Regulation of GHGs from Ships

On the available discretion for regulatory solutions in a European and Finnish perspective

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1 Introduction

The reduction of greenhouse gases is one of the key environmental challenges facing the Earth, and also one of the most important challenges currently facing international shipping. International maritime transport contributes, mainly through burning fossil fuels, some 2-3 per cent of the total anthropogenic emissions of carbon dioxide (CO_2), and this share is widely expected to grow.[1]

The regulation of greenhouse gas (GHG) emissions from ships is currently tackled at many levels, globally, regionally and at national level in many states. In addition, technical development on alternative low carbon fuels is rapid and many options exists for sustainable maritime fuels for the future. However, there are many uncertainties about the performance, safety and availability of such fuels and there is no certainty yet as to what fuel types or categories will be dominating in the future.

The International Maritime Organization (IMO) has been involved in the regulation of GHGs since the late 1990's, but only technical measures with relatively limited effects have been adopted to date. Recently, however, several proposals have advanced on further reduction measures in the mid- and long-term to significantly reduce CO_2 emissions, both on a ship-by-ship level and for the industry as a whole. IMO thus looks set to be heavily in the matter for decades to come.

The European Union (EU) has indicated its interest in the subject matter for decades, but only in July 2021 made its first concrete legislative proposals targeting emission reduction. Even if the proposals formally only represent the views of the Commission only, it appears clear that the EU for the moment is more determined than ever before to introduce regional reduction measures for ships, independently of their nationality, entering the region, both relating to regional energy intensity requirements and market-based measures (by including shipping in the European emission trading scheme).

In view of these major developments, it is a good time to study the regulatory field, to review the existing rules and proposals and to consider what challenges future regulation in the field might entail for European states and shipping industry. The national focus is on Finland with its particular challenges and needs that follow from its geographical conditions.

In view of the many regulatory uncertainties in the field and the many rules that are only under development, it is not possible to make a traditional legal study on regulatory consistency or compatibility between different types of laws. Instead, focus here is on more general limitations that dictate action in the area and the scope of discretion that regions or individual states have

in making their own regulatory solutions. In addition, some general policy considerations that, in the view of the authors, affect the Finnish options to secure its interest in this field are given in section 4.5.3.

The study consists of three main parts: chapter 2 addresses global measures adopted by and discussed at the IMO; chapter 3 reviews EU measures, with an emphasis of the most recent proposals; while chapter 4 considers the Finnish position. Some general conclusions are summarized in chapter 5, which also serves as the executive summary of the study.

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2 The international legal framework

2.1 General starting points regarding global regulation

2.1.1 Introduction

Climate change and the reduction of GHG emissions from ships is the key regulatory challenge for the IMO. It has been the dominant issue on the organization's regulatory agenda for years and is likely to remain so for decades to come. The topic presents an unusually complex mix of regulatory, policy and technical challenges. It also aptly illustrates the dynamism between the law of the sea, the IMO, the European Union, and other key stakeholders in the international maritime community.

Emission of greenhouse gases is not a new topic for the IMO. Since the late 1990's, the organization has sought to address the reduction of GHGs from ships, with a particular focus on CO_2, which is directly related to the amount of fuel consumed by ships, from main and auxiliary engines.

2.1.2 Who is in charge?

Even if IMO is widely acknowledged to be the principal international regulator in shipping, including in the field of climate change, it is worth highlighting at the outset that it is not necessarily the *only* global body in charge of regulating GHG emissions from ships. Whether the topic should be regarded as a shipping matter (to be addressed within the IMO) or a measure akin to other (national) measures aimed at mitigating climate change (to be addressed within the global climate change system, under the UNFCCC framework) has existed from the outset and is still not entirely resolved. The question has important substantive implications, as it is, *inter alia*, linked to the question of what principles should guide the reduction measures.[2]

Transport is not excluded from the global climate change regime.[3] The Paris Agreement includes all GHG emissions within its long-term mitigation aims. Its aim is "to strengthen the global response to the threat of climate change" by containing the increase of temperature within the limits referred to in Article 2(1)(a).[4] In order to achieve those goals "Parties aim to reach global peaking of greenhouse gas emissions as soon as possible ... so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century".[5] As a minimum, it therefore seems clear that allowing the emissions of shipping to increase by a factor of two or more until 2050[6] would jeopardize the climate goals set by the Paris Agreement and therefore would not be consistent with the Agreement.

A climate regime for shipping within the UNFCCC framework could thus, in theory, be developed on the basis of existing provisions and would not require an amendment of its existing mandate.[7] Nor would the reference in UNCLOS to a single 'competent international organization' when it comes to ship-source pollution constitute a limit in this regard.[8] The

reference is commonly understood as referring to the IMO, but there is no limitation to that effect in the UNCLOS itself.[9] The climate change regime could very well be the organization competent for regulating GHG emissions from shipping, in view of its better understanding of the global challenge underlying the need for regulation. Nor is there anything in UNCLOS precluding a sharing of the competence for a topic between two or more international organizations.

In more practical terms, however, a shift of the regulatory initiative to the UNFCCC would involve challenges. The mitigation tools offered by the Paris Agreement, i.e. the national reduction pledges, are not well suited for emissions caused by international shipping. The UNFCCC framework also offers fewer opportunities for the speedy adoption of globally applicable amendments than does the IMO's procedures.[10] Furthermore, the UNFCCC framework includes no tools for ensuring a workable monitoring and enforcement regime for internationally movable objects like ships.

For the moment, it seems widely accepted, also within the global climate change framework, that the IMO is the most suitable body for addressing GHG emissions from ships.[11] Recent regulatory measures and implementation tools, to be further discussed below, have strengthened the IMO's position in this respect in the past years. Nevertheless, while the debate on the appropriate regulatory forum is more settled than it has been for decades, a continued consensus on the matter is dependent on results by the IMO in terms of concrete emissions reductions from the shipping sector in the coming few years.

2.1.3 How much reduction is reasonable?

To achieve a contribution equal to that of other sectors in achieving the climate goals set by the Paris Agreement (limit increase in global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels), shipping emissions must be reduced by 50% from 2012 levels by 2050 and reach zero emissions by 2080.[12] Yet, even dramatic improvements of fuel efficiency in ships would not achieve overall reductions in the cumulative emissions from ships. Indeed, total emissions have been projected to rise by 50% to 250% of 2012 levels by 2050, due to estimated increases in world trade.[13]

A basic question relating to the regulation of greenhouse gases from ships thus relates to the difference between reduction by individual ships/operators and those of the sector as a whole. The dominant role of the increase in world trade in the projected increase of emissions begs the question as to whether it is fair to demand that shipping reduce its total emissions when the cause of the increase lies in factors beyond shipping? While ship-based reduction targets may be easier to justify, it is more difficult to establish a 'fair share' of the total emission reduction

by the sector as a whole, as the growth in trade is neither known nor controllable by the industry itself.

A second regulatory issue relates to the balance to be struck between technical feasibility and promotion of innovation. On the one hand, it appears widely accepted that technological solutions and fuels that are currently in use will not be able to achieve reductions of the magnitude required,[14] which make very ambitious reduction requirements seem unrealistic. On the other hand, it is equally well-understood that stringent forward-looking requirements with a clear goal are needed to foster technological change and promote investments and research and development into new technologies, in this case notably regarding alternative fuels for ships.

To meet the goals and requirements, and take the maritime industry to zero-emissions, a new generation of fuels is accordingly needed, that result in vessels producing very low or no GHG emissions, from well to wake. Yet, the question of which marine fuel(s) will be the dominant one in the future is currently subject to uncertainty. A number of new fuels are being developed and tested on individual ships. Biogas for example, is already in use, while several others primarily non-zero carbon options are in testing or soon to be operational in demonstration projects (ammonia and hydrogen). Not all fuels suit all kinds of ships, and not all are available in quantities that a proper technology shift in shipping would require. It is therefore difficult at this point to identify winners or favourites among the many different fuel options for the future, but DNV has estimated that ammonia and bio-based methanol are among the most promising carbon-neutral fuels.[15]

2.2 What has happened so far?

Broadly speaking, the discussions at IMO to date have centered on three types of measures to reduce GHG emissions from ships: technical measures (ship design and equipment); operational measures; and market-based measures. In view of the difficulty to agree on market-based measures, the discussions have mainly focused on the first two categories.

The first progress in terms of regulatory requirements was achieved in 2011, when new design requirements for the energy efficiency of new ships (EEDI) were introduced as Chapter 4 to MARPOL Annex VI, which entered into force on 1 January 2013.[16]

The addition of the new Chapter 4 to MARPOL Annex VI in 2011 also included a provision aimed at reducing GHG from ships by means of operational measures. All ships above 400gt are, based on Regulation 22, required to have a Ship Energy Efficiency Management Plan (SEEMP).

To support these tools, a global data collection system for maritime transport was adopted in 2016 to address the absence of reliable ship emission data and to facilitate the development of further regulatory measures.[17]

MBMs have been discussed at the IMO since 2003, in greater depth from 2006.[18] The Organization's members have been deeply divided on whether and how to include MBMs, and in the event they are included, whether it should be a system for the shipping sector alone or whether reduction measures could be taken in other sectors. Deep divisions have also existed as to whether, and if so in what manner, the system should accommodate the CBDR principle. The topic proved so divisive, that in 2013 it was decided to suspend the discussions.[19]

Discussions on MBMs have recently resumed at IMO (see section 2.3.3 below); pressure to reach a result in this field increased with the adoption of the Paris Agreement in 2015, but also when the International Civil Aviation Organization succeeded in adopting a global emission reduction scheme for aviation in 2016.[20] Most recently, significant pressure was added by the EU with its proposal to include shipping in the regional emissions trading system (section 3.2.2).

2.3 What is the situation today?

2.3.1 IMO Strategies and other documents supporting their implementation

The technical and operational measures discussed above will not suffice to bring shipping in line with the targets of the Paris Agreements, or even reduce the overall emissions of the sector in view of the projected growth in international trade. Following the adoption of the Paris Agreement in 2015, the IMO adopted a Roadmap for developing a comprehensive IMO strategy on reduction of GHG emissions from ships in 2016.[21] The purpose was to "build upon, and bring together, the various streams of activity that have already been taking place in IMO in relation to the reduction of GHG emissions from international shipping."[22] The Roadmap extends to spring 2023, when the 80th session of the Marine Environment Protection Committee (MEPC) is expected to adopt the comprehensive IMO strategy.[23] This goal is also stated in the Strategic Plan for the Organization for the period 2018-2023, where IMO has set out Strategic Directions for areas of particular focus for the period, including the development of "a comprehensive IMO Strategy on reduction of GHG emissions from ships, which will be ambitious and realistic."[24]

In line with the Roadmap, an 'Initial IMO Strategy' for dealing with the matter was agreed in 2018,[25] to be replaced by a 'comprehensive strategy' in 2023. Even if it is not a binding instrument, the strategy establishes certain important goals for the organization in dealing with GHGs from ships and at the same time bridges some of the previous issues of contention.[26]

According to the vision outlined in the Initial Strategy "IMO remains committed to reducing GHG emissions from international shipping and, as a matter of urgency, aims to phase them out as soon as possible in this century." The levels of ambition directing the Initial Strategy are the following:

1. **carbon intensity of ships to decline through implementation of further phases of the energy efficiency design index (EEDI) for new ships**
   to review with the aim to strengthen the energy efficiency design requirements for ships with the percentage improvement for each phase to be determined for each ship type, as appropriate;
2. **carbon intensity of international shipping to decline**
   to reduce CO_2 emissions per transport work, as an average across international shipping, by at least 40% by 2030, pursuing efforts towards 70% by 2050, compared to 2008; and
3. **GHG emissions from international shipping to peak and decline**
   to peak GHG emissions from international shipping as soon as possible and to reduce the total annual GHG emissions by at least 50% by 2050 compared to 2008 whilst pursuing efforts towards phasing them out as called for in the Vision as a point on a pathway of CO_2 emissions reduction consistent with the Paris Agreement temperature goals.

The Initial Strategy, in other words, envisages both a reduction in carbon intensity of individual ships (to reduce CO_2 emissions per transport work) and by the sector as a whole (that total annual GHG emissions from international shipping should be reduced by at least 50% by 2050 compared to 2008, independent of the sector's growth). It also makes a bridge to the global climate change framework by acknowledging that the Paris Agreement temperature goals form part of the levels of ambition that direct the strategy[27] and that *both* non-discrimination and the CBDR principles represent guiding principles for the strategy.[28]

The Initial Strategy sets out the timelines for the measures to be adopted for the short-term (2018-2023), mid-term (2023-2030) and long-term (2030-2050 and beyond). It provides a non-exhaustive list of candidate measures for short-term, mid-term, and long-term measures, with timelines, to be revised as appropriate as additional information becomes available. The short-term measures include further improvement of the EEDI and SEEMP tools for improving energy efficiency, along with a series of measures to stimulate the adoption of innovatory technologies. The measures for the mid-term list five measures, one of which is "new/innovative emission reduction mechanism(s), possibly including Market-based Measures (MBMs), to incentivize GHG emission reduction".[29] The long-term goals focus on pursuing the development and provision of zero-carbon or fossil-free fuels and facilitating the general adoption of other new/innovative emission reduction mechanisms. The Initial Strategy underlines that work regarding mid- and long-term measures must begin prior to 2023.

The Initial Strategy is further elaborated and implemented through a 'Programme of Follow-Up Actions of the Initial Strategy up to 2023' (Programme of Follow-Up Actions, 2018)[30] and

a ‘Work Plan for Development of Mid- and Long-Term Measures as a Follow-Up of the Initial IMO Strategy on Reduction of GHG Emissions from Ships’ (Work Plan, 2021).[31]

The Work Plan contains three phases. Phase I, ‘Collation and initial consideration of proposals for measures’, covers the period spring 2021 to spring 2022. During this phase, the purpose is to table various proposals and identify key issues relating to each proposed measure. Phase II, ‘Assessment and selection of measures to further develop’, takes place from spring 2022 to spring 2023. It builds on Phase I and seeks to identify candidate measures to develop further as a priority. The specific dates for Phase III, ‘Development of (a)measure(s) to be finalized within (an) agreed target date(s)’, will be agreed in conjunction with the revised IMO Strategy in 2023. During this phase, the aim is to prepare, based on the priority measures set out in Phase II, amendments or a legal framework for developing a new regulatory instrument.

The programme of follow-up actions has a list of activities and target timelines as depicted in the table below. Thus far, the programme by and large appears to be on track, as far as specific target dates have been singled out, such as the publication of the Fourth IMO GHG Study or delivering ship fuel oil consumption data to the IMO. Other activities are by nature processes that are ongoing.

Streams of activity	2018	2019	2020		2021	2022		2023
	MEPC 73	MEPC 74	MEPC 75	MEPC 76	MEPC 77	MEPC 78	MEPC 79	MEPC 80
Candidate short-term measures (Group A) that can be considered and addressed under existing IMO instruments[1]	Invite concrete proposals	Consideration of proposals	Consideration and decisions on candidate short-term measures that can be considered and addressed under existing IMO instruments e.g. further improvement of the existing energy efficiency framework with a focus on EEDI and SEEMP, ITCP[2]					
Candidate short-term measures (Group B) that are not work in progress and are subject to data analysis	Invite concrete proposals	Consideration of proposals	Consideration and decisions on candidate short-term measures that are not work in progress and are subject to data analysis, consistent with the Roadmap[3]					
			Data analysis, in particular from the IMO Fuel Oil Consumption DCS					
Candidate short-term measures (Group C) that are not work in progress and are not subject to data analysis	Invite concrete proposals	Consideration of proposals	Consideration and decisions on candidate short-term measures that are not work in progress and are not subject to data analysis e.g. National Action Plans guidelines, lifecycle GHG/carbon intensity guidelines for fuels, research and development[3]					
Candidate mid-/long-term measures and action to address the identified barriers	Invite concrete proposals	Consideration of proposals including identification of barriers and action to address	Progress made and timelines agreed on the development of mid- and long-term measures					
Impacts on States[3]	Invite concrete proposals	Finalization of procedure	Measure-specific impact assessment, as appropriate, consistent with the Initial Strategy, in particular paragraphs 4.10 to 4.13					
Fourth IMO GHG Study	Scope	Initiation of the Study	Progress report	Final report				
Capacity building, technical cooperation, research and development	Development and implementation of actions including support for assessment of impacts and support for implementation of measures							
Follow-up actions towards the development of the revised Strategy		Ship fuel oil consumption data collection pursuant to regulation 22A of MARPOL Annex VI (DCS)			Initiation of revision of the Initial Strategy taking into account IMO DCS data and other relevant information			Adoption of revised Strategy

Table. Stream of activities and timelines, as outlined in the 2018 programme of follow-up actions.[32]

These strategies and other documents supporting their implementation set out the framework and timelines for the IMO’s work regarding more specific binding and non-binding measures.

All strategy documents lead up to the 80th session of the MEPC in 2023, leaving the IMO and its membership less than two years to agree upon mid- and long-term measures so that these can be included in the revised and comprehensive IMO Strategy.

2.3.2 Existing international regulatory framework

EEDI

The first mandatory measures addressing GHG emissions from international shipping within the IMO regime were technical and operational measures, Energy Efficiency Design Index (EEDI) and Ship Energy Efficiency Management Plan (SEEMP), respectively. EEDI and SEEMP were adopted in 2011 by adding Chapter 4 to the MARPOL Annex VI, and these amendments entered into force in 2013. Both apply to all ships of 400 gross tonnage and above that are engaged in international voyages.[33] Both EEDI and SEEMP are goal-based standards in the sense that they do not prescribe a certain method for achieving the reductions.[34] They focus on per-ship emission reductions, rather than sector-wide reduction targets, but contribute to reduced emissions as more energy efficient ships use less fuel and emit less GHG.[35]

The EEDI index is based on a formula dividing the emissions (from main and auxiliary engines, subject to various correction factors) by the benefits for society (capacity and speed of the ship) and establishes index levels that new-built ships (differentiating between different categories of ships) must comply with before they are entitled to operate. The index introduces minimum standards of energy efficiency for new ships, in the form of an index – the attained Energy Efficiency Design Index (EEDI) – which is based on the amount of fuel (and CO_2 emissions) that the ship burns (and emits), at a given reference speed taken at 75 per cent of the Maximum Continuous Rating (MCR) of its main propulsion power under maximum cargo/loading capacity.[36] The required EEDI sets a minimum energy-efficiency level per capacity mile (tonne mile) for different ship types and size segments. The requirement for energy efficiency performance is to be made more stringent every five years, so that ships will gradually become more energy efficient.[37]

It applies to new ships, new ships that have undergone a major conversion, and new or existing ships which have undergone an extensive major conversion and are regarded as newly constructed ships by the Administration.[38] The EEDI value can be reduced by reducing engine power, fuel consumption or the carbon factor of fuel, or by increasing the deadweight or speed of the ship (without affecting fuel consumption). Technical options available currently include slimmer hull design, lightweight construction materials, more efficient engines, alternative fuels or complementary energy sources, such as solar or wind power (e.g. serving auxiliary and back-up systems).[39] The reductions are strengthened in five-year phases. Currently Phase 2 is underway (2020-2024), which requires 20% reduction for the EEDI relative to the EEDI reference line, and in Phase 3 (2025 and onwards) the reduction becomes 30%. EEDI has been

amended over the years to include a new ship categories. The EEDI currently concerns ship types that are responsible for approximately 85% of the total CO_2 emissions from ships.

The rule applies to all ships, of the covered twelve ship types ordered or having undergone major conversions as from 2017.[40] Each ship shall carry a certificate indicating its EEDI value,[41] to be issued by its flag state and checked by port-state control, irrespectively of flag.[42]

A series of supplementary guidelines have been adopted to assist in the calculation of the index values and reference lines, and for implementing the scheme more generally:[43]

1. 2012 Interim Guidelines for the calculation of the coefficient fw for decrease in ship speed in a representative sea condition for trial use
2. 2013 Guidance on treatment of innovative energy efficiency technologies for calculation and verification of the attained EEDI
3. 2013 Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI)
4. 2013 Guidelines for calculation of reference lines for use with the Energy Efficiency Design Index (EEDI) for cruise passenger ships having non-conventional propulsion
5. 2013 Interim guidelines for determining minimum propulsion power to maintain the manoeuvrability of ships in adverse conditions, as amended
6. 2014 Guidelines on survey and certification of the Energy Efficiency Design Index (EEDI), as amended
7. 2014 Guidelines on the method of calculation of the attained Energy Efficiency Design Index for new ships, as amended

The reduction factors and reference line values, which form the basis of the energy efficiency requirements, are to be reviewed subject to technical developments and the first adjustments have already been made.[44] However, since the measure only covers new ships (or major conversions), a significant time lag for its impact on global emissions is inevitable. Ships normally have a commercial life of some 30 years, and it will therefore take several decades until all ships have been built to the EEDI standards.

SEEMP

Reducing CO_2 emissions from ships is not only a function of how ships are designed. The ways in which they are operated entail significant reduction potential. Apart from slow steaming and operational measures aimed at optimizing arrival,[45] mechanisms for achieving better energy efficiency include improved voyage planning, more frequent cleaning of the hulls (underwater parts of the ship), ship/fleet energy management policies, planned engine maintenance, etc. It has been estimated that, by combining various operational measures and using only existing

technologies, GHG emissions from shipping could be reduced up to 75 per cent.[46] Such measures would obviously also provide benefits to owners in the form of fuel savings.

The new Chapter 4 to MARPOL Annex VI introduced in 2011 also included a provision aimed at reducing GHG from ships by means of operational measures. All ships above 400gt are, based on Regulation 22, required to have a Ship Energy Efficiency Management Plan (SEEMP). The plan seeks to help ship operators to improve the energy efficiency of a ship by means of operational measures (e.g. through improved voyage planning or more frequent hull cleaning, or introduction of technical measures such as waste heat recovery systems or a new propeller). The IMO also proposed that an energy efficiency operational indicator (EEOI) could be used as a monitoring tool to measure improvements over time.[47] However, the normative effect of the requirement is limited, as it only represents a requirement that a Ship Energy Efficiency Management Plan (SEEMP) exists. It does not include any standards on the content of the plan, nor any reduction targets that ships must meet.[48]

The 2016 Guidelines for the Development of a Ship Energy Efficiency Management Plan further concretized the implementation of the SEEMP.[49] According to the Guidelines, the SEEMP consists of either one or two parts, depending on the size of a ship. If a ship is below 5000 gross tonnage, its SEEMP needs only to include a four-step plan to improve energy efficiency including planning, implementation, monitoring, and self-evaluation and improvement.[50] If a ship is 5000 gross tonnage or more, it must also have a ship fuel consumption data collection plan. Still, the SEEMP lacks a control mechanism regarding both parts.[51]

EEXI

In 2021, the legal regime was further strengthened, through the introduction an Energy Efficiency Design Index for existing ships (EEXI) and a Carbon Intensity Indicator (CII) and CII rating. These amendments of MARPOL Annex VI were adopted at the 76th Session of MEPC in June 2021 and will enter into force in January 2023.

The EEXI complements the EEDI in terms of coverage by extending the principles of the EEDI from only new ships to all existing ships falling under MARPOL Annex VI.[52] Here, too, for each ship two values must be calculated, the attained Energy Efficiency Existing Ship Index (Regulation 23) and the required Energy Efficiency Existing Ship Index (Regulation 25).

The required EEXI is calculated as a certain share, based on a reduction factor that differs between ship types, of the EEDI reference lines (Regulation 25). The attained EEXI is ship-specific and indicates the estimated performance of the ship in terms of energy efficiency. It is calculated by the owner and shall, like the attained EEDI, be accompanied by the EEXI technical file which contains the information necessary for the calculation of the attained EEXI

and shows the process of the calculation (Regulation 23(1)). On the basis of this file, the attained index is then verified by the flag state administration or an authorized organization (in practice, classification society).

Like the EEDI, the EEXI is accordingly a 'one-off' exercise that must be undertaken only once for each ship, unless it undergoes major conversion. Once the indexes are calculated and verified, the ship will receive an International Energy Efficiency (IEE) certificate to demonstrate compliance.

Implementation of the EEXI is supported by a set of guidelines that were also adopted at 76th session of MEPC:

- the 2021 Guidelines on the method of calculation of the attained Energy Efficiency Existing Ship Index (EEXI)[53];
- the 2021 Guidelines on survey and certification of the Energy Efficiency Existing Ship Index (EEXI)[54]; and
- the 2021 Guidelines on the shaft/engine power limitation system to comply with the EEXI requirements and use of a power reserve[55].

CII

The 'Annual operational carbon intensity indicator' (CII) targets how ships are operated, rather than how they are built. It develops the rules of the SEEMP for larger ships (5000 gross tonnage and above) by requiring the determination of an annual reduction factor to ensure continuous improvement of the ship's operational carbon intensity, and to document the achieved annual operational CII.[56] As from 2023, evidence of carbon intensity reduction must be recorded in the SEEMP. Emissions data, that go beyond the existing fuel consumption requirement must be submitted through the IMO Data Collection System (DCS), depending on the ship type. From 1 January 2024, vessels will be issued with a Statement of Compliance, covering verified fuel consumption, attained carbon intensity reduction and an annual rating (A to E) based on carbon intensity reduction performance against the required carbon intensity reduction.

A set of non-mandatory guidelines were approved by the IMO, setting a carbon intensity reduction of 2% each year between 2023 and 2026. The annual target is to be reviewed by the IMO no later than 1 January 2026. Performance against this target will be used to provide the vessel its rating. Based on the CII, the ships are then rated A, B, C, D or E, referring to a major superior, minor superior, moderate, minor inferior, or inferior performance level. The carbon intensity reduction requirements were approved with no ship-specific correction factors, though these are likely to be revisited during 2022.

In relation to the amendments concerning CII and CII rating, SEEMP was also revised to include a description of the methodology that will be used to calculate the ship's attained annual operational CII and the required annual operational CII and implementation plan to achieve it (Regulation 26). A ship rated as D for three consecutive years or rated as E has to develop a plan of corrective actions to achieve the required annual operational CII. The SEEMP will be reviewed to include the plan of corrective actions. On the other hand, for ships rated as A or B, administrations, port authorities and other stakeholders are encouraged to provide incentives (Regulation 28).

Periodic SEEMP verification audits will be introduced to ensure plans are in place to achieve the targets and ensure correction plans are being followed where a vessel is rated E in any given year, or D in three consecutive years. The frequency and specific requirements of these audits is expected to be discussed further in 2022.

Failure to attain the CII targets will not, under the current rules, automatically result in operational limitations or other forms of sanctions.[57] However, many details about the practical applications of these measures remain to be settled through further guidelines, on, *inter alia*, exemptions, corrections, methods for setting the targets and on the enforcement of the rules.[58] The CII Rating system could also have broader implications that would stimulate a 'bottom-up' enforcement pressures, for example, with respect to shipping companies that form part of long and global value chains.[59]

DCS

To support these tools, a global data collection system for maritime transport was adopted in 2016 to address the absence of reliable ship emission data and to facilitate the development of further regulatory measures.[60] Starting from 2020, IMO's data collection system requires all ships above 5,000 gross tonnage to collect consumption data for each type of fuel oil they use, as well as other, additional, specified data including proxies for transport work. The data is reported by owners to the flag state on a yearly basis. Flag states issue a 'Statement of Compliance' to the ships that have been reported in accordance with the requirements, and subsequently transfer the data, in aggregated form, to an IMO Ship Fuel Oil Consumption Database. The IMO then produces an annual report to its Marine Environment Protection Committee (MEPC), summarizing the data collected.

Since its adoption, the MEPC has adopted a set of guidelines to further support and guide the implementation of the database:

- 2017 Guidelines for Administration verification of ship fuel oil consumption data
- 2017 Guidelines for the development and management of the IMO Ship Fuel Oil Consumption Database

- MEPC circular on submission of data to the IMO data collection system of fuel oil consumption of ships from a State not party to MARPOL Annex VI
- Sample format for the confirmation of compliance pursuant to regulation 5.4.5 of MARPOL Annex VI

This data collection system was preceded by the adoption of a regional EU Regulation on 'monitoring, reporting and verification' (MRV) in 2015. As discussed below in section 3.1, there are certain differences between the systems and it seems likely, despite ongoing efforts to align them, that some differences will persist.

2.3.3 Mid- and long-term measures

The Initial Strategy identified five measures for the mid-term (2023-2030), one of which is "new/innovative emission reduction mechanism(s), possibly including Market-based Measures (MBMs), to incentivize GHG emission reduction".[61] The long-term goals focus on pursuing the development and provision of zero-carbon or fossil-free fuels and facilitating the general adoption of other new/innovative emission reduction mechanisms.

MBMs refer to a broad range of measures that provide for economic incentives for ship operators to reduce their bunker fuel consumption.[62] They range from various forms of 'levies' or 'carbon taxes' on bunker fuel to efficiency credit trading programs and fully fledged 'cap and trade' emission trading schemes where emission rights could be sold and purchased on a market. This type of measures have the potential to generate significant funds, which could be used for emission reduction measures where they can be most cost-effectively implemented (including by emission reductions outside the realm of shipping, if so decided).

IMO is currently in the phase of tabling, assessing and comparing different options regarding development of mid- and long-term measures.[63] The tenth Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG 10) in October 2021 divided the proposals on mid- and long-term measures into three groups: a GHG levy; a cap-and-trade system; and a GHG fuel standard.[64]

GHG Levy

The most concrete proposal for a GHG levy is one put forward by the Marshall Islands and Solomon Islands,[65] echoing the thinking of many national shipowner's associations, and further developed into a comprehensive regulatory proposal by the International Chamber of Shipping (ICS) and the International Association of Dry Cargo Shipowners (INTERCARGO).[66] Under the proposal, the carbon levy "would be based on mandatory IMO climate contributions by ships, per tonne of CO_2 emitted, to an IMO Climate Fund" via adoption of a new Chapter to MARPOL Annex VI.[67] The proposal recommends amending MARPOL Annex VI to establish a levy-based MBM and an IMO Climate Fund and includes a draft text for the purpose. The proposal includes little financial information on the expected level of the levy or on the amount

of revenues it will generate, but offers a basis for discussing the administrative framework surrounding it. As to legal challenges, the co-sponsors state that they "are not aware of any legal reason why MARPOL Annex VI cannot be amended to establish an MBM if the Parties to MARPOL Annex VI wish to do so," albeit that the recognize that the Committee might decide that a self-standing instrument would be more appropriate (but time-consuming).[68]

The proposal contains three annexes that set out in detail how MARPOL Annex VI could be amended to accommodate the GHG levy. Annex 1 contains the proposed draft amendments to MARPOL Annex VI, including a new Chapter that establishes the IMO Climate Fund. Its appendix also illustrates how the form of the Statement of Compliance regarding contributions to the IMO Climate Fund might look. Annex 2 entails a Draft Resolution concerning adoption of guidelines for the establishment and governance of the IMO Climate Fund under the new chapter of MARPOL Annex VI. Annex 3 is a Draft Resolution regarding determination of a fixed rate and value for the IMO climate contribution. As far as usage of the funds are concerned, the co-sponsors note that research and development for the maritime sector is already covered by another proposal,[69] and limits the use to of the IMO Climate Fund to administrative costs and to "provide support … to assist maritime GHG reduction efforts of developing countries, in particular LDCs and SIDS, including deployment of bunkering infrastructure for the supply of low-carbon and zero-carbon fuels for use by international shipping".[70] So far, it is the most detailed regulatory proposal put forward since the adoption of the Initial Strategy, demonstrating how an MBM could function on a global basis.

The arguments for choosing a levy-based MBM include that it "would be least likely to result in distortion of international shipping markets which would interfere with efficient maritime trade", it would be the most likely mechanism to be successful in expediting the uptake and deployment of zero-carbon fuels by closing the price gap with fossil fuels, as the levy would be stable and fixed and thus minimize uncertainty regarding long-term investment decisions for zero-carbon technologies, and it would be the easiest to establish quickly.[71] Moreover, shipowners' organizations have argued that "if the Organization [IMO] is to develop an MBM as soon as possible within the timeline agreed under the Initial IMO Strategy, a levy-based system will be the easiest to establish quickly while meeting those principles already agreed by the Committee to use as a reference for assessing proposals for MBMs."[72]

The ISWG-10 report, however, also acknowledges a main drawback in a levy:

> The main drawback to a GHG levy is it gives no guarantee that it will achieve the levels of ambition. Given no direct linkage with either carbon intensity or GHG emissions, implications of a levy on the levels of ambitions are hard to tell. If the new fuels do not actually exist in a form and scale which can be deployed by international shipping, the levy will be merely a revenue raising exercise, which will in turn impede the sustainable development of international shipping.[73]

When comparing the levy to an emissions trading system, the ISWG noted:

> The great advantage of the carbon levy is that MEPC will be fully in control of what the quantum of the levy should be, both initially when first implemented, and at the five-year intervals which we have suggested, in line with the proposal of the Marshall and Solomon Islands that there should be a five year "ratchet" when the carbon levy is increased. Under an emission trading system, however, where the price of allowances is set by the market and the costs can be variable and volatile, the conduct of an IMO impact assessment becomes far more difficult, especially for the longer term given that any MBM IMO adopts is likely to be in place for 20 to 30 years.[74]

Cap-and-trade system

A cap-and-trade system refers to establishing a global emissions trading system for shipping under the auspices of the IMO. A proposal from Norway at the ISWG-GHG 10 notes that setting a cap on total emissions from shipping would have the benefit of ensuring the reduction of total GHG emissions and thus pave the way for international shipping to meet its ambition of halving the emissions by 2050.[75] The proposal suggests that the legal framework for an emissions trading system could be established through amendments of MARPOL Annex VI, including the main obligation requiring a ship to annually surrender allowances corresponding to the GHG emissions of the ship, and by developing a new instrument, a Ship Emissions Trading Code, that would regulate auctioning, trading and financial streams.[76]

Norway concludes that there are several reasons for choosing a cap-and-trade system over a levy-based system. First, "a cap-and-trade system directly mandates an emission level designed to meet the absolute GHG emission target in 2050, while it is difficult to know the implications on the emission level of a levy." Second, Norway argues that it would incentivize emissions reductions better than a fuel levy because it avoids the split incentives barrier that refers to a situation where the investment decision-maker does not directly experience the cost and cost savings: "under a cap-and-trade system it is the entity that normally decides actions to reduce emissions – the ship owner – that will also be the one required to pay the carbon price directly and explicitly. If the levy is placed on marine fuel it will in many cases be the charterer that pays the carbon price, and the ship owner will only see the cost indirectly."[77]

To date, Norway's proposal is the most detailed proposal for a cap-and-trade system put forward, and the commentary from ISWG-GHG 10 is to large extent based on Norway's proposal. The Norwegian proposal does not include draft legal texts, but previous Norwegian proposals have included detailed draft texts on the matter, including notably a submission from 2010.[78] Those hesitant towards the 2021 proposal are, *inter alia*, concerned that "if the number of available emission allowances is progressively withdrawn without knowing what the future demand for trade might be, there would seem to be a risk that trade by sea could in effect be rationed, with serious impacts on national economies and sustainable development."[79] There was also concern over the practical complexities involved in establishing such a system, in particular regarding how to set a meaningful cap trajectory, how to set the rules for auctioning,

trading and surrendering of Ship Emission Units, or how the revenues from the auctioning would be utilized.[80]

Low GHG Fuel Standards

There have also been proposals for a low GHG fuel standard (LGFS), both by Norway[81] and by a coalition of co-sponsors consisting of several States and the European Commission.[82] The LGFS would prescribe a decreasing limit value for the average GHG emissions intensity of fuels used by ships and could thus promote a quicker use of renewable and low-carbon fuels in international shipping. The proposal would ensure a more predictable transition towards zero-GHG emission fuels, regardless of price developments of the fuels, and would allow ships a high degree of flexibility in choosing how to comply. The co-sponsors recommend that "a LGFS would prescribe a limit value for the GHG emissions intensity of fuels used by ships (for example, averaged over a year period) expressed in e.g. grams CO_2eq/MJ."[83]

Such measure could be adopted as a regulatory measure through MARPOL Annex VI and other supporting instruments such as guidelines.[84] This is also what Norway proposes, adding that "the main legal provision will be to require a ship to achieve an annual average fuel GHG emission intensity below a defined level." Norway also notes that in developing a LGFS, the upcoming Lifecycle GHG and Carbon Intensity Guidelines for maritime fuels should be taken into account.[85] As to timing, the document with the larger number of co-sponsors provides that "it is essential that the LGFS and/or another measures proposed in document MEPC 76/7/15 be adopted by the middle of this decade. Only by implementing the measures in the next few years will private enterprises have an incentive to continue to invest in the development of technology and infrastructure."[86]

2.3.4 Supporting measures

Apart from the proposals aimed at legal developments, a number of proposals for supporting measures and actions have been made at IMO in the past few years to support the objectives of the Initial Strategy. Through Resolution MEPC 323(74) in 2019, IMO members were invited to "promote the consideration and adoption by ports within their jurisdiction, of regulatory, technical, operational, and economic actions to facilitate the reduction of GHG emissions from ships." Such actions could include *inter alia*:

1. supporting the viability of business cases for ship and in-port renewable power-to-ship solutions and the use of these solutions;
2. encouraging cooperation between ports, bunker suppliers, shipping companies and all relevant levels of authority in addressing the supply and availability of alternative low-carbon and zero-carbon fuels, including the legal, regulatory and infrastructural barriers to the efficient and safe handling and bunkering of alternative low-carbon and zero-carbon fuels;
3. promoting incentive schemes that address GHG emissions and sustainability of international shipping and encouraging more incentive providers and shipping companies to join these; and
4. supporting the industry's collective efforts to improve quality and availability of data and develop necessary global digital data standards that would allow reliable and efficient data exchange

between ship and shore as well as enhanced slot allocation policies thereby optimizing voyages and port calls and facilitating just-in-time arrival of ships;[87]

Building on this Resolution, the Ship-Port Interface Guide is a call for action that aspires to support the maritime industry in achieving IMO's emission reduction goals and to contribute to greener shipping in the ship-port interface. It presents eight practical measures that can be implemented with limited capital: facilitate immobilization in ports, facilitate hull and propeller cleaning in ports, facilitate simultaneous operations in ports, optimize port stay by pre-clearance, improve planning of ships calling at multiple berths in one port, improve ship/berth compatibility through improved Port Master Data, enable ship deadweight optimization through improved Port Master Data, and to optimize speed between ports.[88]

Another important supporting measure relates to the overall assessment of the climate impact of different fuels. Current IMO regulations only address onboard tank-to-propeller CO_2 emissions from fossil fuels. However, the IMO is working on guidelines to determine lifecycle CO_2 and GHG emission factors for all types of fuels, including biofuels and electrofuels. It is estimated that at least 70% of current marine fuels need to be changed or modified to meet IMO's regulatory ambitions as outlined in the Initial Strategy.[89] However, only a small number of vessels use alternative energy sources and these options come with differing technical maturity and infrastructure availability. Yet, by combining energy efficiency measures with a switch to low or zero-carbon energy carriers, there is an excellent chance for very low and eventually zero GHG emissions from shipping to be achieved.[90] To better understand a range of low-carbon and zero-carbon energy source options potentially available in the maritime sector, consultancy firm Ricardo has been contracted by the IMO to carry out a study for the purpose of identifying "relevant sustainability criteria and lifecycle GHG emission assessment / calculation methods for the production and use of marine fuels."[91] The study investigates the lifecycle of marine fuels, that is, Well-to-Wake (WtW) GHG emissions. These cover fuel extraction and production processes, transport, and distribution (Well-to-Tank, WtT) and use in a vessel to produce useful work (Tank-to-Wake, TtW).[92] The IMO Life Cycle Assessment (LCA) guidelines will set a common framework for the lifecycle assessment of the GHG intensity of marine fuels, covering both the upstream (WtT) and the downstream (TtW) parts.

2.4 Assessment of global measures

Despite decades of work aimed at reducing GHG emissions from ships, the IMO's progress in terms of concrete emission reductions is fairly limited to date. So far, applicable regulation consists of the EEDI with limited effect in the short term and the SEEMP without binding force. Throughout the process, the work at IMO has been hampered by uncharacteristically difficult political divides among its membership, but also pressures from other regulatory authorities at global and regional level. However, several recent developments in this field indicate a shift towards a better regulatory environment, allowing the IMO to focus on meeting the aims of its Initial Strategy. This may give reason for some optimism with respect to

regulatory progress in the future. The long-standing battle on institutions and governing principles has entered a period of consolidation and relative 'truce' since the adoption of the Paris Agreement in 2015 and with the unanimous approval of the Initial IMO Strategy. The regime currently provides for ‘dynamic stability’, with the IMO clearly positioned in the driving seat. The truce is not without its conditions, however, and a key milestone for measuring the IMO's success in the field will be in 2023.[93] Much of the result will depend on how the organization manages to face the challenge of MBMs and, in the longer term, on the pace of the industry's shift towards alternative zero-carbon fuels.

While reaching consensus on the goals and principles is significant, the Initial Strategy is still far from producing any reductions in emissions from shipping. The document is an expression of objectives rather than of actions, in a legally non-binding format, and includes no concrete undertaking in the form of reduction measures to be undertaken. In reality, existing technologies may not be sufficient to achieve the longer-term reduction goals. Moreover, even if the reduction goals expressed in the Initial Strategy are achieved, these will not be sufficient to meet the climate goals of the Paris Agreement.[94]

Advancements made over the past few years indicate important improvements, with respect to the short-term measures. EEXI and CII represent important improvements of the previous regime by broadening the scope, strengthening the technical performance requirements and by providing some more teeth to the operational scheme for larger ships.

The most important challenges for now relate to mid-term measures and in particular MBMs. Work on this has only recently resumed, and choices between the measure will have to be made soon, based on demanding criteria set out earlier (in 2008), under which any market-based measure adopted should be “effective in contributing to the reduction of total global greenhouse gas emissions” as well as “cost-effective, binding and equally applicable to all flag states in order to avoid evasion” and able to minimize competitive distortion and without penalizing world trade and growth. In addition, the measures should be goal-based, not prescriptive, promote innovation and research and leading technologies while also being ”practical, transparent, fraud free and easy to administer.”[95]

It is too early to speculate on what the outcome might be, but the most realistic scenario for now seems to be the least complex one, based on a fuel levy collected to a fund for stimulate sustainable climate solutions for shipping. The recent proposal at EU level to include shipping in the regional ETS has probably increased the prospect of a levy-based fund at IMO, given that most states supporting a global cap and trade system will be covered by a prospective EU ETS.

In the long-term, work needs to focus on new types of fuels to make possible the shift to carbon neutral shipping. Without clear rules on how new fuel types are to be used, handled and stored on board ships and beyond, the necessary shift towards sustainable low carbon fuels will not take place. An important task will accordingly be to prepare the ground for new types of marine fuels by adopting the necessary technical standards.

What is also clear, and critically important, is that the work at IMO has generated wide-ranging activities within the industry aimed at finding technical solutions to meet the objectives. Apart from massive research and development projects relating to new types of fuels, industry has also increasingly started to develop tools for assessing and marketing low carbon solutions, allowing their customers to choose their transportation on the basis of carbon footprint and other sustainability performance criteria.[96]

As to legal constraints, IMO being an intergovernmental body operating at global level, has broad discretion in choosing its measures. Representing a 'competent international organization' within the meaning of UNCLOS it will develop the 'generally accepted rules and standards' foreseen and indeed has a responsibility to do so in view of the trust placed in the organization by other international bodies. The IMO's own founding convention provides for a broad mandate of measures for the organization to act in the field of shipping, and to the extent there are other legal impediments posed by specific legal fields, such as international trade law, they will presumably be mitigated by the global nature of the effort combined with the seriousness and urgency of the matter under regulation. It is easy therefore to agree with the conclusion of the submission by Belgium, Marshall Islands and Solomon Islands summarizing that "the only legal limit upon what measures can be agreed at IMO is the agreement of the members themselves… If the members of the Organization now agree that in order to reduce the impact of the maritime sector on the climate, IMO should implement a mid-term measure, of whatever form, there is nothing in the Convention preventing this."[97]

Law thus neither provides an obstacle for the development of further measures in this regard nor a tool for deciding on what market-based measure should be chosen. As to the formal type of the rule to be developed, however, it seems agreed that new rules, including MBMs, should be included in Annex VI of the MARPOL Convention. This solution would make it possible to benefit from the treaty law invention of MARPOL that makes an amended rule applicable to all existing parties, as long as they do not explicitly object to it. The so-called 'tacit-acceptance' procedure accordingly by-passes the need for additional ratification processes by states, which could easily delay its applicability with several decades. Including the rules in an existing annex of MARPOL thus appears to be essential for reaching the applicable climate goals.

3 The EU activities

3.1 Earlier climate policy

Since several decades, the EU, and in particular the European Commission has been critical of the format and pace of the development of GHG reduction measures at IMO. The EU has taken a very broad interest in climate policy more generally and has had relatively little understanding for the needs for special solutions, delays or exemptions for shipping. The absence of emission reduction rules for shipping has repeatedly been indicated as a concern for the Union, more recently coupled with the observation that shipping is the only sector which is not expressly addressed by an EU emission reduction objective or legislation to contribute to the EU general CO_2 reduction targets.[98] Warnings have at times been made that EU rules targeting shipping may be introduced in this area if satisfactory global rules cannot be agreed at IMO.[99]

Yet, at least at policy level, the starting point for the EU has traditionally been that it will only act in the field of GHG and shipping if global regulation fails.[100] The EU has repeatedly accepted to postpone its threat of unilateral action to allow the IMO time for concretizing its policy or, more recently, its initial strategy.[101] The latest position at EU-level, that is, endorsed by all institutions, is found in a recital to a Directive from 2018:

> Under the Paris Agreement, the Union and its Member States have undertaken an economy-wide reduction target. Efforts to limit international maritime emissions through the International Maritime Organisation (IMO) are under way and should be encouraged… The Commission should keep this under regular review, and should report at least once a year to the European Parliament and to the Council on the progress achieved in the IMO towards an ambitious emission reduction objective, and on accompanying measures to ensure that the sector duly contributes to the efforts needed to achieve the objectives agreed under the Paris Agreement. Action from the IMO or the Union should start from 2023, including preparatory work on adoption and implementation and due consideration being given by all stakeholders.[102]

The current EU-deadline for IMO measures that "duly contribute" to achieving the climate goals of the Paris Agreement is accordingly in 2023. What the EU expects from the global regime in terms of reduction standards has not been specified, however, which tempers the effect and credibility of the EU's threat.

In its 2013 policy document on an EU climate strategy, the Commissioned identified three substantive steps to reach the climate goals:[103]

1) Monitoring, reporting and verification of CO_2 emissions;
2) GHG reduction targets for the shipping sector; and
3) Further measures, including MBMs in the medium to long term.

Neither technical design measures nor operational requirements have accordingly formed part of the measures that the Commission envisages for shipping. Instead, the substantive focus of EU's climate policy has been on market-based measures, which effectively means inclusion of

shipping into the existing EU emission trading scheme.[104] A corresponding move was made with respect to aviation in 2008, but was only partially implemented, in view of protests from international airlines against covering non-EU flights.[105] Until recently (see below), however, threats of an EU regulation for shipping have not been accompanied by concrete proposals.

As to reduction targets, the 2013 Commission strategy referred to global reduction targets set by the UNFCCC and general targets set by the EU, but set no specific reduction targets for shipping, at EU-level or beyond.

By contrast, the first of the above steps resulted in a new EU regulation already in 2015.[106] To back potential future regional reduction measures, the EU has developed its own scheme for monitoring, reporting and verification of CO_2 emissions from ships. The MRV Regulation and the IMO's global data collection systems are largely similar when it comes to data that shall be included in the report, but there are significant differences between the two systems, notably in relation to the scope (global/regional reach, coverage of port emissions), the calculation of cargo carried, transparency of data, and the process for verifying data submitted by shipowners.[107] Where the IMO data collection system places the responsibility for the monitoring and reporting on the flag state, the EU system is based on independent verification of the data by accredited third parties and based on port state jurisdiction in the sense that it only covers ships which call at a port of the EU.[108]

An EU proposal to align the two systems has been adopted,[109] but even if approved in the form proposed by the European Commission, it would not amount to full harmonization between the regional and global regimes.[110] It is thus unlikely that all differences will be done away with, even once an alignment measure has been adopted by the EU. A more probable outcome of a forthcoming alignment is therefore a largely harmonized reporting procedure, but apart from that, the parallel regimes in EU and globally look set to continue.[111]

In summary thus, it is clear that the EU for a long time has been an important catalyst in this field at global level and a force behind many of the actions at IMO to date. It has been more vocal than other bodies pressurizing the IMO and has had a major role in advancing the global data collection system. In addition, the EU and the European Maritime Safety Agency undertake a significant amount of work behind the scene to support e.g. fact-finding and capacity building measures and by supplying data to member states and others, contributing to studies, developing methodologies etc.[112] However, it was not until the summer of 2021, that the Commission presented more detailed plans for how it concretely wishes to include shipping in the regional climate change reduction schemes. This happened through the so-called ‘Fit for 55’ proposals, of which three proposals in particular have a direct bearing on shipping.

3.2 Fit for 55 proposals

3.2.1 General

With the arrival of the new Commission led by Ursula van der Leyen in September 2019, the Commission's focus on climate change was significantly strengthened. An overarching policy known as the 'Green Deal' made climate change a main priority for the Commission and this has also impacted other EU institutions. The Green Deal is a strategy that "aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are not net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use."[113] As part of the Deal, the Commission reviewed all its climate-related policy instruments to increase the EU's greenhouse gas emission reductions target for 2030 to at least 50% and towards 55% compared with 1990 levels in a responsible way.[114] The European Climate Law now includes the target for reducing net emissions by at least 55% by 2030 compared to 1990 and for being the first climate neutral continent by 2050.

To achieve this, and as a result of the review of its climate-related policy instruments, the Commission presented legislative package 'Fit for 55' on 14 July 2021, in which the Commission concretized its policy and ambitions significantly across a range of policy areas and economic sectors: climate, energy, and fuels, transport, buildings land use and forestry. The package includes five entirely new measures, and eight substantial amendments to existing ones.[115] It also covers the maritime sector, regarding which the Commission notes that it will both pursue domestic policies and continue to work with partners at international level through the IMO.[116]

While the Commission has welcomed the recent progress in the IMO,[117] it considers these measures insufficient to decarbonize international shipping and thus proposes a basket of EU measures to increase the contribution of maritime transport to the EU climate efforts as part of the Fit for 55 legislative package in the context of the Green Deal. This basket of measures contains: the inclusion of shipping into EU emissions trading scheme ('EU ETS Directive'); the 'FuelEU Maritime' initiative aiming to increase demand and deployment of renewable alternative transport fuels ('FuelEU Maritime Regulation'); and removing the current taxation exemption regarding fuel used by ships ('Energy Taxation Directive').[118] The three measures are discussed separately below, with a particular focus on their scope, liable person, enforcement measures and robustness.

3.2.2 Inclusion of shipping into the EU ETS

Introduction

Through the 'Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation

(EU) 2015/757' (hereinafter, 'the ETS proposal'), the Commission seeks to include international shipping in the regional ETS system that has been in operation since 2005. In this regard, the Commission takes note of the European Parliament's support for the extension of the EU ETS to cover also maritime transport emissions from 2023.[119]

As regards the link between the EU measure and potential future IMO measures, the proposal includes a review clause in Article 3ge. In the event that the IMO adopts a global market-based measure to reduce greenhouse gas emissions from maritime transport, and in any case before the 2028 global stocktake at the IMO, the Commission will present a report to the European Parliament and to the Council to assess such measure. Furthermore, the Commission may also follow up with a legislative proposal to amend the EU ETS Directive. However, until then the Commission is set to proceed with the current ETS proposal which is currently under negotiation and to which Member States are currently formulating their positions. This represents a major shift compared to previous policy statements on the matter, as the EU institutions no longer wait for IMO action before they act, but engage in negotiations of a regional measure in parallel to the global discussions.

Scope

To achieve the increased climate ambition and the overall target of a 55% decrease in greenhouse gas emissions in 2030 compared to 1990, the Commission proposes to include in the EU emissions trading scheme sectors that are currently not in its scope, including, but not limited to, maritime transport.[120] The ETS proposal amends "the definition of "emissions" in Article 3(b) to include emissions from ships performing a maritime activity, expands Chapter II of the Directive to cover "aviation and maritime transport", adds maritime transport as a new activity in Annex I, as well as adds new definitions to Article 3 concerning shipping companies, and expands Chapter II to maritime transport by inserting new Articles 3g to 3ge.[121] Pursuant to Annex I (c)(vii), the scope of the proposed Directive is aligned with the MRV Regulation, covering "maritime transport activities of ships" and "greenhouse gases" covered by the MRV Regulation 2015/757 (MRV Regulation).

The proposed EU ETS Directive thus exempts ships below 5000 gross tonnage.[122] Other exempted ship categories are warships, naval auxiliaries, fishing vessels, and government vessels used for non-commercial purposes. Moreover, inland waterway transport and all voyages for purposes other than transporting cargo or passengers for commercial reasons are excluded.[123] In line with the MRV Regulation, which only covers carbon dioxide emissions currently, also the EU ETS extension to maritime transport would cover only carbon dioxide emissions in the first phase.

The maritime transport sector is to be phased-in to the ETS gradually, from 2023 to 2025. For 2023, 20% of verified emissions must be reported, for 2024, 45% and for 2025, 70%.

Consequently, "to the extent fewer allowances are surrendered in respect of verified emissions for maritime transport during those years, the amount of allowances not surrendered should be cancelled."[124] 2026 is accordingly the first year in which the shipping companies have to surrender 100% of their verified emissions as per Article 3ga. The sector would not receive any free allocation of allowances and all allowances thus need to be auctioned. While this is not explicitly stated in the proposal, it can be deduced from the fact that the proposal does *not* specify that the Commission Decision on the 'Transitional Union-wide rules for harmonized free allocation'[125] would apply to shipping.[126]

Among the different options on how to include emissions of maritime transport in the system, the proposal opts for a route-based scope. This refers to choosing maritime emissions linked to the EU/EEA as a starting point, as opposed to choosing for example a flag-based approach.[127] Consequently, the geographical scope of the measure is defined by the starting and finishing point of the covered ship movements, based on the first and last port of call within or outside the EU/EEA.[128] Article 3 of the proposal provides that the EU ETS would cover 100% of emissions from intra-EU/EEA voyages, 100% of emissions at berth in an EU/EEA port, and 50% of emissions from extra-EU/EEA voyages. The geographical scope is thus not limited to marine areas under the jurisdiction of Member States, but depends on the route of the ship and may extend to other continents. This has implications not only for the allocation of and the surrender requirements for allowances,[129] but also for the international law elements of the proposal discussed in section 3.3 below.

According to draft Article 9, the Union-wide quantity of allowances will be increased by 79 million allowances for maritime transport in the year following its entry into force, and the linear reduction factor will be 4,2 %. This should ensure that "the overall quantity of allowances ('cap') will decline at increased annual pace resulting in an overall emission reduction of sectors under the EU ETS of 61% by 2030 compared to 2005."[130] This means that the maritime sector would not have a separate 'maritime' cap within the system. An open EU ETS would thus allow trading of emission allowances with other sectors, and tightening the stringency of the system as whole would be dealt with a common linear reduction factor.[131]

Application in a nutshell

Apart from the specific rules targeting the inclusion of shipping into the EU ETS, shipping will eventually be subject to the same rules that apply to other sectors under EU ETS Directive, e.g. rules regarding auctioning, the transfer, surrender and cancellation of allowances, penalties and registries apply also in the maritime transport sector.[132] With respect to the applications that are specific to shipping, the ETS proposal seeks to build on the MRV Regulation, and proposes a number of amendments to the latter to secure that the two systems function together.

For example, shipping companies need to develop monitoring plans for the purpose of the EU ETS. Under the proposed amendment of Article 6 of the MRV Regulation:

> Within three months of [date of entry into force of revised ETS Directive], companies shall submit to the responsible administering authority a monitoring plan for each of their ships falling under the scope of this Regulation, which shall first be assessed as being in conformity with this Regulation by the verifier.

The shipping companies (and verifiers) also need to open an account in the Union Registry by sending a request to the national administrator (for example in Finland, the Finnish Energy Authority). The Union Registry serves to guarantee accurate accounting for all allowances issued under the EU ETS and it keeps track of the ownership of allowances held in electronic accounts.[133]

The next phase consists of gathering the data for ongoing monitoring and reporting and acquiring the emission allowances. As the current proposal does not allow any free allocation for shipping companies, companies need to acquire the emission allowances needed through auctioning or otherwise buying them from the market. The companies to prepare an emissions report for every calendar year, and based on the emissions report, companies need to determine the aggregated emissions data at company level (Article 11a(1) of the amended MRV Regulation). To guarantee transparency, independent accredited verifiers have to validate the emission reports submitted by companies and issue a verification report.[134] The companies have submit the verified aggregated emissions data to the national administering authority by 31 March each year, pursuant to amended Article 11a of the MRV Regulation.

Following the phase-in years, the number of emissions allowances and the emissions of a shipping company must match each other per calendar year. Each year, by the end of April, the shipping company needs to surrender the adequate number of allowances to cover its emissions, which the national administrator then cancels. If the shipping company does not surrender the required amount of emission allowances, it has to pay a penalty fee.

Shipping companies are administered under the EU ETS by a national administering authority. Article 3(w) defines 'administering authority in respect of a shipping company' to mean "the authority responsible for administering the EU ETS in respect of a shipping company in accordance with Article 3gd". In practical terms this signifies that "each shipping company falling within the scope of application of the EU ETS is attributed to a Member State – the administering authority – for its administration under the Directive. The administering authority is determined based on where the shipping company is registered. If the company is not registered in a Member State, it is attributed to the Member State where it had the highest number of port calls in the two previous monitoring years."[135] Only one Member State should be accordingly responsible for each shipping company.[136] Article 3gd provides obligations to

the Commission with regard to publishing and regularly updating a list of shipping companies and their administering authorities.

Article 3gb of the proposal stipulates that the administering authority shall ensure that a shipping company under its responsibility monitors and reports the relevant information and submits aggregated emissions data at the company level to the administering authority in line with Chapter II of the MRV Regulation, and this information must be verified according to the verification and accreditation rules in Chapter III of the MRV Regulation (Article 3gd).

The revenues from the EU ETS are allocated to the Union budget and Member States and used for various purposes in the realm of tackling climate change.[137]

Responsible entities

The structure of the maritime sector involves a range of ownership and commercial arrangements and there are issues around defining the person or entity that is accountable for complying with the legislation. The situation is complicated by the fact that ship ownership and operation often lie in the hands of different actors, with shipowners having control over technical improvements of the ship and ship operators (including charterers) being in charge of implementing operational emission reductions.[138]

In the ETS proposal, the responsible entity is the 'shipping company'. Article 3(v) defines the term to mean "the shipowner or any other organisation or person, such as the manager or the bareboat charterer, that has assumed the responsibility for the operation of the ship from the shipowner and that, 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, set out in Annex I to Regulation (EC) No 336/2006 of the European Parliament and of the Council." Linking the definition to shipping company with the ISM Code in this way has benefits in terms of identifying them through their IMO number, which is a measure meant to enhance maritime safety, security, environmental protection, and prevention of maritime fraud.[139] Another argument for choosing the shipping company to be the responsible entity was administrative burden: had the ship been chosen as the responsible entity, the number of entities would have been considerably higher. The Commission estimates that the amount of shipping companies involved in the scope of the ETS proposal is around 1600, whereas the amount ships is around 12 000.[140] Furthermore, in view of the close link between the EU ETS Directive and the MRV Regulation, it is desirable that the terms used in the two instruments match. The proposed amendments to the EU ETS Directive is almost identical to the one in Art 3(d) of the MRV Regulation.

With respect to the broad range of ownership and commercial arrangements in the shipping sector, Recital 20 of the ETS proposal clarifies that "in line with the polluter pays principle,

the shipping company could, by means of a contractual agreement, hold the entity that is directly responsible for the decisions affecting the CO_2 emissions of the ship accountable for the compliance costs under this Directive. This entity would normally be the entity that is responsible for the choice of fuel, route and speed of ship." Such entity could be, e.g., a bareboat or time charterer, or other 'operator' of the ship, depending on the contracts concerned.[141]

The approach has nevertheless been criticized, *inter alia* by ECSA, on the grounds that it addresses only the shipping company in a binding manner, but not the commercial operator.[142] Instead, ECSA proposes that there should be an explicit legal *requirement* to pass the costs of the EU ETS from the shipping companies to the commercial operators in the context of a contractual agreement.

> Under this policy alternative, an article should be added requiring that in line with the 'polluter pays' principle, by means of a binding clause under a contractual agreement, the entity that is responsible for the decisions affecting the CO_2 emissions of a ship shall bear the costs arising from the implementation of this Directive. This entity would be the entity that is ultimately responsible for the purchase of fuel and the choice of route and speed of the ship.[143]

By contrast, e.g. the World Shipping Council has supported the current definition of a shipping company because it takes into account the diverse vessel owner/vessel operator arrangements and relationships, and recognizes the shared agency between shipowners and ship operators.[144] The WSC notes:

> The value of using the current company definition is amplified over a vessel's lifetime, as it passes to second- and third-hand control. The EC's proposal is consistent with the international nature of fleet operation, ownership, and control, aiding EU priorities and for IMO agreements and measures to reduce GHGs in shipping.[145]

However, it is not clear from the proposal, even if it does provide the possibility to pass through the costs of emissions to the commercial operator through a contractual agreement, what it means in the context of the EU ETS. The proposal does not elaborate the legal implications regarding a responsible entity and compliance with the Directive in the event of a contractual agreement, considering also the variety of arrangements regarding the allocation of costs when a vessel is hired under different types of charter-parties and the freedom of contract that applies in this field.[146] In the absence of a direct obligation targeting the commercial operator or any further elaboration regarding the interpretation of a responsible entity in these situations, there is a potential for disputes.

> This may imply that a company would need to either charge emission related cost at the end of the contract when a charterer reports emissions from its operations, or charge a "deposit" from the outset whereby the unused money would be returned to the charterer in the end of the contract period. A charterer could also purchase allowances and transfer them to the company, which will then surrender them to the regulator.[147]

Lack of clarity regarding the position of the shipping company's contractual partners also has implications for the database of allowances, the Union Registry. A charterer would not, under

the present proposal, be able to transfer emissions allowance units without opening an account in the Union Registry, and such an arrangement would multiply the administrative burden of the system in that regard. Recent efforts by the European Parliament to limit the obligation of shipowners in this regard have met with immediate opposition by the World Shipping Council.[148]

Enforcement & sanctions

The general EU ETS rules on penalties apply to maritime transport. Pursuant to Article 16(3), a shipping company that does not surrender sufficient allowances by 30 April of each year to cover its emissions from the preceding year will be held liable for the payment of an excess emissions penalty. The excess emissions penalty is 100 euros for each tonne of carbon dioxide equivalent emitted for which the shipping company has not surrendered allowances. The national administering authority deals with emissions penalties.

Additionally, Article 16(11a) stipulates that if a shipping company has failed to comply with the surrender requirements for two or more consecutive reporting periods and also other enforcement measures have failed to ensure compliance, the competent authority of the Member State of the port of entry can issue an expulsion order and following that and appropriate notifications, every Member State (except the Member State whose flag the ship flying) shall refuse entry of the ships under the responsibility of the shipping company into its ports until the company fulfills its surrender obligations. Moreover, the Member State whose flag the ship is flying can order the ship to be detained until the shipping company fulfills its obligations.

Robustness (loopholes)

The inherent risk of a regional emissions trading scheme is carbon leakage. The risk of carbon leakage depends on practical feasibility, the carbon price level and on the geographical scope. Carbon leakage may occur e.g. in the form of evasive port calls, transshipment, modal shifts, and using smaller ships:

a) adding a new port call outside the EEA in a journey to minimise the amount of emissions in the ETS scope (Evasive port calls);
b) unloading goods in a non-EEA port and loading it into another ship to reach the final destination (Transhipment);
c) shifting demand to other transport modes, although there would be no leakage if these other modes are covered by the ETS;
d) using ships below the threshold defined in the EU maritime MRV regulation (smaller vessels);
e) assigning their best performing vessels to EU related voyages while keeping the less performing ones for non-EEA trade routes (fleet optimisation).[149]

From a ship's perspective, evasion becomes profitable if the carbon dioxide price is higher than the extra cost caused by evasive port calls. To reduce the EU ETS compliance costs, ships might decide to add an additional, strategic port call just outside the EU ETS or, in the case of

transhipment, decide to switch to a hub outside the EU.[150] The risk of evasion is higher on longer routes and also depends on the vessel type. A high carbon price increases the risk, as well as geographical scope that includes extra-EEA voyages. Regarding transshipment, it is particularly container ships that may be tempted to increase use of nearby competing transshipment hubs, however, for other types of vessels it is less likely that they would set up transshipment for the sole purpose of evasion.[151]

To address this, Wissner et al. have suggested that "specific rules could be applied to high evasion risk ports, e.g., always the last two legs of a journey are included for these ports."[152] In this regard, monitoring of evasive port calls practices would be required to understand these patterns, and the Commission suggest that monitoring could rely on vessel tracking information and maritime freight statistics and based on this, addition measures can be considered after the proposed measures enter into force and practical experience is gained first.[153] For example, calling a Russian port first and then a Member State port in the Baltic Sea region could be an attractive option particularly to those vessels that are coming from a third country to minimize the costs from emissions trading, as they are required to acquire and surrender allowances regarding 50% of emissions of such voyage.

Modal shift refers to replacing maritime transport to other modes of transport such as road and rail. Majority of railway activities are already under the EU ETS and also road transport is proposed to be covered under its own ETS under the Fit for 55 – package. Moreover, deep-sea shipping is less likely to compete with other modes of transport than intra-EEA maritime transport.[154] The case studies in the Commission's impact assessment report indicated that a modal shift from one transport model to another is possible, but it also evaluated that only 5 % of routes may be vulnerable to carbon leakage.[155]

Shipping companies could also decide to operate ships below 5000 gross tonnage to evade the application of EU ETS, particularly in sector where the use of smaller vessels is common. However, evasion of this type would be fairly easy to tackle by amending the EU ETS Directive to cover lower thresholds to fit these smaller vessels into the scope of ETS.[156] Shipping companies might also seek to optimize their fleet by assigning their best performing vessels to EEA related voyages and use their less performant ships for other routes, which decreases the total emissions emitted in the geographical scope of the ETS but increases them outside the scope. However, to some extent, the technical and operational measures of the IMO balance the situation.[157]

At this stage, the ETS proposal has focused only on revising the EU ETS Directive, and further measures down the line will include revising rules on auctioning, Union Registry, monitoring and reporting of emissions and verification of emission reports and accreditation of verifiers. However, it should be noted already at this stage that when the number of actors and value of

the carbon market itself increases by introducing new sectors to it, it becomes increasingly important to protect the system from financial crimes.[158] Since the proposal aspires to include 50% of emissions from extra-EU/EEA voyages and shipping companies (and possibly other commercial operators) from third countries need to open accounts, it opens up for new vulnerabilities in this regard.

3.2.3 FuelEU Maritime

General

The second legislative proposal supporting the Green Deal's goal for the continent to become climate neutral by 2050 and affecting the maritime sector is the 'Fuel EU Maritime' proposal (Proposal for a Regulation of the European Parliament and of the Council on the use of renewable and low-carbon fuels in the maritime transport and amending Directive 2009/16/EC). The aim of the Regulation is to "increase the share of renewable and low-carbon fuels in the fuel mix of international maritime transport without creating barriers to the single market".[159] Moreover, as developing and deploying new fuel and energy solutions can involve long time leads, the purpose is also to establish a clear and predictable long-term regulatory framework that facilitates planning and investment regarding all stakeholders.[160]

At present, the fuel mix used in the maritime sector is almost completely based on fossil fuels. Decarbonization of the sector requires both energy efficiency measures and a transition to renewable and low-carbon fuels (RLF).[161] RFL in particular have a significant potential to reduce emissions in the future but face high abatement costs and market barriers that likely require a policy intervention to be overcome.[162] The Fuel EU Maritime initiative is introduced "to achieve the economies of scale in the uptake of RLFs in maritime transport as well as avoiding carbon leakage, and ensuring level playing field between operators calling in EU ports and between the EU ports themselves."[163] The Commission considers that a Regulation is the most suitable choice of instrument "as the transition to RLFs requires significant investments from fuel suppliers, fuel distribution and a strong and clear demand push, it is vital that the regulatory framework provides a single, long-term and robust set of rules to all investors EU-wide."[164] In particular, it is considered important to avoid creating a patchwork of differing measures at national level, which would be the case if implemented under a cross-sectoral directive.[165]

Scope

The Regulation is 'flag-blind' and applies to ships of any nationality above a gross tonnage of 5000 with respect to:

- the energy used during their stay within a port under the jurisdiction of a Member State;

- the entirety of energy used on voyages from a port of call under the jurisdiction of a Member State to a port of call under the jurisdiction of a Member State; and
- half of the energy used on voyages departing from or arriving to a port of call under the jurisdiction of a Member State[166]

Warships, naval auxiliaries, fish-catching or fish-processing ships, wooden ships of primitive build, ships not propelled by mechanical means, or government ships used for non-commercial purposes are excluded from the scope.[167]

With respect to fuels, the proposal is technology-neutral, though it excludes promotion of food and feed crop-based fuels as it could increase the pressure on land and lead "to the extension of agricultural land into areas with high-carbon stock, such as forests, wetlands and peatland, causing additional greenhouse gas emissions and loss of biodiversity."[168] Nevertheless, there remains concerns that the FuelEU Maritime may cause "potential overreliance on [other] biofuels, which can have questionable sustainability credentials."[169]

Substantive obligations

The main objective of the FuelEU Maritime Regulation is twofold. First, and primarily, it sets a limit on the greenhouse gas intensity of energy used on-board by a ship arriving at, staying within or departing from ports under the jurisdiction of a Member State.[170] The limit, which shall not be exceeded, concerns the yearly average greenhouse gas intensity of the energy used on-board during a reporting period.[171] Annex I of the Regulation provides a more detailed methodology to calculate the amount of greenhouse gas emissions per unit of energy to determine the greenhouse gas intensity.[172] The greenhouse gas intensity limit will become stricter every five years from 2025 till 2050 according to the formula set out in Article 4(2).

Second, the draft Regulation also imposes an obligation to use on-shore power supply or zero-emission technology in ports under the jurisdiction of a Member State.[173] Starting from 1 January 2030, when a containership or passenger ship is at berth in a port under the jurisdiction of a Member State it must connect to on-shore power supply and use that for all energy needs while at berth.[174] However, this does not concern ships that are at berth less than two hours, use zero-emission technologies, are unable to connect to on-shore power supply due to unavailable or incompatible connection points in a port, have to make an unscheduled port call for reasons of safety or saving a life at sea, or ships that require the use of on-board energy generation, under emergency situations representing immediate risks or for other reasons for majeure nature.[175] It is the managing body of the port who determines whether any of these exceptions apply.[176] However, the exemptions concerning port infrastructure or how the ship is equipped will expire 2035, and cannot be applied to a ship more than five times during one reporting year pursuant to Article 5(6).

Link to AFIR

The obligation for containerships and passenger ships to usage on-shore power supply links to another of the Fit for 55 proposals, the 'Alternative Fuel Infrastructure Regulation' – proposal (AFIR), which is intended to replace the existing Alternative Fuels Infrastructure Directive (AFID) from 2014.[177] Article 9(1) of the AFIR stipulates that Member States shall ensure that a minimum shore-side electricity supply for seagoing container and passenger ships is provided in maritime ports. To that end it sets specific targets for meeting the demands of containerships, ro-ro passenger ships, high-speed passenger crafts, and other passenger ships (all above 5000 gross tons). It aspires thus to be fully complementary to the FuelEU Maritime Regulation, and the intention is that these two Regulations would create an interest and demand for ports to invest on shore-side electricity infrastructure.[178]

Monitoring, reporting and compliance

Companies must monitor and report on the relevant energy data during a reporting period for each of their ships within all ports under the jurisdiction of a Member State and for any voyages to or from a port under the jurisdiction of a Member State.[179] Monitoring and reporting must be complete regarding all energy use, consistent and comparable over time, and the data must be acquired in a transparent and accurate manner.[180] Companies must submit a monitoring plan to the accredited verifiers by 31 August 2024, or if a ship falls under the scope of the Regulation after that, then two months after each ship's first call in a port under the jurisdiction of a Member State. The regulation lists a series of items ((a)-(l)) that must be included in a standardized monitoring plan and the Commission will determine such templates and the technical rules relating to them.[181] The monitoring plan needs to be checked regularly and modified pursuant to Article 8. An independent and accredited verifier assesses the conformity of the monitoring plan with the requirements stemming from Article 6 (Common principles for monitoring and reporting) and Article 9 (Certification of biofuels, biogas, renewable liquid and gaseous transport fuels of non-biological origin and recycled carbon fuels) and Annexes I, II, and III as well as the reliability, credibility and accuracy of the data.[182]

Based on the assessed monitoring plan, companies must record for each ship and for each voyage, the following information under Article 14:

- port of departure and port of arrival including the date and hour of departure and arrival and time spent at berth;
- for each ship that the requirement of Article 5(1) applies, the connection to and use of on-shore power or the existence of any of the exceptions listed in Article 5(3);
- the amount of each type of fuel consumed at berth and at sea;
- the well-to-wake emission factors for each type of fuel consumed at berth and at sea, broken down by well-to-tank, tank-to-wake and fugitive emissions, covering all relevant greenhouse gases; and
- the amount of each type of substitute source of energy consumed at berth and at sea.

Companies must provide this data to the verifier by March 30 each year,[183] and the verifier will then assess the quality, completeness and accuracy of the information provided.[184]

The Regulation provides some flexibility to companies regarding compliance. Companies can bank and borrow compliance surplus between reporting periods (Article 17) and/or pool compliance balances of two or more ships (Article 18). Banking and borrowing of surplus can take place in two ways. First, if the ship has a compliance surplus for the reporting period, the company may bank it to the same ship's compliance balance for the following reporting period. Second, if the ship has a compliance deficit for the reporting period, the company may borrow an advance compliance surplus of the corresponding amount from the following reporting period. However, the advance compliance surplus cannot be borrowed for two consecutive periods, nor if the amount exceeds a specifically formulated limit.[185] It is also possible to pool compliance of two or more ships that are verified by the same verifier. The company can then decide how to allocate the total compliance balance of the pool between the ships. If the ships are not controlled by the same company, then the companies have to make a joint notification to the verifier, which also specifies the method how to allocate the total compliance balance of the pool.[186] If no compliance deficit exists, the verifier issues a FuelEU certificate of compliance by 30 June of the year following the reporting period, which will be valid for the period of 18 months after the end of the reporting period.[187]

Responsible entities

The entity responsible for complying with the FuelEU Maritime Regulation is the (shipping) company, for each of its ships falling under the scope of the Regulation. If the ship is not compliant, it is the company that shall pay the penalty (Article 20(1)). The definition of the 'company' is made by reference to the MRV Regulation (Article 3(1)(k) of the FuelEU Maritime Regulation).[188] Even if it does not follow from the articles of the Regulation, its sixth recital includes a similar text as recital 20 of the ETS proposal with respect to contractual arrangements and (the option of) holding "the entity that is directly responsible for the decisions affecting the greenhouse gas intensity of the energy used by the ship accountable for the compliance costs".

Thus, the FuelEU Maritime Regulation makes the fuel *user* responsible for bringing about the fuel intensity reductions, rather than the *supplier* of the fuel.[189] A main reason for this is that the Regulation applies to ships purchasing fuels within the EU as well as ships purchasing fuels in third countries.[190]

By placing the responsibility on the energy consumers, the proposal creates a demand which might otherwise not materialize."[191] In this respect, the proposal draws a parallel to previous rules on regulating sulphur limits in fuels, where ships have also been the responsible entity and, as observed by Einemo, "whenever regulations have caused market demand for low-sulphur fuels to increase, the supply side has responded."[192] ECSA, on its part, considers that "the real reason why the EC may wish to place this obligation on the ship could be to ensure

that marine fuel suppliers in the EU are not placed at commercial disadvantage to fuel suppliers located outside of the EU, an approach which might be perceived as protectionist of the EU marine fuel supply industry."[193]

Enforcement & sanctions

The enforcement scheme of the FuelEU proposal is straightforward in principle: if the ship does not meet the required energy intensity reductions, the company must pay a penalty for each non-compliant port-call, the amount of which is to be calculated by the verifier according to a specific formula.[194] Once the penalties are paid, the verifier will issue a FuelEU certificate of compliance. The funds from the penalties will be allocated to support common projects aimed at the rapid deployment of renewable and low carbon fuels in the maritime sector by stimulating production of greater quantities of renewable and low carbon fuels, facilitating the construction of appropriate bunkering facilities or electric connection ports, and supporting the development, testing and deployment of the most innovative European technologies in the fleet to achieve significant emission reductions.[195]

Robustness

A particular concern with respect to the robustness of the scheme relates to fuels purchased in third countries. Non-EU fuel providers are not directly bound by the EU law and their law enforcement may therefore be expected to be less robust than within the EU. The EU would have to rely on paper documents provided by non-EU fuel suppliers, and it has been observed that "proper inspections for biofuel blends purchased outside the EU will be challenging for competent authorities".[196] ECSA has claimed that the Commission is outsourcing the enforcement of its rules to shipping companies and verifiers, but also that the proposal if adopted "would imply that the EU would be determining which non-EU fuel suppliers could or could not refuel any ships calling at EU ports."[197]

ECSA is also concerned about safety issues regarding new maritime fuel standards that are addressed to ships rather than fuel suppliers: "there are critical safety issues associated with the use of biofuels, including compliance with the requirement in the IMO Safety of Life at Sea Convention (SOLAS) for marine fuels to have a flashpoint above 60 degrees Celsius."[198]

Moreover, there is also concern that the availability of compliant fuels would probably be limited, at least initially.[199] This calls for contemplating the possible need for fallback clauses in such an event. A fallback clause should determine at least the circumstances under which the ship/shipping company has done what can be reasonably expected of it to comply with FuelEU Maritime to avoid paying a penalty fee in the event that there is not enough FuelEU Maritime – compliant fuels available.

For all those concerns, however, it may be noted that the rules on sulphur contents in marine fuel provide a precedent, even if not strictly an EU measure. In particular, the significant regional differentiations caused by the different temporal and geographical application of the rules within 'Sulphur Emission Control Areas' and elsewhere gave rise to very similar concerns, which have been addressed, either in MARPOL Annex VI[200] or in the relevant EU Directive.[201]

3.2.4 Energy taxation directive

Scope

The third legislative proposal supporting the Green Deal's goal for the continent to become climate neutral by 2050 and affecting the maritime sector is a revision of the Energy Taxation Directive (Proposal for a Council Directive restructuring the Union framework for the taxation of energy products and electricity (recast)). The Commission has reviewed the existing Energy Taxation Directive to align it with new climate objectives of the EU and to remove negative incentives that uphold the current fossil fuel usage.[202] The Directive seeks to complement other measures by removing disadvantages for clean technologies and introducing higher levels of taxation for inefficient and polluting fuels.[203] The main reforms concern a new structure of tax rates based on the energy content and environmental performance of the fuels and energy and broadening the taxable base by including more products in the scope and by removing some of the current exemptions and reductions.[204] The proposed Energy Taxation Directive seeks to renew the tax structure by grouping the energy products and electricity into four categories based on environmental performance and by adopting a uniform tax level within each tax category.[205]

Under the proposal, energy taxation is to be based on the energy content of the energy products and electricity, as this attribute provides a better reference for comparing different energy products and electricity. Moreover, environmental performance will be measured by establishing the corresponding ranking of applicable rates that take into account the specific characteristics of the different products, the different products and their treatment under the current Energy Taxation Directive, the expected evolution of the EU energy mix in the light of the 'Fit for 55 -package', the polluter pays principle, and their coherency and contribution to the common objectives.[206]

So far, the maritime transport sector has been fully exempted from energy taxation in the EU as heavy oil used in the maritime industry has not been taxed. The review accompanying the proposal covered certain unclear interpretations of the exemption related to motor fuels used in waterborne navigation and the proposal, importantly, seeks to end the current mandatory exemption of waterborne navigation and fishing sector.[207]

The proposal allows for a different level of taxation to be applied to the use of energy products and electricity for intra-EU waterborne regular service navigation, fishing and freight transport and their respective at berth – activities. Recital 23 further provides:

> Considering the specificity of those uses, the minimum levels of taxation should be lower than the ones applicable to general motor fuel use. In order to provide an incentive to the use of sustainable alternative fuels and electricity, such fuels and electricity should be exempted from taxation for ten years. Energy products and electricity used for the remaining intra-EU waterborne navigation should be subject to the standard levels of taxation applicable to motor fuels and electricity in the Member States.

Along such lines, draft Article 15 provides that regarding energy products used as fuels to vessels and electricity used directly to charge electric vessels (for the purposes of intra-EU waterborne regular service navigation, fishing and freight transport), Member States must apply the minimum levels of taxation as set out in Tables B and D of Annex I (for the purposes of the first subparagraph, electricity is ranked among motor fuels indicated in the Table B of Annex I).[208] This concerns also motor fuels and electricity used in the field of the manufacture, development, testing and maintenance of vessels, and for dredging operations in navigable waterways and in ports.[209] Remaining intra-EU waterborne navigation, such as navigation of private pleasure crafts, would be subject to the standard levels of taxation applicable to motor fuels and electricity.[210]

Regarding sustainable biofuels and biogas, low-carbon-fuels, renewable fuels of non-biological origin, advanced sustainable biofuels, biogas and electricity, minimum tax rates of zero apply over a transitional period of ten years between 2023-2032.[211] Electricity that is produced on board a vessel is exempted from taxation completely.[212] As far as extra-EU waterborne navigation (including fishing) is concerned, Member States can either apply the same levels of intra-EU taxation or exempt it.[213] Member States also have discretion with regard to electricity that is directly supplied to vessels berthed in ports, as they can apply total or partial taxation exemptions.[214] The purpose of this is to provide an incentive for the development and usage of shore-side electricity. Instead of producing electricity on board a vessel while at berth, ports could offer a cleaner alternative in the form of a possibility to connect to the on-shore electricity grid.[215] As was noted above, this is proposed to be obligatory for containerships and passenger ships above 5000 gross tonnage, through the FuelEU Maritime and AFIR proposals.

Previously the Energy Taxation Directive has included numerous national exemptions, but in the proposed recast version, these have been removed. Nevertheless, the Directive still contains an article providing that a Member State can be granted permission to apply additional tax exemptions or freedoms for special purposes. While this article provides some leeway for national discretion, it is clarified that such exemptions or freedoms cannot contradict environmental goals or cause any disturbance to the functioning of the internal market.[216]

Responsible entity

The form of taxation in question would be excise taxation that is indirect taxation. Excise duties are product-specific and levied on products manufactured in a Member State and imported into a Member State. For example, the responsible entity to pay the excise duty in Finland is an authorized warehouse keeper, a registered consignee, a registered consignor or a tax representative in distant sales, who would then also be the party to deal with the Finnish Tax Administration if they are not compliant.[217] However, on a practical level, the increased tax burden would concern shipping companies, which would likely be reflected on transport prices and thus be transferred forward to a variety of economic actors.[218]

Robustness

The maritime transport sector is at high risk of carbon leakage due to the so-called "bunker evasion" that refers to the phenomenon where "vessels used for intra-EU voyages are filled with fuel outside of the EU."[219] Shipping companies have an economic incentive to refuel where the tax level is the lowest one and it can affect how they optimize their routing.[220] To discourage such phenomenon, "shipping fuels will be subject to the same lower tax rate as that applied to the agriculture sector".[221] In practical terms, this means that the Energy Taxation Directive proposes a minimum €0.90 per gigajoule tax on bunker fuels used for intra-European maritime voyages from January 1, 2023. This tax is only 12% of what other sectors that use fossil fuels will be charged, due to the risk that shipowners and operators would otherwise source bunkers outside the EU.[222] Nevertheless, it is clear that the new taxation rules on maritime transport fuels could provide an opportunity to fuel the ship without additional costs of indirect taxation particularly in non-EU ports close to EU states, such as Russia in the Baltic Sea Region.

The issue of legal basis

The proposal leaves partially open the issue of its legal basis. It provides two options, which are Article 113 of the Treaty on the Functioning of the European Union (TFEU) and Article 192(2) of the TFEU. The choice between the two has significant impact on the voting rules for the adoption of the directive.

Article 113 stipulates:

> The Council shall, acting unanimously in accordance with a special legislative procedure and after consulting the European Parliament and the Economic and Social Committee, adopt provisions for the harmonisation of legislation concerning turnover taxes, excise duties and other forms of indirect taxation to the extent that such harmonisation is necessary to ensure the establishment and the functioning of the internal market and to avoid distortion of competition.

If Article 113 is chosen as the legal basis, it signifies using special legislative procedure which requires unanimous approval in Council. In this case, it is "not unthinkable that certain Member States such as Cyprus, Greece and Malta, with their particular interest in the shipping industry,

could block proposals or that proposals could be considerably amended to appease certain vested interests."[223]

Article 192, on the other hand, provides:

> 1. The European Parliament and the Council, acting in accordance with the ordinary legislative procedure and after consulting the Economic and Social Committee and the Committee of the Regions, shall decide what action is to be taken by the Union in order to achieve the objectives referred to in Article 191.
> 2. By way of derogation from the decision-making procedure provided for in paragraph 1 and without prejudice to Article 114, the Council acting unanimously in accordance with a special legislative procedure and after consulting the European Parliament, the Economic and Social Committee and the Committee of the Regions, shall adopt:
> (a) provisions primarily of a fiscal nature;
> The Council, acting unanimously on a proposal from the Commission and after consulting the European Parliament, the Economic and Social Committee and the Committee of the Regions, may make the ordinary legislative procedure applicable to the matters referred to in the first subparagraph.

The reference to Article 191 in this context refers to the objective of "preserving, protecting and improving the quality of the environment". If Article 192(2) is chosen as the legal basis, it may mean the use of the ordinary legislative procedure and qualified majority voting in the Council. For support of this approach, the impact assessment provides:

> In line with the European Green Deal communication, the review of the directive should focus on environmental issues. Therefore, it is possible to use Article 192 of the Treaty (environmental measures of fiscal nature) that allows European Parliament and the Council to adopt proposals in this area through the ordinary legislative procedure by Qualified Majority Voting rather than by unanimity in the Council.[224]

In its memo on the legal basis of the proposal, ClientEarth has analyzed the case law from the European Court of Justice and provided the following conclusions regarding the choice of a legal basis for legislative proposals:

> • The choice of a legal basis must always rest on objective factors, such as the aim and content of the envisioned measure.
> • When there are multiple objectives, and one objective can be identified as the main objective, the legal basis must be found on that single predominant objective.
> • The legal framework within which the rules are situated can be taken into account to clarify the objective pursued by the measure.
> • It is mandatory to found measures on specific provisions of the Treaties when applicable.
> • The context of both the amended measure and the amending measure should be taken into account when determining the objective and legal basis. This would include the old Energy Taxation Directive which has a predominantly fiscal background, as well as the environmental mindset of the (to be) revised directive.[225]

Applying those conclusions to the current proposal, there is a strong argument to be made to use the Article 192(2) as the legal basis. The recast Energy Taxation Directive is part of the European Green Deal and of the Fit for 55 – legislative package, the purpose of which as a whole is to tackle "environmental-related challenges and achieve the EU's domestic

greenhouse gas emissions reductions objectives and air pollution reduction."[226] The proposal states as its main objectives the following goals:

1. Providing an adapted framework contributing to the EU 2030 targets and climate neutrality by 2050 in the context of the European Green Deal. This would involve aligning taxation of energy products and electricity with EU energy, environment and climate policies thus contributing to the EU efforts to reduce emissions.
2. Providing a framework that preserves and improves the EU internal market by updating the scope and the structure of rates as well as by rationalising the use of tax exemptions and reductions by Member States.
3. Preserving the capacity to generate revenues for the budgets of the Member States.

The first main objective thus is environmental, rather than fiscal, and can be argued to be the predominant objective. Such interpretation would entail that also the legal basis should be found on environmental grounds, that is, the Article 192(2). This is further supported by the content of the recast and the legal framework within which this proposal is situated.

3.3 International law issues raised by Fit for 55

3.3.1 Briefly on the most relevant rules of the law of the sea and international law

Apart from the questions relating to scope, responsible entities and robustness discussed above, all three proposals touch upon legal matters of a jurisdictional nature, which could raise issues of international law. The fact that the proposals are presented in a regional context but aspire to cover entities (ships and companies) of any nationality raises the question of whether the EU has to right, or jurisdiction, to pursue such measures with potentially worldwide implications, not least as maritime transport on oceans is traditionally governed by principles of the freedom of the seas and non-interference in the activities of the ship by other states than the ship's flag state. As the experience from the aviation sector illustrates,[227] inclusion of foreign entities in the regional ETS not only raises a significant degree of political sensitivity, but also legal concerns related to extra-territorial jurisdiction that are closely linked to the law of the sea.[228]

The matter is a complex one and necessitates consideration of both the general jurisdictional rules under the law of the sea and the principles of extra-territorial jurisdiction under general international law.[229] A starting point is that in order to lawfully enforce a rule on a foreign subject, there needs to be both prescriptive and enforcement jurisdiction for the rule in question. Enforcement jurisdiction refers to the right of state to take legal measures with respect to a violation of a requirement, while prescriptive jurisdiction refers to the right of the state to impose the requirement in the first place.

Under the law of the sea, as authoritatively codified in UNCLOS, which is widely ratified and generally considered to represent customary law, states' jurisdiction over ships depends on their role and relationship to the ship in question. (The EU is to be likened to a state in this context, given that a regional institution is subject to the same restraints and obligations as states under the law of the sea; no jurisdictional privileges follow from being a regional body consisting of several states.)

Flag states (of which there can be only one per ship) have a very clear and broad jurisdiction over ships in their registry, both as regards prescription and enforcement. There are few international law limitations on what rules flag states may subject its own ships to. The legal problem for the EU does not accordingly lie in the regulation of ships flying the flag of its own Member States, but in the inclusion of ships of other states. To cover *only* ships flying the flag of an EU states is not a viable option in view of the ease by which ship operator may reflag and hence choose the jurisdiction of their operations. The risk that EU-focused measures would lead to a significant outflagging from EU states is therefore very real, which would neither be in the economic or environmental interest of the Union. Both the effectiveness of the measures and economic realities therefore requires that as many of the ships as possible are covered, i.e., that the measures apply to ships of any nationality.

As opposed to flag states, coastal states' rights to regulate foreign ships in their waters, and to enforce those rules is heavily limited. Simply put, a coastal state (i.e. a state in whose waters a foreign ship navigates, without entering its internal waters) may not impose environmental rules on foreign ships that exceed the rules that have been agreed at IMO. This applies in their exclusive economic zones (Article 211(5)), but also in their territorial sea, as far as rules relating to the construction, design, equipment or manning of ships (Article 21(2)). Beyond these zones (on the high seas, or in other states' coastal waters) states have no prescriptive jurisdiction over foreign ships at all, only a very limited right to take enforcement measures in exceptional circumstances that are not relevant here (Article 221).

3.3.2 Port state jurisdiction

None of the three Commission proposals discussed above raise traditional issues linked to coastal state jurisdiction, since they do not cover ships that merely pass through EU Member States' maritime territories. Rather, since all proposals are limited to ships that (voluntarily)[230] enter EU ports, it is the extent of a state's jurisdiction over ships that enter its internal waters and ports (hereinafter port state jurisdiction) that is of relevance. The (enforcement) jurisdiction of a state to take measures with respect to a foreign ship voluntarily in its port is not in doubt,[231] at least as far as they do not relate to matters that are completely internal to the ship.[232] Rather, it is the reach of the (prescriptive) jurisdiction of states to impose requirements on foreign ships that is relevant here.

In contrast to the relatively clear but rigid limitations of coastal state jurisdiction over foreign ships,[233] port states are largely left outside the jurisdictional scheme of UNCLOS. Only a few provisions tentatively address the reach of port states' jurisdiction over foreign ships that (voluntary) enter their ports or internal waters.[234] This shortage of legal provisions has meant that matters of relevance to the extent of port states' jurisdiction are largely left to be governed by general international law.[235]

Internal waters may, for jurisdictional purposes, be assimilated to the land territory of the state.[236] Ships, through their voluntary presence in the port or internal waters of another state, subject themselves to the territorial jurisdiction of that state. As a starting point, a port state is hence free to impose its national rules on foreign ships and to enforce those rules by (reasonable) means of their choice It is also widely recognized that ships enjoy no general right of access to foreign ports under international law.[237] This implies, *a fortiori*, a right for the port state to make access to its ports conditional on compliance with specific (national or regional) requirements.[238]

The absence of specific limitations on port state jurisdiction has offered an opportunity for states to strengthen the conditions and requirements that they apply to foreign ships. A gradual recognition of port states' rights to impose conditions and requirements on foreign ships has led to an increasingly widespread use of such measures, both in terms of prescriptive requirements and in terms of the consequences of failing to comply with those requirements. In reality, port state jurisdiction has become the main vehicle for advancing maritime regulation outside the IMO.[239]

Port states' jurisdiction to impose access conditions and other requirements on foreign ships entering their ports is not without limits, however. Limitations include the restraints that may follow from treaty commitments, whether imposed by bilateral or multilateral, maritime, commercial or other treaties, and from principles of general international law, such as the prohibition of discrimination or of abuse of rights.[240] Proportionality requirements may also place limitations on the enforcement measures that may reasonably be taken against ships that fail to comply with the port state's requirements.[241] This type of limitations is clearly less specific and more dependent on the circumstances of the individual case than the relatively clear-cut, maximum limits imposed on coastal states for regulating passing ships in their maritime zones.

Identifying the precise boundaries of port state jurisdiction is further complicated by the fact that different types of rules raise different jurisdictional questions. Rules relating to 'static' features of ships, such as its design, construction, equipment or manning, 'follow' the ship wherever it is. Well known examples include the US and EU requirements on the double hull constructions of oil tankers.[242] In such cases, the ship either complies with the requirement or not, irrespective of its geographical location. Since a ship operator cannot easily change this type of feature during a voyage, this type of requirement is often considered to be most intrusive with respect to ships' navigational freedom. Paradoxically, however, static port state requirements are easier to justify in jurisdictional terms. If a ship fails to comply with a port state's requirement on static features it will be in violation even while within the port or internal waters of the state, where its prescriptive jurisdiction is uncontested.[243]

Aside from the occasional judgment suggesting differently,[244] it seems widely accepted that port states may impose this type of requirement on foreign ships.[245] Even where the subject matter in question is subject to international rules, port states retain their right to impose additional requirements relating to static features, as long as the international rules in question do not specifically exclude such complementary standards.[246] The existence of such residual jurisdiction of port states is explicitly recognized in the text of some IMO conventions.[247]

The jurisdictional setting is somewhat different with respect to rules that are not static in the above sense. Here, the scope of port state rules that relate to specific conduct (or other operational conditions) need to be determined in geographical terms, and it cannot be assumed that the violation has necessarily (also) taken place within the port State's own waters. In case the port State seeks to regulate conduct that takes place beyond the areas over which it has explicit prescriptive jurisdiction (under the coastal State jurisdiction provisions of UNCLOS), the requirement has clear extra-territorial features, and the jurisdictional foundation for the requirement may be doubted.[248] Well-known examples of this type of requirements have been provided in Australian domestic legislation, [249] and, to some extent, in EU law.[250]

However, even for such cases, it is conceivable that the required (prescriptive) jurisdictional basis for port State requirements could be found outside the realm of UNCLOS, notably in the principles of extra-territorial jurisdiction under general international law.[251] Extra-territorial jurisdiction of states to legislate in respect of activities occurring beyond their own territory has to be based on a specific principle of jurisdiction that is recognized under international law. The most widely recognized principles are: active personality principle; the passive personality principle; the protective principle and the universality principle.[252] However, while the existence of certain principles to this effect is widely acknowledged, their respective status, scope of applicability and mutual relationship remain uncertain, due to a notable lack of authoritative judgments at international level, and a multitude of national judgments which point in diverse directions.[253] The state of flux in this area of international law has led certain legal scholars to settle for a rather more generic single jurisdictional principle 'of genuine connection between the subject matter of jurisdiction and the territorial base or reasonable interests of the State in question.'[254] It may thus very well be that the EU's jurisdiction to extend its rules to foreign ships beyond its own geographical area is not only, or even mainly, governed by the law of the sea, but also by abstract notions such as its 'reasonable interests' to regulate climate change and its 'genuine connection' to the subject matter.

In addition, the jurisdictional acceptability of the port state requirement depends on the enforcement measure taken. Enforcement measures that are unproblematic from a point of view of international law, such as denying the non-complying ship the right to certain services in port, or perhaps even access to port, may be justified even if the prescriptive basis for extra-

territoriality is weak; while punitive measures, such as sanctions, require a firmer prescriptive jurisdictional basis.[255] With regard to enforcement, any measures taken by port and coastal States are also subject to certain important 'safeguards' as listed in Section 7 of UNCLOS Part XII.[256]

With that general background, some jurisdictional issues raised by the three proposals will be briefly discussed below.

3.3.3 The energy taxation directive

The Energy taxation proposal is least controversial from this perspective, given that it targets locally established fuel suppliers and only indirectly ships. Even if adopted in its present format, the Directive would not affect the right of ship operators to freely choose where they bunker their ships. A related international law question of some interest is whether foreign tankers in the future may systematically evade the rules of the directive by offering bunkering of non-taxed fuels just outside the coastal waters and jurisdiction of the port state in question. That impression may follow from the majority decision in the *Norstar* case at the International Tribunal for the Law of the Sea in 2019.[257] However, the judgment probably does not represent a correct understanding of international law of the sea, and has been widely criticized in legal literature (as well as by the seven judge strong minority opinion).[258] A better assumption is therefore that bunkering vessels based in an EU port, which offers tax-free bunkers to ships visiting the port, but in the form of ship-to-ship-transfers just outside the jurisdiction of the port state, could be lawfully detained and prosecuted in the port state. This does not, however, do away with the possibility that non-EU states may offer bunkering of non-taxed fuel, which reduces the impact of the directive, in particular in the peripheral parts of the EU.

3.3.4 FuelEU Maritime and EU ETS proposals

The other two measures raise more traditional issues relating to the rights of port states to regulate foreign ships. A preliminary observation is that neither proposal relates to static requirements as described above, in the sense that the violation in question takes place *while* the ship is in the port (making the port state's jurisdiction undisputed).[259] This is because both of them link the enforcement to compliance over a longer period of time, i.e. a full year.

With respect to the geographical scope, both rules apply to incoming and outgoing voyages independently of the maritime zones involved. Ships activities beyond the territorial jurisdiction of the EU Member States will accordingly be covered under both rules. The extra-territorial reach of the two proposals is similar: both cover 100 per cent of intra-EU transports, but only half of the emissions/energy used on voyages to or from non-EU states.[260] From a law of the sea perspective, neither approach is entirely easy to justify.

The law of the sea implicitly acknowledges a right, which is more explicitly in certain other international conventions, to place national requirements on all ships trading within a single state (so-called 'cabotage'). Ships trading between EU Member States, however, fall outside the scope of cabotage, as the EU can hardly be considered to represent a single state for this purpose. Rather, covering intra-EU trade represents an effort to implement an 'EU-wide cabotage'. There are precedents for such measures (mainly in commercial field), but a foreign ship on such a route might still object to being covered, in particular as regards energy consumed and emissions released during passage legs that extend beyond the territorial seas of EU Member States (where coastal state jurisdiction is limited to generally accepted international rules).

As regards, transports involving a non-EU port, such concerns are magnified, as the territorial link of the measure to the EU is limited to one of the ports only. The mitigation of the extra-territorial effect is done by means of a percentage reduction (50%), which has no basis in the law of the sea. The only mitigation that would have explicit support in the law of the sea would be to limit the calculation of emissions/energy to those produced/used while in the territorial waters of EU Member States, as these are the only waters in which states has prescriptive jurisdiction to introduce national discharge and emissions requirements.

While the 50% requirement of the ETS is argued to allow space for other MBMs to supplement the regime,[261] presumably also a future IMO regime, the corresponding limitation of Article 2(c) of the FuelEU Maritime proposal is more difficult to understand, as it serves to reduce the effectiveness of the measure, without offering scope for a supplementary regime. Recital 4 clarifies that the main reason for the limitation is indeed policy-based, as it "limits the risk of evasive port calls and the risk of delocalisation of transhipment activities outside the Union."

In order to overcome the enforcement challenges linked to monitoring fuel purchases and quality worldwide, the FuelEU Maritime proposal requires ships to hold a Certificate of Compliance issued by an accredited verifier. It is then the on-board presence and validity of this certificate which, in Article 22, is made a condition for entry into an EU port.

While doubts could be raised about the jurisdictional construction involved in transforming a continuous obligation that covers a ship's whereabouts worldwide during a calendar year into an entry requirement in the form of a certificate, this type of verification tools are common in shipping and in reality represent the main form of enforcement mechanism in IMO rules. It is true, however, that most existing certificates relate to static characteristics of ships and do not cover operational matters, such as what fuels are used. (But see Bunker Delivery Note, required by Marpol Annex VI). Moreover, most certificates required today relate to requirements agreed at global level (at the IMO), which makes them less susceptible to legal criticism than a purely regional documentary requirement.

The ETS proposal, on its part, places the primary obligations on the company. It is for the company to record the emissions data, have it verified and submitted to the administering authority concerned (Article 11 of the MRV Directive). Draft Article 3gc provides that it is for the administering authority ensure that the reporting of aggregated emissions data at shipping company level submitted by a shipping company is verified in accordance with the verification and accreditation rules. This focus on duties of companies and EU authorities, rather than ships, as a starting point, distances the ETS requirements from navigational rights and the jurisdictional provisions of the law of the sea.

However, in the enforcement provisions, both proposals address the ship as such, notably through the prospect that a non-compliant ship may be expelled from all EU ports.

In the FuelEU Maritime proposal, the first enforcement measure is the penalty referred to in Article 20 to financially compensate for the annual compliance deficit. The administration of the penalty is partly delegated to verifiers as it is to be calculated by the verifier, according to a level set by the Commission, and reflected in the certificate of compliance. The proceeds will be used to support common projects aimed at the rapid deployment of renewable and low carbon fuels in the maritime sector, and managed as external assigned revenues by the Innovation Fund referred to in Article 10a(8) of the ETS Directive. The penalty thus effectively constitutes a mandatory contribution by non-compliers to a regional research and development fund for low-carbon fuels in shipping.[262]

As a second enforcement step, Article 23(3) provides that "Where a ship has failed to present a valid FuelEU certificate of compliance for two or more consecutive reporting periods and where other enforcement measures have failed to ensure compliance, the competent authority of the Member State of the port of call may, after giving the opportunity to the company concerned to submit its observations, issue an expulsion order." In reality this means a denial of entry of the ship in question to any EU port (unless ports of its flag state in the case of an EU ship) until compliance is restored.

In the ETS proposal the main duty is to surrender the allowances based on the rules of the Directive. If this is not done, the general rules on penalties under Article 16 of the ETS Directive will apply. Apart from this, the proposal adds a secondary layer of enforcement that is specific for shipping. Under draft Article 16(11a) (and, in similar terms, the new draft Article 20(3) of the MRV Regulation), a port state may issue a corresponding expulsion order, "in the case of a shipping company that has failed to comply with the surrender requirements for two or more consecutive reporting periods and where other enforcement measures have failed to ensure compliance … As a result of the issuing of such an expulsion order, every Member State

… shall refuse entry of the ships under the responsibility of the shipping company concerned into any of its ports until the company fulfils its surrender obligations".

From an international law perspective, the secondary enforcement measures (expulsion), may – despite their stringency – be easier to justify than the penalties and other monetary sanctions primarily imposed. This may seem contrary to the principle of greater force but follows from the absence of a right under international law to enter foreign ports. As was noted above, the legality of port state measures, and the strength of the prescriptive jurisdictional basis they require, also depends on what enforcement measures are taken to secure compliance. If the consequence of non-compliance is withdrawal of a privilege to which foreign ships have no entitlement, the need to establish a solid prescriptive basis for the requirement is more limited than in case sanctions are awarded for non-compliance. Somewhat paradoxically, therefore it is easier to claim jurisdiction over a measure that results in a prohibition to enter the port (in the state or in the EU as a whole) than over one in which non-compliance results in a fine. As far as the FuelEU Maritime proposal is concerned, this means that denying the access of non-complying ships under Article 23(2) would require less explicit prescriptive authority for the measure than the imposition of penalties under Article 20. On the other hand, the discrepancy between persons involved (the primary obligations are imposed on the company while the enforcement measures target individual ships) could be argued to stretch the extent of how far enforcement regime based on port access can reasonably be taken. This is particularly so as the reference to ships "under the (company's) responsibility" is unclear, e.g. in relation to the application of the rule for other ships in the company's fleet. In this respect, the proposed regime bears some interesting similarities to the private law concept of ship arrest (for failure by the owner to respect financial obligations) which, however, is a measure that can only be imposed by courts.[263] In both proposals, the expulsion order is formulated as an option for the port state in question, rather than an obligation.

3.3.5 Summary

In summary, the international rules on the extent to which a port state may or may not take measures with respect to foreign ships are far from straightforward. The rules include a number of paradoxes (e.g. that it is easier to justify static requirements for ships than to impose operational standards beyond the territory of the port state, and that it is easier to justify the refusal of entry of a ship into a port than to admit it and issue a penalty) and are generally imprecise. The matter has not been further clarified in treaties or in international case law, while national case law is both scarce and inconclusive.[264]

In addition, the applicability of classical law of the sea principles of jurisdiction for evaluating the lawfulness of the EU proposals is not self-evident. The ETS and the FuelEU proposals essentially concern financial obligations rather than navigational rights, which casts doubts on the applicability of the law of the sea, as long as the ship is not the target of the (enforcement)

measures. Nor is the subject of regulation a classical matter of 'pollution' or 'air emission' as regulated in UNCLOS, but rather a set of policy obligations targeting the actions and choices of the ship operator without direct implications for the hands-on operation of the ship itself. This is further underlined by the fact that both proposals bench-mark compliance with behaviour of the shipping company spanning over a long period of time.

The eventual legality of the measure thus has to be assessed broadly in view of a number of factors, including law of the sea, but also general international law and other branches, such as international trade law that have not been considered here. In the end, it may well be that the limitations imposed by different branches of international law have significant similarities, eventually boiling down to a generic reasonableness requirement to be concretized by balancing the different interests at stake.

In such a balancing of interests, important elements favouring EU's actions in the field relate to the growing climate crisis and the fact that IMO has failed to adopt measures that would significantly reduce GHG emissions from ships despite discussing the matter for almost 25 years. EU may, under this view, be seen as acting regionally on behalf of the world community as a whole, for no particular benefit of the region's own (depending on how potential funds will be distributed). If anything, the UNFCCC and the Paris Agreement specifically accept the principle that industrialised countries have a greater responsibility than other states to take measures to prevent global warming, on behalf of the world as a whole.

It may also be of significance that the essentially financial nature of the obligations distinguishes them from more concrete restrictions on the navigational freedoms of the sea and coastal waters, which is what the UNCLOS regime essentially sets out to protect. The proposed scheme, in other words, does not place any limitation on navigation, but only makes the voyage somewhat more expensive, presumably in a non-discriminatory manner. The concerns of ship owners, flag states or the maritime community as a whole might therefore not be given the same prominence in this case as in a more clear-cut case of extra-territorial jurisdiction *versus* navigational rights. However, in view of the significance of what starting point is chosen for analysing this matter (law of the sea, climate change, the EU perspective or general international law), it is quite possible that the choice of forum will influence the outcome if or when a ruling on the legality of EU's action were to be sought in the future.

It may therefore be concluded that international law does not prevent a port state, or the EU, from implementing requirements affecting international shipping, even if they have implications beyond its territorial jurisdiction. It does, however, qualify that jurisdiction in several important ways. In particular, the jurisdiction depends on the nature of the requirement, on the measures chosen to enforce them and on the respect of the criteria of reasonableness that

follow from general international law and potential treaties which may limit the EU's or port states' jurisdiction in this regard.

The Fit for 55-proposals appear to have assessed this legal setting carefully and do not, in our view, raise immediate international law concerns. In view of the balancing of interests, the EU's case for action is assisted, also in legal terms, by the circumstance that corresponding regimes are not yet developed elsewhere, including at the IMO. Were this to change, the EU's measures, if adopted, are likely to require some adjustments. However, even then, they may certainly serve as a useful supplement to other measures aimed at decarbonizing shipping.

3.4 Conclusion

The Fit for 55 package represents an ambitious set of proposal for maritime transport, which will no doubt involve significant challenges to finalize and implement. The package is probably also a necessary step for the EU to maintain its own credibility in this field, in view of its long-standing criticism against the lack of progress at IMO, its repeated threats of regional action, but no specific targets imposed by itself and several postponements of established deadlines. In light of that history, the existing package provides a set of very detailed proposals that are ready to be negotiated within the other EU institutions at once and provide a very clear indication of the priorities of the Commission when seeking to include shipping in the overall fight against climate change.

It has also been estimated above that the measures proposed will probably be subject to less legal controversy than, for example, previous proposals to include international aviation in the ETS, despite their level of ambition and effect on the industry. This estimate is not only due both to a changed political atmosphere with regard to climate change worldwide, but also due to a relatively careful selection of tools and principles to secure the accommodation of the proposals in the (unsatisfactorily open-ended) international law framework.

Yet it must be remembered that the package is only a proposal by the Commission at this stage, and many things may change during the further negotiations. While the European Parliament has provided indications that appear to align closely with the Commission's policy, the position of the Member States in the Council is still very open.

In view of the stringency and potential effect of all three proposals discussed above, it seems important to ensure the compatibility of the measures, between themselves, but also with forthcoming IMO rules in the area. In view of the early stage of negotiations of the proposals, it is not possible to make a detailed study of compatibility at this stage, but the tables in Annex 1 seeks to summarize some main features of the measures under discussion. Table 1 below represents World Shipping Council's summary with respect to the different timings involved.

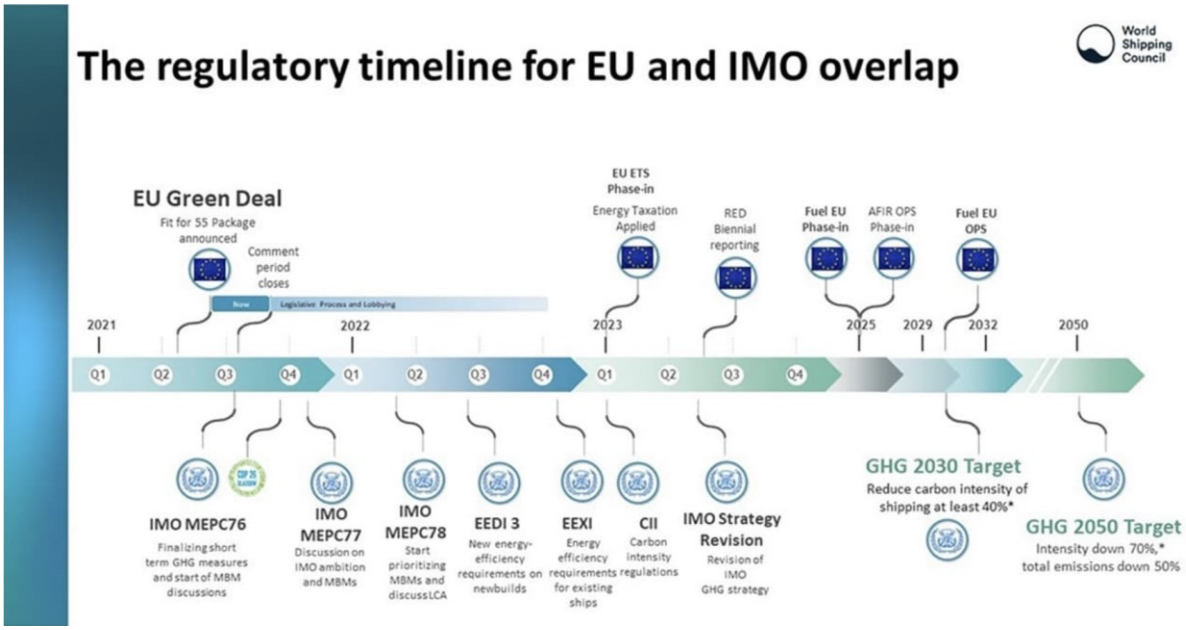

Table 1: Timeline of measures (Source: World Shipping Council)

4 Finnish perspectives

4.1 Introduction

This chapter studies Finnish perspectives to the decarbonizing of shipping. It discusses how the work within the IMO and the EU might affect the Finnish policy interests and legislation and how the Finnish Government and other stakeholders have viewed the developments concerning, in particular, the Fit for 55-proposals. The chapter also briefly refers to the most recent developments regarding the maritime sector from the Conference of the Parties meeting of United Nations Framework Convention on Climate Change held in Glasgow in November 2021 (COP 26).

4.2 Factual background

The CO_2 emissions from maritime transport of goods between Finland and other countries amounted to 5.67 Mt in 2017.[265] 90% of Finnish exports and 80% of imports of goods are carried by sea.[266] Finland is thus heavily dependent on foreign trade carried by sea, which has implications for Finnish industries and consumers not only within the maritime cluster but also in other sectors.

Every year parts of the Baltic Sea (including all Finnish ports) freeze, and in very severe winters the whole Baltic Sea can freeze. The severity of a winter is not only measured by the extent of ice cover, but also by the duration of ice conditions, the ice thickness, and the amount of heavy pack ice and pressures created.[267] The Finnish Meteorological Institute has predicted that in the long haul due to the climate change, winters in the Baltic Sea may become more variable and difficult to predict, rather than only getting milder.[268] Furthermore, Finland is a boarder state in the EU, situated in the periphery of the Union, neighbouring non-EU state Russia. Russia is the only coastal state in the Baltic Sea region that would not be bound by the EU legislation, which could be a risk factor e.g. in terms of carbon leakage.

The special circumstances of Finland thus include the remote geographical location, as a boarder state next to Russia,[269] far away from the main European markets,[270] and the location by the Northern parts of the Baltic Sea that freezes during the winter season,[271] which causes special challenges for winter navigation.[272] In the European, and even in the global context, these circumstances add up to a highly particular situation. Apart from the countries along the Eastern shores of the Baltic Sea, of which Finland is by far the Northernmost, other countries do not face a situation where all their ports regularly freeze during wintertime. This, as has been noted by the country's Ministry for Transport and Communications, should be added to being remotely located and being heavily dependent on international seaborne trade that needs to function all year round:

> Due to Finland's climate and geographical location, icebreaking is an essential service for maritime transport. All ports on the Finnish coast may freeze in winter. While the assistance needs of winter navigation vary from year to year, they place Finnish shipping in a different

position compared to such competitors as other EU countries, even if climate change is factored in.[273]

Finland is thus dependent on functioning and cost-effective winter navigation. This covers both ice-classed commercial vessels and icebreaking services, both of which cause additional costs and emissions. According to the Ministry of Transport and Communications, "annually 70-80% of visits of ships to Finnish ports from foreign ports are made by vessels in best ice classes. These vessels are built heavier and equipped with stronger engines than other vessels." Not only do ice-classed ships consume more fuel during winter period (20-60 %), but also when sailing in open-water the rest of the year (2-5% more fuel).[274] Moreover, even within Finland, there are large regional variations regarding the ice conditions. For example, almost all merchant ships sailing in the Bothnian Bay, regardless of their ice class or flag state, need the aid of icebreakers.[275]

In Finland, the Finnish-Swedish Ice Class Rules (FSICR) apply to the design of merchant ships trading in the Northern Baltic in winter. These rules determine Finnish and Swedish ice classes for the purpose of identifying which ships are eligible for ice-breaker assistance to Finnish and Swedish ports and to determine the fairway dues for ships calling at Finnish ports.[276] Most of the members of the International Association of Classification Societies (IACS) have adopted these rules and included them in their own regulations on the classifications of ships.[277] The FSICR determine 6 ice classes:

- Ships in ice class IA Super are intended for year round operation in the Baltic Sea area and the Administrations do not set traffic restrictions for this ice class. Ships in ice class IA are intended for year-round operation in the Baltic Sea area, and are escorted if necessary.
- Ships in ice class IB or IC may have limited access to Finnish and Swedish ports for part of the year, depending on the ice conditions.
- Ships belonging to ice classes II and III are not strengthened for navigation in ice. Traffic restrictions based on ice class, deadweight and possibly power are given according to ice conditions. In Finland, the fairway dues depend on the ice class of the vessel, for which reason "ice classes" II and III are used.[278]

According to the statistics from 2018 which are based on a share of gross tonnage of Finland's merchant shipping fleet, 56% of ships belong to ice class I A Super, 36 % to I A, 1 % to I B, 0,1 % to I C, 0,9% to II and 7% belonged to III or had no ice-class.[279] The majority of the vessels belonging to the two best ice classes were dry cargo carriers (27 ships) passenger ships (11 ships) and tankers (6 ships).[280] Thus it is clear that as far as the Finnish fleet is concerned, most vessels are intended for year-round operation and are equipped for safe winter navigation and thus consume more fuel than ships designed to sail open waters. Moreover, these ice-strengthened ships also have a role in keeping the sea routes open in wintertime for the foreign vessels that are not ice-strengthened.[281]

4.3 The national and international climate change commitments of Finland

Finland has not set its own national, binding, numeric values for reducing emissions from shipping.[282] However, Finland is bound by its international and national commitments. Finland is party to the UNFCCC and the Paris Agreement, the relevant IMO Conventions and the European Climate Law that includes the target for reducing net emissions by at least 55% by 2030 compared to 1990 and becoming the first climate neutral continent by 2050. Regarding future developments of maritime transport, the Government is generally supportive of the Fit for 55 – legislative proposals concerning the maritime transport and of the work of the IMO to decarbonize shipping.

Most recently, Finland has supported two new declarations regarding reduction of shipping emissions at COP 26 (of the UNFCCC) in Glasgow, while underlining concurrently and consistently that the challenges of winter navigation need to be taken into account. Alongside with Belgium, Denmark, France, Germany, Honduras, Hungary, Iceland, Marshall Islands, Norway, Panama, Sweden, United Kingdom of Great Britain and Northern Ireland and United States of America, Finland is a participant State of the Declaration on Zero Emission Shipping by 2050, that stresses "that in order to keep the Paris Agreement temperature goal within reach, emissions from international shipping should peak immediately, undergo significant reductions in the 2020s, and reach zero emissions by 2050."[283]

Finland also became signatory to the Clydebank Declaration for Green Shipping Corridors supporting zero-emission maritime routes with Australia, Belgium, Canada, Costa Rica, Denmark, Fiji, France, Germany, Ireland, Italy, Japan, Marshall Islands, Morocco, the Netherlands, New Zealand, Norway, Spain, Sweden, The United Kingdom of Great Britain, and Northern Ireland and the United States of America. In the Declarations mission statement the signatories pledge that "it is our collective aim to support the establishment of at least 6 green corridors by the middle of this decade, while aiming to scale activity up in the following years, by inter alia supporting the establishment of more routes, longer routes and/or having more ships on the same routes. It is our aspiration to see many more corridors in operation by 2030."[284] The green corridors are a voluntary initiative that entail decarbonising entire maritime routes, internationally or domestically, by facilitating the establishment of partnerships with participation of ports, operators and others actor along the value chains.[285]

Finland is also bound by its own Climate Change Act requiring reducing greenhouse gas emissions at least 80% compared to the 1990 levels (which has been proposed to be amended to include the goal of carbon neutrality by 2035).[286] It does not mention shipping particularly but obligates Finland to take into account its international commitments, as well as EU legislation. The Maritime Transport Strategy and the Government Resolution on Finland's Maritime Policy Guidelines provide some further parameters.

The Maritime Transport Strategy for Finland 2014-2022, which is currently in the process of being updated, provides an overall view of the sector and aims at ensuring "that Finland's maritime transport and maritime industries can operate effectively and that the competitiveness of national economy and environmental and safety issues are taken extensively into account."[287] The Strategy underlines that regarding reduction of greenhouse gas emissions from shipping, "Finland needs to focus internationally and within the EU particularly on the parameters imposed by the country's geographical location and the additional costs of winter navigation and on securing sea transport links all year round. Shipping to and from Finland must not be punished for the higher fuel consumption of ice-strengthened ships required for year-round traffic."[288]

The Government Resolution on Finland's Maritime Policy Guidelines also promotes low-carbon maritime transport, cutting black carbon emissions, and reducing the carbon footprint of ports.[289] The recent Government Resolution on reducing greenhouse gas emissions from maritime and inland waterway transport builds on the Maritime Transport Strategy but also anticipates the inclusion of shipping under EU climate objectives and measures.[290] The Resolution notes that it would be preferable to have a global emissions trading system for the international maritime sector instead of having a geographically limited system in the EU. However, the Resolution notes the difficulty of such an effort: "a prerequisite for global emissions trading would be consensus between the 170 IMO Member States; reaching this consensus would take time and require a much more ambitious approach from a number of states to build systems that would in line with both IMO objectives and the goals of the Paris Agreement."[291] It also further stresses that it is important that in relation to including shipping into the EU ETS, "its fitness for future global application and the possible impact of regional regulation on the progress of the IMO's negotiations should be assessed. Attention should be paid to any negative effects on trade relations."[292]

4.4 Stakeholder views

The main dilemma for the Finnish maritime sector is reconciliation between emission reduction measures and their impacts on the industry and economy.[293] Based on stakeholders views on the Fit for 55 – proposals, it is clear that the proposals cause significant concerns for stakeholders, although some also see them as an opportunity.

The marine labour unions (the Finnish Seafarers' Union, the Finnish Ship's Officers' Union and the Finnish Engineers' Association) have expressed their concerns regarding the Fit for 55 – proposals and their potential effect on the Finnish maritime transport and industry sectors in a joint statement. In their view, the worst-case scenario is that the costs could be catastrophic, Finland could lose new factories in the Bothnian Bay region, and transportations could be transitioned to Sweden and Norway. The coalition insists that the EU must take into account the challenges posed by winter navigation.[294]

The Confederation of Finnish Industries supports the ambitious climate policy of the EU and the premise that shipping needs as ambitious targets as other sectors. However, it also stresses the importance of ensuring that the Finnish industries' competitiveness is maintained by taking into account the winter navigation issues, but offers no concrete suggestions on how this is to be achieved. The Confederation considers sufficient free allocation of allowances as a measure that could help avoid carbon leakage from the EU ETS and stresses that all measures at the EU level need to function together well with IMO measures. It also highlights the relevance of global reductions and considers that the EU should strengthen its impact in the IMO to achieve the goals of the Paris Agreement.[295]

The Finnish Shipowner's Association also regrets that the EU has failed to address winter navigation in the EU ETS proposal, and also notes that there are many proposals currently under negotiation and therefore a risk that regulation might overlap and get overly complicated. The Association emphasizes that impacts must be evaluated as a whole, and that account should be taken of development at the IMO.[296]

The Finnish Forest Industries and the Finland Chamber of Commerce similarly note in their joint assessment of the Fit for 55 – package that winter navigation is not addressed at all and stress that the messages from Finnish actors need to be coordinated at the negotiations to achieve streamlined solutions.[297]

However, new low-carbon and zero-carbon solutions signify not only challenges but also opportunities for the Finnish maritime sector.[298] For example, Meriaura has been developing its own biofuels, introduced the opportunity for its customers to enter into near-carbon-neutral transportation contracts, and is working towards a 100% carbon neutral transportation concept based on renewable energy solutions.[299] The Confederation of Finnish Industries, too, notes that the new emission reduction obligations provide new business and growth opportunities for the maritime sector.[300]

4.5 Assessment of Finland's position on and opportunities to affect the future developments

4.5.1 Finland and the IMO

Finland has repeatedly confirmed its support for both the international climate change law framework within the UNFCCC as well as addressing the matter through the IMO. It has been actively involved in developing such measures at IMO, emphasizing that "maintaining a level playing field among different ships within a ship type, and among different ship types, is a common principle when developing regulations at the IMO."[301] In particular, Finland has actively sought solutions to the winter navigation issue, with considerable progress. Currently,

both EEDI and EEXI rules allow for ice class correction factors, and discussions on how to take consider the matter in the context of the CII are ongoing.

The possibility for a correction factor based on ice performance was introduced at the first EEDI version in 2011. Regulations that take into account the special design features of ships having an ice class and ice class correction factors for capacity and power have since been adopted in the 2014 Guidelines on the method of calculation of the attained EEDI for new ships.[302] The general argument for using ice class correction factors is to level the playing field by making ice class tonnage comparable to open water tonnage in view of the attained EEDI.[303] The EEXI Regulations, too, accordingly incorporate ice class correction factors correct the installed power, e.g. for Ice-class ships, as well as to correct the capacity, e.g. to consider structural enhancement. Further correction factors are applicable for cranes on board and for Ice-classed ships having IA Super and IA.[304]

However, the relationship of CII and CII ratings to ice class correction factors remains open and it is unclear as of now whether such corrections will materialize within the operational measures. Currently the guidelines only provide that the MEPC "agrees to consider substantiated proposals for CII correction factors for certain ship types, operational profiles and/or voyages with a view to enhance the annexed Guidelines before entry into force of the aforementioned amendments to MARPOL Annex VI."[305]

Finland was involved in a submission which proposed "an addition to the text of Regulation 28.1 to permit exclusions for ice-classed ships when sailing in ice conditions."[306] Finland has also noted that

> ice class correction factors alone would not compensate the effect of sailing in ice conditions for the attained CII of an ice-classed ship. Also voyage exclusions, when sailing in ice conditions, are required. The longer the distance the ship sails in ice conditions, the more challenging it is for the ship to comply with the CII regulations without applying voyage exclusions when sailing in ice conditions.[307]

However, the MEPC 76 did not agree to the proposal for an exclusion for ice-classed ships in the MARPOL and decided that the matter should be considered as part of the ongoing discussion with regard to correction factors/voyage exclusions taking place in the Intersessional Working Group, through the guidelines on the application of the CII under development.[308]

4.5.2 Finland and the Fit for 55 – proposals

On the arguments used by Finland and their reception

The Finnish views regarding the EU legislative proposals under the Fit for 55 -package generally echo those expressed at the IMO. The Government is committed to a high level of ambition to reduce GHG emissions from shipping while at the same time underlining that the measures should respect the special circumstances of Finland stemming from the need to ensure safe winter navigation and maintain the competitiveness of Finnish industries. However, the

Finnish Government has not put forward concrete propositions regarding how winter navigation should be taken into account in the Fit for 55 – package, which leaves many questions open regarding the options in terms of legal design and potential issues.

For the Finnish Government, the issue of winter navigation has been a particularly important question and it is actively pushing for "fair treatment of ice-strengthened vessels" as "an urgent matter of maritime safety and logistical efficiency in the northernmost parts of the Baltic Sea".[309] As a basis for this argument, the Minister of Transport and Communication, Timo Harakka, in a letter the Commission's Executive Vice-President Frans Timmermans, has referred to the 1995 Treaty on the Accession of Finland to the EU that was accompanied by a Joint Declaration stating that the challenges caused by physical conditions to Finland's vital transport connections need to be taken into account in all relevant EU initiatives.[310]

The remote geographical location and the importance of maritime transport were accordingly items of concern already when Finland joined the EU in 1995. The Treaty on the Accession of Finland to the EU was accompanied by a Joint Declaration on Safeguarding Finland's Transportation Links, stating the following:[311]

> The Contracting Parties, recognising that for Finland sea routes are especially important, due to geographical location, and particularly difficult to secure, due to climatic conditions, agree that due attention will be given to the maintenance and development of the Finnish maritime links with the rest of the Union in relevant Union initiatives, inter alia in connection with the development of the trans-European networks in Northern Europe.[312]

A Joint Declaration is part of the Accession Treaty – package. It is annexed to the Final Act, which is not a legally binding part of a Treaty on Accession, but rather a political instrument. When a Treaty on the Accession of a new Member State enters into force, the Treaty and its Protocol, along with the annexes, become part of the primary law of the EU. However, unilateral and Joint Declarations are not legally binding.[313] Therefore, using the Joint Declaration on Safeguarding Finland's Transportation Links emphasizes the policy aspects surrounding the issue, but does not serve as a legal argument to secure special rules regarding winter navigation.

ETS discussions

Much of the discussions on applying the Finnish concerns to the three proposals in the Fit for 55-package, has centered on the EU ETS proposal. It is the main EU response for regulating shipping that has been discussed from the outset, and it is based on an existing system that already operates. The Finnish concerns related to this proposal are likely become more serious over time, as the price of carbon in the EU ETS has been rising, and, if the ETS functions as is intended, should continue to do so, further emphasizing the financial consequences for disadvantaged states and regions.

The Commission's understanding for the Finnish concerns particular proposal was the subject of a question by Finnish Member of the European Parliament, Elsi Katainen, to the Commission in April 2021:

> In June 2021, the Commission intends to propose adding shipping to the EU emissions trading system as part of the European Green Deal. Many remote EU countries, such as Finland, are totally dependent on its maritime connections. In all, 90% of Finnish exports and 80% of imports are transported by sea. In addition to its remote location, Finland faces the challenge of wintry conditions, with the sea and harbours frozen for a third of the year. For a vessel to pass through a layer of thick ice, there is a need not just for special structures and massive engine power but also more fuel, which means significant additional costs. If the special features of winter navigation are not considered when the proposal is being drafted, extending emissions trading to shipping could place Member States at a disadvantage.
>
> How does the Commission intend to take account of the requirements of navigation in ice conditions when expanding the scope of EU emissions trading to ensure a level playing field in Europe?[314]

Executive Vice-President Timmermans replied on behalf of the Commission in June, i.e. before the Fit for 55-package was published:

> In line with the European Green Deal and the Climate Target Plan Communication, the Commission is committed to extend European emissions trading to the maritime transport sector and will present its proposals mid-July 2021. In this context, the Commission is preparing an impact assessment for the amendment of the EU Emissions Trading System to assess how to strengthen and expand the current legislation in light of the increased climate ambition for 2030.
>
> As part of this impact assessment, the objective is to consider different policy options to ensure that EU policies are designed in the most efficient and effective way possible. In particular, the Commission strives to develop a system that ensures a level-playing field for all actors, limits administrative burden and maintains the competitiveness of the EU industry. At the same time, equal treatment is another key guiding principle, meaning that exemptions or special treatment would need to be motivated by e.g. clear underlying competitive distortion. The impact assessment will therefore analyse the possible effects of emissions trading in the maritime transport sector on the European internal market and trade, also taking into account the EU countries and regions heavily dependent on shipping.
>
> In addition, the intention of the Commission is for emissions trading in the maritime sector to rely on the amount of emissions reported under Regulation (EU) 2015/757 on the monitoring, reporting and verification of CO_2 emissions from maritime transport, which includes the possibility for companies to monitor and report information relating to the ship's ice class and to navigation through ice.[315] (Footnotes omitted)

Vice-President Timmermans refers to the impact assessment and that it will take into account the EU countries and regions heavily dependent on shipping. Indeed, the inception impact assessment from 2020 (i.e. before the EU ETS proposal was published), similarly provided that:

> As regards the extension of the EU ETS to maritime emissions, previous analysis showed the limited impacts of carbon pricing applied to maritime emissions on commodity prices compared to normal price fluctuations, but an updated analysis will be carried out, taking also into account the situation of remote islands and peripheral regions.[316]

Yet, the Impact Assessment Report that accompanies the ETS Proposal a year later makes no reference to either EU countries heavily dependent on shipping or further analysis on how the ETS revision would affect remote islands and peripheral regions. Nor does the proposal for an EU ETS Directive, as noted, include any exemptions for states or activities that are particularly hard hit by the extension of the ETS to shipping. It must be concluded that the Commission, at this stage at least, considers that this type of special arrangements are not justified in view of the overall impact and effectiveness of the proposal (including administrative burden) and of the principle of equal treatment.

If Finland intends to prepare concrete proposals to this effect, reliance should ideally be made, as was also indicated by Vice-President Timmermans, on accurate data gathered through the MRV regulation on fuel consumption and its actual relationship to ships' ice classes and winter navigation in the Baltic Sea. It would probably be beneficial for the negotiation process to demonstrate to other Member States and the EU institutions how the proposed reductions could fit into the overall scheme of the Fit for 55 – package.

4.5.3 Concluding assessment

The Finnish position on the reduction of greenhouse gas emissions from shipping is somewhat ambivalent. The Finnish generally ambitious (and binding) climate goals appear to be contradictory with its special interests and goals as far as shipping is concerned, which obscures the country's general policy position on the matter. Finland attempts to be at the same time an ambitious actor in tackling climate change, also in shipping, while concurrently seeking special treatment and exceptions, due to the special challenges and costs that follow from its geographical conditions. It is difficult to do both simultaneously in a credible way. In addition, the successful argument for Finnish derogations varies with respect to both the Finnish concern at issue and what measure is being targeted.

There appears to be two main concerns underlying the Finnish position with respect to the Fit for 55-proposals, both of which consist of two sub-elements. The first concern has to do with winter navigation, which is divided into the (design) concern of ice-strengthened ships and the (operational) concern relating to the higher engine power and extra fuel and energy used while actually operating in icy conditions. The second concern relates to the peripheral geographical position of Finland in the EU which, on the one hand, raises concerns about the general dependency of maritime transport and the expenses that follow from long and vital marine transports. On the other hand, the peripheral position raises risks linked to carbon leakage and other rule evasion, in view of Finland's proximity to areas where the EU rules do not apply (Russia).

The risk related to ice-strengthened ships has to do with ship design. Ships are built in many places around the world and the decision on a ship's structural strength and engine power is

based on a number of factors, often without a complete overview of the ship's future operating areas. The risk that EU rules in the future might lead to less ships being adequately built for navigation in icy conditions is therefore a general concern (including maritime safety, pollution prevention etc. concerns) that goes well beyond the particular Finnish situation. It may also be noted that the additional fuel consumption (and costs) of ice-strengthened ships has not prevented such ships from being built – or operated in Finland – to date, even if the additional costs have always been there. It is also a matter that cannot be effectively regulated by means of EU rules, both because EU rules do not cover all places where ships are built and because EU rules do not cover ship design. This is accordingly a concern that should be addressed at global level, at IMO. As has been shown in chapter 2 above, ice correction factors have been included in the EEDI and EEXI rules, which should alleviate concerns related to ship design, or at least provide a venue for strengthening those rules.

Another question is whether the actual operation of ships in icy conditions should somehow be compensated by the EU rules in the field. This points towards the ETS proposal, which is the one of the three proposals that most clearly targets the quantity of fuel used on board.[317] There may be some scope for exempting certain ship types from the scope of the ETS obligations. As a minimum, it seems justified to exempt icebreakers in service from the obligations, as part of the "government vessels used for non-commercial purposes". As to commercial ships, the matter is more complex. Exempting ice-classed ships completely would significantly limit the effectiveness of the Directive, and could even be counterproductive as it would encourage fuel inefficiency. A less radical option would be to offer general reductions (or 'corrections') for ice-classed vessels (of a certain ice-class) linked to the increased costs, e.g. by including such vessels (in part) within the scope of Article 10a regarding 'Transitional Union-wide rules for harmonized free allocation of allowances'. However, the same objections would apply in principle. Any exemption, partial or not, will work against the purpose of the instrument.

While it is possible to exempt certain classes of ships from the duties to surrender part of the allowances, the proposal is coupled with potential policy concerns. As the EU ETS covers multiple sectors, generic exemptions for a particular sector will probably be considered very restrictively, however narrow they may be, to avoid similar exemptions in other sectors and additional administrative complexities. The economic justification of such a reduction for certain ships is not altogether straightforward either. On the one hand, the added cost of winter navigation may not be more than an additional 3-6% to the general costs that all three EU measures give rise to.[318] On the other hand, that cost is further diluted if it is presented in the form of the cost for the end consumer of the transported goods.[319] In the end, it seems that if a compensating factor for the additional fuel consumption of (certain) ice-classed ships is to be successfully introduced, it should be founded in some larger context than the economic interest of a few Northern Member States alone. One of the few possibilities in this regard would be to link the reductions for ice-going ships to the technical allowances already accepted at IMO and

have the global corrections transferred to the EU context as part of the implementation of a larger global agreement. It is not clear, though, if or how this linkage could be achieved in regulatory terms without unduly complicating the EU emission reduction measures, but it will be for the requesting states to formulate such proposals.

Another (alternative or additional) option is to make the derogation purely 'operational' by permitting derogations or carbon 'discounts' for the periods that a particular ship actually operates in icy conditions. This is where the main economic impact of winter navigation lies, and it would also offer a flexible solution that could be implemented by any EU Member State for the ice-covered period and/or ports and would more fairly reflect on the real additional costs of winter navigation. However, this option would also reduce the economic benefit of the exemption for the shipowners. The gains might not be proportionate to the added administrative burden such an exemption regime would entail. (Given, that an operational exemption of that nature, to be fair, would need to take into account the climate conditions, including thickness of the ice in the location for which the exemption is sought etc.). However, if operational exceptions for operation in icy conditions are accepted within the IMO (CII) system,[320] will have a stronger regulatory foundation, which may make such complications easier to accept from an EU point of view. Another possibility for the EU could be to make such an arrangement optional for the Member States (administering authorities) who are prepared to invest in the additional administrative burden to operate such operational reductions, without offering an explicit right for ships to expect them.

The second Finnish main concern has to do with its geographical location in the periphery of the EU. The first part of this concern is that Finland is remotely located far from Central Europe and its main trading partners, making it heavily dependent on shipping for its international trade and, through that, particularly vulnerable to increased maritime transportation costs. This, of course, is a disadvantage (if it is one) that has existed from the outset and applies to any shipping regulation involving operational costs. However, it has not been given special consideration in EU maritime regulation to date. Indeed, one the few EU shipping rules adopted to date that has (exceptionally) accepted unequal treatment between Member States, places Finland among the states accepting (significantly) higher operational costs for ship operators in the interest of environmental protection.[321] As was indicated in the reply by Vice-President Timmermans quoted above, exceptions to the general starting point of equal treatment between Member States require a "clear underlying competitive distortion". Moreover, since shipping is by no means the only activity or transport mode that is subject to tighter standards for GHG emissions, corresponding arguments could be advanced by any other peripheric region as well as by Member States that have particular transportation challenges, such as large coverage of mountains etc.

The second part of the geographic concern, relating to the proximity to a non-EU state, constitutes a more interesting argument, and is probably more promising as a foundation for potential exceptions. All three EU acts discussed above entail the risk that shipping averts ports of peripheral states by opting to trade through ports in a neighbouring non-EU state and thereby avoids the EU requirements altogether. Ship operators may choose to bunker their ships in Russian ports to avoid EU fuel taxes, or to choose a Russian port following a long sea leg to avoid that the long journey forms part of the emissions or energy calculations for contribution to the EU ETS. The same applies to the FuelEU regime, albeit in a weakened form, given that the energy intensity limit of the energy used onboard focuses on the quality of fuel used as much as actual usage.

This type of risks is inherent in any non-global regulatory scheme and therefore difficult to avoid in a regional measure. To some extent, the EU has sought to mitigate such risks by reducing the effectiveness of the proposals (by only covering 50% of the non-EU voyages) as far as voyages from third states are concerned. The extent of this risk is further moderated for Finland by the fact that the overwhelming majority of Finnish sea transports are to or from another EU Member State, and would thus be covered, in half, even if one end of the transport would move outside the EU.

Further mechanisms could be thinkable to reduce the risk without compromising the effectiveness of the measure. As far as the FuelEU Maritime proposal is concerned, it was noted that there are unclear justifications of the 50% coverage of non-EU voyages in the first place. Its removal could be considered, by extending its coverage to the entire voyages of ships (somewhat regularly) visiting EU ports. As far as the ETS is concerned, the risk of 'tactical' voyage planning could, for example, be reduced by introducing specific rules for ports that are susceptible to such risks.[322] The legality of such measures would have to be subject to separate assessments of reasonableness in view of their effect and consequences.

By shifting its policy concern from winter conditions to the peripheral location, Finland may also find broader support among other peripheral EU Member States, which could help to secure results. In addition, the proposals outlined above do not have detrimental effects to the effectiveness of the rules but would in effect serve to increase their impact in reducing GHG emissions and would hence fit more easily in Finland's generally climate-conscious policy.

In the bigger scheme, it seems clear, however, that global rules will always be more effective than regional ones, in particular when it comes to leakage issues. A main ambition of Finland, also in an EU context, should therefore be to ensure continued progress of the file in parallel at IMO and to include mechanisms in the EU proposals to ensure their compatibility with future IMO measures. As was noted above, this may also be the most realistic way to have special rules for winter navigation approved at EU-level.

In an even larger context, it may be worth recalling the difference in temporal scope of the GHG measures. While the EU ETS (and any global MBMs being considered by the IMO) are designed as temporary measures to facilitate and accelerate the shift towards fuel efficiency and low carbon fuels, they do not as such facilitate a shift towards low and zero carbon sustainable fuels. The sooner that shift (which is specifically targeted by the FuelEU Maritime proposal, and more cautiously by IMO's plans to identify sustainability criteria and lifecycle assessment calculations) takes place, the smaller the problems linked to ETS will be. It would therefore seem consistent with the overall ambition of Finland to work in favour of an early shift to sustainable fuels, and thereby to minimize the potential drawbacks of the ETS proposal, and maximise the availability of EU funding aimed at supporting a fuel switch. That strategy would also fully permit capitalizing on Finland's ambition to "make full use of new technologies and data to improve … energy efficiency as well as to reduce GHG emissions".[323]

5 Conclusions

General

This study has reviewed the current regulatory situation when it comes to the reduction of greenhouse gases from ships and the shift to low or zero-carbon fuels in the future. It has also assessed Finland's position in this context and considered available options to secure its interests in the field.

The topic is very unsettled in legal terms, as a number of initiatives have recently been launched at global level and within the EU, but only very few rules are adopted and in force. It is therefore difficult to make a traditional legal study of the relationship between the rules, internally, or between the global and regional regulatory levels. Instead, the focus of the study has been to assess the regulatory options, for both the EU and Finland, to pursue their own policies in this field in terms of identifying legal opportunities and limitations.

Global rules

The first main chapter (Chapter 2) covers the developments at global level, notably at the IMO. IMO has taken the lead in regulating greenhouse gas emissions from ships and in the past few years, the work has intensified considerably, not least thanks to the Initial Strategy adopted in 2018, which is now specifically referred to in MARPOL Annex VI.

However, IMO does not have exclusive authority over the subject matter, and its efforts could be supplemented by other global regulatory activities in the future, e.g. within UNFCCC framework, if IMO progress was deemed to be unsatisfactory.

At present, however, global regulatory action is firmly within the IMO, and is set to be so for the foreseeable future, in view of the many on-going legal initiatives to decarbonize shipping. There are few legal limitations on the actions that IMO can take in this field and the organization has a broad discretion in choosing its policies and measures.

In the past few years, some basic (gradually strengthening) ship construction standards on energy efficiency have been extended from newbuildings to existing ships, and the first steps towards setting mandatory targets for ship operations have been taken through the CII. Most recently, the discussions on MBMs have restarted following a ten year's break. It is too early to assess the direction of these discussions, but currently the most likely scenario seems to be a levy to the fuel which is collected to a fund aimed at supporting climate mitigation measures within the industry, with a particular emphasis on the needs of developing countries and particularly vulnerable states.

EU rules

Chapter 3 covers the EU activities in this field, with a particular emphasis on three recent proposals with effects for shipping made under the Fit for 55 package in July 2021.

The main elements of the proposals are explained, bearing in mind that the proposals may still undergo significant alterations in the other EU institutions before they are adopted. The energy taxation directive proposes to reduce the tax exemptions that fossil fuels currently enjoy.

The EU ETS proposal seeks to include shipping. This has been a policy option for the Commission for decades, but it is the first time a concrete proposal is presented, which allows for EU negotiations to be undertaken in parallel to the discussions at IMO

The proposal includes few special rules for shipping, apart from the data collection and allocation of responsibilities between public and public actors. As far as the operation of the ETS is concerned, shipping is treated like any other industry sector covered by the existing ETS.

The FuelEU Maritime is an entirely new instrument aimed at reducing the combined energy intensity of ships, i.e. including the (well to wake) calculations of type of fuel a ship uses and therefore provides a more direct incentive for switching to low-carbon fuels. Like the ETS proposal, the FuelEU Maritime operates on the basis of aggregated annual data (some more flexibility), but includes somewhat more flexible rules on implementation, e.g. as regards allowing the company to calculate averages for its entire fleet.

None of the measure include obligations for other entities than the shipowning company (such as e.g. charterers), but both the ETS and the FuelEU Maritime proposals acknowledge the possibility that the duties may be delegated through contractual arrangements.

All three measures target ships of any nationality insofar as they enter EU ports and hence use the temporary territorial presence of the ship as their jurisdictional basis. In view of their regional scope, all measures involve risks of leakage; and these risks are emphasized in the peripheral regions of the EU, where competition with non-EU states is most tangible and direct.

The chapter also includes an international law analysis of the limitations imposed by international law on regional (or national) measures in the field. It concludes that international law includes different types of restraints on how far unilateral regulation in this field may extend, both under the law of the sea and under general international law. The restraints are not particularly specific, however, and the situation is further obscured by the fact that the EU rules in question often target financial obligations of shipowners, base themselves on annual performance data rather than individual voyages, and have only remote links (through

secondary enforcement measures) to the operation of the ship as such. Overall, it is concluded that the EU proposals appear to handle the international law restraints carefully and do not raise immediate concerns of legality from this perspective. Since enforcement measures limiting port access are easier to justify in jurisdictional terms than penalties, there may even be scope for strengthening the material obligations of foreign ships by limiting enforcement to access criteria, for example to apply the FuelEU Maritime obligation to the full extent (instead of 50%) for voyages to and from non-EU ports.

Finland

The last chapter covers the Finnish position in view of the regulatory developments at IMO and in the EU. Finland has been fairly successful in obtaining understanding for its concerns at IMO so far, notably regarding the design of ships and the availability of a correction factor for calculating the energy efficiency for ice-strengthened ships with higher engine power and fuel consumption. Whether a similar understanding will be met for the operational requirements in the making at IMO for the moment is still open.

At EU level, there has been no accommodation of the Finnish concerns in the proposals presented by the Commission. This is natural, given that national exemptions are typically introduced during negotiations within the Council, and since Finland did not put forward concrete proposals for the Commission as to how its concerns should or could be taken into account.

The three EU measures offer different opportunities for accommodating the Finnish concerns. None of the measures deal with ship construction and that matter is anyway better regulated at global level. The energy taxation directive includes a certain discretion for Member States to identify the right level of fuel taxes, even if does away with the overall exclusion.

Making specific exemptions for (certain) ice-classed ships in the ETS systems would require strong technical justification as it will to some extent encourage fuel inefficiency and thereby counteract the objective of the proposal. It may also be difficult to find support for that proposal, not least in view of the multi-sector scope of the ETS. An option to alleviate such concerns could be to implement the correction factors and other allowances for ice-strengthened ships that have been accepted by the IMO in the EU system. This is likely to be a regulatory challenge, though, as it may add significant complexity to the EU-system. Providing operational derogations or discounts for periods when ships have actually been operating in ice conditions is an alternative approach to compensate for the additional fuel consumption and would thus be easier to justify. Yet, an operational system of that kind would require a significant administrative support system by the state authorities and others involved in verifying and implementing it.

Accepting the Finnish concerns do not necessarily have to be against the goals of the system. Certain ways to address the concerns by strengthening the effect of the measures were highlighted, in particular by addressing some of the risks that follow from Finland's proximity to the EU's outer border. For example, raising the 50% threshold for covering non-EU voyages in the FuelEU Maritime regulation to 100% would reduce the risk of rule evasion through choosing non-EU ports, and hence also the losses of 'transit traffic' on wheels to Russia that Finland currently benefits from. The ETS system may offer other opportunities to ensure that vessels do not tactically choose non-EU ports as their destination.

By shifting its policy concern from winter conditions to the peripheral location, Finland could shift its efforts to strengthening the regime, rather than finding exemptions from it. This would both me more consistent with the country's general climate policy and probably also find broader support among other EU Member States. Promoting a swift and smooth transition to zero or low-carbon fuels and technologies will also shorten the period of challenges linked to the ever-more expensive ETS and will be consistent by Finland's ambition to be at the forefront of the technological development in this field.

Apart from these regulatory options, it is clear, finally, that Finland should promote other mechanisms to foster a change to low-carbon fuels in shipping, e.g. by promoting 'bottom-up' solutions by the industry to promote low carbon practices. The 'Green Corridors' represent another mechanism whereby Finland, together with other states, could gain experience from zero-carbon fuels the related infrastructure, at sea and on land.

Annex: Summary table of IMO and EU measures

	Scope	Targeted subject	Source of first data input	Accredited Verifier	State in control	Generates funds for	Leakage risks	Consequence of non-compliance	Comments
IMO Measures									
DCS	Data system (global) 5000gt	Ship operator	Ship operator	Yes (class)	Flag state	-	-	Non-issue of certificate by Flag state	Does not reduce emissions: data tool
EEDI	Design of new ships (400gt)	Shipdesigner/ builder			Flag state (certificate)	-	- (non-party ships governed by NMFT clause)	Non-issue of certificate by Flag state	
EEXI	Design of existing ships (400gt)	Ship operator			Flag state (certificate)	-	- NMFT clause	Non-issue of certificate by Flag state	
SEEMP	Operational Management plan (400/5000gt)	Ship operator	Ship operator	-		-	- NMFT clause	-	
CII	Carbon intensity indicator + rating (5000gt) (annual)	Ship operator	Ship operator	-	Flag state?		- NMFT clause	?	
MBM (levy)	Price addition to fuel	Fuel provider			Port state (fuel provider)	Shipping	Yes, non-party fuel providers?	?	Drawback: no guarantee for reduction + charterer pays levy

	Scope	Targeted subject	Source of first data input	Accredited Verifier	State in control	Generates funds for	Leakage risks	Consequence of non-compliance	Comments
EU measures									
MRV	Data system (regional) 5000gt carbon dioxide	Shipping company	Shipping company	Yes	Port state	-	-	Denied entry to port	Does not reduce emissions: data tool
ETS	Cap and trade emissions trading (5000gt) carbon dioxide	Shipping company or commercial operator through a contractual agreement	Shipping company or commercial operator through a contractual agreement	Yes -monitoring plans, emissions report of aggregated emissions	Port state	Union budget (Innovation and Modernisation funds), Member States (to tackle climate change	Trans-shipment hubs, other evasive port calls, using smaller vessels, fleet optimization	Penalties 100€/CO2 tonne + expulsion order issued by MS authority, MS authorities to detain ships or deny entry	Auctioning of allowances, gradual reduction of cap
FuelEU M	Requirements of share of renewable and low-carbon fuel	Shipping company	Shipping company	Yes	Port state	Fines (shipping)	Yes in remote EU areas, non-EU operators	Penalties + denied entry	Also in-port electricity use requirements
Taxation	Taxation of HFO, less tax on RLCF	Fuel provider			Port state	Member state	Yes in remote areas		

References

[1] See e.g. the Fourth IMO GHG Study, submitted to the IMO's Marine Environment Protection Committee (MEPC) in July 2020, as document IMO Doc. MEPC 75/7/15.
[2] In the climate change framework, the principle of 'common but differentiated responsibility' (CBDR) has been the guiding principle from the outset. (See the 1992 United Nations' Framework Convention on Climate Change (UNFCCC), Art. 3(1)). In the 1997 Kyoto Protocol, the main part of the obligations were limited to (developed) States listed in Annex 1. In the Paris Agreement, the CBDR principle features in Arts. 2(2) and 4, but is moderated as the Agreement includes all States in mitigation efforts. By contrast, the IMO has traditionally relied on the principle that all ships should be treated in the same way. many key IMO conventions establish that there shall be no difference in treatment between ships flying the flag of parties and non-parties to the conventions when visiting ports of States Parties. See, e.g, MARPOL, Art. 5(4).
[3] UNFCCC refers to contribution by "all economic sectors", and even includes certain references to transport in some of the key provisions (Arts. 3 and 4(1)(c). In Art. 2(2) of the 1997 Kyoto Protocol matters relating to bunker fuel from shipping and aviation was specifically left for the IMO and the International Civil Aviation Organization (ICAO) to regulate, but such a provision no longer features in the 2015 Paris Agreement.
[4] Paris Agreement, Art. 2(1).
[5] Paris Agreement Art. 4(1).
[6] See J. Scott, T. Smith, N. Rehmatulla, B. Milligan, 'The promise and limits of private standards in reducing greenhouse gas emissions from shipping' (2017) 29 *Journal of Environmental Law*, 235.
[7] See also A. O'Leary & J. Brown, 'Legal bases for IMO Climate Change Measures', Report by Environmental Defense Fund, Columbia Law School, 2018, available at http://columbiaclimatelaw.com/files/2018/06/OLeary-and-Brown-2018-06-IMO-Climate-Measures.pdf
[8] Ref. e.g. art 211
[9] The use of the word 'organization' in the singular in some parts of UNCLOS that deal with ship-source pollution (e.g. Art. 211(1) , does not preclude that several organizations are competent for different aspects of the topic (note e.g. the division of competence between the IMO and ILO on different aspects of regulation of seafarers). It is also to be noted that the reference is frequently coupled with the phrase "or general diplomatic conference"(e.g. Arts. 211(2). This addition was made originally made to UNCLOS precisely to preclude a monopoly for a single organization. See e.g. D. Bodansky 'Protecting the Marine Environment from Vessel-Source Pollution', 18 Ecology Law Quarterly, 1991, 772.
[10] In particular the 'tacit acceptance' procedure, under which existing IMO conventions may be amended with the effect for all parties, unless they explicitly opt out of the amendment. See e.g. MARPOL Art. 16(2). The 'no more favourable treatment clause which exists in many IMO conventions, including in MARPOL Art. 5(4), has similar effects with respect to non parties.
[11] B. Martinez Romera, 'The Paris Agreement and the regulation of international bunker fuels' 25(2) *Review of European Community & International Environmental Law*, 2016, 221.
[12] See J. Scott et al., p. 234.
[13] *Ibid.*. See also the Third IMO GHG Study (2014), made available in IMO Doc. MEPC 67/INF.3 and the somewhat moderated predictions made in the Fourth IMO study referred to in n. 1 above.
[14] See e.g. various presentations available at www.imo.org/en/About/Events/Pages/Symposium-alternative-low-carbon-and-zero-carbon-fuels.aspx
[15] https://www.dnv.com/maritime/hub/decarbonize-shipping/fuels/future-fuels.html
[16] IMO Doc. MEPC 62/24/Add.1
[17] IMO Resolution MEPC.278(70) introducing a new Reg. 22A to Marpol Annex VI, including two new appendices. See also Resolution MEPC 293(71) containing the 2017 Guidelines for the development and management of the IMO Ship Fuel Oil Consumption Database and Resolution MEPC.292(71)) including guidance for shipowners. See also www.imo.org/en/MediaCentre/PressBriefings/Pages/04MARPOLamendments.aspx
[18] www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Market-Based-Measures.aspx
[19] IMO Doc. MEPC 65/22, 44.
[20] ICAO Assembly Resolution 39-3 setting up the 'Carbon Offsetting and Reduction Scheme for International Aviation' (CORSIA). The scheme enters its pilot phase in 2021, but individual reduction obligations, which represent the real incentive for air operators to reduce their emissions, will only apply as from 2030. Nevertheless, it is clear that its establishment has contributed to a convergence of regimes governing international and national emissions and that that many of the arguments relating to the impossibility to find solutions for international bunker fuels have weakened along the way.
[21] IMO Doc. MEPC 70/18/Add.1, Annex 11. See also IMO Doc. MEPC 70/7/8.

[22] MEPC 70/18/Add.1, Annex 11. (11 November 2016) 1.
[23] MEPC 70/18/Add.1, Annex 11. (11 November 2016) 1-2.
[24] IMO Assembly, 30th Session, 'Strategy, Planning and Reform' (2017) A 30/7. Annex 1 'Strategic Plan for the Organization for the Six-Year Period 2018-2023. 5.
[25] IMO Resolution MEPC.304(72).
[26] The legal status of the Initial Strategy was boosted through the 2021 revision of MARPOL Annex VI, which included a new Regulation, outlining the goal of the relevant chapter as being "to reduce the carbon intensity of international shipping, working towards the levels of ambition set out in the Initial IMO Strategy". IMO Doc. Resolution MEPC.328(76), Annex, (Revised MARPOL Annex VI), Reg. 20.
[27] IMO Resolution MEPC.304(72), para. 3.1.3.
[28] *Ibid*., para. 3.2.1.
[29] *Ibid.*, para. 4.8.3. The only candidate longer-term measures (beyond 2030) listed in para. 4.9 are to "pursue the development and provision of zero-carbon or fossil-free fuels to enable the shipping sector to assess and consider decarbonization in the second half of the century" and to "encourage and facilitate the general adoption of other possible new/innovative emission reduction mechanism(s)."
[30] MEPC 73/19/Add.1, Annex 9 Programme of Follow-Up Actions of the Initial IMO Strategy on Reduction of GHG Emissions from Ships up to 2023. (October 2018)
[31] MEPC/76/15/Add.2, Annex 14 'Work Plan for the Development of Mid- and Long-Term Measures as a Follow-Up of the Initial IMO Strategy on Reduction of GHG Emissions' (June 2021).
[32] MEPC 73/19/Add.1, Annex 9 Programme of Follow-Up Actions of the Initial IMO Strategy on Reduction of GHG Emissions from Ships up to 2023. 2.
[33] Resolution MEPC.203(62), Annex 19. Amendments to the Annex of the Protocol of 1997 to Amend the International Convention for the Prevention of Pollution from Ships, 1973, As Modified by the Protocol of 1978 Relating Thereto (Inclusion of Regulations on Energy Efficiency for Ships in MARPOL Annex VI) (Adopted 15 July 2011)
[34] A Fakhry and B Bulut, 'MARPOL Energy Efficiency: Verging on Legal Inefficiency' in AI Ölcer et al. (eds) Trends and Challenges in Maritime Energy Management (2018) 6 WMU Studies in Maritime Affairs. 20.
[35] B Garcia et al., 'Net Zero for the International Shipping Sector? An Analysis of the Implementation and Regulatory Challenges of the IMO Strategy on Reduction of GHG Emissions' (2021) 33 Journal of Environmental Law. 89.
[36] MARPOL, Annex VI, chapter 4, regulations 19–21. See also the 2014 Guidelines on the Method of Calculation of the Attained Energy Efficiency Design Index (EEDI) for new ships, IMO Doc. MEPC 66/21 (25 April 2014), Annex 5.
[37] MARPOL Annex VI, Regulation 21, as amended in 2011.
[38] Regulation 20, Resolution MEPC.203(62), Annex 19. Amendments to the Annex of the Protocol of 1997 to Amend the International Convention for the Prevention of Pollution from Ships, 1973, As Modified by the Protocol of 1978 Relating Thereto (Inclusion of Regulations on Energy Efficiency for Ships in MARPOL Annex VI) (Adopted 15 July 2011).
[39] H Ringbom, 'Regulating Greenhouse Gases from Shipping: Some Light at the End of the Tunnel?' in E Johansen et al. (eds) The Law of the Sea and Climate Change (Cambridge University Press 2021) 139.
[40] In 2011 seven ship types were included (bulk carriers, gas carriers, tankers, container ships, general cargo ships, refrigerated cargo ships and combination carriers), which were thought to cover 70 per cent of the total shipping emissions. In 2014, five new ship types were added (LNG carriers, vehicle carriers, ro-ro cargo ships, ro-ro passenger ships and cruise passenger ships with non-conventional propulsion systems), bringing the percentage up to an estimated 85 per cent. However, the regime applies only to new ships and to ships above 400 gross tonnage.
[41] MARPOL, Annex VI, Regulation 19. See also 2014 guidelines on survey and certification of EEDI, Resolution MEPC.254(67) as amended by IMO resolution MEPC.309(73).
[42] MARPOL, Annex VI, Regulation 10(5)
[43] See IMO's web page on energy efficiency measures, at www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/Technical-and-Operational-Measures.aspx.
[44] The EEDI originally covered only the largest and most energy intensive segments of the world merchant fleet, i.e. tankers, bulk carriers, gas carriers, general cargo ships, container ships, refrigerated cargo carriers and combination carriers. In 2014, Marpol Annex VI was amended to extend the scope of EEDI to: LNG carriers, ro-ro cargo ships (vehicle carriers), ro-ro cargo ships; ro-ro passenger ships and cruise passenger ships having non-conventional propulsion. For certain ship types the implementation dates were strengthened in May 2019. See IMO Doc. MEPC 74/18.
[45] See e.g. GEF-UNDP-IMO GloMEEP Project and members of the GIA, 2020: Just In Time Arrival Guide – Barriers and Potential Solutions (available at https://greenvoyage2050.imo.org/wp-content/uploads/2021/01/GIA-just-in-time-hires.pdf)

[46] Second IMO GHG study, 54 and 58. See, however, also Fourth IMO GHG Study (MEPC 75/715), 276, concluding that "it is difficult to achieve IMO's mid-term target by energy-saving technologies and speed reduction of ships only."
[47] The EEOI is a simple calculating tool that indicates the ratio between CO_2 emissions and transport work (cargo carried × distance). See also IMO Doc. MEPC.1/Circ. 684 (17 August 2009).
[48] MARPOL Annex VI, Reg. 22. see also MEPC.1/Circ.684 (Guidelines for voluntary use of the EEOI for new and existing ships).
[49] Regulation 22, Resolution MEPC.203(62), Annex 19. Amendments to the Annex of the Protocol of 1997 to Amend the International Convention for the Prevention of Pollution from Ships, 1973, As Modified by the Protocol of 1978 Relating Thereto (Inclusion of Regulations on Energy Efficiency for Ships in MARPOL Annex VI) (Adopted 15 July 2011)
[50] IMO, Resolution MEPC.282(70) The 2016 Guidelines for the Development of a Ship Energy Efficiency Management Plan.
[51] A Fakhry and B Bulut, 'MARPOL Energy Efficiency: Verging on Legal Inefficiency' in AI Ölcer et al. (eds) Trends and Challenges in Maritime Energy Management (2018) 6 WMU Studies in Maritime Affairs. 22.
[52] Regulation 23(3), MARPOL Annex VI. MEPC 76/15/Add.1. Like for the EEDI, the scope of application of EEXI is all vessels above 400 gross tonnage coming within the scope of MARPOL Annex VI.
[53] Annex 7, Resolution MEPC.333(76).
[54] Annex 8, Resolution MEPC.334(76).
[55] Annex 9, Resolution MEPC.335(76).
[56] *Ibid*, Reg. 24.
[57] *Ibid*, Reg. 28.
[58] IMO Doc. MEPC76/WP.1/Rev.1, paras. 7.44 - 7.105, 49-73
[59] See e.g. B Garcia et al., 'Net Zero for the International Shipping Sector? An Analysis of the Implementation and Regulatory Challenges of the IMO Strategy on Reduction of GHG Emissions' (2021) 33 Journal of Environmental Law. 109, noting that shipping companies face "increasing pressure from corporate customers and supply chain/logistics companies to offer low-carbon options." For a concrete example involving maritime transport emission reductions, see e.g. Geof Stapledon and Fiona Wild, 'Addressing Greenhouse Gas Emissions beyond Our Operations: Understanding the "Scope 3" Footprint of Our Value Chain' (BHP, 2018) www.bhp.com/media-and- insights/prospects/2018/08/addressing-greenhouse-gas-emissions-beyond-our-operations.
[60] IMO Resolution MEPC.278(70) introducing a new Reg. 22A to Marpol Annex VI, including two new appendices, which entered into force on 1 March 2018. See also www.imo.org/en/MediaCentre/PressBriefings/Pages/04MARPOLamendments.aspx and A Chircop et al., 'International Law and Policy Considerations for Shipping's Contribution to Climate Change Mitigation' (2018) A Special Report Commissioned by the Center for International Innovation (CIGI). 57.
[61] *Ibid.*, para. 4.8.3. The only candidate longer-term measures (beyond 2030) listed in para. 4.9 are to "pursue the development and provision of zero-carbon or fossil-free fuels to enable the shipping sector to assess and consider decarbonization in the second half of the century" and to "encourage and facilitate the general adoption of other possible new/innovative emission reduction mechanism(s)."
[62] The OECD has defined market-based measures more narrowly by stating that they "seek to address the market failure of 'environmental externalities' either by incorporating the external cost of production or consumption activities through taxes or charges on processes or products, or by creating property rights and facilitating the establishment of a proxy market for the use of environmental services." See https://stats.oecd.org/glossary/detail.asp?ID=7214. See also H.N. Psaraftis, 'Market-Based Measures for Greenhouse Gas Emissions from Ships: A Review, 11(2) *WMU Journal of Maritime Affairs*, 2012, 211.
[63] MEPC/76/15/Add.2, Annex 14 Work Plan for the Development of Mid- and Long-Term Measures as a Follow-Up of the Initial IMO Strategy on Reduction of GHG Emissions. 1.
[64] Report of the Tenth Meeting of the Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG 10) (25.10.2021) ISWG-GHG/WP.1/Rev.1, Annex 2 Agenda Item 5: Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term measure, Non-Exhaustive Collation of Views Expressed. 17-27
[65] MEPC 76/7/12
[66] ISWG-GHG 10/5/2.
[67] Report of the Tenth Meeting of the Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG 10) (25.10.2021) ISWG-GHG/WP.1/Rev.1, Annex 2 Agenda Item 5: Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term measure, Non-Exhaustive Collation of Views Expressed. 17.
[68] ISWG-GHG 10/5/2: A Levy-Based MBM, per Tonne of CO_2 Emissions, to Expedite the Uptake and Deployment of Zero-Carbon Fuels, 3.

[69] The IMO Research and Development Fund (IMRF) initiative set out in document MEPC 76/7/7 (Denmark et al.)
[70] ISWG-GHG 10/5/2: A Levy-Based MBM, per Tonne of CO_2 Emissions, to Expedite the Uptake and Deployment of Zero-Carbon Fuels, 5.
[71] ICS and INTERCARGO, 'Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term Measures: A Levy-Based MBM, per Tonne of CO_2 Emissions, to Expedite the Uptake and Deployment of Zero-Carbon Fuels. 2.
[72] ICS and INTERCARGO, 'Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term Measures: A Levy-Based MBM, per Tonne of CO_2 Emissions, to Expedite the Uptake and Deployment of Zero-Carbon Fuels. 2.
[73] Report of the Tenth Meeting of the Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG 10) (25.10.2021) ISWG-GHG/WP.1/Rev.1, Annex 2 Agenda Item 5: Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term measure, Non-Exhaustive Collation of Views Expressed.
[74] Report of the Tenth Meeting of the Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG 10) (25.10.2021) ISWG-GHG/WP.1/Rev.1, Annex 2 Agenda Item 5: Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term measure, Non-Exhaustive Collation of Views Expressed. 18.
[75] Norway, 'Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term Measures: Proposal for regulatory mechanisms for the uptake of sustainable low-carbon and zero-carbon fuels' (3.9.2021) ISWG-GHG 10/5/6.4.
[76] Norway, 'Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term Measures: Proposal for regulatory mechanisms for the uptake of sustainable low-carbon and zero-carbon fuels' (3.9.2021) ISWG-GHG 10/5/6.
[77] *Ibid.*
[78] MEPC 60/4/22 (2010)
[79] Report of the Tenth Meeting of the Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG 10) (25.10.2021) ISWG-GHG/WP.1/Rev.1, Annex 2, 18.
[80] Norway, 'Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term Measures: Proposal for regulatory mechanisms for the uptake of sustainable low-carbon and zero-carbon fuels' (3.9.2021) ISWG-GHG 10/5/6. 20-21.
[81] ISWG-GHG 10/5/6.
[82] ISWG-GHG 10/5/3, based on MEPC 76/7/15. See also pending case C-161/20 at the Court of Justice of the European Union, where the competence for making submission in this field (by Member States or the EU as a whole) is under dispute.
[83] ISWG-GHG 10/5/3, 2.
[84] Austria et al., 'Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term Measures: Comments on document MEP/7/15 proposing a Low GHG Fuel Standard for International Shipping' (3.9.2021) ISWG-GHG 10/5/3. 2, 5, 6.
[85] Norway, 'Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term Measures: Proposal for regulatory mechanisms for the uptake of sustainable low-carbon and zero-carbon fuels' (3.9.2021) ISWG-GHG 10/5/6.
[86] Austria et al., 'Consideration of Mid-Term GHG Reduction Measures in the Context of Phase I of the Work Plan for the Development of Mid- and Long-Term Measures: Comments on document MEP/7/15 proposing a Low GHG Fuel Standard for International Shipping' (3.9.2021) ISWG-GHG 10/5/3. 2.
[87] Resolution MEPC 323(74).
[88] IMO, Ship-Port Interface Guide: Practical Measures to Reduce GHG Emissions (2021).
[89] C-WC Hsieh and C Felby, 'Biofuels for the Marine Shipping Sector' (IEA Bioenergy 2017) 86.
[90]J Dankwa Ampah et al., 'Reviewing Two Decades of Cleaner Alternative Marine Fuels: Towards IMO's Decarbonization of the Maritime Transport Sector' ( ) 2.
[91] ISWG-GHS 9/2/6, Further Consideration of Concrete Proposals to Encourage the Uptake of Alternative Low-Carbon and Zero-Carbon Fuels, Including the Development of Lifecycle GHG/Carbon Intensity Guidelines for All Relevant Types of Fuels and Incentive Schemes, as Appropriate – Sustainable Criteria and Lifecycle GHG Emission Assessment Methods and Standards for Alternative Marine Fuels, 3 August 2021. 2.
[92] ISWG-GHS 9/2/6, Further Consideration of Concrete Proposals to Encourage the Uptake of Alternative Low-Carbon and Zero-Carbon Fuels, Including the Development of Lifecycle GHG/Carbon Intensity Guidelines for All Relevant Types of Fuels and Incentive Schemes, as Appropriate – Sustainable Criteria and Lifecycle GHG Emission Assessment Methods and Standards for Alternative Marine Fuels, 3 August 2021. 2.

[93] 2023 is not only the time for the review of IMO's GHG Strategy, but also the year for the first global stocktake of the Paris Agreement and the deadline set by the EU for IMO measures that 'duly contribute' to achieving the climate goals of the Paris Agreement under recital No 4 of Directive 2018/410.
[94]For criticism of the IMO in this respect, see e,g, www.transportenvironment.org/news/shipping-body's-climate-plan-'ignores-paris-agreement' (30.10.2020).
[95] MEPC 57/21 (2008), paragraphs 4.73 to 4.77.
[96] At least one such project is currently underway in Finland. See www.eslshipping.com/en/news/esl-shipping-attracs-and-viking-line-are-developing-models-for-reducing-emissions-in-shipping-together-with-åbo-akademi-and-pbi-research-institute
[97] MEPC 76/7/11 (2021), para. 21.
[98] See e.g. COM (2013) 479 final, at p. 7 and COM (2019) 38 final, p. 1.
[99] See e.g. third recital of Directive 2009/29 amending Directive 2003/87/EC: "All sectors of the economy should contribute to achieving these emission reductions, including international maritime shipping and aviation ... In the event that no international agreement which includes international maritime emissions in its reduction targets through the International Maritime Organization has been approved by the Member States or no such agreement through the UNFCCC has been approved by the Community by 31 December 2011, the Commission should make a proposal to include international maritime emissions according to harmonised modalities in the Community reduction commitment, with the aim of the proposed act entering into force by 2013. Such a proposal should minimise any negative impact on the Community's competitiveness while taking into account the potential environmental benefits."
[100] See e.g. COM strategy in COM(2013) 479 final.
[101] Recital No 4 of Directive 2018/410, amending Directive 2003/87 (the ETS Directive), provides that: "The adoption of an ambitious emission reduction objective as part of this initial strategy has become a matter of urgency and is important for ensuring that international shipping contributes its fair share to the efforts needed to achieve the objective of well below 2 °C agreed under the Paris Agreement. The Commission should keep this under regular review, and should report at least once a year to the European Parliament and to the Council on the progress achieved in the IMO towards an ambitious emission reduction objective, and on accompanying measures to ensure that the sector duly contributes to the efforts needed to achieve the objectives agreed under the Paris Agreement. Action from the IMO or the Union should start from 2023, including preparatory work on adoption and implementation and due consideration being given by all stakeholders.
[102] Recital 4, Directive (EU) 2018/410 of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/814.
[103] COM(2013) 479 final.
[104] While only MBMs are discussed in the strategy itself, the EU has subsequently highlighted the importance of strengthening the requirements linked to the EEDI and SEEMP, e.g. by increasing the reduction targets or by revising the reference lines altogether. Such measures need to be taken at IMO, so there is no regional alternative available, even if IMO would fail to deliver this type of measures by 2023. Among the other measures listed in para. 4.7 of IMO's initial strategy, new operational measures on the basis of new indicators is regarded as particularly important. For an example, see e.g. IMO Doc. MEPC 66/4/6.
[105] The EU's legislation on the regional emission trading system was amended by Directive 2008/101 to include aviation within the scope of the EU ETS as from 2012. However, due to strong protests from third countries, it was decided to postpone application of this amendment for flights between the EU and third countries. Intra-EU flights remain included in the ETS, while the future inclusion of flights to and from third countries will depend on regulatory progress made at ICAO. See https://ec.europa.eu/clima/policies/transport/aviation_en. The application of EU rules to non-EU flights raised legal concerns, too, but in Case C-366/10, *Air Transport Association of America and Others v Secretary of State for Energy and Climate Change* 2011 ECR I-13755, the Court of Justice of the European Union, considered that the extension did not amount to a breach of international law. The judgment has been criticized in legal literature for being too superficial on the question of extraterritorial jurisdiction. See e.g. G. De Baere & C. Ryngaert, 'The ECJ's Judgment in Air Transport Association of America and the International Legal Context of the EU's Climate Change Policy', 18 *European Foreign Affairs Review*, 2013, 402.
[106] EU Regulation 2017/757. In preambular para. no. 34 it is considered that the EU MRV system also should serve as a model for the implementation of a global system. See also Delegated Regulation 2016/2071 (amendment of Regulation), Delegated Regulation 2016/2072 (on verification and accreditation activities) and Implementing Regulations 2016/1972 (on templates) and 2016/1928 (on the definition of cargo carried for certain ship categories).
[107] See e.g. www.verifavia-shipping.com/shipping-carbon-emissions-verification/press-media-eu-mrv-vs-imo-fuel-consumption-data-collection-system-155.php and COM (2019) 38 final.
[108] EU Regulation 2017/757, article 2(1).

[109] In COM(2019) 38 final it is proposed, *inter alia*, to harmonize the use of certain key definitions to ensure that same entities are in charge of the monitoring and reporting obligations under the two regimes. Alignment is also made relating to the calculation of distance and cargo as well as the reporting period and the minimum requirements for monitoring plans. An alignment between the EU and (a future) IMO reporting schemes was already foreseen in article 22 of the MRV Regulation (Regulation 2015/757). Alignment proposal COM (2019) 38 final is still being discussed among the EU institutions (Procedure 2019/0017 (COD))
[110] Under the Commission's proposal, the MRV system will be revised in order for the EU to take *"*appropriate account*"* of the IMO's global data collection system "with a view to allow for streamlining and reducing administrative effort for companies and administrations as possible [sic], while preserving the objectives of the EU MRV Regulation." COM (2019) 38 final, p. 2.
[111] The European Parliament added a number of amendment to the proposal that relate to a more general climate policy for shipping and the link to IMO's work. In September 2020, the proposal to amend the MRV Regulation was sent back by the Plenary of European Parliament to the Committee responsible for further inter-institutional negotiations and has not been further discussed since then.
[112] See e.g. 'EC funding gives green light to ambitious IMO energy-efficiency project', Press Release by IMO of 12 January 2016 (www.imo.org/en/MediaCentre/PressBriefings/Pages/01-2016-MTCC-.aspx).
[113] EC, 'Communication from the Commission to the European Parliament, the European Council, the Council, The European Economic and Social Committee and the Committee of Regions: The European Green Deal' (Brussels 11.12.2019) COM(2019) 640 Final. 2.
[114] *Ibid.* 4.
[115] EC, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: 'Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality' (Brussels 14.7.2021) COM(2021) 550 Final. 1, 3
[116] *Ibid.*. 6.
[117] See e.g. https://ec.europa.eu/clima/news-your-voice/news/commissioners-bulc-and-arias-canete-welcome-imo-agreement-co2-reductions-maritime-sector-2018-04-13_en
[118] EC, Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757 (Brussels 14.7.2021) COM(2021) 551 Final, 5.
[119] COM(2021) 551 final, p. 4. See also at note 111 above.
[120] COM(2021) 551 Final 2.
[121] COM(2021) 551 Final 16
[122] COM(2021) 551 Final (14).
[123] COM(2021) 551 Final 51.
[124] COM(2021) 551 Final 16.
[125] Commission Decision 2011/278/EU determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to article 10a of Directive 2003/87/EC of the European Parliament and of the Council.
[126] See also CE Delft & DLR, 'Research for TRAN Committee – Maritime Shipping, Aviation and the EU ETS: Challenges and Impacts, Final Report' (2021) European Parliament, Policy Department for Structural and Cohesion Policies. 12, 43.
[127] A flag-based approach refers to the nationality of the ship or where the company has been registered, and was not chosen as it could lead to evasion through reflagging of ships and distortion of competition. See e.g. ETS Proposal COM (2021) 551 Final, p. 48.
[128] COM(2021) 551 Final. 49.
[129] CE Delft & DLR, 'Research for TRAN Committee – Maritime Shipping, Aviation and the EU ETS: Challenges and Impacts, Final Report' (2021) European Parliament, Policy Department for Structural and Cohesion Policies. 43.
[130] COM(2021) 551 Final. 17.
[131] N Wissner et al., 'Integration of Maritime Transport in the EU Emissions Trading System (Öko-Institut e.V. and Transport and Environment, Berlin/Brussels July 2021) 17, 19.
[132] COM(2021) 551 Final. 16.
[133] EC, 'Union Registry' https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/union-registry_sv
[134] EC, 'Impact Assessment Report' (Brussels 14.7.2021) SWD(2021) 601 Final. Part 2/4. 150.
[135] COM(2021) 551 Final. 16.
[136] ETS Proposal, Recital 21.
[137] For details, see https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets_en
[138] EC, 'Impact Assessment Report' (Brussels 14.7.2021) SWD(2021) 601 Final. Part 2/4. 141-142.

[139] *Ibid.* 142.
[140] EC, 'Impact Assessment Report' (Brussels 14.7.2021) SWD(2021) 601 Final. Part 1/4. 50-51.
[141] EC, 'Impact Assessment Report' (Brussels 14.7.2021) SWD(2021) 601 Final. Part 2/4. 142.
[142] ECSA, 'ECSA Policy Paper on the EU ETS Proposal' (October 2021) 2.
[143] *Ibid.* 3.
[144] World Shipping Council, 'EU ETS – the WSC Perspective' (3 November 2021) 3. See also EC, 'Impact Assessment Report' (Brussels 14.7.2021) SWD(2021) 601 Final. Part 2/4. 143.
[145] World Shipping Council, 'EU ETS – the WSC Perspective' (3 November 2021) 3.
[146] EC, 'Impact Assessment Report' (Brussels 14.7.2021) SWD(2021) 601 Final. Part 2/4. 143.
[147] *Ibid.*
[148] See: www.worldshipping.org/news/european-parliament-proposed-amendments-to-eu-ets-put-green-deal-goals-at-risk
[149] EC, 'Impact Assessment Report' (Brussels 14.7.2021) SWD(2021) 601 Final. Part 1/4. 94.
[150] CE Delft & DLR, 'Research for TRAN Committee – Maritime Shipping, Aviation and the EU ETS: Challenges and Impacts, Final Report' (2021) European Parliament, Policy Department for Structural and Cohesion Policies. 81.
[151] EC, 'Impact Assessment Report' (Brussels 14.7.2021) SWD(2021) 601 Final. Part 1/4. 94-96.
[152] N Wissner et al., 'Integration of Maritime Transport in the EU Emissions Trading System (Öko-Institut e.V. and Transport and Environment, Berlin/Brussels July 2021) 13.
[153] EC, 'Impact Assessment Report' (Brussels 14.7.2021) SWD(2021) 601 Final. Part 1/4. 96.
[154] *Ibid.* 97.
[155] S Parker et al., 'Harnessing the EU ETS to Reduce International Shipping Emissions: Assessing the Effectiveness of the Proposed Policy Inclusion of Shipping in the EU ETS to Reduce International Shipping Emissions' (8 December 2021) UMAS/Environmental Defense Fund Europe. 36.
[156] EC, 'Impact Assessment Report' (Brussels 14.7.2021) SWD(2021) 601 Final. Part 1/4. 98.
[157] *Ibid.*
[158] Interpol, 'Guide to Carbon Trading Crime' (2013) 24-25.
[159] EC, Proposal for a Regulation of the European Parliament and of the Council on the use of renewable and low-carbon fuels in maritime transport and amending Directive 2009/16/EC (Brussels 14.7.2021) COM(2021) 562 Final, 2.
[160] COM(2021) 562 Final.
[161] COM(2021) 562 Final 1.
[162] COM(2021) 562 Final 4.
[163] COM(2021) 562 Final 5.
[164] COM(2021) 562 Final 5.
[165] COM(2021) 562 Final 5.
[166] Article 2(c), see also recital 4.
[167] Article 2, COM(2021) 562 Final.
[168] COM(2021) 562 Final (12)-(13).
[169] U Einemo, 'Fuel EU Maritime, EU ETS and bunker tax proposals raise many questions' (2.8.2021) IBIA: https://ibia.net/2021/08/02/ibia-has-studied-the-european-commissions-fit-for-55-package-of-proposals/
[170] COM(2021) 562 Final, Article 1.
[171] COM(2021) 562 Final, Article 4.
[172] COM (2021) 562 Final, Article 4(3).
[173] COM (2021) 562 Final, Article 1.
[174] COM (2021) 562 Final, Article 5(1)-5(2).
[175] COM (2021) 562 Final, Article 5(3)
[176] COM (2021) 562 Final, Article 5(4).
[177] Proposal for a Regulation of the European Parliament and of the Council on the deployment of alternative fuels infrastructure, repealing Directive 2014/94//EU of the European Parliament and of the Council (AFIR).
[178] Proposal for a Regulation of the European Parliament and of the Council on the deployment of alternative fuels infrastructure, and repealing Directive 2014/94/EU of the European Parliament and of the Council (Brussels 14.72021) COM(2021) 559 Final. 3-4.
[179] COM (2021) 562 Final, Article 6(1).
[180] COM (2021) 562 Final, Article 6(2)-6(4).
[181] COM (2021) 562 Final, Article 7.
[182] COM (2021) 562 Final, Articles 10, 11, 13.
[183] COM (2021) 562 Final.
[184] COM (2021) 562 Final, Article 15.
[185] COM (2021) 562 Final, Article 17.

[186] COM (2021) 562 Final, Article 18.
[187] COM (2021) 562 Final, Article 19.
[188] There is some discrepancy between the definitions in this regard. The definition of Regulation 757/2015 is shorter and does not refer to ISM Code. Yet the 6th recital of the FuelEU proposal refers to exactly the same wording as that of the ETS proposal discussed above.
[189] ECSA, 'ECSA Position Paper on the FuelEU Maritime Proposal' (October 2021) 3.
[190] *Ibid.* 2.
[191] U Einemo, 'Fuel EU Maritime, EU ETS and bunker tax proposals raise many questions' (2.8.2021) IBIA: https://ibia.net/2021/08/02/ibia-has-studied-the-european-commissions-fit-for-55-package-of-proposals/
[192] *Ibid.*
[193] ECSA&ICS, 'FuelEU Maritime – Avoiding Unintended Consequences: Efficacy and implications of potential measures, including new EU fuel standards, to help decarbonize international shipping' (May 2021) 12.
[194] COM (2021) 562 Final, Article 20.
[195] COM (2021) 562 Final, Article 21.
[196] ECSA, 'ECSA Position Paper on the FuelEU Maritime Proposal' (October 2021) 3.
[197] ECSA&ICS, 'FuelEU Maritime – Avoiding Unintended Consequences: Efficacy and implications of potential measures, including new EU fuel standards, to help decarbonize international shipping' (May 2021) 14.
[198] *Ibid.* 13.
[199] *Ibid.*
[200] MARPOL Annex VI, Regulations 16, 18 and Appendix 6 in particular.
[201] Directive 2016/82 relating to a reduction in the sulphur content of certain liquid fuels.
[202] Proposal for a Council Directive Restructuring the Union Framework for the Taxation of Energy Products and Electricity (recast) (Brussels 14.7.2021) COM(2021) 563 Final. 1.
[203] COM(2021) 563 Final, 2.
[204] EC, Revision of the Energy Taxation Directive (ETD): Questions and Answers (14 July 2021) 2.
[205] Valtioneuvoston kirjelmä eduskunnalle komission ehdotuksesta neuvoston direktiiviksi energiatuotteiden ja sähkön verotusta koskevan unionin kehyksen uudistamisesta (uudelleenlaadittu energiaverodirektiivi) (Helsinki, 7.10.2021) U 56/2021 vp. 3.
[206] COM(2021) 563 Final 13.
[207] COM(2021) 563 Final 3. Regarding the interpretation challenges, two treaties are mentioned in the proposal that may cause such issues, the revised Mannheim Convention of 17 October 1868 for the Navigation of the Rhine ("the Mannheim Convention") and the Agreement on Customs and Tax Regime for Gas Oil Applicable to the Stores of Vessels in Rhine Navigation, adopted in Strasbourg on 16 May 1952 (the Strasbourg Agreement). However, as per Article 351(2) TFEU, if Member States have entered into treaties with third countries that are incompatible with EU law, they have to take necessary measures to eliminate such incompatibilities. In this regard, the proposal's Recital 23 notes: "fuel used for waterborne navigation, including fishing, should also be taxed, and the Member States party to international agreements providing for the exemption of that fuel, have to, by the date of the application of this Directive, ensure they eliminate the incompatibilities." However, Finland is not a party to these treaties and thus the interpretation challenges are not a concern here.
[208] COM(2021) 563 Final, Article 15(1).
[209] COM(2021) 563 Final, Article 15(3).
[210] COM(2021) 563 Final, 15-16.
[211] COM(2021) 563 Final, Article 15(1) and Annex I.
[212] COM(2021) 563 Final, Article 15(4).
[213] COM(2021) 563 Final, Recital 24, Article 15(1).
[214] COM(2021) 563 Final, Article 15(5).
[215] COM(2021) 563 Final, 16.
[216] COM(2021) 563 Final.
[217] Verohallinto, 'Excise taxation' https://www.vero.fi/en/businesses-and-corporations/taxes-and-charges/excise-taxation/
[218] Valtioneuvoston kirjelmä eduskunnalle komission ehdotuksesta neuvoston direktiiviksi energiatuotteiden ja sähkön verotusta koskevan unionin kehyksen uudistamisesta (uudelleenlaadittu energiaverodirektiivi) (Helsinki, 7.10.2021) U 56/2021 vp. 3. 12.
[219] EC, Revision of the Energy Taxation Directive (ETD): Questions and Answers (14 July 2021) 3.
[220] Valtioneuvoston kirjelmä eduskunnalle komission ehdotuksesta neuvoston direktiiviksi energiatuotteiden ja sähkön verotusta koskevan unionin kehyksen uudistamisesta (uudelleenlaadittu energiaverodirektiivi) (Helsinki, 7.10.2021) U 56/2021 vp. 3. 13.
[221] EC, Revision of the Energy Taxation Directive (ETD): Questions and Answers (14 July 2021) 3.

[222] A Adamopoulos et al, 'EU Proposes tax on all shipping emissions and to limit polluting fuels' (14.7.2021) Lloyd's List. https://lloydslist.maritimeintelligence.informa.com/LL1137545/EU-proposes-tax-on-all-shipping-emissions-and-to-limit-polluting-fuels
[223] K O'Brien, 'No Pain, No Gain? Implementing the European Green Deal and Getting the EU Maritime Transport Sector "Fit for 55"' (29 July 2021) EU Law Analysis – Expert insight into EU law developments.
[224] EC, 'Inception Impact Assessment' (4.3.2020) Ref. Ares(2020)1350088. 2.
[225] ClientEarth, 'Energy Taxation Directive – Identifying the Appropriate Legal Basis' (June 2021) 3.
[226] Proposal for a Council Directive Restructuring the Union Framework for the Taxation of Energy Products and Electricity (recast) (Brussels 14.7.2021) COM(2021) 563 Final. 1.
[227] Case C-344/04 (IATA) at the CJEU.
[228] See e.g. de Baere, G.; Ryngaert, C.M.J. 'The ECJ's Judgment in Air Transport Association of America and the International Legal Context of the EU's Climate Change Policy', (2013) *European Foreign Affairs Review*, Volume 18, issue 3, 389 – 409.
[229] For more details, see e.g. H. Ringbom, 'Global Problem – Regional Solution? – International Law Reflections on an EU CO_2 Emissions Trading Scheme for Ships', *The International Journal for Marine and Coastal Law*, 2011, 613.
[230] Ships that have entered the port as a place of refuge in distress are subject to somewhat different legal conditions, under customary international law.
[231] Internal matters, Place of refuge
[232] See e.g. R.R. Churchill & A.V. Lowe, *The Law of the Sea* (Manchester University Press, 1999), 65-69.
[233] E.g. UNCLOS Arts. 21, 211 and 220.
[234] E.g. UNCLOS Arts. 25(2), 211(3) and 255.
[235] According to the final paragraph of the UNCLOS Preamble, "matters not regulated by this Convention continue to be governed by the rules and principles of general international law".
[236] UNCLOS Art. 8.
[237] *Case concerning Military and Paramilitary Activities In and Against Nicaragua* (Nicaragua v. United States of America), 27 June 1986, ICJ Reports 1986, para 213. See also A.V. Lowe, 'The Right of Entry into Maritime Ports in International Law' *San Diego Law Review*, 1977, 597-622, L. de la Fayette, 'Access to Ports in International Law' *International Journal of Marine and Coastal Law*, 1996, 1-22.
[238] See also, to this effect, UNCLOS Arts. 25(2) and 211(3).
[239] Generally, see B. Marten, *Port State Jurisdiction and the Regulation of International Merchant Shipping* (Springer, 2014); E.J. Molenaar, 'Port State Jurisdiction: Toward Comprehensive, Mandatory and Global Coverage', *Ocean Development & International Law*, 2007; H. Ringbom, *The EU Maritime Safety Policy and International Law* (Brill, 2008); C. Ryngaert & H. Ringbom, 'Introduction: Port State Jurisdiction: Challenges and Potential' 31 *International Journal of Marine and Coastal Law*, 2016, 379; R. Churchill 'Port State Jurisdiction Relating to the Safety of Shipping and Pollution from Ships—What Degree of Extra-territoriality?'31 *International Journal of Marine and Coastal Law*, 2016, 454; S. Kopela, 'Port-State Jurisdiction, Extraterritoriality, and the Protection of Global Commons', 47 *Ocean Development & International Law*, 2016.
[240] See also UNCLOS Arts. 227 and 300.
[241] E.g. UNCLOS Arts. 225 and 232. See also Final Report of the International Law Association's Committee on Coastal State Jurisdiction relating to Marine Pollution over Vessel-Source Pollution, 2000 ('the ILA Report') at 456, 495 and 497 and Ringbom 2008, n. 239 above, 228-229.
[242] The US requirements were introduced in the 1990 Oil Pollution Act (33 U.S.C. 2701-2761) in the aftermath of the *Exxon Valdez* oil spill in Alaska in 1989. The EU double hull requirements (EU Regulations 417/2002 and 1726/2003) were based on MARPOL' standards but accelerated the timetable, following the sinking of the *Erika* and *Prestige* tankers in European Atlantic waters in 1999 and 2002.
[243] This is different with respect to passing ships. Coastal States' jurisdiction to regulate static features of foreign ships passing through the territorial sea is specifically limited in UNCLOS Art. 21(2) to 'generally accepted international rules or standards'. On the interpretation of this phrase, see. e.g. the ILA Report, note 241 above. 473-481.
[244] See notably *Sellers v. Maritime Safety Inspector*, CA 104/98, Judgment by the Court of Appeal in New Zealand, 5 November 1998.
[245] See e.g. the sources referred to in note 239 above.
[246] See also, to this effect, T.L. McDorman, 'Port State Enforcement: A Comment on Article 218 of the 1982 Law of the Sea Convention', (1997) 28(2) *Journal of Maritime Law and Commerce* 314; E.J. Molenaar, 'Residual Jurisdiction under IMO Regulatory Conventions', in H. Ringbom (ed.), *Competing Norms in the Law of Marine Environmental Protection, Focus on Ship Safety and Pollution Prevention*, Kluwer Law International, 1997, 201-216; L.S. Johnson, *Coastal State Regulation of International Shipping* (Oceana Publications, Inc., 2004) 40; A.E. Boyle, 'EU Unilateralism and the Law of the Sea' 21(1) *International Journal of Marine and Coastal Law*, 2006,

24; and Swedish Case No. M 8471-03, Svea Court of Appeal, Environmental Court of Appeal (Miljööverdomstolen), Judgment of 24 May 2006.

[247] See e.g. Article 1(3) of the 2001 Anti-fouling Systems Convention; Article 2(3) of the 2004 Ballast Water Management Convention and MARPOL Regulation I/21(8)(2). See also Article 4(1)(b) of the 2009 FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (FAO Doc. C 2009/LIM/11-Rev. 1).

[248] In the specific context of vessel-source pollution, it could also be argued that UNCLOS Art. 218 (referred to in section 2.3.1 above) *a contrario* suggests that there is no such extra-territorial port State jurisdiction in this field.

[249] E.g. Section 59C of the Australian Great Barrier Reef Marine Park Act 1975, under which the punishable offence is "to enter an Australian port after navigating without a pilot if (a) a regulated ship navigates without a pilot in the compulsory pilotage area; and (b) the ship enters an Australian port under the command of the master who was in command of the ship during the navigation referred to in paragraph (a)." Another example is the (now removed) Australian rule from 2001 obliging ships to exchange ballast water on the high seas before entering Australian ports. That rule was modified in 2015 to align it with the international rules that had become applicable in the meantime.

[250] See e.g. the reporting and notification requirements of Directive 2002/59 establishing a Community vessel traffic monitoring and information system and Regulation 2015/757 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport. See also M. Bevan 'Port State Jurisdiction over Vessel Information: Territoriality, Extra Territoriality and the Future of Shipping Regulation', in 31 *International Journal of Marine and Coastal Law*, 2016, 470-498 and Kopela, n. 239 above, 96-102)

[251] The most widely recognized principles are: active personality principle; the passive personality principle; the protective principle and the universality principle. See e.g. Cedric Ryngaert, *Jurisdiction in International Law* (2nd ed, Oxford University Press 2015).

[252] Ryngaert, n. 251 above, ch 4.

[253] See eg the Final Report of the ILA's Committee on Extra-territorial Jurisdiction, International Law Association, Report of the Sixty-Seventh Conference, Helsinki, Finland, International Law Association, London, 1996) 521–22 and 525. See also Ryngaert, n. 251 above, ch 4.

[254] J. Crawford Brownlie's Principles of Public International Law (9th ed., Oxford University Press, 2019) 441. A.F. Lowenfeld, *International Litigation and the Quest for Reasonableness, Essays in Private International Law* (Clarendon Press, 1996) 228–32; R. Jennings and A. Watts (eds), *Oppenheim's International Law Ninth Edition, Volume I Peace, Introduction and Part 1* (Longman 1992) 457–58, 468. See also §211 of the US Restatement (Fourth) on Foreign Relations Law published in 2018 discussed in W.S. Dodge, 'Jurisdiction in the Fourth Restatement of Foreign Relations Law' (20+17) 18 *Yearbook of Private International Law*, 153.

[255] See E.J Molenaar, note 239 above and *id*., 'Port and Coastal States' in D.R. Rothwell, A.G. Oude Elferink, K.N. Scott, T. Stephens (eds.) *The Oxford Handbook of the Law of the Sea* (Oxford University Press, 2015) 280.

[256] In particular UNCLOS Arts. 226, 228 and 230, which provide for limitations on the inspections of ships in ports and on the penalties to be employed, but also establish a requirement not unnecessarily to delay ships in ports, and a possibility for the flag State, under certain conditions, to take over the proceedings instituted by the port State.

[257] *M/V Norstar* (Panama v. Italy) ITLOS Judgment No. 25, 10 April 2019.

[258] *Norstar* concerned bunkering on the high seas. The decision has been widely criticized, see e.g. A. Honniball at https://site.uit.no/nclos/2019/06/04/freedom-of-navigation-following-the-m-v-norstar-case/ and H. Ringbom, 'Ships in ABNJ – Broadening Jurisdictional Opportunities for Non-Flag States' in V. de Lucia et al. (eds.) *International Law and Marine Areas Beyond National Jurisdiction* (Brill, 2022), with further references.

[259] This distinguishes them from e.g. the rules on sulphur in fuel requirements, which were based on the fuel actually in the tanks, further strengthened in 2020 by a prohibition to carry non-compliant fuel.

[260] Article 2c in Fuel EU Maritime proposal, and Article 3g(1) in EU ETS proposal.

[261] Article 3g(1) Recital 17:"it is appropriate that the EU ETS covers a share of the emissions from voyages between a port under the jurisdiction of a Member State and port under the jurisdiction of a third country, with the third country being able to decide on appropriate action in respect of the other share of emissions". See also ETS proposal p. 155 on the coverage options considered by the Commission.

[262] Apart from this, Article 23(1) of the draft Regulation includes a generic sanction to be used for non-compliance with the Regulation more generally. This provision offers few details, e.g. on the relationship to penalties under Article 20, but only includes the standard EU law requirements that Member States shall lay down these sanctions and that the sanctions must be effective, proportionate and dissuasive.

[263] See, e.g., the 1999 International Convention on the Arrest of Ships (UN Doc. A/CONF.188/6); Articles 1 and 2, which incidentally includes "damage or threat of damage caused by the ship to the environment . . . or related interests" among the valid claims for arrest.

[264] Trelleborg, Sellers

[265] Ministry of Transport and Communications, 'Government Resolution on Reducing Greenhouse Gas Emissions from Maritime and Inland Waterway Transport' (2020) Publications of the Ministry of Transport and Communications. 8-9.
[266] *Ibid.* 7.
[267] *Ibid.* 22.
[268] *Ibid.* 21.
[269] Valtioneuvoston kirjelmä eduskunnalle komission ehdotuksesta Euroopan parlamentin ja neuvoston direktiiviksi (päästökauppadirektiivin, markkinavakausvarantopäätöksen ja meri- liikenteen MRV-asetuksen muuttaminen) sekä komission ehdotuksesta Euroopan parlamentin ja neuvoston päätökseksi (markkinavakausvarantopäätöksen muuttaminen) (Helsinki, 7.10.2021) U 60/2021 vp. 28.
[270] Ministry of Transport and Communications, 'Government Resolution on Reducing Greenhouse Gas Emissions from Maritime and Inland Waterway Transport' (2020) Publications of the Ministry of Transport and Communications. 7.
[271] *Ibid.*
[272] Valtioneuvoston kirjelmä eduskunnalle komission ehdotuksesta Euroopan parlamentin ja neuvoston direktiiviksi (päästökauppadirektiivin, markkinavakausvarantopäätöksen ja meri- liikenteen MRV-asetuksen muuttaminen) sekä komission ehdotuksesta Euroopan parlamentin ja neuvoston päätökseksi (markkinavakausvarantopäätöksen muuttaminen) (Helsinki, 7.10.2021) U 60/2021 vp. 28.
[273] Ministry of Transport and Communications, 'Government Resolution on Reducing Greenhouse Gas Emissions from Maritime and Inland Waterway Transport' (2020) Publications of the Ministry of Transport and Communications. 21.
[274] Letter from Minister Timo Harakka to H.E. Frans Timmermans, Executive Vice-President for the European Green Deal, European Commission (Helsinki 8.7.2021) 1.
[275] Seafarer's Unions, 'Finnish dependence on winter navigation must be taken into account by EU Emissions Trading' (27.10.2021) https://www.smu.fi/uutiset/seafarers-unions-finnish-dependence-on-winter-shipping-must-be-taken-into-account-by-eu-emissions-trading/
[276] TRAFICOM & Swedish Transport Agency, 'Guidelines for the Application of the 2017 Finnish-Swedish Ice Class Rules' (8.1.2019) 8-9.
[277] *Ibid.* 6.
[278] *Ibid.* 11.
[279] Kauppalaivatilasto 2018' Liikenteen turvallisuusvirasto. 9. https://www.traficom.fi/sites/default/files/media/file/Kauppalaivasto-2018-vuositilasto.pdf
[280] *Ibid.* 17.
[281] H Busk and V Härmälä, 'Katsaus kauppamerenkulun tilanteeseen Suomessa' (2016) PTP raportteja 252. 44.
[282] Ministry of Transport and Communications, 'Government Resolution on Reducing Greenhouse Gas Emissions from Maritime and Inland Waterway Transport' (2020) Publications of the Ministry of Transport and Communications. 11.
[283] Declaration on Zero Emission Shipping by 2050, UN Climate Conference 2021 (COP26) (Glasgow, 1 November 2021. https://em.dk/media/14312/declaration-on-zero-emission-shipping-by-2050-cop26-glasgow-1-november-2021.pdf
[284] The Clydebank Declaration for Green Shipping Corridors, UN Climate Conference 2021 (COP26) (Glasgow, 10.11.2021.) https://ukcop26.org/cop-26-clydebank-declaration-for-green-shipping-corridors/
[285] *Ibid.*
[286] 6§ Ilmastolaki (609/2015); Hallituksen esitys eduskunnalle ilmastolaiksi (Luonnos 2.7.2021) https://api.hankeikkuna.fi/asiakirjat/4592289f-ee2e-456e-a17b-66b71dd124bf/d46a96da-111c-43d3-a6cd-5272916ad733/LAUSUNTOPYYNTO_20210706110335.PDF
[287] Ministry of Transport and Communications, 'Maritime Transport Strategy for Finland 2014-2022' (12 March 2014) Publications of the Ministry of Transport and Communications 24/2014. 3.
[288] *Ibid.* 61.
[289] The Prime Minister's Office, 'Government Resolution on Finland's Maritime Policy Guidelines: From the Baltic Sea to the Oceans' (2019) Publications of the Prime Minister's Office 2019:7. 20-21.
[290] Ministry of Transport and Communications, 'Government Resolution on Reducing Greenhouse Gas Emissions from Maritime and Inland Waterway Transport' (2020) Publications of the Ministry of Transport and Communications. 11-12.
[291] *Ibid.* 25.
[292] *Ibid.*
[293] *Ibid.*
[294] STTK, 'Merimiesliitot: EU:n päästökauppa ei saa koskettaa talvimerenkulkua' (26.10.2021) https://www.sttk.fi/2021/10/26/merimiesliitot-eun-paastokauppa-ei-saa-koskettaa-talvimerenkulkua/

[295] EK, 'EU:n energia- ja ilmastolainsäädännön uudistaminen vuoteen 2030: Merenkulun päästökaupassa hyvitettävä talvivaikutus' (Toukokuu 2021) https://ek.fi/wp-content/uploads/2021/05/Onepager_2021_5-EU-merenkulun-paastokauppa-lopullinen.pdf
[296] Suomen Varustamot, 'Talvimerenkulun erityispiirteiden huomioiminen merenkulun päästökaupassa on välttämätöntä' (15.7.2021) https://shipowners.fi/talvimerenkulun-erityispiirteiden-huomioiminen-merenkulun-paastokaupassa-on-valttamatonta/
[297] Metsäteollisuus, 'Keskuskauppakamari ja Metsäteollisuus: Suomen kilpailukyky tarvitsee selkeitä ratkaisuja EU: merenkulun päästökaupassa' (14.7.2021) https://www.metsateollisuus.fi/uutishuone/suomen-kilpailukyky-tarvitsee-selkeita-ratkaisuja-eu-n-merenkulun-paastokaupassa
[298] Ministry of Transport and Communications, 'Government Resolution on Reducing Greenhouse Gas Emissions from Maritime and Inland Waterway Transport' (2020) Publications of the Ministry of Transport and Communications. 7.
[299] Jussi Mälkiä, 'Emissions trading is needed to support carbon-neutral shipping' (8.10.2021) Meriaura Group Blog. https://meriaura.fi/en/paastokauppa-tukemaan-hiilineutraalia-merenkulkua/
[300] EK, 'EU:n energia- ja ilmastolainsäädännön uudistaminen vuoteen 2030: Merenkulun päästökaupassa hyvitettävä talvivaikutus' (Toukokuu 2021) https://ek.fi/wp-content/uploads/2021/05/Onepager_2021_5-EU-merenkulun-paastokauppa-lopullinen.pdf
[301] MEPC 76/3/5 (7 April 2021) 2.
[302] Resolution MEPC.245(66), as amended by Resolution MEPC.281(70); See also, e.g., T Mattson, 'Preedict – EEDI Power Correction Factors FJ for Ice Class Ships' (2020) Research Report No 105. Winter Navigation Research Board. 4.
[303] EE-WG 2/2/9 (2 December 2011) 3.
[304] MaritimeCyprys, 'Maritime Compliance: EEXI – Energy Efficiency Existing Ship Index' (3.2.2021) https://maritimecyprus.com/2021/02/03/maritime-compliance-eexi-energy-efficiency-existing-ship-index/
[305] ISWG-GHG 8/J/7, '2021 Guidelines on operational carbon intensity indicators and the calculation methods (CII Guidelines, G1) (Adopted on 17 June 2021) 1.
[306] MEPC 76/3/5 and 76/7/21.
[307] MEPC 76/INF.67 (7 April 2021) 10.
[308] MEPC, 76th Session, Report of the Marine Environment Protection Committee on its Seventy-Sixth Session. MEPC 76/15. 8; MEPC 76/3/5 (Estonia et al.)
[309] Letter from Minister Timo Harakka to H.E. Frans Timmermans, Executive Vice-President for the European Green Deal, European Commission (Helsinki 8.7.2021) 1.
[310] *Ibid.* 2.
[311] *Ibid.*
[312] ACT concerning the conditions of accession of the Kingdom of Norway, the Republic of Austria, the Republic of Finland and the Kingdom of Sweden and the adjustments to the Treaties on which the European Union is founded, FINAL ACT - III. OTHER DECLARATIONS - C. Joint Declarations: The present Member States / Republic of Finland - 22. Joint Declaration on safeguarding Finland' s transport links (29.8.1994) Official Journal C 241. 0390.
[313] See e.g., Perustuslakivaliokunnan lausunto 11/2003 vp. 1-2.
[314] Priority question for written answer P-002151/2021 to the Commission, Rule 138, Elsi Katainen (Renew), Subject: Navigation in ice conditions and emissions trading (21 April 2021).
[315] P-002151/202, Answer given by Executive Vice-President Timmermans on behalf of the European Commission (8.6.2021)
[316] EC, 'Inception Impact Assessement' (29.10.2020) Ref. Ares(2020)6081850. 4
[317] Since the FuelEU proposal targets the yearly average greenhouse gas intensity of the energy used on-board during a reporting period, it emphasizes the type of fuel used by the ships, much more than the quantity, and is therefore inappropriate for addressing this particular concern.
[318] A recent calculation by the Finnish Ministry of Transport and Communication of 3 February 2022, estimated the additional of ice-covered ships to represent 3-6% of the overall price increase of the three EU measures. https://www.lvm.fi/-/siirtyma-vahapaastoiseen-meriliikenteeseen-eu-ssa-lisaa-kustannuksia-samalla-ilmastotoimet-luovat-liiketoimintaa-1650474
[319] IA Report 4/4, SWD(2021) 601 final, p. 34: Based on a recent analysis (Ricardo 2021), carbon pricing would result in minor additional commodity prices for goods transported in ice-strengthened vessels, assuming 6 months of ice-navigation per year and a range of ad valorem transport costs between 1% and 15%, depending on the nature of the cargo. In view of this, the competitiveness of industry sectors reliant on maritime transport in Nordic and Arctic regions were not expected to be significantly affected in general terms.
[320] See at note 306 above.
[321] Directive 2016/82 referred to in note 201 above. In this case the distinction was based in an international convention (Marpol Annex VI).

[322] See e.g. Wissner et al. quoted at note 152 above. In this respect it may be noted that since the overwhelming part of Finnish seaborne trade is to or from another EU port, the tactical avoidance of Finnish port is only partially effective. Even if the ship seeking to avoid the costs would choose a Russian port as a tactical measure before – or instead of – calling at a Finnish port, it would in most case still cover 50% of the voyage with EU ETS allowances.

[323] The Prime Minister's Office, 'Government Resolution on Finland's Maritime Policy Guidelines: From the Baltic Sea to the Oceans' (2019) Publications of the Prime Minister's Office 2019:7. 20. See also id. at p. 11: "The international competitiveness of Finland's maritime industry is based on innovation, constant renewal and specialisation. … The changing operating environment of logistics opens up new opportunities for the growth of the maritime cluster. Maintaining competitiveness and making use of opening markets are key growth factors for the maritime cluster …"Finland's marine energy competence can be further developed, scaled and exported with the aim of creating ecological, sustainable and as carbon neutral energy production as possible."