’t it be the best available option to rely on the international environmental law principles when allocating the costs of GHG emissions occurred or if so, avoided? By principle, it would be a justified and reasoned approach to comply with the environmental law principles. Precautionary principle should be considered as a general obligation to all industry stakeholders to pay for costs needed in order to avoid environmental harm. The polluter pays paradigm – to create a general set of GHG emissions liability matrix, a comprehensive list of causalities and allocation of costs for the distribution of GHG emissions liabilities. Novel technologies might support achieving it. Different data models could be utilised with the already existing data.

The precautionary principle already indicated that legislation is required to prevent environmental harm. GHG emission costs should be allocated to those in charge of producing the emissions and thus, causing the environmental damage.

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280 ibid
281 EMSA, ‘5th CISE Stakeholders Group Meeting’ <www.emsa.europa.eu/cise/meetings-and-workshops.html> accessed online 1 November 2020 (note: 18 May 2021 this webpage has been moved)
Addressed in the Green Deal, achieving EU’s climate ambitions requires significant investment needs and mobilising both the public and private sector. 282 The EC considers financing as a fundamental mechanism towards achieving climate ambitions. Thus, the EU examines “how to make sustainability considerations an integral part of its financial policy in order to support the European Green Deal”. 283 The EU sustainable finance strategy introduces key mechanisms e.g. corporate disclosure of climate-related information, sustainability-related disclosure in the financial services sector 284, and the EU Taxonomy for sustainable activities. The following sections shed a light on EU Corporate Social Responsibility and EU taxonomy.

3.4.1 Corporate Sustainability Reporting in the EU

While there are various Corporate Social Responsibility (CSR) voluntary reporting initiatives, which steer or control businesses, the EU has not implemented a cross-sector horizontal due diligence legislation at EU level. Different optional and hard law initiatives 285 have however been put in practice to steer businesses towards becoming more responsible. 286 While some Member States have implemented local due diligence legislation, a lack of EU level legislation was identified. 287 European Green Deal acknowledged that in achieving the EU’s climate ambitions, both engaging the public and the private sector is required. 288 The Green Deal acknowledged that private entities’ trend to focus in their short-term financial performance and not in their long-term development and sustainability. 289 The Green Deal strategized that private entities need to embed sustainability into corporate governance framework. 290 It also strategized that both private entities and financial institutions must disclose climate and environmental data in order to share sustainability information to their investors. 291 Following these acknowledgements, the EC announced to review a Non-

282 European Green Deal (n 84)
286 Noti, Mucciarelli et als (n 311) 8-9
287 ibid 9
288 European Green Deal (n 84)
289 ibid
290 ibid
291 ibid
Financial Reporting Directive. 292 This review recently culminated in the proposal for a Corporate Sustainability Reporting Directive (‘CSRD’) which shall reframe and tailor the sustainability reporting standards to meet with current EU policies. The first expected set of standards should be adopted in October 2022. 293 The CSRD shall introduce a general EU-wide audit requirement for reported sustainability information. This shall help to ensure that the reported sustainability information is accurate and reliable and, to compare the information from company to company. 294 The CSRD scope of application shall be extended from large companies (already covered in the NFRD) to all large companies whether listed or not and without an employee headcount threshold. Also listed Small and Medium-Sized Enterprises (‘SMEs’) shall be covered under the scope of CSRD.

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The CSRD proposal is a positive enhancement in the sustainable financing field. It shall promote sustainability governance and sustainability policies in private entities. CSRD shall be building a bridge between the public and private interests, and support sustainability information transparency and accessibility. However, the CSRD should be researched further as being said that it will come out as a directive which will require national implementation of it. If the EU CSR was regulation it would be directly applicable in the MSs. If so, the CSR regulation could serve the private industry - often operating in an international and not domestic practical framework - a better position. Regulation would better harmonise the sustainability legal framework for businesses.

3.4.2 The Taxonomy Regulation

Another novel sustainability financing mechanism arising out of the EU Green Deal is The Taxonomy Regulation (2020/852) (‘EU Taxonomy’). In order to strengthen the foundations for sustainable investment, a need for the creation of a common classification system for sustainable economic activities was identified. The EU Taxonomy is a classification system which established a list of environmentally sustainable economic activities. 296 It obligates companies to track and comply with the mechanisms arising out of it and its delegated acts. EU Taxonomy is linked to other sustainable

292 ‘NRFD’ (n 287)
financing mechanisms and builds on the expectation that financial actors will have a growing interest in their investment sustainability. EU Taxonomy supports their investment sectors which currently cover agriculture, forestry and fishing, manufacturing, electricity, gas, steam and air conditioning supply, water, sewerage, waste and related remediation, transportation and storage, information and communication technologies, and buildings. 297

EU Taxonomy regulates four overarching conditions that economic activities must “meet in order to qualify as environmentally sustainable”. 298 It also establishes six environmental objectives – (i) climate change mitigation, (ii) climate change adaptation, (iii) the sustainable use and protection of water and marine resources, (iv) the transition to a circular economy, (v) pollution prevention and control, and (vi) the protection and restoration of biodiversity and ecosystems. 299

EU Taxonomy is supported by tools defining technical screening criteria for each environmental objective through delegated acts. 300 The companies are obligated to Recently, the first delegated act on sustainable activities for climate change adaptation and mitigation objectives was published. 301

Maritime transport is included in the delegated act in a joint clause regarding the GHG emissions reduction potential of maritime shipping and aviation. 302 The delegated act considers shipping as one of the least carbon intensive ways to transport goods and states that shipping should be equally treated with other transport modes. In order to support the transition towards an equal treatment, specific technical assessments should be done to establish a technical screening criteria for maritime transport. 303 The specific provisions relating to the economic activities of the delegated act are specified in its annexes.

The EU Taxonomy and its delegated acts are, too, a positive enhancement in sustainable financing. However, it is too early to evaluate the specified delegated acts effects on the maritime transport industry in the EU or, their impact on climate change mitigation. The EU Taxonomy is a classification system and a screening tool that will ultimately serve the investors and financiers purposes in auditing companies’ sustainability. It will be interesting to see how maritime transport industry (and its

298 ibid (n 287)
299 ibid
300 ibid
301 The first delegated act will be formally adopted at the end of May 2021 once having been translated in all EU languages. EC, ‘Sustainable Finance communication’ Accessed online 14.5.2021 https://ec.europa.eu/info/publications/210421-sustainable-finance-communication_en#taxonomy
302 ibid
stakeholders) shall welcome the EU Taxonomy in business practice. This serves as a great research question in the future.

3.4.3 The Emissions Trading System

EU has taken steps towards including maritime transport industry into the EU Emission Trading System (‘ETS’).\(^{304}\) The EC intends to make a proposal related thereto in the summer of 2021.\(^{305}\) In brief, emissions trading in practice means that the parties to the system shall “annually obtain and surrender emission allowances equivalent to their emissions”.\(^{306}\) The issued emissions allowances are gradually reduced which incentivises the parties towards adapting to emissions reductions.\(^{307}\) However, the emissions allowances are subject to sale and purchase between parties\(^{308}\) resulting in trading of emissions allowances from states with lower emissions to states with higher emissions.

The EU has both the expertise and experience as aviation CO2 emissions were incorporated in the EU ETS (effective as of 2012).\(^{309}\) Thus, incorporating of shipping into the ETS is a practically oriented policy aim. However, this intention signifies the hypothesis that the EU and the IMO are moving to different directions in maritime GHG emissions reduction practices.\(^{310}\)

3.4.4 International Maritime Research and Development Board

In addition to EU sustainable financing mechanisms, the IMO has set their separate emissions reduction targets. IMO intends to e.g. implement global MBMs as briefly discussed in section 3.2.2.\(^{311}\) The upcoming MEPC 76 meeting in June 2021 shall most likely decide on new measures to reduce shipping GHG emissions. IMO’s goal is to reduce CO2 emissions of merchant shipping and improve the carbon intensity by at least 40% by 2030.\(^{312}\) One of the proposed measures by the IMO is to support decarbonisation by establishing a new International Maritime Research and Development Board.

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\(^{305}\) ibid

\(^{306}\) ibid

\(^{307}\) ibid

\(^{308}\) ibid


\(^{310}\) Based on a discussion with LVM specialists in May 2021.


Board (‘IMRB’). 313 IMRB aims at accelerating low-carbon and zero-carbon technologies and fuels. By a preliminary estimate, IMRB would require five billion USD funding per annum and operate from 2023 to 2025. IMRB would collect Research and Development (‘R&D’) funds globally from ship owners and allocate the collected funds to the development and deployment of zero carbon vessel power systems on board commercial ships and to the deployment of zero carbon fuels for transoceanic shipping. 314 IMO has acknowledged that shipping industry tends not to develop vessels until the technologies exist. 315 Therefore, the IMRB would help to overcome this barrier by enabling of investments and development in novel maritime technologies and by creating a pull effect on investments in zero carbon technologies also by other parties. 316

313 MEPC 75 made a proposal to establish an International Maritime Research and Development Board (IMRB).
314 IMO, ‘MEPC 75/INF.5’ <www.imo.org/en/MediaCentre/MeetingSummaries/Pages/MEPC-75th-session.aspx> accessed online 18 May 2021
315 ibid
316 ibid
4 CONCLUSIONS

4.1 Summary of findings

An overarching research theme was presented - what actions and measures are needed in order to safeguard that shipping industry can answer (i) to the increasing demand of delivering shipping services and, (ii) to the increasing sustainability requirements. Two main research questions were asked – 1) who governs international maritime affairs and shipping sustainability objectives in the context of shipping GHG emissions reductions, and 2) how to implement the GHG reductions objectives in the shipping industry?

Tackling the overarching and interdisciplinary threat of climate change is a must-win-battle that affects all industry areas – including international maritime transportation of goods. Policy initiatives in sustainable development and climate change come both from the UN and the EU bodies. Climate governance must exist both on national and international levels. IMO has not succeeded in the creation of emissions reductions measures or tools. The EU has strengthened its climate policies and measures. EU climate ambitions from European Green Deal are affecting EU policymaking and bringing new normative tool to all areas of European living. The international shipping industry is operating in a regulatory jungle in which they must answer to many parallel and overlapping systems and regulation. Flags of convenience and IMO governance model remain as barriers to IMO’s climate ambitions.

Comprehensive governance and tools are however required. The recently launched UN Ocean Decade shall impact these issues. The MEPC 76 shall be held in June, and it will show if the IMO can reach consensus over maritime emissions reductions ambitions and measures. Simultaneously, the EU is preparing to move forward with implementing shipping under the ETS. Having said that, the IMO and the EU seem to move into two different directions and towards multilateralism, not universalism. In order to attain sustainable development objectives into shipping industry practices, innovative administrative solutions and governance models are needed from policy makers and legislators. Interdisciplinary and innovative solutions are needed to tackle the wicked problem of climate change with adequate emissions reductions objectives.

Shipping is a complex industry with multiple stakeholders and therefore subject to numerous diverse interests arising out of both private and public sectors, engaging domestic and international policies and legislation. Stakeholder compliance requires right awareness and knowledge in order to effectively adapt to sustainability changes that, as an objective, has been identified in international discourse and policymaking but yet remains unidentified or insufficient in practice.
While both IMO and EU have identified the need for data collection, reporting and monitoring, overlapping systems and reporting requirements exist. While both IMO and EU have acknowledged digitalisation as a key driver towards attaining a sustainability transformation in shipping industry, it still remains much as a policy initiative. Prominent digitalisation tools are being developed, such as the CISE. While both IMO and EU have identified financing as a key driver towards enhancing a sustainability transformation, new sustainable financing tools are developed separately from each other. While both IMO and EU have identified international cooperation importance in tackling climate change, they seem to be moving to different directions from each other. This might cause even further administrative burdens to shipping industry. The gap between EU and IMO is a barrier disabling a paradigm shift towards a sustainability transformation in the shipping industry. New and innovative governance models and incentives are rapidly needed.

Three ship types – container shipping, bulk carriers and oil tankers – remain the dominant source of international shipping’s GHG emissions. Hence, it would be reasonable to focus in the largest polluters, vessel types currently responsible for over 86 percent of shipping total emissions with more powerful measures to influence the reductions. The dilemma remains however that the uppermost international governing bodies lie within the IMO – governed by the most influential shipping countries. Alternative mechanisms must be discussed but they are not enough. Polluter pays principle would represent international environmental law in an environmental question. However, shipping emissions are difficult to allocate as there are many different stakeholders and stakeholder interests in the supply chain. Digitalisation and new technologies may support a systemic change in the industry. Already existing shipping GHG emissions data should be harnessed towards a comprehensive, transparent and accessible emissions information. This would serve as a possibility to engage a sustainability transformation in shipping industry. However, as the industry is still operating with traditional paper tools, digitalisation needs further input from policy initiatives in order to be possible in practice.

By promoting and supporting a partnership dialogue locally and internationally engaging of stakeholders may support in removing barriers. Changing the discourse towards an inviting and collaborative discussion outlining the interests of all parties, adapting to sustainability transformation may become more efficient. Currently the international regulatory scheme and the sustainability regulatory scheme cause administrative burdens to the industry actors. The status quo does not (yet) support the industry to respond to the increasing demand of delivering shipping services while implementing more sustainable business practices.
4.2 Further research

A number of research questions can be discussed further. It would be interesting to continue this research by (i) understanding the relations between EU and the UN governing bodies further, (ii) focusing in socio-legal developments and theories relating to the overarching research theme of sustainability transformation, and (iii) conducting a business case with a shipping company in a case study to address shipping digitalisation in a legal context. Harnessing of digital tools and already existing data would serve many great research questions.
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