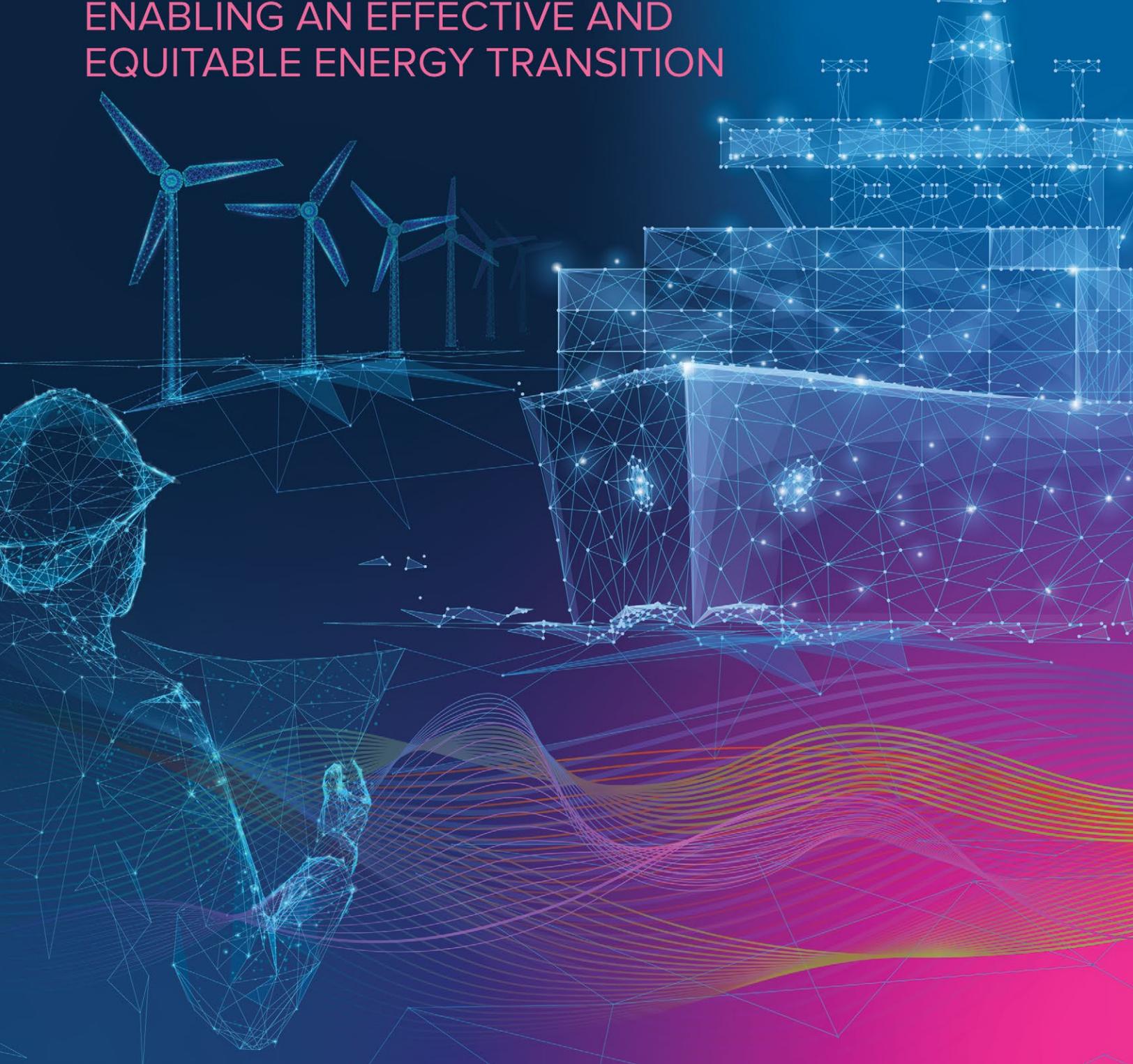


CARBON REVENUES FROM INTERNATIONAL SHIPPING:

ENABLING AN EFFECTIVE AND
EQUITABLE ENERGY TRANSITION



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TABLE OF CONTENT

Preamble	ii
Acknowledgements	iii
Abbreviations	iv
1: International shipping is a key enabler for trade and development, and a significant emitter of greenhouse gases.....	1
2: Climate policymaking at the IMO and the current focus on mid-term measures, including market-based measures.....	3
3: The unique revenue-raising potential of market-based measures.....	5
4: What could carbon revenues from international shipping be used for?.....	10
5: Who could be the recipients of carbon revenues from international shipping?	17
6: How could the adequate management of carbon revenues from international shipping be imagined?	20
7: Key conclusions.....	21

TABLES

Table 1: Revenue uses, their potential alignment with the Initial IMO GHG Strategy and other selected desirable key features.....	14
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FIGURES

Figure 1: Historical and projected transport demand and GHG emissions from international shipping.....	2
Figure 2: Measures envisaged under the Initial IMO GHG Strategy with respective timelines.....	4
Figure 3: Possible market-based measures and their potential to raise revenues in the context of the Initial IMO GHG Strategy.....	6
Figure 4: Two main solutions considered to address the challenges resulting from the need for an equitable transition.....	10
Figure 5: Potential revenue uses from carbon pricing in shipping considered.....	11
Figure 6: Potential revenue uses assessed against guiding principles and selected desirable key features.....	13
Figure 7: Win-win situation from synergies between strategic in-sector use and out-of-sector use of revenues from carbon pricing in international shipping.....	16
Figure 8: Groups of recipients best positioned to achieve main broad aims of potential revenue uses.....	19

BOXES

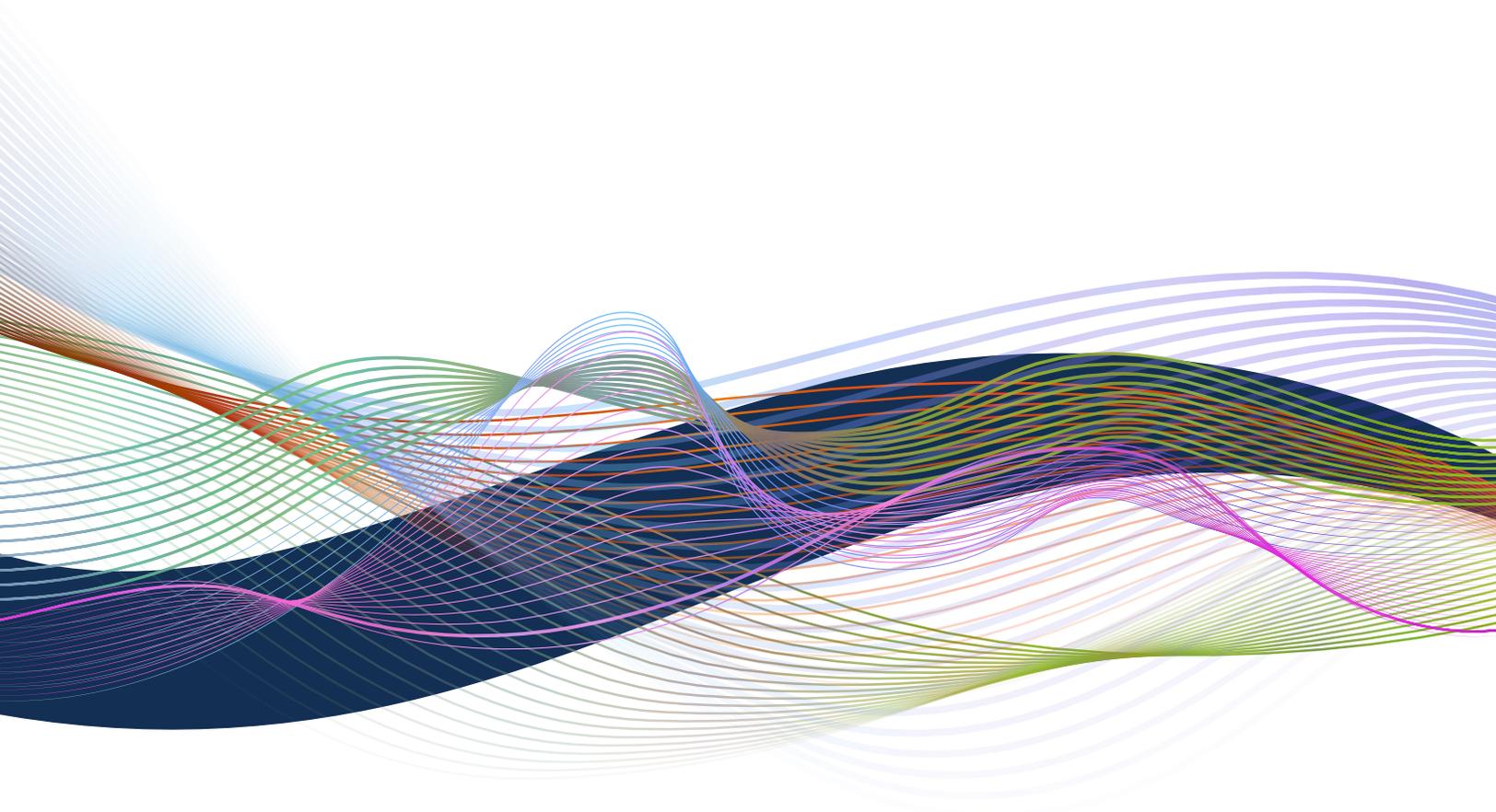
Box 1: Potential scale of carbon revenues from international shipping based on two selected examples.....	7
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PREAMBLE

The World Bank has undertaken analytical work on the use, recipients, and management of potential carbon revenues from international maritime transport. This document [Carbon Revenues from International Shipping: Enabling an Effective and Equitable Energy Transition – Summary For Policymakers](#) is based on a comprehensive technical paper entitled [Carbon Revenues from International Shipping: Enabling an Effective and Equitable Energy Transition – Technical Paper](#)¹



¹ Dominioni, G.; Englert, D., 2022. Carbon Revenues from International Shipping: Enabling an Effective and Equitable Energy Transition – Technical Paper. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/37240> License: CC BY 3.0 IGO





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ABBREVIATIONS

ACRONYM

CBDR-RC

CO₂

CO₂e

DNI

GHG

IMO

LDC

SIDS

t

UN

UNEP

\$

DEFINITION

Common but Differentiated Responsibilities and Respective Capabilities

Carbon dioxide

Carbon dioxide equivalent

Disproportionately negative impacts

Greenhouse gas

International Maritime Organization

Least developed country

Small Island Developing States

tons

United Nations

United Nations Environment Programme

United States dollar





1: INTERNATIONAL SHIPPING IS A KEY ENABLER FOR TRADE AND DEVELOPMENT, AND A SIGNIFICANT EMITTER OF GREENHOUSE GASES

- 1. Global maritime transport plays a crucial role in facilitating global trade and fostering economic development.** Maritime transport accounts for about 70 percent of global trade by value and about 80 percent by volume.² It plays a key role in the economic development of countries—regardless of whether they are coastal or landlocked. It is particularly important for less developed countries as of total goods transported internationally by sea today, about 60 percent are loaded (exports) and 70 percent are unloaded (imports) in those countries.³ And just as importantly, shipping represents the lifeline for many Small Island Developing States (SIDS) and Least Developed Countries (LDCs) which are heavily dependent on maritime transport for the supply of essential goods such as food, construction materials, and pharmaceuticals.⁴
- 2. At the same time, international shipping is responsible for a significant source of greenhouse gas (GHG) emissions, which is projected to grow further without effective policy intervention.** The GHG emissions generated by international maritime transport account for around three percent of global GHG emissions annually.⁵ Estimates under a business-as-usual scenario anticipate GHG emissions to increase from about 90 percent of 2008 GHG emissions in 2018 to 90-130 percent of 2008 GHG emissions by 2050.⁶ This puts shipping on a pathway consistent with 3 to 4 degrees Celsius warming if no additional GHG emission curbing regulations are adopted.⁷
- 3. International shipping has officially committed itself to at least halve its emissions by 2050 from 2008 levels, and many stakeholders are already calling for full decarbonization by that date.**⁸ In 2018, the International Maritime Organization (IMO) adopted its Initial Strategy on the Reduction of GHG Emissions from Ships. This strategy—known as the Initial IMO GHG Strategy—aims to reduce absolute GHG emissions by at least 50 percent by 2050 as compared to 2008 levels.⁹ Yet, given the extent and urgency

2 UNCTAD (United Nations Conference on Trade and Development). 2018. 50 Years of Review of Maritime Transport, 1968–2018: Reflecting on the past, exploring the future. https://unctad.org/system/files/official-document/dtl2018d1_en.pdf; UNCTAD. 2018. "Review of Maritime Transport 2018." https://unctad.org/system/files/official-document/rmt2018_en.pdf

3 UNCTAD. 2021. "Review of Maritime Transport 2021."

4 Herbert, Sian. 2019. Development characteristics of Small Island Developing States. Brighton, UK: In Brighton, UK: Institute of Development Studies. https://assets.publishing.service.gov.uk/media/5d554c0a40f0b6706d0d2faf/623_Development_Characteristics_of_Small_Island_Developing_States_Final.pdf

5 International Maritime Organization (IMO). 2020. Fourth Greenhouse Gas Study 2020. <https://www.imo.org/en/OurWork/Environment/Pages/Fourth-IMO-Greenhouse-Gas-Study-2020.aspx>.

6 International Maritime Organization. 2020. Fourth Greenhouse Gas Study 2020 <https://www.imo.org/en/OurWork/Environment/Pages/Fourth-IMO-Greenhouse-Gas-Study-2020.aspx>.

7 Climate Action Tracker (database). Global Shipping. Available at: <https://climateactiontracker.org/sectors/shipping/>.

8 International Maritime Organization (IMO). 2018. Maritime Environment Protection Committee (MEPC). 72/17/Add.1.

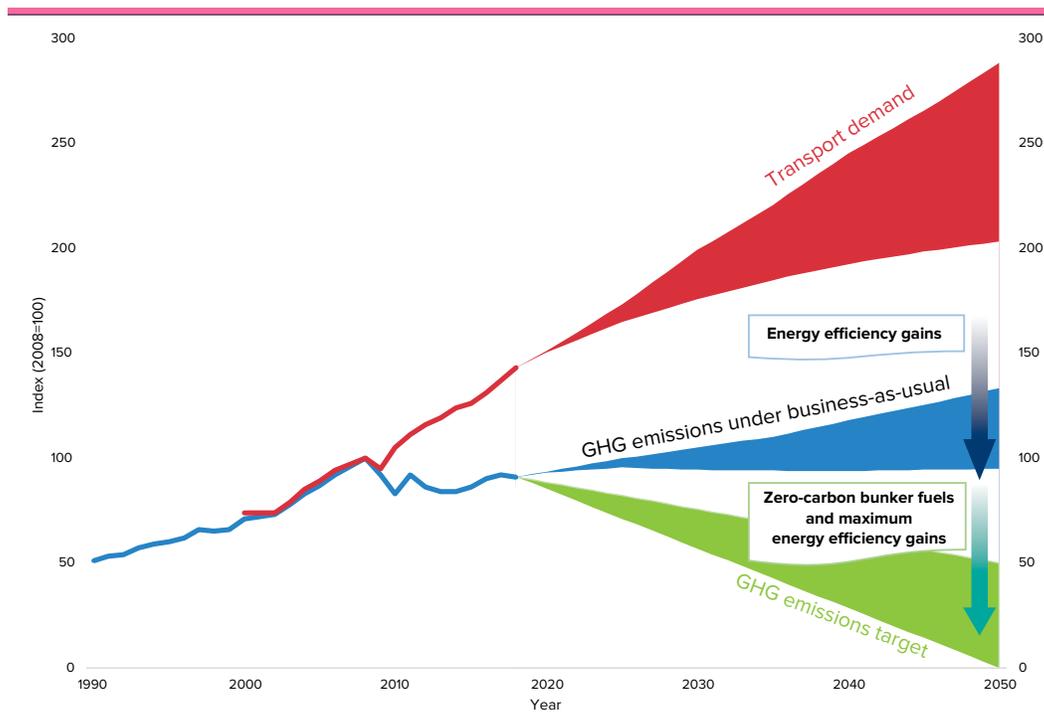
9 International Maritime Organization (IMO). 2018. Maritime Environment Protection Committee (MEPC). 72/17/Add.1.





of the climate crisis, calls by IMO Member States and major industry stakeholders have increased for the sector to fully decarbonize within the same timeframe. For this to occur, large untapped possibilities to achieve energy efficiency need to be exploited, and new zero-carbon bunker fuels need to replace the currently predominant heavy-fuel oil (see Figure 1).¹⁰ Moves to accelerate shipping's energy transition away from fossil fuels towards hydrogen or hydrogen-derived fuels were clearly visible at the 26th Conference of the Parties for the United Nations Framework Convention on Climate Change in Glasgow, both from individual nations and the private sector. Examples of these include the Clydebank Declaration¹¹ that plans to establish at least five green shipping corridors by 2025, the First Movers Coalition that has committed to mobilize collective demand for green fuels,¹² and the Cargo Owners for Zero Emission Vessels platform aiming at charterers interested in minimizing their carbon footprint from seaborne transportation.¹³

FIGURE 1: HISTORICAL AND PROJECTED TRANSPORT DEMAND AND GHG EMISSIONS FROM INTERNATIONAL SHIPPING



Source: Adapted from United Nations Environmental Programme (UNEP). 2020. Emissions Gap Report 2020. Nairobi: UNEP.

10 Englert, Dominik, Andrew Losos, Carlo Raucci, and Tristan Smith. 2021. The Potential of Zero-Carbon Bunker Fuels in Developing Countries. World Bank, Washington, DC. <https://openknowledge.worldbank.org/handle/10986/35435>.
11 UN Climate Change Conference UK. 2021. "Clydebank Declaration for Green Shipping Corridors." Available at: <https://ukcop26.org/cop-26-clydebank-declaration-for-green-shipping-corridors/>.
12 First Movers Coalition. Available at: <https://www.weforum.org/first-movers-coalition>.
13 Cargo Owners for Zero Emission Vessels. Available at: <https://www.cozev.org/>.





- 4. Enabling shipping's decarbonization pathway will require strong international policy action.** Like international aviation, international shipping is distinctive in that it has a global regulating body: The IMO, a specialized UN agency, which has the mandate to regulate international shipping on a variety of issues, including climate change. Policy action taken at the IMO level reduces risks of distorting competition and carbon leakage as each IMO Member State implements the same regulation. While providing a unique forum for international negotiations, the consensus-finding process often becomes challenging as it requires all 175 IMO Member States to agree on a common set of policy measures. However, the stringency of these policy measures will eventually be instrumental in putting shipping on a technological and operational pathway to achieve the target of at least 50 percent reduction or, even more ideally, zero GHG emissions by 2050 and to ensure consistency with the Paris Agreement's temperature goals.



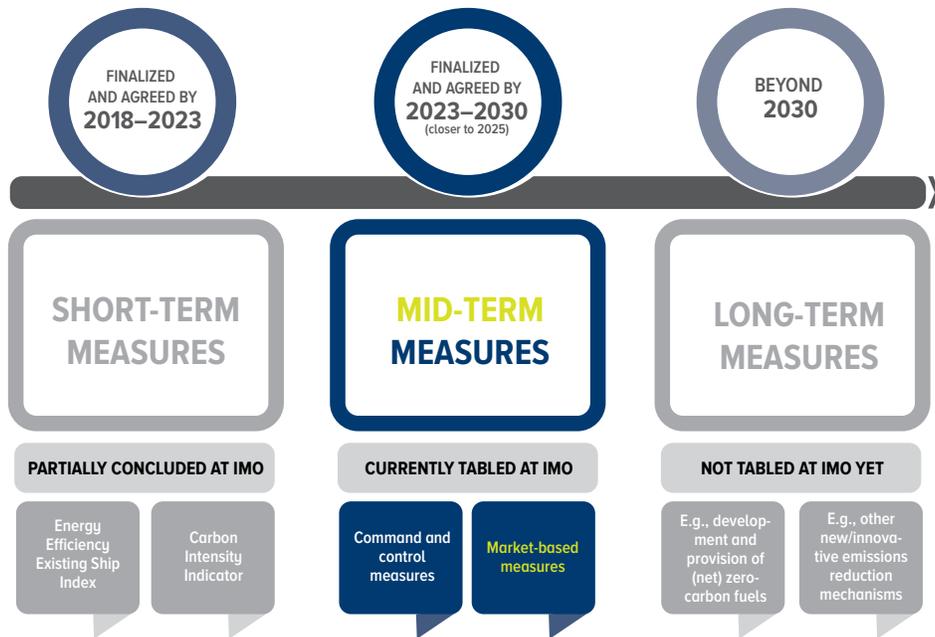
2: CLIMATE POLICYMAKING AT THE IMO AND THE CURRENT FOCUS ON MID-TERM MEASURES, INCLUDING MARKET-BASED MEASURES

- 6. The Initial IMO GHG Strategy states that short-term, mid-term and long-term measures should be adopted by the IMO to meet the GHG emissions target.** The Initial IMO GHG Strategy, which was adopted in 2018 and is to be revised in 2023, distinguishes three types of measures to support the decarbonization of shipping which are to be finalized and agreed on by different dates: short-term (2018–2023), mid-term (2023–2030), and long-term measures (beyond 2030) (see Figure 2). Since the debate on short-term measures (e.g., introduction of the Energy Efficiency Existing Ship Index, or the Carbon Intensity Indicator) has almost been concluded, the focus has now turned to mid-term measures.





FIGURE 2: MEASURES ENVISAGED UNDER THE INITIAL IMO GHG STRATEGY WITH RESPECTIVE TIMELINES



- 7. While all these measures are to reduce GHG emissions from ships, they are also expected to be in line with the guiding principles of the Initial IMO GHG Strategy.** Some of these guiding principles relate to equity concerns among IMO Member States. In this context, for instance, the Initial IMO GHG Strategy states that any measure adopted must be cognizant of the principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) and address potential disproportionately negative impacts (DNI) on States.¹⁴ This is to ensure an equitable transition toward low- and zero-carbon shipping.
- 8. The mid-term measures considered include a variety of policy options, including market-based measures.** The IMO is currently discussing different types of mid-term measures to support the achievement of the Initial IMO GHG Strategy's climate ambition.¹⁵ For now, the debate focuses on two primary approaches: command-and-control measures (for example, performance standards, fuel-emission standards) and market-based measures, whereby polluters are incentivized to reduce their GHG emissions through price signals. In general, a market-based approach is expected to provide more flexibility to regulated entities to achieve the GHG emissions reductions required in the most cost-effective manner.
- 9. Carbon levies and cap-and-trade schemes represent the most discussed market-based measures.** Both carbon levies and cap-and-trade schemes are market-based measures that put an explicit price on GHG emissions. This is to reduce the carbon content of bunker fuels, disincentivize the use of fossil fuels, and create a level playing field for emerging zero-carbon bunker fuels. Yet the two measures differ in their approach.

¹⁴ Both concepts will be explained in more detail in subsequent sections.

¹⁵ International Maritime Organization (IMO). 2018. "UN Body Adopts Climate Change Strategy For Shipping." Press release, April 13, 2018. <https://www.imo.org/en/MediaCentre/PressBriefings/Pages/06GHGinitialstrategy.aspx>.





Carbon levies directly apply a price to the theoretical carbon content or the actual GHGs emissions of bunker fuels. A cap-and-trade scheme sets a cap on the sector's overall GHG emissions and lowers this cap over time. The cap represents the aggregate amount of individual emissions allowances (usually one emissions allowance per one ton of CO₂e), which are distributed to regulated agents (e.g., shipowners, bunker fuel suppliers, etc.)—either at a fixed price (although this is rather unusual), through auctions, or distributed. Regulated entities can trade allowances freely on the secondary market and are required to surrender these allowances for their GHG emissions at the end of each compliance period (most often annually).

- 10. At the IMO and in the shipping industry, market-based measures are currently getting a lot of attention.** In the recent past, two types of market-based measures have been proposed to the IMO. First, a carbon levy on bunker fuels, starting at \$ 100/tCO₂e from 2025 with upward ratchets on a five-yearly review cycle.¹⁶ Second, a cap-and-trade scheme combined with a fuel GHG limit, the latter acting as a command-and-control measure.¹⁷ These proposals have received a wide range of attention from both IMO Member States and the private sector alike.¹⁸ Industry players such as the International Chamber of Shipping,¹⁹ representing over 80 percent of the world merchant fleet,²⁰ Trafigura²¹ a major charterer and others have expressed their support for a market-based approach and shared their own proposals for applying carbon pricing to shipping.



3: THE UNIQUE REVENUE-RAISING POTENTIAL OF MARKET-BASED MEASURES

- 11. In contrast to other mid-term measures, market-based measures have the advantage that they can generate a revenue stream which could be used to create an additional set of opportunities.** Some market-based measures, specifically carbon levies and cap-and-trade schemes without free distribution of emissions allowances, are able to raise revenues (see Figure 3). These so-called carbon revenues can enable an additional set of possible actions. That enabling potential is a key feature offered by no other mid-term measure considered. For instance, significant amounts of financial resources

16 Marshall Islands and Solomon Islands, Marine Environment Protection Committee (MEPC) 76/7/12. 76th session, 21 April 2021.

17 Norway, MEPC 76/7/2. 76th session, 21 April 2021.

18 Climate Vulnerable Forum. 2021. "Dhaka-Glasgow Declaration of the CVF." Available at: <https://thecvf.org/our-voice/statements/dhaka-glasgow-declaration-of-the-cvf/>; Global Maritime Forum. "Call to Action for Shipping Decarbonization." <https://www.globalmaritimeforum.org/content/2021/09/Call-to-Action-for-Shipping-Decarbonization.pdf>.

19 International Chamber of Shipping. 2021. "International Chamber of Shipping Sets Out Plans For Global Carbon Levy To Expedite Industry Decarbonization." Press release, September 6, 2021. <https://www.ics-shipping.org/press-release/international-chamber-of-shipping-sets-out-plans-for-global-carbon-levy/>.

20 International Chamber of Shipping. "About ICS." Available at: <https://www.ics-shipping.org/about-ics/>.

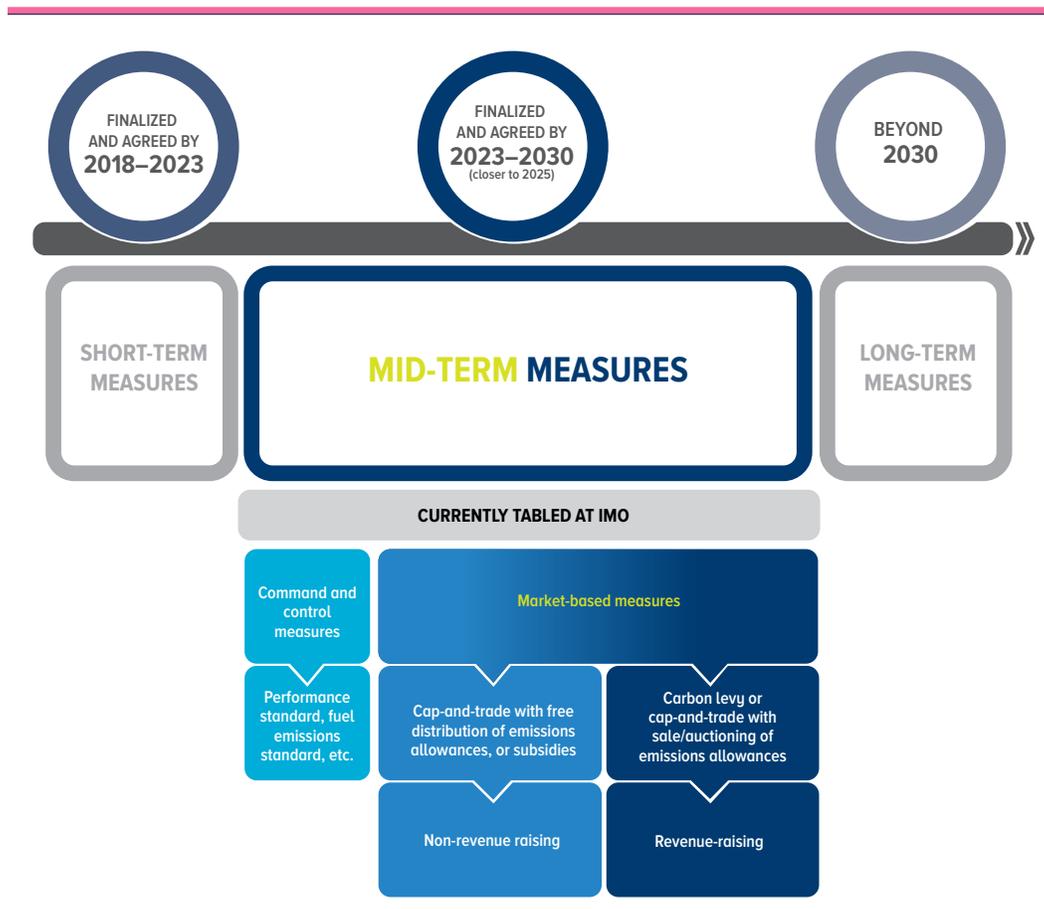
21 Trafigura. "A Proposal for an IMO-led Global Shipping Industry Decarbonisation Programme." <https://www.trafigura.com/media/2752/a-proposal-for-an-imo-led-global-shipping-industry-decarbonisation-programme.pdf>.





could become available to facilitate and accelerate climate action, both in the shipping sector or beyond, and to enable an equitable transition taking into account the need to be cognizant of CBDR-RC and/or address DNI. There are also market-based measures which would curb GHG emissions but without raising revenues. These are, for instance, cap-and-trade with free distribution of the emissions allowances, baseline-and-credit, or subsidies. However, these lack the inherent advantages of the revenue raising schemes to create those additional opportunities or benefits (of which more later).

FIGURE 3: POSSIBLE MARKET-BASED MEASURES AND THEIR POTENTIAL TO RAISE REVENUES IN THE CONTEXT OF THE INITIAL IMO GHG STRATEGY



12. It is estimated that between \$1 trillion to \$3.7 trillion could be raised from a market-based measure in shipping by 2050. According to estimates, carbon pricing applied to a scenario where the minimum climate change mitigation targets of the Initial IMO GHG Strategy will be met could raise between \$1.3 trillion to \$2.6 trillion in total.²² Projecting a full decarbonization scenario by 2050, those revenues could be between \$1 trillion to \$2 trillion. According to another study, a flat carbon levy of \$250 per tCO₂e could raise \$3.7 trillion by 2050.²³ Depending on different modelling assumptions, estimates for carbon revenues from international shipping could imply an average of around \$40 billion to \$60 billion of annual revenues (see Box 1).

22 Baresic, Domagoj, Isabelle Rojon, Alison Shaw, and Nishatabbas Rehmatulla. (2022). "Closing the Gap: An Overview of the Policy Options to Close the Competitiveness Gap and Enable an Equitable Zero-Emission Fuel Transition in Shipping." Prepared by UMAS, London.

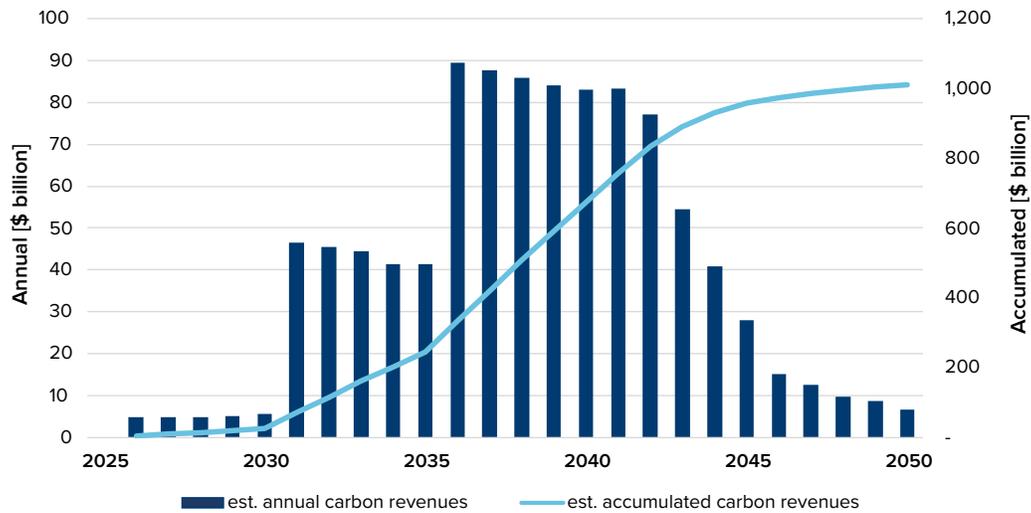
23 Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping. 2021. "Industry Transition Strategy." Copenhagen: Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping.





BOX 1: POTENTIAL SCALE OF CARBON REVENUES FROM INTERNATIONAL SHIPPING BASED ON TWO SELECTED EXAMPLES

FIGURE B1.1: 100% REVENUE RECYCLING TO SUPPORT SHIPPING'S DECARBONIZATION



Based on techno-economic modelling conducted for the Getting to Zero Coalition^a it is estimated that to fully decarbonize international shipping by 2050, the average carbon price would need to be around \$191/ton CO₂ and reach a maximum of around \$358/ton CO₂. Carbon prices could however be lower if revenues generated by the market-based measures are recycled to further support decarbonization of shipping, for example by subsidizing the deployment of zero-emission fuels and technologies. If 100 percent of revenues were recycled to support shipping decarbonization, in theory, this could lower the carbon price level by up to half, i.e., to an average of \$96/ton CO₂ and a maximum of \$179/ton CO₂ (but this would mean no revenues are left for other purposes, such as enabling an equitable transition). Depending on the level of revenue recycling, the average amount of revenue collected would range between \$41 billion and \$81 billion per annum, totaling between \$1 trillion and \$2 trillion.

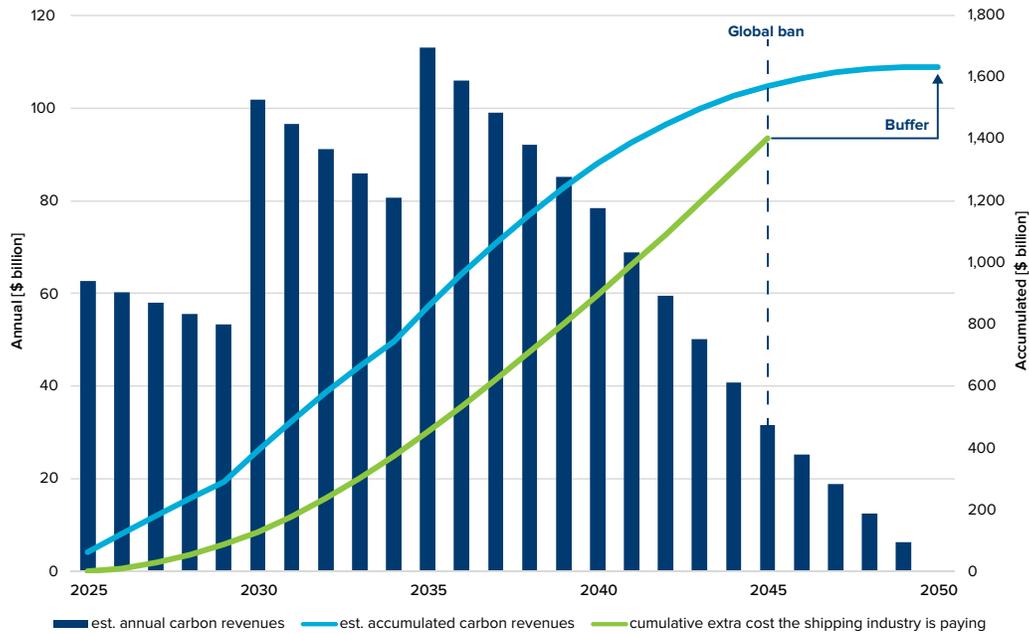
Note:* The collected revenue should be considered in terms of the total amount of available revenue which can be distributed over the period of decarbonization (from 2025–2050), rather than assuming the revenue will be deployed only in the year it is collected. This scenario generally provides more subsidy/support for zero-emission fuels early in the transition when price spreads to zero-emission fuels are expected to be highest, and less towards the end of the transition when zero-emission fuels are more established and have a lower price spread.

continues on page 8





FIGURE B1.2: 'EARMARK AND RETURN' WITH BUFFER FOR WIDER USE



The Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping^b illustrates an 'earmark and return' global carbon levy system, coupled with a global ban on fossil-fueled vessels once most of the fleet has transitioned to alternative bunker fuels. Based on such an earmark and return logic, the carbon levy needs to be at least large enough to cover the cumulative extra cost the shipping industry is paying relative to a fossil fuel baseline in a transition to zero emissions by 2050. The projections above are made assuming a carbon price starting at \$50 (2025) with two hikes to \$100 (2030) and \$150 (2035) respectively. With these assumptions, the levy scheme accumulates funds to cover the extra cost for alternative fuels to the shipping industry. Additionally, the scheme accumulates carbon revenues of approx. \$300 billion as a buffer, which can be used to address DNI amongst others.

Note:* The data related to the earmark and return proposal stems from the Industry Transition Strategy. It is important to note that the accumulated cost gap during the transition is the difference between estimates of the cost of production of alternative fuels and the baseline cost being a forward-looking curve for the price of very low sulphur fuel oil (VLSFO) and liquified natural gas (LNG). The carbon price levels required to facilitate a transition (and enabling a buffer as well) would change with a) the fossil fuel price assumptions and b) the impact of key assumptions underlying the alternative fuels cost, e.g., levelized cost of electricity.

*The notes were provided by the respective authors of the two studies.

a Baresic, Domagoj, Isabelle Rojon, Alison Shaw, and Nishatabbas Rehmatulla. (2022). "Closing the Gap: An Overview of the Policy Options to Close the Competitiveness Gap and Enable an Equitable Zero-Emission Fuel Transition in Shipping." Prepared by UMAS, London. Link

b Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping. 2021. "Industry Transition Strategy." Copenhagen: Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping. Link





- 13. Currently, a key point of contention in the mid-term measure debate at the IMO is how to ensure an equitable transition.** There are two guiding principles in the Initial IMO GHG Strategy—the need to be cognizant of the principle of CBDR-RC and the need to address DNI on States—that relate to this question of equity. There can be different views among IMO Member States on whether these two guiding principles may overlap. For the specific purpose of this discussion, they are treated as separate issues.
- 14. CBDR-RC generally has two components: the common responsibility to address climate change and the need to account for differing circumstances among States.** Usually, the principle—although its final meaning remains a matter of debate—stipulates that, although all countries have a common responsibility to mitigate climate change, any measure to do so must take into account the differing circumstances among States on the subject of their contribution to the climate problem and their ability to address it.²⁴
- 15. The need to address DNI takes into account concerns that climate measures for shipping may have more severe impacts on some States than on others.** It implies that “impacts on States of a measure should be assessed and taken into account as appropriate” and that “disproportionately negative impacts should be...addressed.”²⁵ For instance, it is based on a general assumption that developed countries have more capacity to absorb the costs²⁶ associated with shipping’s decarbonization than less developed countries.
- 16. In principle, two main solutions can be imagined to address the challenges resulting from the need for an equitable transition: exemptions, or the strategic use of carbon revenues.** Exemptions from a market-based measure, for instance, could mean that certain less developed countries (or associated routes, ship types, etc.) may be exempted completely (e.g., no carbon price is applied) or at least partially (e.g., a lower carbon price is applied) from a carbon price on bunker fuels. Alternatively, or in combination, the need for an equitable transition could be addressed by distributing revenues to selected countries.
- 17. Exemptions can create environmental and safety risks.** Exemptions create a perverse incentive for shipping companies to deploy their least energy-efficient and therefore most polluting (often also oldest and least safe) vessels on those routes where they do not need to pay the carbon price, leading to issues related to market distortions, local pollution, and safety.
- 18. In contrast to exemptions, the strategic use of carbon revenues would avoid a situation where shipping companies seek to game the system.** Under such an alternative approach, carbon revenues could be strategically used to support those countries—most likely less developed countries—with greater difficulties in coping with shipping’s energy transition and related costs. Such support could be extended in many ways, such as targeted investments in low- and zero-carbon maritime infrastructure. This approach appears to have considerably more merit, than an exemptions approach which would lead to unintentional consequences in terms of competitiveness, pollution, and safety.

24 Sands, Philippe, and Jacqueline Peel. 2012. *Principles of International Environmental Law*. Cambridge: Cambridge University Press.

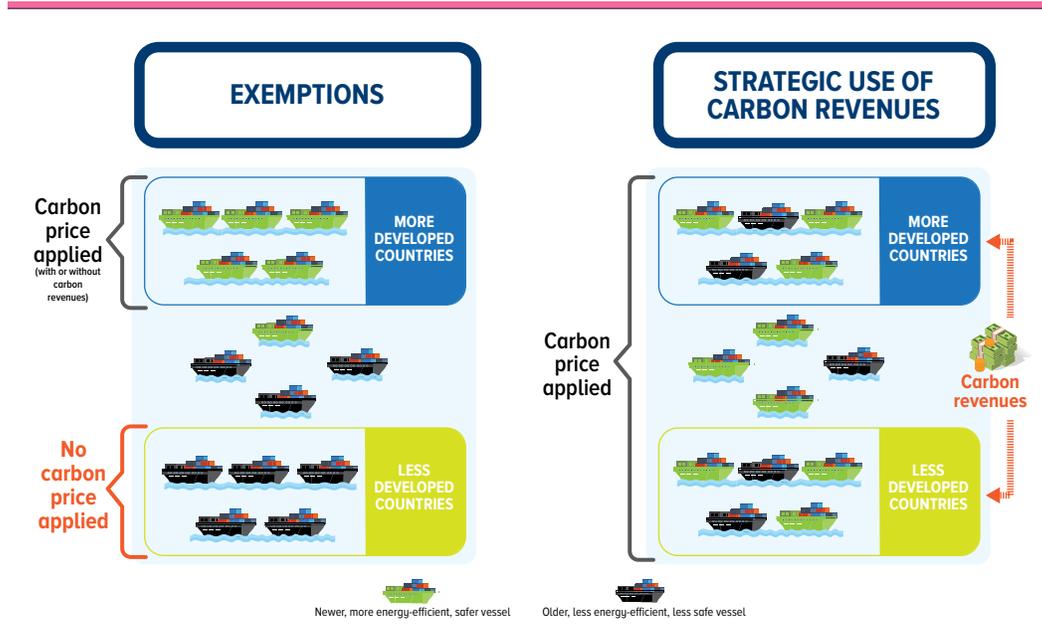
25 International Maritime Organization (IMO). 2018. Resolution MEPC.304(72) adopted on 13 April 2018. Initial Strategy on Reduction of GHG Emissions from Ships.

26 Such costs could be related, for example, to direct costs from new technologies, new infrastructure, etc., but also to indirect costs from an increase in maritime transport costs, etc.





FIGURE 4: TWO MAIN SOLUTIONS CONSIDERED TO ADDRESS THE CHALLENGES RESULTING FROM THE NEED FOR AN EQUITABLE TRANSITION



19. Given its enabling character, this revenue-raising potential of market-based measures deserves further attention in the debate. The remainder of this summary for policymakers focuses on three key questions regarding the strategic use of revenues. First, what could carbon revenues from international shipping be used for? Second, who could be the recipients of carbon revenues from international shipping? Third, how could the adequate management of carbon revenues from international shipping be imagined?



4: WHAT COULD CARBON REVENUES FROM INTERNATIONAL SHIPPING BE USED FOR?

20. Seven main carbon revenue uses are considered. In the following assessment, revenues from carbon pricing could be used for:

1. Financing in-sector climate change mitigation;
2. Enhancing maritime transport infrastructure and capacity;
3. Financing broader climate aims;

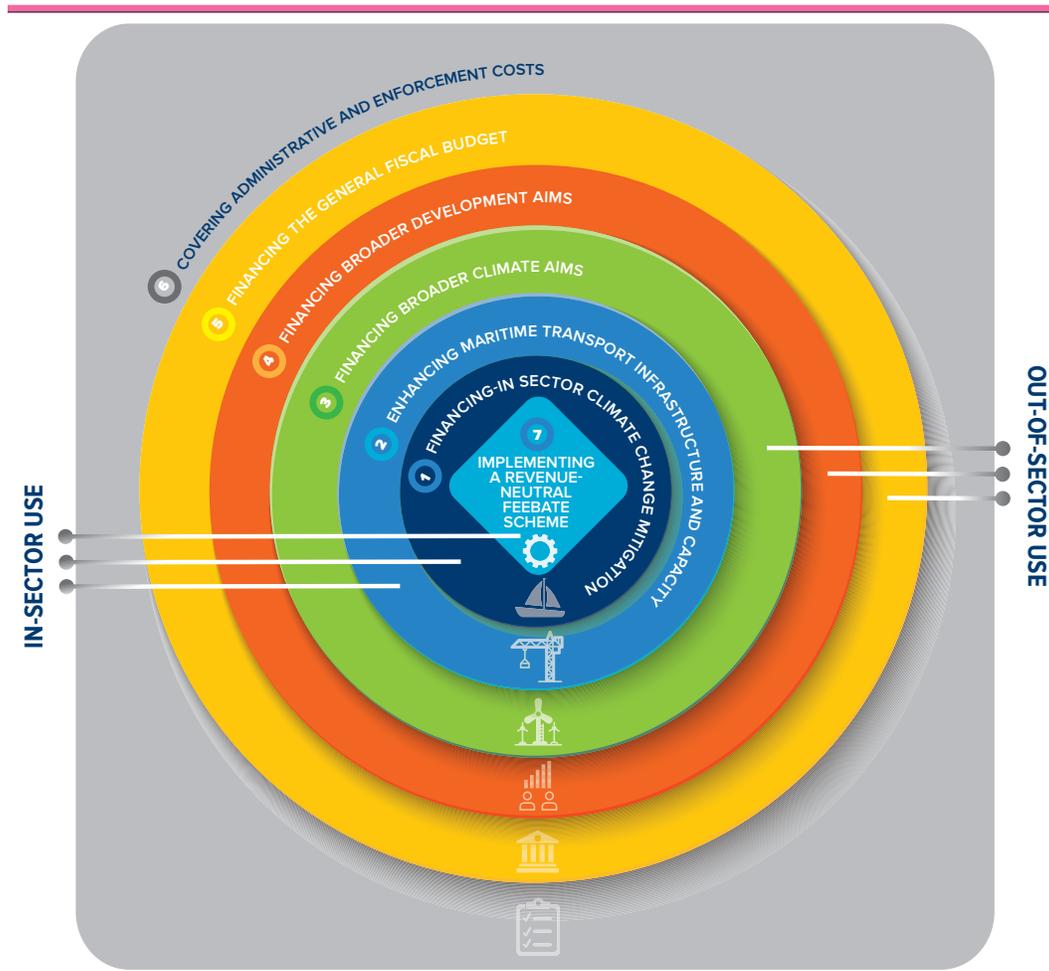




4. Financing broader development aims;
5. Financing the general fiscal budget;
6. Covering administrative and enforcement costs; and
7. Implementing a revenue-neutral feebate scheme.²⁷

Broadly, they can be divided into two classes: in-sector use and out-of-sector use (see Figure 5). Covering administrative and enforcement costs does not fall in either of the two classes.

FIGURE 5: POTENTIAL REVENUE USES FROM CARBON PRICING IN SHIPPING CONSIDERED



21. These main revenue uses are assessed against their alignment with guiding principles of the Initial IMO GHG Strategy, namely the need to be cognizant of CBDR-RC and the need to address DNI. As mentioned above, any measure adopted to achieve the IMO's GHG emissions target should be aligned with the need to be cognizant of CBDR-RC and the need to address DNI on States.

²⁷ Under a revenue-neutral feebate scheme, regulated agents (e.g., shipowners or charterers) whose GHG intensity is above a benchmark pay a levy (also called a fee), and those that emit a lower amount of GHG emissions per ton-mile than the benchmark receive a subsidy (also called a rebate).



- 22. The alignment of any revenue use with the CBDR-RC principle is assessed by distinguishing two approaches to be cognizant of CBDR-RC: narrow and broad.** Under a narrow approach, only carbon revenues earmarked for climate change mitigation and/or adaptation in selected countries can address the need to be cognizant of CBDR-RC. Under a broad approach, revenues distributed to selected countries can address the need to be cognizant of CBDR-RC – regardless of whether they are earmarked for climate change action or not.
- 23. Addressing DNI through potential carbon revenue use also requires a further distinction between avoiding DNI and remedying DNI.** Under avoidance, carbon revenues are spent directly on preventing DNI before they may occur (meaning that DNI are addressed ex ante). The avoidance of DNI can be either full or partial. Under remediation, DNI are not directly addressed, but carbon revenues are primarily distributed to countries subject to DNI (either ex ante or ex post).
- 24. Additionally, the main revenue uses are assessed against two additional principles put forward by IMO Member States in related submissions.** Two additional principles that are not explicitly mentioned in the Initial IMO GHG Strategy but brought up by recent submissions are also considered: the Polluter Pays principle and the principle of Highest Possible Ambition. In this analysis, the Polluter Pays principle is interpreted as implying that a polluter should bear the costs of preventing pollution and implementing control measures.²⁸ It has been argued that this means that carbon revenues from international shipping are to be used for climate action—both mitigation and adaptation—in vulnerable countries to “address environmental and societal externalities resulting from the combustion of fossil fuels within the maritime sector.”²⁹ The principle of Highest Possible Ambition relates to the expectation that parties to the Paris Agreement will put in place their best efforts to set and achieve climate change mitigation targets.³⁰
- 25. Furthermore, the various revenue uses have also been assessed against further desirable key features.** The following features have been taken into account: Can the specific revenue use yield potential climate benefits? Can it yield potential development benefits? To what extent will it require active management of the revenues? How politically feasible does it appear from an industry perspective?

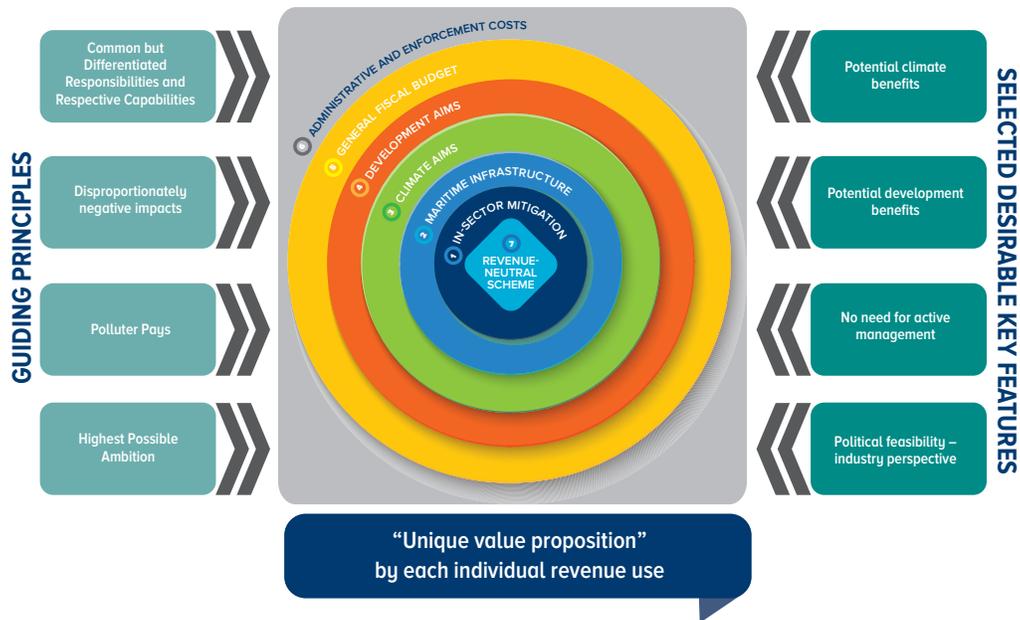
28 OECD (Organisation for Economic Co-operation and Development). 1972. “Recommendation on Guiding Principles Concerning International Economic Aspects of Environmental Policies, C(72)128.” Paris: OECD; OECD. 1974. “Recommendation on the Implementation of the Polluter-Pays Principle, C(74)223.” Paris: OECD.

29 Marshall Islands and Solomon Islands. 2021b. “Comments on submissions concerning an International Maritime Research and Development Fund and Board (IMRB/IMRF).” MEPC 76/7/49. London: IMO, April 21.

30 United Nations Framework Convention on Climate Change. 2015. “Adoption of the Paris Agreement, 21st Conference of the Parties.” Paris: United Nations.



FIGURE 6: POTENTIAL REVENUE USES ASSESSED AGAINST GUIDING PRINCIPLES AND SELECTED DESIRABLE KEY FEATURES



26. Eventually, the assessment shows that some carbon revenue uses appear more aligned with guiding principles (or at least some of their interpretations) of the Initial IMO GHG Strategy and the desirable key features than others. This means that financing shipping’s decarbonization, enhancing maritime transport infrastructure and capacity, financing climate change needs more broadly, and covering administrative and enforcement costs seem to be more aligned with the guiding principles of the Initial IMO GHG Strategy and other desirable key features of a revenue-raising market-based measure than other revenue uses (see Table 1).



TABLE 1: REVENUE USES, THEIR POTENTIAL ALIGNMENT WITH THE INITIAL IMO GHG STRATEGY AND OTHER SELECTED DESIRABLE KEY FEATURES

CRITERIA		① FINANCING IN-SECTOR CLIMATE CHANGE MITIGATION	② ENHANCING MARITIME INFRASTRUCTURE AND CAPACITY	③ FINANCING BROADER CLIMATE AIMS	④ FINANCING BROADER DEVELOPMENT AIMS	⑤ FINANCING THE GENERAL BUDGET	⑥ COVERING ADMINISTRATIVE AND ENFORCEMENT COSTS	⑦ IMPLEMENTING A REVENUE-NEUTRAL FEE/BATE
Potential Alignment with the Initial IMO GHG Strategy Principles	Narrow CBDR-RC*	Green	Amber	Green	Amber	Red	Green	Red
	Broad CBDR-RC*	Green	Green	Green	Amber	Green	Green	Red
	Avoiding DNI	Green	Green	Red	Red	Red	Amber	Red
	Remedying DNI	Green	Green	Green	Green	Green	Green	Red
	Polluter Pays	Green	Amber	Green	Amber	Red	Green	Red
	Highest Possible Ambition	Green	Amber	Green	Amber	Red	Green	Amber
Selected Desirable Key Features	Potential Climate Benefits**	Green	Amber	Green	Amber	Red	Green	Amber
	Potential Development Benefits**	Green	Green	Green	Green	Amber	Green	Amber
	No Need for Active Management	Red	Red	Red	Red	Red	Amber	Green
	Political Feasibility – Industry Perspective	Green	Green	Amber	Red	Red	Amber	Green
	“Unique value proposition”	Opportunity to lower the carbon price level needed to decarbonize shipping	Extension of the options to address DNI through sector-specific but not necessarily climate-related financing	Highest potential climate benefits	Highest potential development benefits	Greatest flexibility for recipient countries to use carbon revenues	Instrumental for proper functioning of carbon pricing instrument	Only option that does not require active management of revenues

* “Broad CBDR-RC” is understood as encompassing “narrow CBDR-RC”. Thus, any carbon revenue use that satisfies the latter appears also aligned with the former.

** Note: The results presented in this table describe the potential of each revenue use option to deliver climate and development benefits and align with the Initial IMO GHG Strategy under the assumption that carbon revenues are adequately spent (e.g., corruption and poor governance do not lead to carbon revenue misuse).

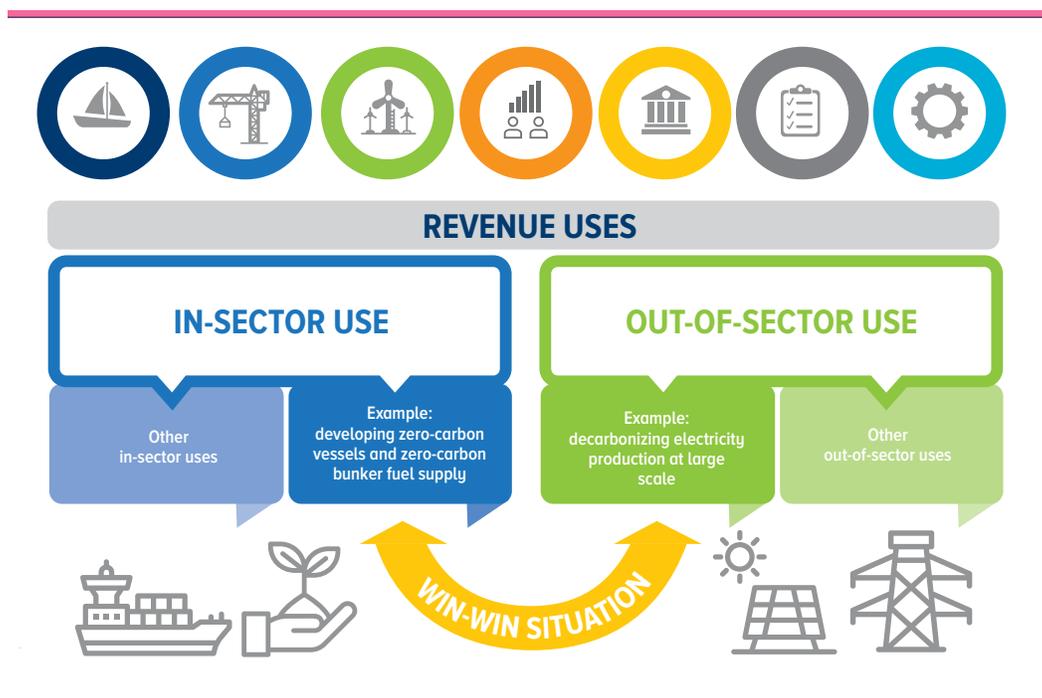
Under a Red-Amber-Green (RAG) matrix, options are marked, with green indicating a more positive evaluation, red a less positive evaluation, and amber an evaluation between green and red. Green = highly aligned | Amber = partially aligned | Red = less aligned.



- 27. The assessment underlines that all revenue use options have unique value propositions.** These should be taken into account when considering the set of revenue options which may become eligible under a revenue-raising market-based measure. Those options range from the opportunity to lower the carbon price level needed to decarbonize shipping (by financing in-sector mitigation), to the potential for highest climate and/or development benefits (by financing broader climate and/or development aims), to providing greatest flexibility to recipient countries (by financing the general fiscal budget) (see Table 1).
- 28. The discussion of various revenue use options also concludes that there is a case to use a meaningful share of carbon revenues within the sector.** For instance, financing in-sector climate change mitigation would speed up the decarbonization of shipping and achieve climate change mitigation targets for the sector at a lower carbon price level. Another reason that could speak in favor of spending carbon revenues in the sector to decarbonize the industry or to enhance maritime transport infrastructure and capacity would be to prevent potential DNI ex ante, instead of remedying them ex post.
- 29. Even so, the case for exclusively using all carbon revenues to decarbonize the shipping sector alone does not appear strong.** The carbon revenues potentially raised are likely to exceed the need of the sector to meet the minimum climate targets of the Initial IMO GHG Strategy and possibly also the investments needed to fully decarbonize the sector. In that context, financing broader climate and development goals beyond the shipping sector would have the potential to yield climate and development benefits more cost-effectively than a narrow focus on using the revenue on shipping-related activities only. This is because it appears unlikely that all the least expensive mitigation, adaptation or development opportunities available are all related to the international maritime transport sector. Strategically using some revenues beyond the shipping sector could address equity concerns more extensively and more cost-effectively.
- 30. Synergies between in-sector and out-of-sector uses could also potentially be achieved.** A win-win situation could be created if some types of out-of-sector revenue uses, such as financing the development of zero-carbon electricity production around the world, could also help the shipping industry decarbonize while delivering both tangible climate change mitigation and development co-benefits beyond the shipping sector. Investments of this type can therefore become a win-win proposition for both the shipping industry and non-shipping constituencies (see Figure 7).



FIGURE 7: WIN-WIN SITUATION FROM SYNERGIES BETWEEN STRATEGIC IN-SECTOR USE AND OUT-OF-SECTOR USE OF REVENUES FROM CARBON PRICING IN INTERNATIONAL SHIPPING



31. Ultimately, a viable way forward from a political perspective could be to agree on splitting the carbon revenues between in-sector use, out-of-sector use, and covering administrative and enforcement costs. Following such a split approach, for instance, one part of the carbon revenues could be allocated to financing in-sector climate change mitigation (e.g., developing zero-carbon bunker fuel supply chains around the world) and enhancing maritime transport infrastructure and capacity more generally which unlocks both mitigation and adaptation opportunities—the latter being particularly important for many SIDS and LDCs. Another part would be allocated to wider climate and/or development goals not necessarily related to shipping but likely to deliver those benefits most cost-effectively. Given the existing large financing gaps in climate and development finance, carbon revenues from shipping should be seen as an additional source of finance, which may help close these gaps. A third part would be dedicated to covering proper administration and enforcement of the measure, a prerequisite for any revenue use.



5: WHO COULD BE THE RECIPIENTS OF CARBON REVENUES FROM INTERNATIONAL SHIPPING?

- 32. Regardless of the ultimate revenue uses, three main groups of recipients could potentially receive the carbon revenues: These are 1) governments 2) the shipping industry, and 3) the private sector more broadly.** Revenues could be disbursed to these groups of recipients through a—potentially third-party governed—fund.
- 33. Ideally, the selection of eventual recipients of carbon revenues will be based on who would be best positioned to achieve the main aims of different carbon revenue uses.** In a simplified manner, the alignment with guiding principles of the Initial IMO GHG Strategy and selected desirable key features could be recategorized under these three broad main aims of carbon revenue use: 1) maximizing climate and/or development outcomes; 2) supporting an equitable transition among countries; and 3) ensuring an adequate functioning of the mid-term measures and of the distribution of revenues.
- 34. Maximizing climate and/or development may require disbursing revenues to both the public and the private sector.** The two types of finance—private oriented finance and public oriented finance—are generally complementary. Usually, climate and development finance for the public sector can support the setting up of adequate public institutions, the financing of public investments, and the implementation of policies that enable subsequent private sector investments. Climate and development finance that targets the private sector most often complements these efforts by directly supporting companies and related advisory services.³¹ Given this complementarity between private and public climate/development finance, maximizing climate and development outcomes may require disbursing revenues both to governments and the private sector, including the shipping industry.
- 35. Supporting an equitable transition among countries may favor governments as recipients due to the need to be cognizant of CBDR-RC.** Under the United Nations Framework Convention on Climate Change, the principle of CBDR-RC generally applies to countries. At the IMO, the operationalization of the principle of CBDR-RC could, in theory, also take the form of targeted funding distributed to companies identified as being related to specific countries such as less developed countries, for instance, due to their ownership, location of operations, or country of incorporation. In practice, however, in many circumstances, the relationship between a company and a particular country is likely to be blurred. This is particularly true in the shipping sector with its complex

³¹ For instance, while public-oriented climate finance could help set up regulatory frameworks for the production of zero-carbon bunker fuels, shipowners' adoption of related zero-carbon propulsion technologies may require private-oriented climate finance to de-risk this type of investment.





multinational structures (e.g., the frequent differences in nationality between a ship's owner, a ship's charterer, and a ship's registered flag). As a clear relationship between a company and a country can often be difficult to establish, it appears more advisable to consider sovereign governments with clear affiliations to a country as recipients.

36. The specific case of supporting an equitable transition through addressing DNI on States may require channeling an even greater share of carbon revenues to sovereign governments than CBDR-RC considerations alone would suggest.

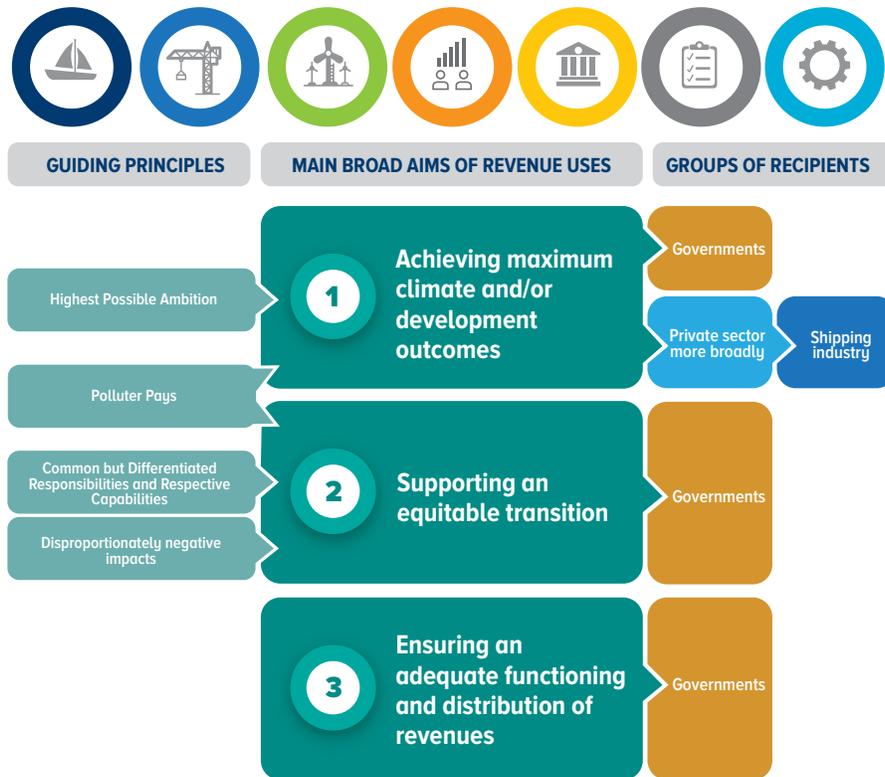
Remedying DNI (ex post and ex ante) presents issues similar to those that apply to using carbon revenues to address the need to be cognizant of CBDR-RC: the recurrent difficulty to link a specific company to a specific country. Further, as explained above, DNI can also be addressed through avoidance (ex ante only). In this case, governments would likely be better positioned to protect their own national interests (i.e., avoiding negative impacts on them) than individual private companies. In addition, distributing revenues to governments would make the government recipient more accountable than if carbon revenues were distributed to private sector actors. Higher accountability of the recipient can lead to a more effective use of carbon revenues. Further, addressing the Polluter Pays principle would favor disbursing revenues to governments, too, as governments of vulnerable countries appear in a better position to know their sources of GHG emissions and climate vulnerabilities and to address these effectively.

37. Third, ensuring an adequate functioning of the mid-term measures and of the distribution of revenues is also likely to require dedicating this share of carbon revenues to governments.

The institutional requirements related to operating a carbon pricing instrument will likely put a transactional burden on governments (especially of less developed countries with more limited capacities), the IMO, and any other public organization involved in these activities. Part of the carbon revenues raised by the market-based measure could help ease that transactional burden.



FIGURE 8: GROUPS OF RECIPIENTS BEST POSITIONED TO ACHIEVE MAIN BROAD AIMS OF POTENTIAL REVENUE USES



38. In sum, these considerations would support the premise that a significant share of carbon revenues should be directed to governments of less developed countries. As discussed above, this reflects the need to address equity concerns related to the need to be cognizant of CBDR-RC, the need to address DNI, and to support the functioning of the market-based measures. Yet, as Figure 8 shows, some revenues, in principle, could still be channeled to the private sector, including the shipping industry—especially if this allowed to achieve certain climate and/or development outcomes more cost-effectively.



6: HOW COULD THE ADEQUATE MANAGEMENT OF CARBON REVENUES FROM INTERNATIONAL SHIPPING BE IMAGINED?

39. If revenues are raised from international maritime transport, steps will need to be taken to ensure their adequate management. Key issues related to the management of carbon revenues include 1) whether to disburse carbon revenues by an existing fund or a new fund; 2) how to address the administrative challenges of actively managing carbon revenues; 3) how to select revenue distribution criteria if a new fund was to be created; and 4) how to ensure that no country would be left behind in the distribution of carbon revenues.

40. The case to disburse revenues through a new fund seems stronger for carbon revenues dedicated exclusively to sector-specific goals than for revenues used for more general climate and/or development finance—and vice versa. When carbon revenues from international shipping are used in the sector, the benefits of disbursing them through a new fund would likely be higher. This appears especially true for addressing sector-specific needs which often require special shipping expertise that is often not available in existing climate or development funds. On top of this, the risk of unintentionally duplicating existing climate and/or development efforts—a general risk of all climate and development financing—would likely be lower than when revenues are used for more general climate or development aims for which many funds exist already. In contrast, the case for using an existing fund appears stronger for out-of-sector revenue uses than for in-sector uses thanks to the potential synergies offered by existing funds.

41. Further, the need for active management of large amounts of funds can be mitigated through two main ways: passive management or trustee services. The management of significant amounts of potential carbon revenues from international shipping may pose a challenge to any active management approach. This is particular true if a new fund was to be created. On the one hand, this challenge could be addressed by relying—to a certain extent—on passive forms of carbon revenue management, e.g., as foreseen by the operation of a revenue-neutral feebate scheme.³² On the other hand, the shipping sector could also rely on the trustee services of organizations with substantial experience in managing climate and development finance globally to alleviate that burden.

42. Third, if a new fund was created, existing expertise and know-how could be

³² Under a revenue-neutral feebate scheme, collecting the fees and giving the rebates would be an automatic process based on algorithms, therefore representing a passive form of revenue management.





harnessed to set up an adequate resource allocation framework. Without doubt, there is significant expertise and know-how in many development organizations on how to set up and apply adequate resource allocation frameworks and related distribution criteria for disbursing climate finance. These often relate to common key considerations such as climate impacts (such as additionality, transformational character), value for money, capacity and policy alignment, equity and needs which could be applied to the distribution of carbon revenues from international shipping.

- 43. Fourth, easing the access to funds for selected less developed countries with limited capacities can help to ensure that no country will be left behind in the distribution process.** A key option to make access to funding more inclusive would be to reserve a certain share of the carbon revenues for selected countries (in particular some LDCs, SIDS, and African countries) and organize the access to these special funds through a less competitive and simplified application process.



7: KEY CONCLUSIONS

- 44. This summary for policymakers has investigated the unique potential of revenue-raising market-based measures from multiple angles such as carbon revenue use, recipients, and management.** From a policy perspective, it has specifically analyzed questions related to the uses of carbon revenues and their alignment with guiding principles of the Initial IMO GHG Strategy and selected desirable key features, the best-positioned recipients of such revenues, and the management of those revenues. It has arrived at these main conclusions.
- 45. In contrast to other mid-term measures, revenue-raising market-based measures are attractive because they can enable an additional set of actions thanks to the revenues raised.** Given the current climate crisis, there is an urgent need for the decarbonization of international shipping. To provide the appropriate policy support for this goal, IMO Member States are currently discussing a range of mid-term measures. Among those, some types of market-based measures such as a levy or cap-and-trade schemes have the potential to not only reduce GHG emissions cost-effectively but also to raise revenues which enable an additional set of actions—a unique feature not offered by any other mid-term measure considered.
- 46. The strategic use of revenues appears more favorable than exemptions to address**





- equity concerns at the IMO.** Key equity concerns recognized in the Initial IMO GHG Strategy regard the need to be cognizant of the CBDR-RC principle and/or to address DNI on Member States. In general, two main policy interventions for potential equity concerns can be considered by the IMO: 1) exemptions for specific countries, or 2) strategic revenue recycling for the benefit of specific countries. As exemptions are likely to lead to market distortions and unwanted externalities in terms of local pollution or safety, the strategic use of revenues appears to be the more suitable approach.
- 47. Certain revenue uses appear more aligned with the guiding principles of the Initial IMO GHG Strategy and the desirable key features of a market-based measure than others.** Financing in-sector climate change mitigation, enhancing maritime infrastructure and capacity, and financing broader climate finance are among those revenue uses most aligned with the guiding principles of the Initial IMO GHG Strategy and selected desirable key features. Nevertheless, each revenue use has its unique value proposition worth considering.
- 48. Splitting carbon revenues between in-sector and out-of-sector use could be a viable way forward.** While there is a case for using a meaningful share of carbon revenues to finance shipping's decarbonization, the large amount of revenues to be expected from carbon pricing in international shipping (likely in excess of the sector's needs) as well as the obvious benefits of additional revenue uses beyond the sector—in particular in terms of delivering climate and/or development outcomes most cost-effectively—speak in favor of considering both in-sector and out-of-sector use. If strategically planned, synergies could be exploited, and win-win situations created. Given the existence of large financing gaps in climate and development finance, carbon revenues from shipping should be seen as *additional* to current and already planned financial support.
- 49. In most cases, sovereign governments appear better suited as recipients for the carbon revenues than the private sector.** This is particularly true to support an equitable transition among countries because of the clear affiliation of a government to a certain country—in contrast to the often blurred links between companies and countries in international shipping. Nevertheless, in pursuing the aim of achieving maximum climate and/or development outcomes, channeling a share of the carbon revenues to the broader private sector, including the shipping sector specifically, appears sensible, too, thanks to the complementarity between public and private sector-oriented finance.
- 50. Ultimately, a lot of expertise and experience from the previous management of existing climate finance funds could be leveraged to inform the management of carbon revenues from international shipping.** In this context, it seems opportune to take advantage of the valuable lessons learned from international climate finance. These could provide helpful support in creating a suitable fund structure, minimizing transaction costs, and making sure that revenues are distributed in the most effective way with no country—especially no SIDS or LDC—being left behind. There can also be benefits in taking advantage of trustee services of organizations with a proven track record of successfully managing substantial volumes of climate and development finance globally to alleviate the transactional burden for all stakeholders involved.

