



Working Paper

Shipping's Decarbonization and Border
Carbon Adjustment Mechanisms: A Case for
Regulatory Cooperation?

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Abstract

The European Union (EU) has extended the application of the EU emissions trading scheme to international shipping and the International Maritime Organization (IMO), and various countries are working on implementing instruments that put a price on greenhouse gas emissions (GHG) from this sector. Due to these policy developments, GHG emissions from shipping may become subject to multiple pricing instruments in the coming years. Stakeholders have raised concerns for the potential negative impacts on the shipping industry and international trade and called for multiple pricing to be avoided. Against this background, this article discusses the potential pros and cons of double pricing GHG emissions from shipping and identifies options to reduce its negative impacts. Overall, the article finds that the case to avoid double pricing rests on a balancing of competing interests. In case policymakers are willing to avoid double pricing, regulatory cooperation between policymakers working on shipping decarbonization and border carbon adjustment mechanisms can provide important lessons on how to do so.

Keywords: Carbon pricing; International shipping; Border carbon adjustment mechanisms (BCA); Regulatory cooperation; EU ETS; Equivalence; International Maritime Organization (IMO).

1. Introduction

The International Maritime Organization's (IMO) Marine Environment Protection Committee (MEPC) has been working on the introduction of a greenhouse gas (GHG) price on shipping's emissions since July 2023.¹ Meanwhile, the European Union (EU) has included international shipping in its GHG pricing instrument — namely, the EU emissions trading system (ETS) by

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For the latest policy developments at the IMO, see Goran Dominioni, 'Carbon pricing for international shipping, equity, and WTO law.' (2024) 33(1) *Review of European, Comparative & International Environmental Law* 19.

amending the EU ETS Directive.² This development, together with other policy initiatives by other jurisdictions, create the potential for GHG emissions from shipping to fall under multiple pricing instruments, i.e., they will be priced twice or more.

GHG pricing mechanisms are an important component of the GHG policy mix to decarbonize the maritime sector. However, some IMO member states and shipping industry representatives have started voicing concerns about the potential negative impacts of double pricing of GHG emissions from shipping, as this may reduce profits of some shipping companies and trade opportunities for countries.

Academic scholarship has analyzed potential impacts of implementing GHG pricing mechanisms in international shipping on states,³ shipping companies,⁴ and GHG emissions.⁵ A related strand of research has investigated how to design GHG pricing mechanisms for international shipping to reduce potential negative impacts on countries.⁶ This article adds to these two strands of research by being the first to: i) analyze the potential (positive and negative) impacts of double pricing of GHG emissions from shipping; ii) discuss options to reduce negative impacts of double pricing of GHG emissions from shipping; iii) argue that, if policymakers do indeed want to avoid double pricing of GHG emissions from shipping, there are lessons to be learned on how to do so from the implementation of border carbon adjustment (BCA) mechanisms; iv) identify avenues for regulatory cooperation between policymakers who work on GHG pricing for international shipping and those who work on BCA mechanisms. In doing so, the article contributes to academic and policy research on regulatory cooperation in climate change and trade.⁷

The remainder of this article is structured as follows: Section 2 identifies scenarios where double pricing of GHG emissions from shipping may occur in the near future. Section 3 discusses the pros

² Directive (EU) 2023/959 of the European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system, [2023] OJ L 130/134 ('Amending Directive (EU) 2023/959') art. 3ga.

³ Isabelle Rojon et al, 'The Impacts of Carbon Pricing on Maritime Transport Costs and Their Implications for Developing Economies' (2021) 132 *Marine Policy* 104653 ('Rojon et al, 2021'); Paula Pereda et al, 'Carbon Tax in the Shipping Sector: Assessing Economic and Environmental Impacts' (2023) Department of Economics, FEA/USP Working Paper, < http://www.repec.eae.fea.usp.br/documentos/Pereda_Lucchesi_Diniz_Wolf_04WP.pdf > ('Pereda et al, 2023')

⁴ Pierre Cariou, Ronald A. Halim, and Bradley J. Rickard. 'Ship-owner response to carbon taxes: Industry and environmental implications.' (2023) 212 *Ecological Economics* 107917. ('Cariou et al, 2023')

⁵ Gabriela Mundaca, Jon Strand., & Ian R. Young, 'Carbon pricing of international transport fuels: Impacts on carbon emissions and trade activity.' (2021) 110 *Journal of environmental economics and management* 102517 ('Mundaca et al, 2021'); Sotiria Lagouvardou, Harilaos N. Psaraftis, & Thalys Zis 'Impacts of a bunker levy on decarbonizing shipping: A tanker case study.' (2022) 106 *Transportation Research Part D: Transport and Environment* 103257 ('Lagouvardou et al, 2022').

⁶ Goran Dominioni, 'Towards an equitable transition in the decarbonization of international maritime transport: Exemptions or carbon revenues?' (2023) 154 *Marine Policy*, 105669; Goran Dominioni and Dominik Englert, 'Carbon revenues from international shipping: enabling an effective and equitable energy transition-technical paper.' (2022) World Bank publication < <https://www.worldbank.org/en/topic/transport/publication/carbon-revenues-from-international-shipping>> ('Dominioni & Englert, 2022')

⁷ See, for instance, Aik Hoe Lim & Kateryna Holzer 'Trading in the era of carbon standards: how can trade, standard setting, and climate regimes cooperate?' (2023) 39(1) *Oxford Review of Economic Policy* 110 ('Lim & Holzer 2023'); On regulatory cooperation see also Christy Ann Petit 'Regulatory cooperation, social security coordination, and participation in Union programmes' In Federico Fabbrini (ed) *The Trade and Cooperation Agreement – Law & Politics of Brexit* (Oxford : Oxford University Press, 2024).

and cons of double pricing of GHG emissions from shipping and potential ways to reduce their negative impacts. Section 4 analyzes learning opportunities from the implementation of BCA mechanisms, in order to reach the policy goal to avoid double pricing of GHGs from shipping. Section 5 identifies avenues for regulatory cooperation. Section 6 concludes.

2. Double Pricing of GHG Emissions from Shipping: Scenarios

Recent policy developments indicate that a share of GHG emissions from international shipping may become subject to multiple carbon pricing instruments in the near future. There are three scenarios where this double pricing can occur. These are: i) parallel implementation of GHG pricing instruments at the global and sub-global level that cover *downstream* emissions from vessels; ii) parallel implementation of GHG pricing instruments by sub-global jurisdictions covering *downstream* emissions from vessels; and iii) parallel implementation of GHG pricing instruments covering *upstream* emissions from the production and distribution of bunker fuels. We address these three scenarios in turn right after clarifying an important distinction between downstream and upstream emissions covered by carbon pricing instruments.

In principle, a carbon pricing instrument for international shipping can have different GHG coverage. Firstly, the instrument could cover only emissions released downstream when fuels are used on vessels (referred to as “tank-to-wake” emissions, hereafter TTW). Secondly, the carbon pricing instrument could also cover emissions released upstream both in the production and distribution of the bunker fuels (i.e., “well-to-wake”, hereafter WTW). For instance, a GHG pricing mechanism for international shipping could also cover emissions released in the extraction of natural gas used for Liquefied Natural Gas (LNG) propulsion on vessels. The latter WTW approach is preferable from a climate change perspective because it provides greater certainty that the decarbonization of the sector will not result in greater GHG emissions from land-based sources.⁸ However, opting for WTW may result in GHG emissions released in the production and distribution of bunker fuels being subject to multiple GHG pricing instruments, as discussed in the third scenario below.

In the first scenario, GHG emissions from shipping could become subject to double pricing due to overlaps between GHG pricing instruments that cover TTW emissions implemented by the IMO as an international organization active at global level, and those adopted within sub-global jurisdictions – supranational (like.g., the EU) or national (e.g., the US) jurisdictions. In July 2023, the IMO’s MEPC adopted a revised GHG strategy for international shipping.⁹ This 2023 IMO GHG Strategy mentions a “maritime GHG emissions pricing mechanism” among the candidate measures to be developed and adopted by the IMO by Autumn 2025.¹⁰ It is expected that the IMO GHG pricing mechanism will be adopted in 2025 and enter into force in 2027. In the meantime, the EU

⁸ Dominioni & Englert, 2022, (n 6); Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping ‘Maritime Decarbonisation Strategy 2022: A decade of change’ (2022) Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping <https://www.zerocarbonshipping.com/publications/maritime-decarbonization-strategy/>

⁹ IMO ‘Revised GHG reduction strategy for global shipping adopted, IMO’ (2023b) IMO Press Briefing <https://www.imo.org/en/MediaCentre/PressBriefings/pages/Revised-GHG-reduction-strategy-for-global-shipping-adopted.aspx> accessed 1 August 2023

¹⁰ IMO ‘2023 IMO Strategy on Reduction of GHG Emissions from Ships. Resolution MEPC.377(80)’ (2023a) para 4.5.2 (‘IMO 2023a’)

has extended the application of the EU ETS to international shipping (EU ETS Directive as amended).¹¹ Starting in 2024, the EU ETS covers 50 percent of GHG emissions from vessels calling at EU ports before or after calling a non-EU port and 100 percent of the GHG released in voyages between EU ports.¹² There is, therefore, a possibility that GHG emissions released by vessels traveling to or from an EU port will be subject to both the EU ETS and the potential forthcoming carbon price adopted by the IMO.

A second scenario in which GHG emissions from shipping could become subject to double pricing involves a potential overlap between sub-global instruments. As mentioned above, the revised EU ETS Directive will apply a GHG price to 50 percent of GHG emissions from voyages between an EU and non-EU port.¹³¹⁴ If other carbon pricing instruments are adopted at the national level by some third countries willing to cover more than 50 percent of GHG emissions released by vessels traveling between one of their ports and an EU port, the two carbon pricing instruments will overlap. Let us illustrate with a case between the EU and a third country. For instance, in the US, the proposed US International Maritime Pollution Accountability Act of 2023 applies a fee on GHG emissions released in burning fuels in transporting cargo to the US.¹⁵ If the US Congress enacts this act, there will be an overlap between the US fee and the EU ETS with regards to cargoes transported from an EU port to a US port and vice versa.

A third scenario is one in which GHG emissions released in the production and distribution of bunker fuels—that is, upstream emissions—are subject to a GHG price. Let us imagine that a country has implemented a GHG pricing instrument that applies to fugitive GHG emissions from the extraction of natural gas. If this gas is used as a bunker fuel (e.g., as LNG) and the GHG price adopted by the IMO also covers these upstream emissions, these emissions will be subject to two pricing mechanisms: one that covers land-based extraction and distribution facilities, and one that applies to international shipping. In fact, the 2023 IMO GHG Strategy sets climate mitigation targets for the sector on a WTW basis and states that the development of the GHG pricing instrument "should take into account the well-to-wake GHG emissions of marine fuels"¹⁶. It is, therefore, possible that a GHG pricing instrument implemented by the IMO will also cover upstream GHG emissions. Thus, a scenario where upstream emissions from bunker fuels are subject to both an IMO and a domestic carbon price is likely.

Based on these scenarios in which GHG emissions from international shipping could be subject to multiple GHG pricing instruments, the next section discusses whether GHG double pricing should be avoided.

3. The Pros and Cons of Double Pricing

¹¹ Amending Directive (EU) 2023/959, (n 2)

¹² Amending Directive (EU) 2023/959, art. 3gg, para. 2 (n 2)

¹³ *ibid*, art. 3ga (n 2)

¹⁴ This provision has to be transposed into national law by 31 December 2023 (see Amending Directive EU 2023/959 art. 3 [n 2])

¹⁵ Sheldon Whitehouse ‘S.1920 - International Maritime Pollution Accountability Act of 2023.’ Bill introduced to 118th Congress (2023-2024) (2023) (US) <https://www.congress.gov/bill/118th-congress/senate-bill/1920/titles?s=1&r=13&q=%7B%22search%22%3A%5B%22d%22%5D%7D> sec. 5

¹⁶ IMO 2023a para. 3.2 and 4.7 (n 10)

This section discusses first the potential negative and positive impacts of pricing GHG emissions from shipping twice. It then analyzes potential ways to reduce negative impacts.

3.1 Potential Negative and Positive Impacts of Double Pricing

As the prospects of the application of double GHG pricing instruments in international shipping are becoming more material, various stakeholders have raised concerns regarding the potential negative impacts of double pricing on their profitability and trade opportunities.

The shipping industry, or at least part of it, is one of the stakeholders that may be negatively affected by double pricing of GHG emissions, as this can reduce profits and competitiveness and increase compliance costs. Pricing GHG emissions from international shipping can reduce profits for the shipping industry as shipping companies may end up bearing a part of the price or — if the price is shared with other entities along the supply chain— may see a reduction in demand for shipping services.¹⁷ Relatedly, pricing GHG emissions from shipping multiple times could further reduce the profits of shipping companies insofar as they become subject to multiple pricing instruments. Moreover, the reduction in profits may be unevenly distributed among shipping companies as some may be more affected by the multiple pricing mechanisms than others (e.g., depending on whether they operate on routes where the multiple prices apply). These are some of the reasons why various organizations representing industry interests have called for the double pricing of GHG emissions from shipping to be avoided.¹⁸ Furthermore, shipping stakeholders have voiced concerns related to the additional compliance costs —including the multiple reporting of GHG emissions— represented by multiple pricing instruments, which could further affect their competitiveness.¹⁹

Some countries have also expressed concerns about the multiple pricing of GHG emissions from international shipping,²⁰ and its impact on trade opportunities. A carbon price implemented in international shipping can translate into an increase in the prices of transported goods or lower availability of transport services on certain routes.²¹ Existing research suggests that impacts on the price of transported goods might be low in general, but they are likely higher for low-value high-weight goods and for goods transported from more remote exporting countries.²² Of course,

¹⁷ Cariou et al, 2023, (n 4)

¹⁸ Japanese Shipowners' Association, 'Response Of the Japanese Shipowners' Association to the European Commission's Proposal to Extend the ETS to International Shipping' (2021) <<https://www.jsanet.or.jp/GHG/img/files/EU-ETS.pdf>> ; European Shippers' Council, 'Feedback on EC initiative Climate change – updating the EU emissions trading system (ETS).' (2021) <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12660-Climate-change-updating-the-EU-emissions-trading-system-ETS-/F2750842_en>

¹⁹ Sam Morgan, 'Shippers balk at EU carbon market plan' *Euractiv* (14 September 2020) <<https://www.euractiv.com/section/shipping/news/shippers-balk-at-eu-carbon-market-plan/>> accessed 17 July 2023; ICS, 'Piecing together the emissions regulation puzzle' (2022) <<https://www.ics-shipping.org/news-item/piecing-together-the-emissions-regulation-puzzle/>> accessed 17 July 2023; Sam Yarrow-Wright, 'Throwing Down the Gauntlet: The European Challenge to IMO on Carbon Pricing, Environmental Defense Fund' (2022) <<https://blogs.edf.org/energyexchange/2022/12/08/throwing-down-the-gauntlet-the-european-challenge-to-imo-on-carbon-pricing/>> accessed 17 July 2023.

²⁰ See, for instance, Argentina et al, 'Fact Sheet—Development of a Basket of Candidate Mid-Term GHG Reduction Measures' (ISWG-GHG 16) 1.3.

²¹ Rojon et al., 2021 (n 3); Pereda et al., 2023 (n 3).

²² Rojon et al., 2021, (n 3).

this may also depend on the carbon price level applied. These issues are prominent topics of discussion in IMO debates on the development of carbon pricing in international shipping.²³ Pricing GHG emissions from shipping twice or more can exacerbate the potential negative impacts of reduced trade on states. However, it is not necessarily the case that all countries will be negatively impacted by a GHG price in shipping, as some may see their exports becoming more competitive or an increase in consumption of domestic products.²⁴

In a nutshell, implementing double GHG pricing instruments for international shipping can negatively affect profits of the shipping industry (or at least a share of this industry) as well as affect trade opportunities of some countries.

Against this background, should double pricing be avoided? It is important to put into the balance the potential benefits too. From a Pigouvian perspective,²⁵ pricing GHG emissions from shipping can help to internalize the climate externality and thereby align private welfare with social welfare. To the extent that single GHG pricing instruments apply a price on GHG emissions from shipping that is lower than the social cost of carbon²⁶—that is, the cost to society of emitting an additional tonne of GHGs into the atmosphere—double pricing is not necessarily a problem from a Pigouvian perspective. In particular, it is not a problem if it allows to internalize the social cost of carbon more fully without imposing a too high price on GHG emissions.

From a climate change mitigation perspective, putting a price on shipping's GHG emissions can help to close the price gap between fossil-based bunker fuels and zero-carbon ones—thereby supporting the uptake of zero-carbon technologies.²⁷ It can also incentivize the uptake of low-carbon operational strategies by shipping companies (such as slow steaming) and greener consumption choices among consumers of transported products.²⁸ Existing research indicates that a sufficiently ambitious and well-designed price on GHGs from shipping can be an effective way to reduce emissions²⁹ and can, therefore, be a useful instrument in the GHG policy mix to decarbonize the sector. From this perspective, double pricing of GHG emissions from shipping is not necessarily a problem as it can induce greater abatements. If individual GHG pricing mechanisms put in place are not sufficiently ambitious to decarbonize international shipping in line with climate targets,³⁰ double pricing mechanisms can help to meet them. Indeed, under a GHG pricing mechanism, emission reductions are expected to take place when marginal abatement costs are lower than the GHG price. Thus, applying double pricing to GHG emissions should result in greater abatements.

²³ Goran Dominioni 'Towards an equitable transition in the decarbonization of international maritime transport: Exemptions or carbon revenues?' (2023) 154 *Marine Policy* 105669 <<https://doi.org/10.1016/j.marpol.2023.105669>> accessed 17 July 2023.

²⁴ See, for instance, Jasper Faber, Dagmar Nelissen, Tristan Smith, Misak Avetisyan & Ronald Halim 'Study on assessment of possible global regulatory measures to reduce greenhouse gas emissions from international shipping.' (2021) European Commission publication p. 100-102 <<https://data.europa.eu/doi/10.2834/330363>>

²⁵ Arthur Cecil Pigou, *The Economics of Welfare*, (Macmillan, 1920)

²⁶ On the social cost of carbon see: William D. Nordhaus, 'Revisiting the social cost of carbon.' (2017) 114(7) *Proceedings of the National Academy of Sciences* 1518.

²⁷ Ian Parry, et al., 'A Carbon Levy for International Maritime Fuels', (2022) 16(1) *Review of Environmental Economics and Policy* 25, <<https://doi.org/10.1086/717961>>.

²⁸ Ian Parry, et al., 'A Carbon Levy for International Maritime Fuels', (2022) 16(1) *Review of Environmental Economics and Policy* 25, <<https://doi.org/10.1086/717961>>.

²⁹ Mundaca *et al.*, 2021 (n 5); Lagourvardou *et al.*, 2022 (n 5); Cariou *et al.*, 2023 (n 4)

³⁰ Such as those included in the 2023 IMO GHG Strategy or those included in sub-global legislation, such as the EU Climate Law.

3.2 Mitigating Potential Negative Impacts of Double Pricing

The previous section highlighted that although double pricing of GHG emissions from shipping may represent a concern for some shipping companies and some countries, it could also have positive impacts in terms of social welfare and climate protection. Thus, there are, in principle, some reasons to allow double pricing to occur, although some negative effects may stem from it. Starting from this premise, this section argues that some strategies to design GHG pricing instrument for international shipping could help to mitigate potential negative impacts of double pricing.

Regarding potential negative impacts on trade exchanges and development opportunities for developing countries, especially Small Islands Developing States (SIDS) and Least Developed Countries (LDCs), research is ongoing in the context of IMO negotiations on how to assess³¹ and address them. Different stakeholders are proposing potential solutions to address and mitigate such disproportionately negative impacts. Indeed, some stakeholders called for exemptions for routes to/from selected countries,³² while others have called for the use of carbon revenues raised through the GHG pricing instrument to address these negative impacts.³³ For instance, World Bank research suggests that using carbon revenues from shipping to enhance port efficiency can reduce transport costs and offset (at least some of) the increase in transport costs related to introducing a GHG price.³⁴ Similar strategies could be adopted to reduce negative impacts from double pricing of GHG emissions from shipping. For instance, a share of carbon revenues raised by the extension of the EU ETS could be reallocated to reduce negative impacts in developing countries that trade with the EU.³⁵

Regarding the additional compliance costs for the industry potentially facing double GHG pricing instruments, these could be alleviated by harmonizing reporting requirements across systems/jurisdictions. Regulatory harmonization is known to reduce business compliance costs and is a key effort undertaken in market integration efforts worldwide.

³¹ In particular, at MEPC80, UNCTAD has been tasked to prepare a comprehensive impact assessment on impacts on states of GHG measures to be adopted by 2025 — including the GHG pricing scheme (IMO, 2023).

³² Argentina et al, ‘Proposal to Establish an International Maritime Sustainability Funding and Reward (IMSF&R) Mechanism as an Integrated Mid-Term Measure’ ISWG-GHG 12/3/9 (IMO ISWG-GHG2022) para 6; Argentina et al, ‘Elaborations on the Key Elements of the International Maritime Sustainable Fuels and Fund (IMSF&F) Mechanism Presented in Document ISWG-GHG 16/2/13’ ISWG-GHG 16/2/14 (IMO ISWG-GHG 2024) 13; Brazil, ‘Assessing Economic and Environmental Impacts’ GHG-EW 4/3 (IMO Expert Workshop on the Life Cycle GHG Intensity of Marine Fuels 2023) 9.

³³ Marshall Islands and Solomon Islands, ‘Proposal for IMO to Establish a Universal Mandatory Greenhouse Gas Levy’ MEPC 76/7/12 (IMO MEPC 2021)

³⁴ Dominiononi & Englert, 2022, (n 6)

³⁵ Currently, there is no requirement to use revenues raised through the inclusion of international shipping in the EU ETS to reduce negative trade impacts on trading partners in developing countries. A share of revenues raised through the EU ETS will be used to support shipping's decarbonization through the Innovation Fund, and the remaining will be directed to EU Member States. The latter can, but are not required to, use these revenues to support climate action in developing countries (European Commission, ‘FAQ – Maritime transport in the EU Emissions Trading System (ETS)’ (2023b) <

https://climate.ec.europa.eu/eu-action/transport/reducing-emissions-shipping-sector/faq-maritime-transport-eu-emission-s-trading-system-ets_en#:~:text=Use%20of%20revenues.-How%20will%20EU&text=According%20to%20the%20C%20mmission%2C%20in%20future%20calls%20for%20proposals.> accessed on 22 September 2023)

It is also worth noting that double pricing of GHG emissions is common in many other sectors like road transport and energy, as carbon taxes and ETSs are often complemented by other policy instruments—such as energy taxes or levies—that increase the marginal cost of emitting GHGs without targeting the carbon content or GHGs released in burning fuels.³⁶ The OECD³⁷ and the IMF³⁸ have estimated *effective carbon prices* for many countries. Effective carbon prices consist of the sum of carbon prices applied directly (through a carbon tax or ETS) and those applied indirectly (through other instruments that increase the costs of emitting GHGs without targeting the GHG content of fuels directly). These analyses indicated that in many countries pricing instruments overlap and, often, precisely this overlap allows countries to have overall GHG pricing levels that are closer to benchmark levels³⁹, such as estimates of the GHG price level needed to deliver on established climate targets. If implemented in the shipping industry, double pricing of GHG emissions would be far from an exception.

Overall, the question whether double pricing should be avoided depends on a balancing of interests, but the normative case to avoid it can be disputed. Moreover, the design of the carbon pricing instruments can mitigate some of the potential negative impacts discussed above. Nonetheless, beyond those considerations, policymakers may choose to avoid double pricing of GHG emissions from shipping. On this ground, the next section discusses potential lessons from academic and policy work on designing and implementing BCA mechanisms that can be useful in addressing concerns related to double pricing.

4. Learning Opportunities from Border Carbon Adjustment Mechanisms

This section argues that, in situations where the policy choice is to avoid double pricing of GHG emissions from shipping, policymakers working on shipping’s decarbonization could learn from sharing knowledge and experience in implementing another type of regulatory instrument that puts a price on GHG emissions; that is, BCA mechanisms. In particular, we can draw lessons from (i) the implementation of crediting mechanisms to avoid double pricing and ii) the comparison of GHG pricing instruments for shipping implemented by the IMO and other sub-global jurisdictions.

4.1 Implementing Crediting Mechanisms to Avoid Multiple Pricing

A potential way to avoid double pricing is to implement a crediting mechanism whereby entities whose GHG emissions are covered by multiple carbon pricing instruments have the right to see the payment made under one of the instruments recognized against the payment due in application of the other instrument. For example, if GHG emissions from shipping are priced twice—either by two sub-global instruments, or by a sub-global instrument and an IMO instrument as per the scenarios in section 2—a crediting mechanism could be implemented. This mechanism would

³⁶ Goran Dominioni, 'Pricing carbon effectively: a pathway for higher climate change ambition' (2022) 22(7) Climate Policy 897; OECD, 'Effective Carbon Rates 2021: Pricing Carbon Emissions through Taxes and Emissions Trading' (2021) < <https://doi.org/10.1787/0e8e24f5-en> > ('OECD 2021')

³⁷ OECD 2021 (n 35)

³⁸ IMF, 'Fiscal Policies for Paris Climate Strategies - From Principle to Practice.' (2019) IMF Policy Paper, < <https://www.imf.org/en/Publications/Policy-Papers/Issues/2019/05/01/Fiscal-Policies-for-Paris-Climate-Strategies-from-Principle-to-Practice-46826> > accessed 1 August 2023.

³⁹ OECD, 2021 (n 35)

allow entities that pay the carbon price under one instrument to see this payment credited by the other instrument, so that there is no multiple payment for the same applicable share.

In practice, such crediting mechanism could take two forms: first, the form of an *exemption* from paying the carbon price under one of the instruments or, second, the form of a *rebate*, whereby the payment made under one instrument is returned or deducted from future payments. The exact form of such crediting mechanisms will depend on the specific design of the pricing instruments that apply to the same tons of GHGs.

BCA mechanisms can include crediting mechanisms of this type, and therefore offer learning opportunities. These mechanisms put a price on GHG emissions embedded in imported products. For instance, the recently adopted EU Carbon Border Adjustment Mechanism (CBAM) Regulation⁴⁰ requires EU-based importers to buy and surrender CBAM certificates equal to the GHG emissions embedded in products imported into the EU.⁴¹ However, in case these emissions were already subject to a GHG price in the exporting country, the amount of allowances that the EU-based importer needs to surrender is reduced.⁴² To illustrate with figures, let us imagine that an EU-based importer has imported 1 ton of a good subject to CBAM into the EU and that GHGs embedded in this product are 10 tons and the price of CBAM certificates is 100 euros per ton. In this example, the importer would need to surrender CBAM certificates for a value of 1,000 euros. However, if the product were already subject to a GHG pricing mechanism in the exporting country equal to 50 euros per ton of GHGs, this price would be credited in the application of CBAM. Here, the importer would need to surrender CBAM certificates only for 500 euros insofar as 500 euros have already been paid in the country of origin of the goods. Based on this parallel, similar mechanisms could be implemented to avoid multiple payments under multiple GHG pricing mechanisms for international shipping.

Various other jurisdictions are considering the implementation of a domestic BCA mechanism, including Australia,⁴³ Canada,⁴⁴ Japan,⁴⁵ the United Kingdom,⁴⁶ and the United States⁴⁷. In each of these jurisdictions, policymakers will need to decide whether and how policies implemented in exporting countries will be credited. These jurisdictions and others considering a BCA mechanism will develop expertise in designing crediting mechanisms. This knowledge could be harnessed to the parallel, similar situation of double pricing of GHG emissions from shipping.

⁴⁰ Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 Establishing a Carbon Border Adjustment Mechanism (Text with EEA Relevance) ('CBAM Regulation 2023/956') [2023] OJ L 130/52.

⁴¹ CBAM Regulation 2023/956, art. 6. (n 39)

⁴² CBAM Regulation 2023/956, Recital (23); art. 9. (n 39)

⁴³ Chris Bowen MP, 'Speech to Australian Business Economists,' (15 August 2023) <<https://minister.dceew.gov.au/bowen/speeches/speech-australian-business-economists>> accessed 09/05/2024.

⁴⁴ Government of Canada 'Consultation on border carbon adjustments,' (Canada.ca 2 June 2023) <<https://www.canada.ca/en/department-finance/programs/consultations/2021/border-carbon-adjustments.html>> accessed 09/05/2024

⁴⁵ Ministry of Trade, Economy, & Industry, 'Achieving Global Carbon Neutrality' (Meti.go.jp August 2021) https://www.meti.go.jp/shingikai/energy_environment/carbon_neutral_jitsugen/pdf/20210825_2.pdf accessed 09/05/2024

⁴⁶ Department for Energy Security and Net Zero & HM Treasury, 'Factsheet: UK Carbon Border Adjustment Mechanism' (www.gov.uk 18 December 2023) <<https://www.gov.uk/government/consultations/addressing-carbon-leakage-risk-to-support-decarbonisation/outcome/factsheet-uk-carbon-border-adjustment-mechanism>> accessed 09/05/2024

⁴⁷ Foreign Pollution Act of 2023, S. 3198 (USA)

4.2 Comparing Climate Policies

Academic scholarship and grey literature have long analyzed ways to compare GHG policies across jurisdictions, for instance looking at their relative GHG emissions reduction outcomes or stringency (for instance, in terms of marginal abatement costs imposed).⁴⁸ Scholarly and policy attention towards the question of how to compare policies has increased in recent years due to policy activity on BCA mechanisms. This is because, normally, these mechanisms would apply a GHG price on products imported from countries that have less stringent (or less effective) GHG policies in place.⁴⁹ Thus, the implementation of these policies entails a comparison of GHG policies in the importing and the exporting country.

In the remainder of this section, we argue that the expertise on methods and ways to compare climate policies and frameworks can support policymakers working on shipping. Such expertise can support them with the *design* of a GHG pricing mechanism for international shipping that avoids double pricing of GHGs from this sector. We elaborate on two different situations envisaged by the revised EU ETS Directive — which extends the application of the EU ETS to international shipping. These scenarios represent respectively the comparison of IMO GHG pricing mechanism with the EU ETS, and the *equivalence* between the EU ETS and third countries' market-based measures (considered as synonymous to 'GHG pricing mechanisms').

First, the EU ETS Directive establishes that in case the IMO adopts a global GHG pricing mechanism, the European Commission shall review the ETS Directive.⁵⁰ In particular, the Commission will prepare a report on the IMO GHG price that analyzes i) its ambition in light of the Paris Agreement's climate objectives, ii) its environmental integrity, also *in comparison* with the EU ETS, iii) its coherence with the EU ETS.⁵¹ The report is submitted to the European Parliament and the Council within a year and a half from the adoption of the measure by the IMO.⁵² Alongside

⁴⁸ See. Joseph E. Aldy et al., 'Comparing emissions mitigation efforts across countries' (2017) 17(4) *Climate Policy*, 501. ; Mark Carhart et al., 'Measuring comprehensive carbon prices of national climate policies' (2022) 22(2) *Climate Policy* 198, Simon Black et al., 'A Framework for Comparing Climate Mitigation Policies Across Countries' (2022) IMF Working Paper < <https://www.imf.org/en/Publications/WP/Issues/2022/12/16/A-Framework-for-Comparing-Climate-Mitigation-Policies-Across-Countries-527049> > accessed 1 August 2023; OECD & IMF, 'Delivering Climate-Change Mitigation under Diverse National Policy Approaches - An independent IMF/OECD report to support the German 2022 G7 Presidency' (2022) < https://www.oecd-ilibrary.org/environment/delivering-climate-change-mitigation-under-diverse-national-policy-approaches_20179e63-en > accessed 1 August 2023; Agnolucci et al., Paolo Agnolucci, et al. 'Measuring Total Carbon Pricing.' (2023) World Bank Policy Research Working Paper WPS10486 ; William Pizer & Erin Campbell, 'Border Carbon Adjustments without Full (or Any) Carbon Pricing.' (2021) 'Resources for the Future Working Paper, < <https://www.rff.org/publications/working-papers/border-carbon-adjustments-without-full-or-any-carbon-pricing/> > accessed on 1 August 2023.

⁴⁹ Goran Dominioni, & Daniel C. Esty, 'Designing Effective Border Carbon Adjustment Mechanisms: Aligning the Global Trade and Climate Change Regimes.' (2023) 65 *Ariz. L. Rev.*, 1.

⁵⁰ Amending Directive (EU) 2023/959, art 3gg, para 1. (n 2)

⁵¹ Amending Directive (EU) 2023/959, art 3gg, para 1. (n 2)

⁵² In its reporting with the 2028 deadline in sight, the Commission will take into account the advice of the European Scientific Advisory Board on Climate Change ('the Board'), and may be able to rely on some reports from this Board that will identify the 'need for additional Union policies and measures in view of (...) the ambition and environmental integrity of the global [GHG pricing mechanism] of the IMO referred to in Article 3gg' (as per new Article 30l inserted by Amending Directive 2023/959). Furthermore, the Commission together with administering EU Member State and administering authorities for shipping may request the assistance of the European Maritime Safety Agency (EMSA) or

this report, the Commission may submit also a legislative proposal to amend the EU ETS directive in light of the IMO GHG pricing mechanism with the aim to ensure the environmental integrity of the EU ETS, ‘while avoiding any significant double burden’,⁵³ and to ensure that the EU is on track to meet its climate targets for 2030 and 2050.

Second, if the IMO does not adopt a GHG pricing mechanism by 2028, or that the adopted GHG price is not aligned with the Paris Agreement temperature goals *and comparable* to the EU ETS, the Commission will submit a report to the European Parliament and the Council.⁵⁴ This report will consider whether the requirement to surrender allowances under the EU ETS should be extended beyond 50 percent of GHG emissions released in voyages from/to an EU port.⁵⁵ In this report the Commission should, among other things, analyze the progress made at the IMO and analyze whether other jurisdictions have implemented a GHG pricing mechanism for international shipping *equivalent* to the EU ETS.⁵⁶ This report will be submitted alongside a legislative proposal to amend the EU ETS Directive.⁵⁷

Thus, the EU ETS Directive foresees a comparison between the EU ETS and other GHG pricing mechanisms for international shipping in at least two situations. The first *compares* the IMO GHG pricing mechanism with the EU ETS, and the second considers the *equivalence* between the EU ETS and third countries’ GHG pricing mechanisms. From the wording of the EU ETS Directive, it is uncertain whether the use of different words in these two situations, that is “level comparable” in the first situation, and “equivalent” in the second, should be interpreted as entailing different types of analyses and assessment by the Commission (regarding the meaning of equivalence, see section 5.2 below). In any case, knowledge and methods on comparing GHG pricing mechanisms can feed into either type of assessment made by the Commission.

Knowledge on methods to compare GHG pricing mechanisms could also help other non-EU countries in *designing* their GHG pricing mechanisms for shipping. In particular, two groups can benefit from it: IMO member states and third countries that plan to adopt a GHG pricing mechanism at the domestic level. They can build on this knowledge to design the IMO GHG price, in order to avoid an extension of the EU ETS beyond 50 percent of GHG emissions released by vessels in voyages between EU ports and ports of third countries. In principle, the implementation of an ambitious GHG pricing mechanism at the IMO could also lead to a withdrawal of the application of the EU ETS to shipping *tout court*.

The comparison of different GHG pricing mechanisms is not only a technical endeavor, but it will also entail political considerations. In the next section, we argue that there is a case for cooperation

another organization, in the context of its obligations under Art. 3gg (2) (see replacing Article 18b (1), Amending Directive 2023/959). The Commission, assisted by EMSA, aims at ensuring ‘robust enforcement’ of the national measures transposing the EU ETS Amending Directive, including through verification and enforcement activities with guidance and tools provided to EU Member States and verifiers (Article 18b (2)).

⁵³ Amending Directive (EU) 2023/959, art 3gg, para 1. (n 2)

⁵⁴ Ibid, para 2. (n 2)

⁵⁵ Ibid, para 2. (n 2)

⁵⁶ Ibid, para 2. (n 2)

⁵⁷ Ibid, para 2. (n 2)

between the EU, the IMO, and third countries on methods/ways to compare their GHG pricing mechanisms.

5. Scope of Regulatory Cooperation on GHG Pricing Mechanisms for International Shipping

In the previous section, we argued that knowledge created in the context of implementing BCA mechanisms could help avoid double pricing of GHG emissions from shipping. On this basis, we concluded that cooperation among policymakers, academics, and civil society experts working on BCA mechanisms and GHG pricing mechanisms for international shipping could be beneficial. In this section, we discuss options to foster such cooperation. To this end, we distinguish three levels of cooperation: i) multilateral cooperation in the context of IMO negotiations and outside the IMO; ii) bilateral cooperation between jurisdictions at government level, and iii) internal cooperation in a given jurisdiction (i.e. EU as a supranational jurisdiction or intra-government in a State). In this examination, we consider both the content and modalities of such cooperation.

5.1 Multilateral cooperation

Let us start, first, with multilateral cooperation in the context of IMO negotiations. In terms of actors involved at this level, the IMO MEPC and Intersessional Working Group on Reduction of GHG Emissions from Ships (ISWG-GHG) represent an existing platform for debate among IMO member states and observer organizations. Organizations with an *observer status* at the IMO include inter alia the EU and other international organizations with expertise on comparing GHG pricing instruments and implementing crediting mechanisms for BCA mechanisms, such as the World Bank and the IMF. Another organization with significant experience in comparing GHG pricing mechanisms is the OECD. While the OECD does not have an observer status at the IMO, it is under a cooperation agreement with the IMO⁵⁸. These channels can foster cooperation on the following substantive matters.

Multilateral cooperation in the IMO context could focus on three broad substantive areas. The first of these could be the exploration of possibilities to harmonize GHG pricing mechanisms to reduce compliance costs for regulated entities. Similarly to other sectors,⁵⁹ regulatory cooperation between entities or jurisdictions that are adopting and implementing a carbon pricing mechanism in international shipping could help harmonization efforts.⁶⁰ Second, cooperation could focus on identifying characteristics of an IMO GHG price that could be seen as “comparable” to the EU ETS. This can focus on key characteristics of a GHG pricing instrument, such as the carbon price level, GHGs covered, use of offsets and exemptions, the integrity of the GHG measurements, reporting, and verification, and enforcement. Third, in case the IMO GHG pricing mechanism is

⁵⁸ IMO, ‘Intergovernmental Organizations which have concluded agreements of cooperation with IMO.’ (2023c) Online resource, < <https://www.imo.org/en/OurWork/ERO/Pages/IGOsWithObserverStatus.aspx> > accessed on 22 September 2023

⁵⁹ See, for instance, Lim and Holzer, 2023 (n 7)

⁶⁰ Harmonization efforts across carbon pricing instruments can open the path to link multiple pricing instruments (Dallas Burtraw et al. ‘Linking by degrees: Incremental alignment of cap-and-trade markets.’ (2013) Resources for the Future Discussion Paper, accessed at < <https://media.rff.org/documents/RFF-DP-13-04.pdf> >), which further reduces compliance costs for regulated entities (Erik Haites, ‘Experience with linking greenhouse gas emissions trading systems’ (2016) 5(3) Wiley Interdisciplinary Reviews: Energy and Environment, 246.)

adopted and overlaps with EU or national GHG pricing mechanisms, cooperation could focus on identifying how to design crediting mechanisms so as to avoid doubling the burden and identify adequate arrangements for the sharing of revenues between entities or jurisdictions that — in the absence of a crediting mechanism— would put a price on the same emissions.

Second, multilateral cooperation may take place outside the IMO. This form of cooperation could involve the EU, other countries that aim to put a price on GHG emissions from shipping through a domestic instrument, and other organizations with expertise on BCA mechanisms. It could take a loose form, including a transfer of knowledge, sharing of best practices and expertise across jurisdictions and stakeholders' organizations via joint workshops. It could also take a more structured form, where regulatory cooperation is facilitated by settings that are more formal and regular, like forums or joint groups, on the basis of a common cooperation framework (in this case at multilateral level). Such settings allow the parties to convene regularly, foster dialogue. In both loose and more structured settings, the aim is to foster common regulatory approaches towards a shared regulatory objective. In this regard, multilateral cooperation outside the IMO could focus on the same three broad substantive areas discussed above: instrument harmonization to reduce compliance costs, comparability of GHG pricing instruments, and options for crediting mechanisms.

5.2. Bilateral cooperation and consideration for EU equivalence

Cooperation on GHG pricing for shipping and BCA mechanisms could take place also between the governments/public institutions of two jurisdictions, for instance, between the EU and other third countries,⁶¹ or among two non-EU countries. Such cooperation could materialize in a loose or structured form with cooperation frameworks, as mentioned above, for multilateral cooperation.

Substantively, these cooperation efforts could focus on harmonizing GHG pricing instruments to reduce compliance costs, agreeing on how to design potential crediting mechanisms (in case two instruments overlap), comparing GHG pricing instruments between jurisdictions, or establishing “equivalence” between the EU ETS and the GHG pricing mechanism of a third country — as envisioned by the revised EU ETS Directive (see section 4). Bilateral cooperation could be particularly needed in the latter case, i.e., for establishing “equivalence” between the EU ETS and third countries' GHG pricing mechanisms, as further discussed below.

In the EU context, the term “equivalence” is mostly used to refer to a process with specific features that entails a comprehensive assessment of regulatory and supervisory frameworks of third countries against the EU domestic framework to assess whether these are indeed “equivalent”. This framework may contain rules, standards, and administrative practices to enforce the rules (broadly captured as the regulatory regime). At the end of this process, the Commission may adopt *equivalence decisions*, also called adequacy decisions. Several EU policy areas foresee equivalence in EU secondary law itself, such as financial services (including clearing counterparties), data

⁶¹ The EU has a sui generis form as a supranational jurisdiction, with an executive power that is multifaceted, see Robert Schütze, *European Constitutional Law* (Second edition, Cambridge University Press 2016); Robert Schütze and Takis Tridimas (eds), *Oxford Principles of European Union Law* (Oxford University Press 2018); Federico Fabbrini, Ernst Hirsch Ballin and Han Somsen, *What Form of Government for the European Union and the Eurozone?* (Hart Publishing 2015).

protection, and third-country auditor oversight. While it is primarily a technical assessment, equivalence remains an area of *political choice* as equivalence decisions are unilaterally granted and potentially withdrawn at any time. Regulatory changes in one jurisdiction and/or the other may lead to divergence in regulatory approaches, which can halt equivalence.⁶²

Most often, the equivalence assessment is *outcomes-based*, in other words, it considers the regulatory outcomes of the frameworks assessed, and if third countries' rules have the same effect as the EU's. In the context of GHG pricing for shipping, this assessment would entail examining the outcomes of third countries' GHG pricing mechanisms against the Amended EU ETS Directive 2023/959. This approach seems to be the one taken in this Directive, as recital 28 states that "account should be taken of measures in third countries that have an *effect equivalent* to Directive 2003/87/EC"⁶³ (emphasis added). Establishing equivalence will normally require substantial knowledge of the GHG pricing mechanism implemented in the third country and the maritime transport sector of the third country (e.g., to identify potential avoidance risks). As such, bilateral cooperation between the EU and another third country is essential to establish equivalence between the EU ETS and the third country regime.

It is uncertain whether the analysis of the Commission underpinning the report sent to the European Parliament and Council will entail this assessment process in a similar fashion to other EU policy areas, or whether "equivalence" will entail another type of assessment of third countries' approach to GHG pricing. In any event, if deemed "equivalent" by the EU, the implementation of a GHG pricing mechanism by third countries could preempt the further extension of the EU ETS to their jurisdictions, and therefore, could solve the issue of double pricing instruments to GHG emissions from shipping. Such assessment will be facilitated by both loose and structured form of cooperation at bilateral level, on the fringe of the ongoing multilateral cooperation in the IMO setting. Prior internal cooperation will also be instrumental to foster such informal and formal dialogue.

5.3. Internal cooperation

Internal cooperation refers to either intra-government cooperation within a country, or intra-EU cooperation in a supranational setting.

Within a country, knowledge acquired or developed on how to compare GHG pricing mechanisms or to implement crediting mechanisms by units working on BCA mechanisms could be shared with units working on GHG pricing mechanisms for international shipping. This may require cooperation across different Ministries or Departments, depending on the organization of a given jurisdiction's Government.

Intra-EU cooperation can take place not only during the EU legislative process itself and among the co-legislators i.e. the European Parliament and the Council,⁶⁴ but also in the implementation of EU law. The latter matters in this field considering the nature of the legal act setting the EU ETS

⁶² Christy Ann Petit and Thorsten Beck, 'Recent Trends in UK Financial Sector Regulation and Possible Implications for the EU, Including Its Approach to Equivalence' (European Parliament 2023) Publication for the Committee on Economic and Monetary Affairs, Policy Department for Economic, Scientific and Quality of Life Policies PE 740.067.

⁶³ Amending Directive (EU) 2023/959 Recital 28. (n 2),

⁶⁴ Consolidated version of the Treaty on the Functioning of the European Union [2012] OJ C 326/47 Art. 192 para. 1. ('TFEU 2012')

regime, that is a Directive. Member States need to transpose the Directive in their national system, by 31 December 2023 (as per Article 3 of Directive 2023/959 amending Directive 2003/87/EC). Under the application of the principle of sincere cooperation,⁶⁵ the Member States shall implement and transpose the EU ETS Directive into national law by the given deadline and fulfil the obligations arising out from it. At the time of writing, still 17 Member States need to transpose it.⁶⁶

Overall, this section has argued that multilateral regulatory cooperation within and outside the IMO, at the bilateral level, and within jurisdictions among policymakers working on BCA mechanisms and GHG pricing for international shipping, can be beneficial to address potential issues related to double pricing of GHG emissions from shipping.

6. Conclusion and Policy Implications

Recent policy developments at the global and sub-global level indicate that a share of GHG emissions from international shipping will soon be under multiple GHG pricing mechanisms. Various countries and shipping companies have expressed concerns about this.

Building on this policy background, this article analyzes the potential impacts of double pricing of GHG emissions from shipping, discusses options to reduce the negative impacts of double pricing, and identifies regulatory cooperation avenues to avoid double pricing.

Overall, the analysis suggests that double pricing of GHG emissions from shipping can have both positive and negative effects, and the latter can be reduced with adequate instrument design. Thus, whether double pricing should be avoided depends on a balancing of interests. In case the policy choice is made to avoid double pricing, there are lessons learned from the implementation of BCA mechanisms on how to do so. Regulatory cooperation, at both a multilateral and bilateral level as well as internally, can support this policy objective. Multilateral cooperation between the IMO, the EU, the World Bank, the IMF, the OECD, and countries working on GHG pricing for international shipping and BCA mechanisms will help reduce potential negative impacts of double pricing or to avoid double pricing *tout court*.

⁶⁵ TFEU 2012 Art. 4 para. 3. (n 63)

⁶⁶ As of 20 March 2024, Belgium, Czechia, Denmark, France, Lithuania, the Netherlands, Austria, Poland, Finland, and Sweden had transposed Amending Directive (EU) 2023/959 (n 2), list available at: <https://eur-lex.europa.eu/legal-content/EN/NIM/?uri=celex:32023L0959> accessed on 09/05/2024