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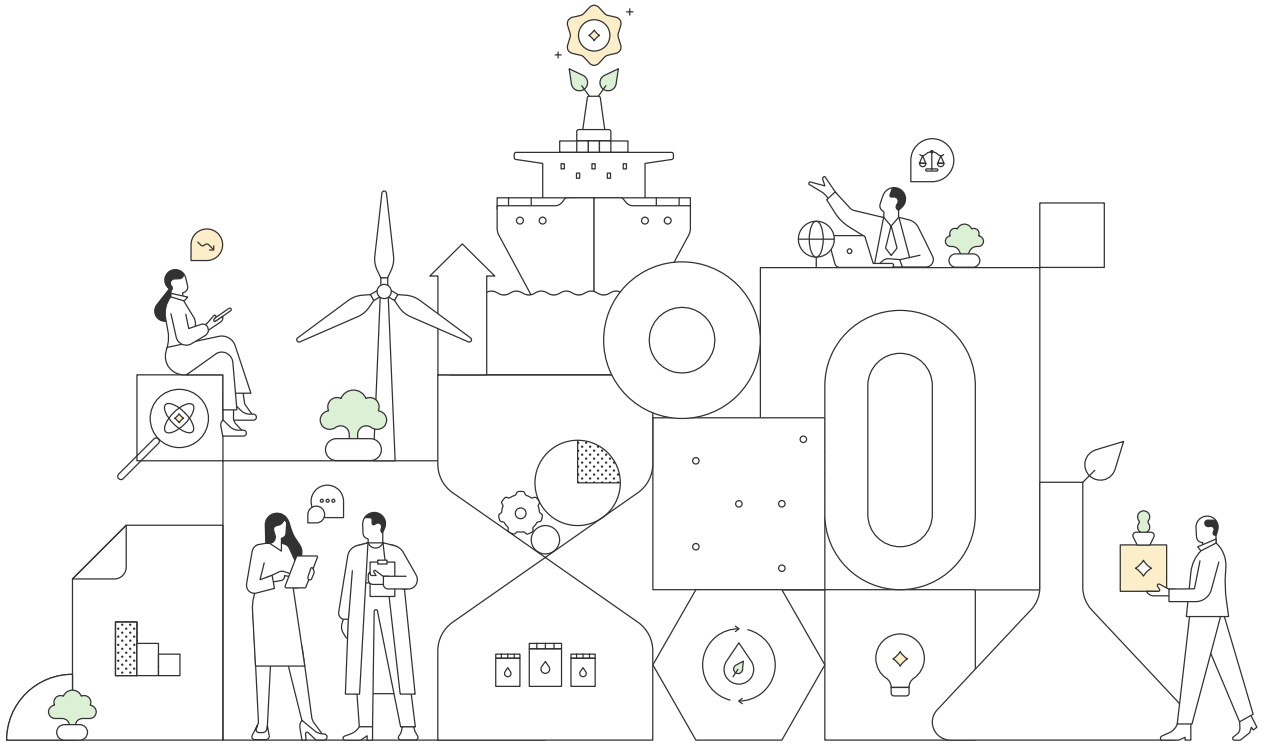
Options Paper on Market-Based Measures
November 2021



Mærsk Mc-Kinney Møller Center
for Zero Carbon Shipping

Key take-aways

To stop global warming, shipping needs to contribute. To reach global zero carbon shipping by 2050, public and private stakeholders need to commit. This commitment needs to be supported by global regulation creating a clear framework for the decarbonization of the sector. Regulation can come in various forms: non-financial measures, as well as financial measures. In this paper we look at how ambitious climate goals in the shipping sector could be supported by global financial regulation with a focus on two carbon levy models. The analysis is based on the Center's techno-economic model with industry and academic input from stakeholders along the entire value chain.

The paper comes with five key messages:

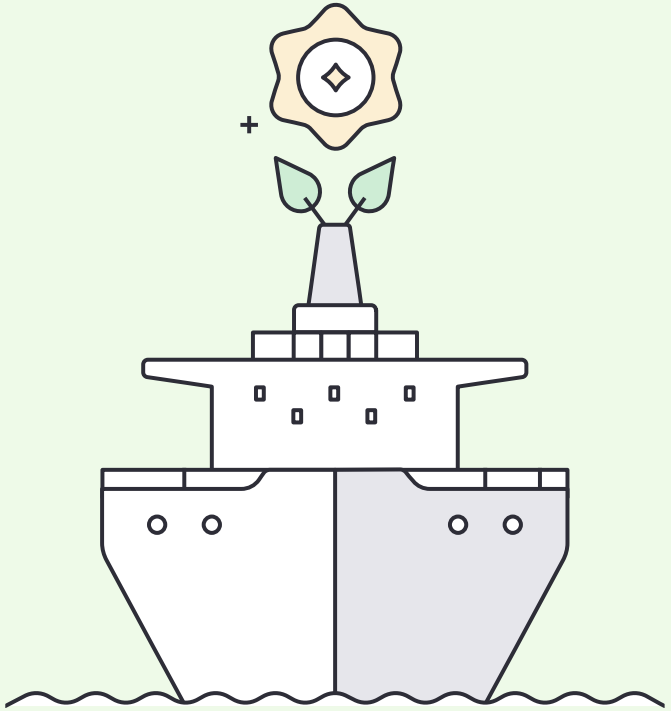
1. **A carbon levy can support a fair and equitable global green transition** by generating global financing and creating a buffer to support developing countries and address disproportionally negative impacts.

2. **A carbon levy can accelerate the green transformation of the shipping sector towards zero by 2050** by closing the cost gap between fossil fuels and alternative fuels, especially if some revenues are strategically recycled to the sector.

3. **A strategic build up of a carbon levy could start at a modest level and then see 1-2 price level increases**, becoming more responsive to the real needs to support a green transition of the maritime sector.

4. **A carbon levy cannot stand alone - it needs to be supported by other elements**, e.g. ambitious absolute reduction targets in form of a total decarbonization by 2050, clearly defined milestones, as well as concrete demands concerning the CO_2-intensity of fuels.

5. **An ETS can be an effective Market-Based Measure as well**. Political and economic aspects of a carbon levy and ETS need to be considered carefully in discussions at global level. Neither an ETS nor levy can stand alone to efficiently reach net zero – they need to be accompanied by other measures.



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We provide a brief overview of Market-Based Measures and a data-driven, concrete presentation of potential policy options

Context

To support the full decarbonization of global shipping by 2050, regulatory measures will be critical. Among these, Market-Based Measures (MBMs) play a prominent role in current discussions among maritime and other stakeholders.

Already 32 countries globally are working with carbon pricing – a prime example of MBMs[1].

Purpose and scope

The purpose of this Options Paper is to provide 1) a brief overview of financial and non-financial regulatory measures to accelerate the green transition and 2) a concrete presentation of different Market-Based Measures (MBMs) options available today with a focus on a carbon levy.

In doing so, we present possible setups for a carbon levy, including **a scenario for a flat carbon levy** and **a scenario for a flexible carbon levy**, where some of the income collected is earmarked and returned to the industry, in order to close the cost gap between fossil and alternative fuels.

This paper also presents a short overview of an Emissions Trading System (ETS), and the current EU proposals on the decarbonization of shipping within the "Fit for 55" package. Still, this analysis does not provide an in-depth assessment of an ETS. Furthermore, the collection, administration and distribution of CO_2 pricing revenues is a natural next step, but does not form part of this paper. Other measures, such as subsidy schemes for international shipping, are also not assessed.

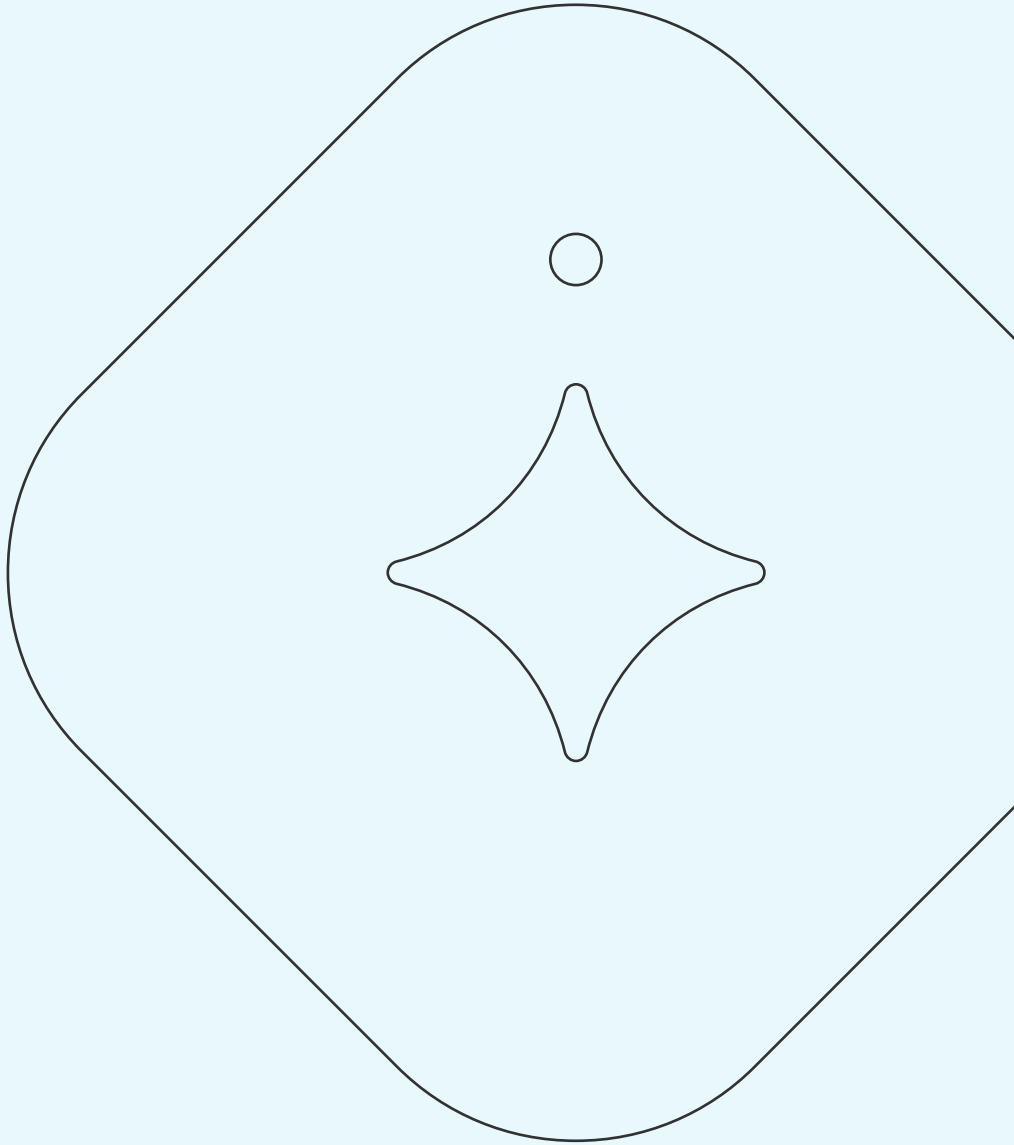
How do we work?

We build our analysis and recommendations on our Industry Transition Strategy and our techno-economic model, NavigaTE[2], analyzing the carbon pricing levels needed to take the maritime sector on the zero path to 2050. In doing so, we aim to provide **quantitative analysis and proposals for the development of carbon pricing for international shipping**.

We analyze the entire shipping and energy value chain from the production of a green electron to the propeller on a ship. The model functionality and data include Center research, input from our industry partners, continuously building on concrete practical experiences, as well as third party data from leading organizations and their publications. The Center can model most probable cost levels, but not predict concrete fuel prices.

1 World Bank Carbon Pricing Dashboard
2 MMM Center for Zero Carbon Shipping, NavigaTE Whitepaper (2021)

Regulatory options for international shipping



The decarbonization of international shipping is an urgent priority, where regulatory initiatives will play a critical role

Both non-Market Based Measures (non-MBMs) and MBMs can play a critical role in decarbonization efforts

The International Maritime Organization (IMO) constitutes the most important global policy forum in the development of regulation for international shipping.

In 2018, the IMO adopted its Initial strategy on the reduction of GHG emissions, following extensive and contentious discussions earlier in the decade. The 2018 Initial IMO strategy has set forth a timeline for the negotiation, finalization and implementation of a number of candidate measures on emissions reductions.

Non-financial and financial measures on emissions reduction at IMO level[1]

2018: Initial IMO Strategy

Short term measures

- Improvement of existing Energy Efficiency frameworks (EEDI, SEMP)
- Technical and operational Energy Efficiency measures
- Speed optimization and speed reduction as a measure
- R&D initiation & International Maritime Research Board
- Encouragement of supply developments in ports
- Enabling first movers
- National actions to address GHG emissions from international shipping
- CO_2 emissions Data Collection System (DCS)
- Implementation programme for the effective uptake of alternative low carbon and zero-carbon fuels

2023: Revised IMO Strategy

Medium term measures

- Operational Energy Efficiency measures (new & existing ships)
- New or innovative emission reduction mechanisms, possibly MBMs
- Technical cooperation and capacity building

2030

Long term measures

- Development of zero-carbon/ fossil-free fuels
- Enabling the adoption of other possible new or innovative emissions reduction mechanisms

Work at the IMO on the implementation of the GHG strategy has a current focus primarily on non-MBMs, e.g by regulating the CO_2-intensity of operations, fuels and ships. These can be effective instruments contributing to the decarbonization of international shipping.

The IMO has decided to discuss MBMs at the Marine Environment Protection Committee (MEPC) in November 2021, but has not made any decision on the possible form and content yet. An MBM could take a form as a medium-term measure, using results from the Data Collection System process, which started in 2019.

1 Selected candidate measures based on the IMO's non exhaustive list discussed in the 2018 IMO Initial Strategy

In this paper, we take a deep dive on MBMs, in line with the increasing regulatory focus on their relevance

MBMs are increasingly coming in focus, albeit in different set ups and forms

Definition

MBM as a term refers to the adoption and implementation of regulatory frameworks, which provide financial incentives and options, with the aim to advance specific targets and industry behavior.

In the context of international shipping, the discussion on MBMs is largely linked to GHG emissions reduction and dates back to the late 2000s.

Types of MBMs

Two key types of MBMs are currently being discussed in the context of international shipping, namely:

1. Emissions Trading System (ETS)

2. Carbon levy

A growing focus on MBMs on IMO level in addition to non-financial measures

Despite the timeline of the Initial IMO strategy, in recent months there has been an increasing focus on the relevance of MBMs for international shipping. This is driven by nations, as well as leading industry players in the maritime sector. This has culminated in a number of key regulatory developments on the front of MBMs, including concrete proposal submissions on IMO level and the increasing number of industry papers on the issue. Basically, we see three types of proposals to reach IMO's 2050 target.

Technical proposals

Focus on reduced carbon intensity also on medium and long term through e.g. fuel GHG intensity limits.

Financial proposals

Example: Solomon Islands and Marshall Islands

Carbon levy of 100 USD/t CO_2-eq with upward ratchets
and reinvestment in the maritime sector.

Combined financial and technical proposals

Example: Norway

Proposal of an Emissions Trading Scheme combined with a fuel GHG intensity limit.

An Emissions Trading System (ETS) is one type of carbon pricing discussed in the context of international shipping

ETS entails political advantages, but could be more difficult to handle in economic terms

Definition and rationale	An ETS is a cap-and-trade system, requiring emitters to cover their emissions with allowances that are tradable. On the basis of an overview of total emissions, the regulator can define a cap. In an auction system, emitters keeping below the cap can sell allowances, while emitters above the cap need to buy additional allowances, thus defining a price on emissions. To reach climate neutrality, a cap needs to be continuously reduced towards zero.
Key benefits	An ETS can contribute to direct emission reductions through its cap. In political terms, an ETS can be perceived as a model easier to implement at global scale compared to national implementation of e.g a global levy or a tax. Several larger nations have federal or regional experiences with an ETS, like the US and China. Furthermore, a global ETS could benefit from the experiences of the expected EU ETS on shipping.
Key challenges	While creating a clear picture of maximum emissions, an ETS leads to changing price levels based on volatile demand and supply. Furthermore, if price levels are too low, customers at the market could be inclined not to reduce emissions. In addition, an ETS does not necessarily create revenues, unless allowances are sold or auctioned by e.g public authorities. To reach its targets, an ETS should be combined with other elements, e.g. demands on CO_2 intensity of fuels. Free allocations can help balance the burden for a sector on the basis of grandfathering or benchmarking.

The history behind the ETS discussion for international shipping

Several proposals on a global ETS were submitted at the initial IMO discussions in 2010.

The EU has introduced its “Fit for 55” package in 2021, calling for the extension of the EU ETS to shipping.

The EU ETS proposal can provide initial impetus, but key issues must be addressed

Initial perspectives on the proposal of the EU ETS extension to the maritime sector

Key elements in the proposal

Geographical coverage

- All emissions calling at EU ports on intra-EU voyages,
- Emissions at berth in EU ports, and
- 50% of emissions from extra-EU voyages.

Scope

- >5,000 gt
- No special considerations on flag

Main advantages with the EU proposal

Given the level and speed of progress on the regulation of emissions from international shipping, the EU initiative is highly welcomed. The initiative can potentially unlock some of the necessary discussions on political and industry ends, leverage years of EU experience with carbon pricing, and potentially provide a template that can be adopted in other regions/countries and inspire a global solution.

Key focus areas and outstanding issues

It is important to ensure coherence between all shipping-related proposals, including methodology on LCA/well-to-wake. Additionally, a substantial amount of revenues should be returned to the sector, including R&D and project financing. Any carbon pricing initiative should be based on a continuous reduction of allowances. It should be supported by a continuous reduction of the CO_2-intensity of fuels, sufficient renewable energy volumes, and relevant fuel infrastructure.

Mapping "Fit for 55"

The European Commission adopted the "Fit for 55" package in July 2021. The package entails several ambitious measures and proposals with high relevance for international shipping from a regulatory perspective, including:

1. Proposal for the extension of the EU ETS to include the maritime sector

Outside the scope of this paper

2. FuelEU Maritime
3. Revision of Renewable Energy Directive, incl. implications for energy taxation
4. Directive on the Deployment of Alternative Fuels Infrastructure

A carbon levy is an alternative type of carbon pricing, which is being extensively discussed in recent months

A carbon levy could be easier to administrate in economic terms, but more difficult to implement politically

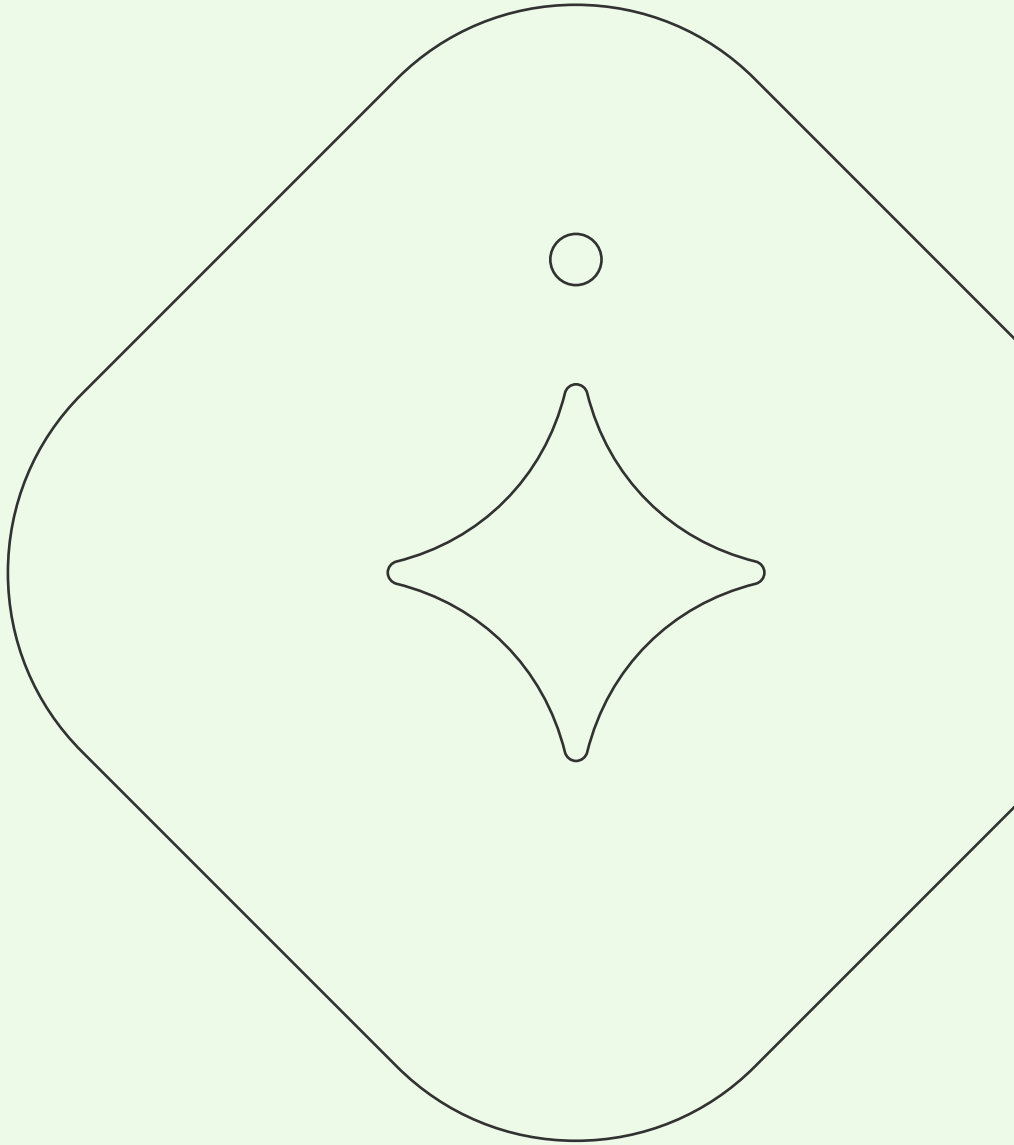
Definition and rationale	A carbon levy can be implemented by adding a price on the carbon content of fossil fuels or on their CO_2 emissions, creating revenues ready for distribution.
Key benefits	In economic terms, a levy can be perceived as easier to administrate. The price is fixed by a regulator and therefore does not depend on market developments. This helps creating certainty on the expected price levels and thereby helps de-risking investments. Furthermore, a levy creates revenues ready for distribution. These could be used directly to support the green transition of the sector towards net zero and strengthen global climate financing.
Key challenges	In political terms, a levy can be perceived by nations as a tax, thus possibly creating a need for broader political national mandates, also in the case of the national implementation of a global carbon levy. Furthermore, a levy alone does not deliver direct emission reductions. It just creates incentives for the customers at the market. Customers at the market can still choose other options, including fossil-based fuel, if they are willing to pay the price difference. To outweigh the disadvantages, a carbon levy should be combined with other elements, including absolute reduction targets. These could be reflected in parallel regulation on the CO_2-content of fuels.

The history behind the CO_2 pricing discussion for international shipping

Included in different setups in the initial IMO discussions and proposals in 2010.

The idea of a carbon levy has recently been backed by a handful of political and industry actors, including the Marshall islands, Maersk and Trafigura.

Carbon levy deep-dive: Our approach and assumptions



Setting the context: Enabling a fair, equitable transition and closing the fuel cost gap are key in designing a carbon levy

In this Options Paper, we aim to present options for the design of a carbon levy, which jointly address two key objectives

Objective 1
Ensuring global financing and a fair transition

A. Enabling a fair and equitable transition: This is a critical element in enabling the decarbonization of international shipping and the global green transition. There is a growing focus on the disproportionate negative impact of policy initiatives on selected states, in particular Less Developed Countries and Small Island Developing States. At the MMM Center for Zero Carbon Shipping, we aim to work for policy options that can contribute to global climate financing.

Objective 2
Closing the fuel cost gap between fossil and alternative fuels

A. Leveling the fuels playing field to advance decarbonization: With low prices, wide availability and matured fuel supply chains, fossil fuels account for ~98% of fuel use in the industry today. The production costs associated with alternative fuels are ~2 to 8x that of fossil fuel prices today. The significant difference in cost, coupled with the complexity of choosing between the many different fuel options for international shipping, necessitates regulatory intervention to bring the costs for fossil and alternative fuels on par.

B. Influencing industry costs, investment decisions and behaviors: Fuel costs represent ~20 to 35% of the Total Cost of Ownership (TCO) associated with ships. Today, we estimate that first movers opting to sail on alternative fuels would bear an additional USD 28 bn in yearly fuel spend, if not supported by legislation or customer willingness to pay higher premiums. In the longer run, we estimate that vessels sailing on alternative fuels could face a TCO gap that is up to ~2x higher than what for vessels running on fossil fuels. Closing the cost gap between fossil and alternative fuels and incentivizing the industry are therefore critical.

Our approach: Presenting two alternative options for a carbon levy and evaluating their impact on key indicators

Our dual focus on enabling global financing for a just transition and closing the fuel cost gap brings four key indicators to the forefront

Two options presented

In this Options Paper, we present two carbon levy options, namely a

1. flat carbon levy without an earmark and return logic,
2. flexible carbon levy with an earmark and return logic.

Both options bear similarities to the elements included in the proposals currently submitted at the IMO.

Four key indicators

In order to understand, analyze and assess the benefits and challenges associated with the two carbon levy options presented, we will focus concretely on their implications for the following key indicators:

Global financing

1. **Cumulative income collected:** represents the cumulative amount of levy income collected through to 2050. This is calculated based on the chosen carbon levy level in each scenario multiplied by a dynamic estimate of the global fleet emissions until 2050, including rate of switch to vessels sailing on alternative fuels.
2. **Use of collected income**: income can be re-distributed to nations with no requirement to directly re-invest the funds in the maritime sector, or alternatively be partially recycled to the sector in a strategic manner (earmark and return logic).
3. **Buffer:** represents the cumulative amount of funds available for redistribution by 2050 and is the difference between the cumulative income collected in 2050 and the cumulative extra fuel cost in 2050, as explained below. The buffer only includes the funds available, after part of the income has been earmarked and returned to the industry to close the fuel cost gap.

Fuel cost gap

4. **Cumulative extra fuel cost:** represents the cumulative additional fuel cost paid by the industry through to 2050 when sailing on alternative fuels instead of fossil fuels[1].

1 The cumulative extra fuel cost presented later in this paper is contingent on the activation of five critical levers explained on the next page. Continuing on a Business-as -Usual Scenario without critical levers activated will lead to an even higher extra fuel cost than what modelled here.

Our assumptions: The concrete options presented enable net zero in 2050[1], assuming that five critical levers are activated[2]

1 Policy and regulation

Rationale: Policy and regulation can supplement, steer and accelerate the transition and are relevant on all levels, namely global, regional, national, as well as local level.

Key assumptions: 1) IMO members accelerate dialogue on carbon pricing, proposing a scheme starting in 2025. 2) Further regulatory tightening of energy efficiency measures continues (incl. successful regulatory enforcement on new designs in an EEDI phase 4 post 2030 and a continued tightening and enforcement of carbon intensity (CII) until 2030).

2 Tech advancements on ship

Rationale: An increase in the global adoption of energy efficiency (EE) technologies and best practices is critical, involving existing and new EE solutions for deep sea shipping.

Key assumptions: 1) Shipowners look for business cases with further efficiency penetration of known measures, with investment pay-back periods balanced and potentially extended to 10 years. 2) New solutions are developed - amongst others in alternative propulsion technologies, voyage optimization using digitalization, and reducing hull resistance.

3 Energy & fuel advancements

Rationale: The accessibility and availability of alternative fuels is critical and is largely dependent on the scaling up of known, but not yet commercially scaled, technologies.

Key assumptions: Energy & Fuels advancements scaling up production and driving costs down. 1) For e-fuels: available and dedicated renewable energy access with significant decline in renewable electricity costs to 2050. 2) For biofuels: continued advancements in technologies. Biomass availability, cross-sector competition and technology ramp-up restrain the supply.

4 Customer demand/pull

Rationale: The pace of maritime decarbonization will increase if more consumers demand zero-carbon transportation and become willing to pay a premium.

Key assumptions: Customer willingness to pay (WTP) differs across products - the closer the end-user is to the supply chain, the higher the WTP premium. Most recent example is the announcement by *Cargo Owners for Zero Emission Vessels* (coZEV) in Oct. 2021 to decarbonize their maritime supply chain by 2040.

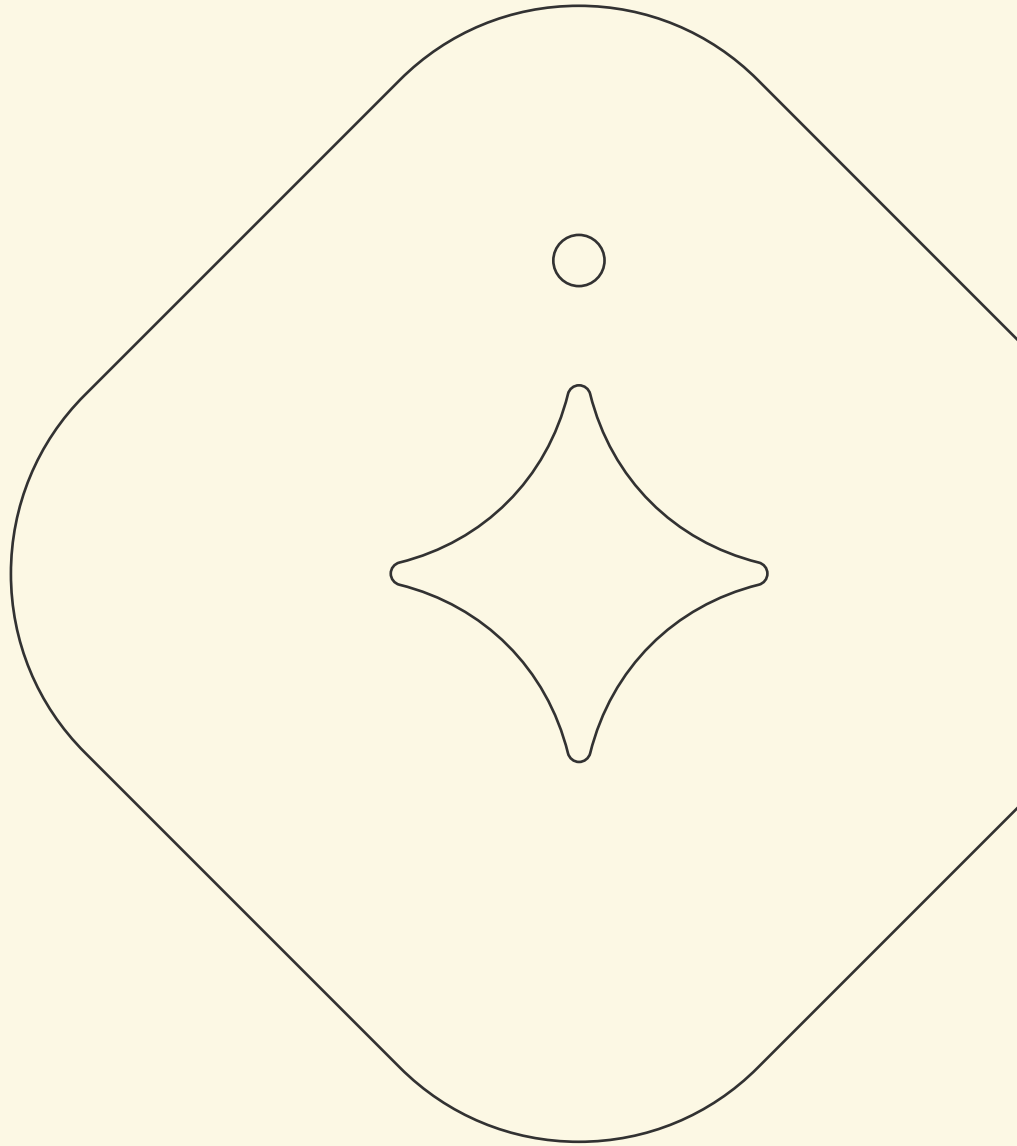
5 Finance sector mobilization

Rationale: The finance sector can steer and accelerate the transformation by lowering the finance cost associated with asset and infrastructure development.

Key assumptions: 1) Major financial institutions reallocate own and customer portfolios to reduce carbon footprint. Green financing will reward actors with clearly defined abatement targets.

1 Anything less than 0.1 GtCO_2-eq qualifies as net zero emissions in our analysis
2 All five critical levers are explained in detail in the Industry Transition Strategy published by the MMM Center for Zero Carbon Shipping

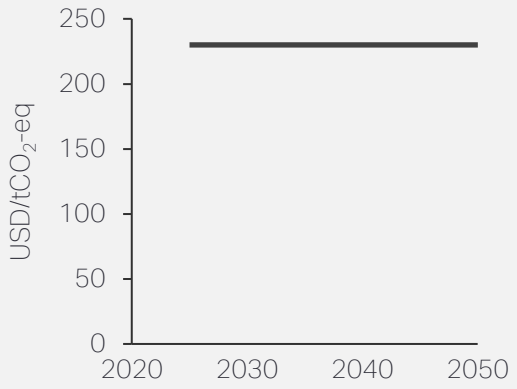
Carbon levy deep-dive: Options and key findings



Option I: A flat carbon levy – This must be priced fairly high, in order to deliver net zero in 2050

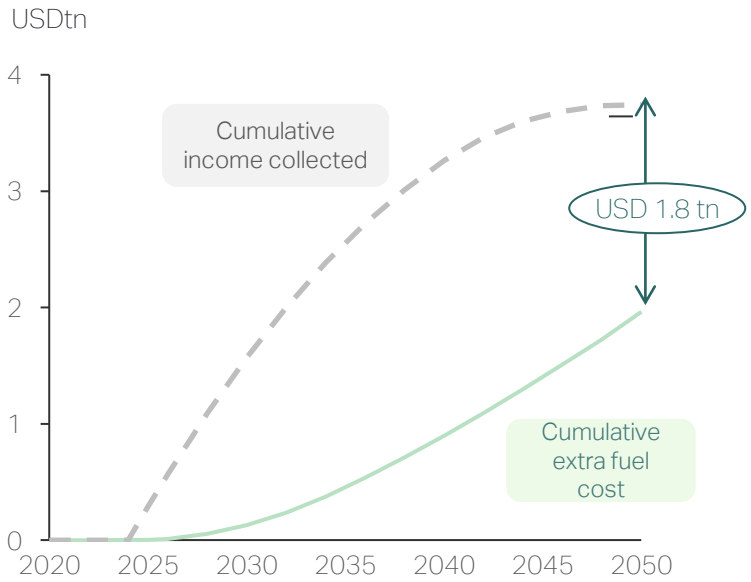
Visualizing the required level for the levy

In the case of a flat carbon levy, we expect the same level of carbon levy to apply throughout the entire period, as shown below



A flat carbon levy starting at USD ~230/tCO_2-eq in 2025 would lead to net zero, and a cumulative collected revenue of USD 3.7 tn[1]

Mapping and understanding the implications of this policy option



Global financing

As can be seen in the graph to the left, a flat carbon levy at ~230/tCO_2-eq would raise an accumulated USD 3.7 tn by 2050. In this scenario, there is no pre-defined agreement that necessitates that the income collected is earmarked and returned to the industry. As a result, the entire amount raised is made available to authorities / states.

Fuel cost gap

In this case, the carbon levy aims to close the fuel cost gap by penalizing fossil fuels. In order to do so, the price is set high already in the initial years, in order to bring fossil fuel-related costs on par with the high cost of alternative fuels. As a result, this option collects USD 1.8 tn more than what would be necessary, in order to cover the extra fuel costs associated with choosing alternative fuels (USD 1.9 tn).

1 Note that the ~ USD 230/tCO_2-eq levy is based and modeled on current outlooks (global trade growth, fuel and electricity prices, fuel availability, development on critical levers etc.) and assumes that all critical levers are activated. Significant changes in these variables will thus directly also impact the levy level needed to reach a Path to Zero.

A flat carbon levy without an earmark and return entails a large industry burden, highlighting the relevance of other options

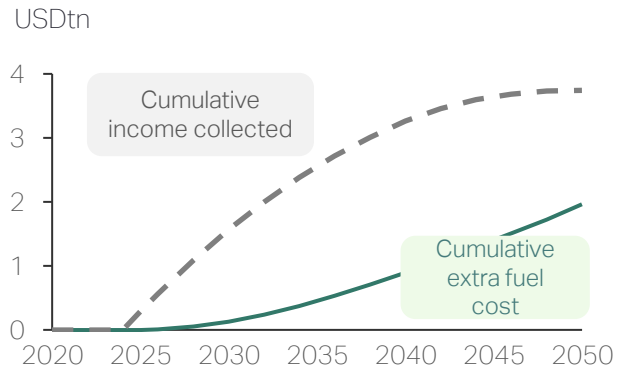
Key economic benefit : Administration

A flat carbon levy is easier to collect and administrate compared to a stepwise carbon levy since the level of the carbon levy does not change over time. This option generates a significant amount of money relevant for global financing.

Key economic challenge : High industry cost can delay the acceleration of the transition

A flat carbon levy in this range without an earmark and return logic requires the industry to pay an accumulated ~ USD 1.8 tn on top of the USD 1.9 tn in extra fuel costs, which the industry will have to bear in connection with switching to alternative fuels. This is a high burden to be borne by the industry, especially when taking into account the significant CAPEX investments that need to be made by the industry, in order to decarbonize the global fleet.

The significantly higher industry cost is the outcome of two key dynamics at odds in this option



Dynamic 1: In this approach, focus is placed on penalizing the use of fossil fuels. As a result, the cumulative income collected starting in 2025 increases steeply, as the many sailing on fossil fuels are called upon to pay. However, as the global fleet transitions to alternative fuels, the cumulative income collected taps off over time.

Dynamic 2: The cumulative extra fuel costs borne by the industry linked to alternative fuels in the beginning are low, as only a few first movers opt for alternative fuels. However, as the global fleet transitions to the use of alternative fuels, the cumulative extra fuel cost will significantly increase proportionally to the number of vessels sailing on alternative fuels.

Result: This scheme entails very high initial income collection when the income needed to bring the cost of fossil and alternative fuels is only low. Over time, it reduces the level of income collected at the same time as the income needed to bring the fuel costs on par steeply increases.

An earmark and return logic on some of the revenues can deliver net zero by 2050 at much lower CO_2 pricing levels

Here, we present a theoretical introduction to earmark and return, which only provides the foundation for the work that follows

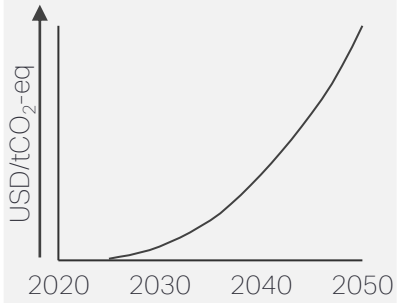
A theoretical approach to earmark & return

In theory, the carbon levy could be tailormade to just cover the extra fuel cost for switching to alternative fuels.

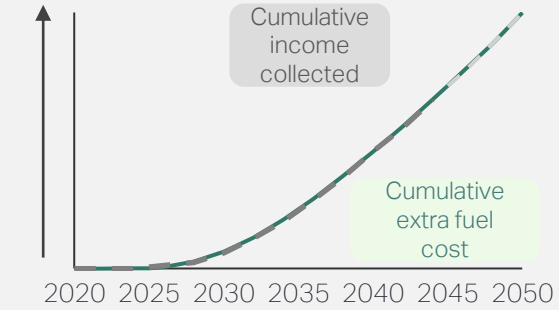
Here, the authorities would earmark the collected income and return it to the industry.

Visualizing the required levy increases

In the beginning of an earmark and return scheme, only few green first movers would need to be compensated by the many still sailing on fossil fuels. Carbon levy levels could start low and increase over time.



Key challenges related to an extensive earmark and return logic



Global financing

Challenge 1:
If all income collected was returned to the industry, no funds could be made available for additional global financing, including climate financing and support to states disproportionally affected.

Admini-stration

Challenge 2:
A levy with too many hikes and contingencies would be very difficult for authorities to administrate and for the industry to plan around.

Fuel cost gap

The carbon levy level would need to be continuously adjusted to cover the development of the fuel cost price gap for those sailing on alternative fuels[1]. The income collected could be used to close the fuel cost gap, creating an equal level playing field between fossil and alternative fuels.

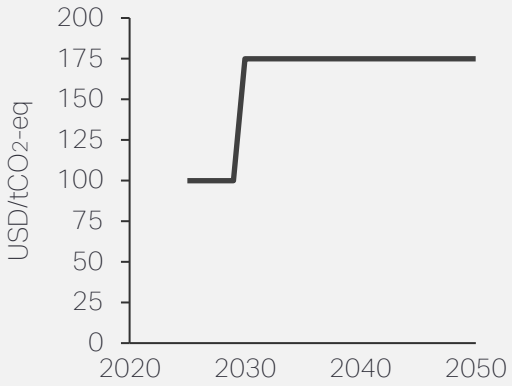
Next, we present a middle ground solution, which can generate a buffer and entails fewer price hikes.

1 The projection on cumulative income collected vs. cumulative extra fuel cost from 2048 onwards is used purely for illustrative purposes.

Option II: A flexible levy with an earmark and return applied on part of the revenues delivers net zero by 2050 at a lower price

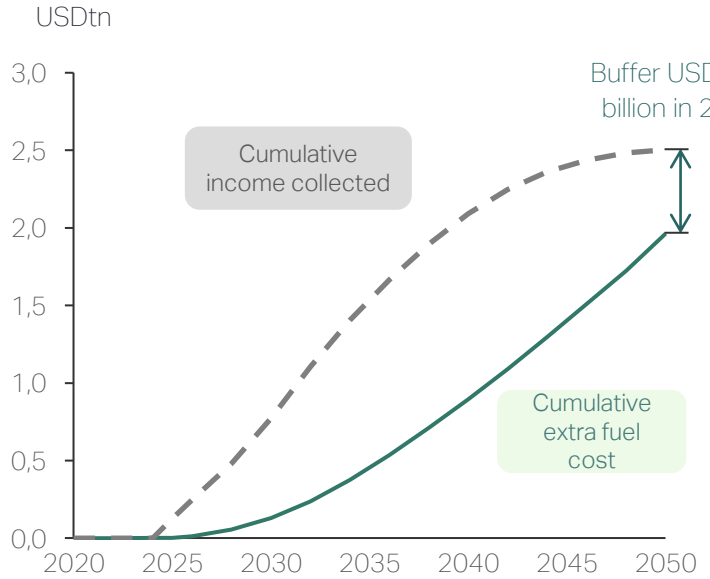
A flexible levy with a single hike

Here, we design the carbon levy to start at USD ~100/tCO_2-eq in 2025 and increase to USD ~ 175 /tCO2-eq in 2030.



Starting at USD ~100/tCO_2-eq in 2025, this approach entails one price hike to 175 USD, generating an USD 500 bn for global financing

A flexible levy with a hike delivers revenues for global financing and closes the fuel cost price gap



This option delivers three critical elements, namely

1. a cumulative income collected that corresponds to USD ~ 2.5 tn by 2050, with
   a. USD ~ 500 bn made available for global financing,
   b. a total of USD ~ 1.9 tn earmarked and used directly to close the fuel cost gap.

It is important to note that this option can be adjusted. An adjustment could generate a higher buffer for global financing either with a slightly higher initial levy and/or a higher hike at a later stage.

Here, the fuel cost gap is closed via a much lower initial carbon price and a more efficient and balanced cost carried by the industry.

1 Note that the ~ USD 100/tCO2-eq levy is based and modelled on current outlooks (global trade growth, fuel and electricity prices, fuel availability, development on critical levers etc.) and assumes that all critical levers are activated. Significant changes in these variables will thus directly also impact the levy level needed to reach net zero by 2050.

When market forces take over, the earmark and return can be stopped earlier, freeing additional income for global financing

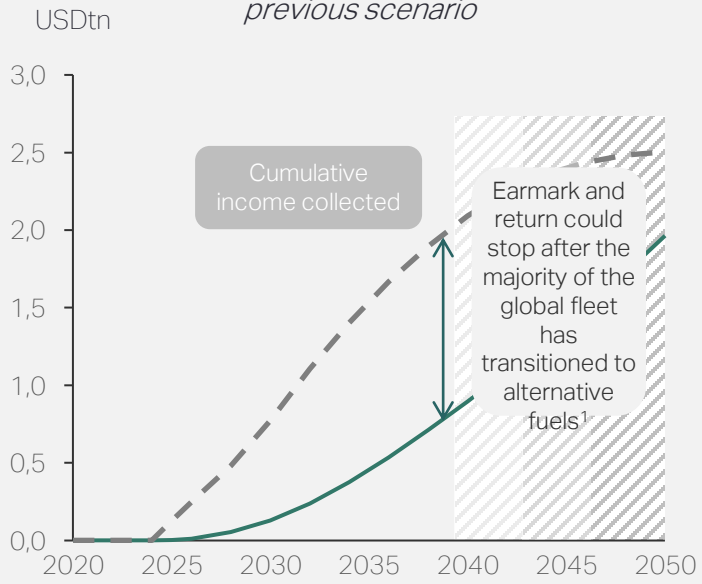
Earmark and return can be stopped ahead of 2050 and be combined with the continued collection of the levy, penalizing fossil fuel usage

Understanding the rationale

Over time, the share of vessels sailing on alternative fuels will grow and ultimately represent the majority of the global fleet.

When a sufficient majority is reached, it becomes relevant to consider the phase-out of the earmark and return scheme to compensate vessels on alternative fuels. Instead, the collection of a levy can be continued, in order to only penalize the few sailing on fossil fuels. The income collected is made available in full to support global financing, without any earmark and return.

Assuming the same price development as in the previous scenario



Considerations on stopping the earmark and return policy

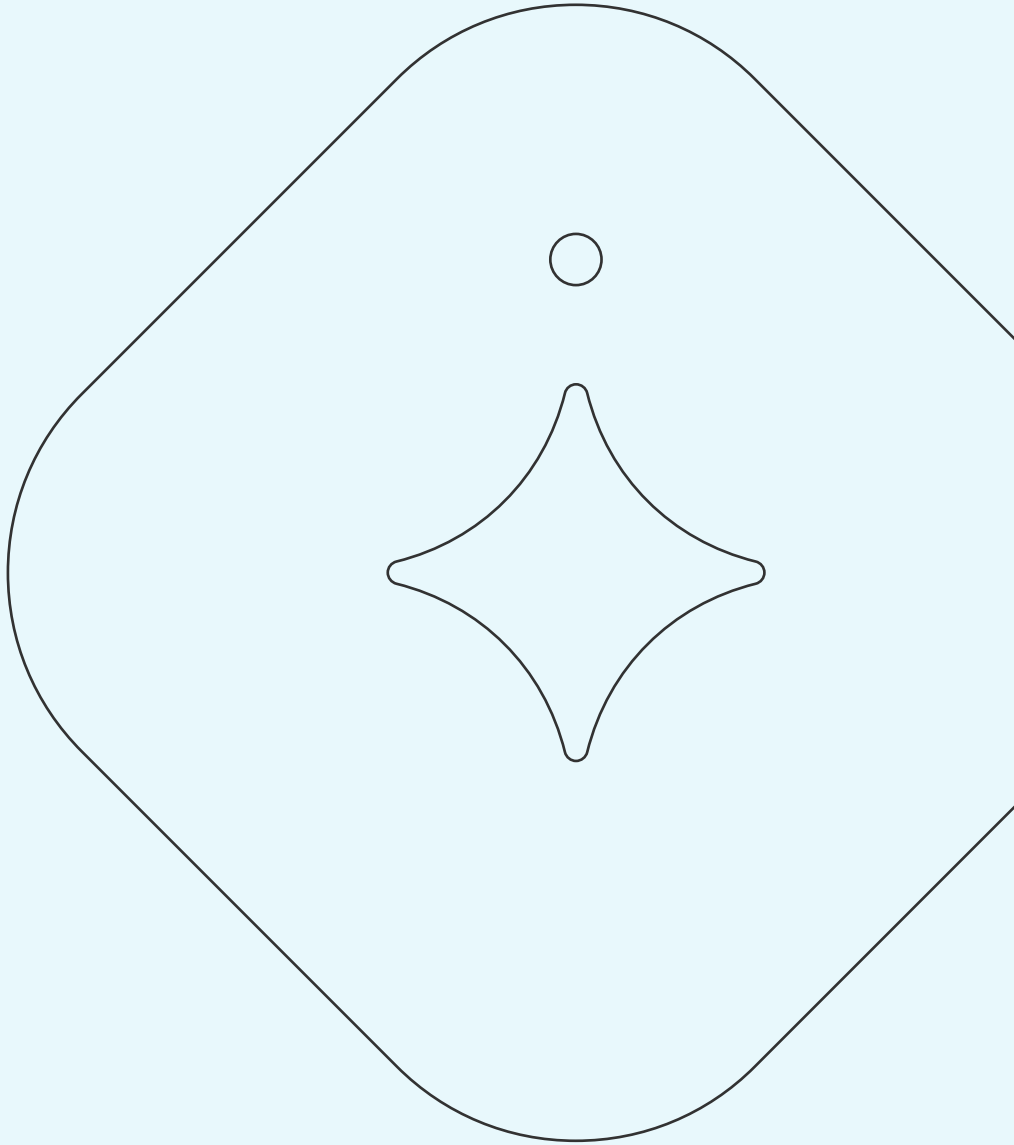
Exact timing: It is not possible to determine the exact timing for this, as this will depend amongst others on market forces and the actual rate of fleet development and transition to alternative fuels.

Key benefit: Stopping the earmark and return policy at an earlier time will enhance the amount of funds available for states to re-direct and use, further increasing buffer beyond the USD 500 billion presented previously. A stop of the policy could be combined with a sequenced ban to avoid the risk of the industry returning to fossil fuels after the earmark and return scheme stops.

Key challenge: It is critical that the policy is not stopped too early in time, or this can disincentivize the remaining fleet and delay the decarbonization of the sector.

The timeline in this graph and dotted boxes only are for illustrative purposes and are not an endorsement of 2040 as the stop point for the earmark and return scheme.

Conclusion and next steps



Concrete work on the collection, administration and distribution of revenues from Market-Based Measures is key

Conclusion

This Options Paper has provided a concrete presentation of different Market-Based Measures (MBMs) options available today, with a focus on a carbon levy and its design in terms of pricing structures and levels, as well as key dynamics.

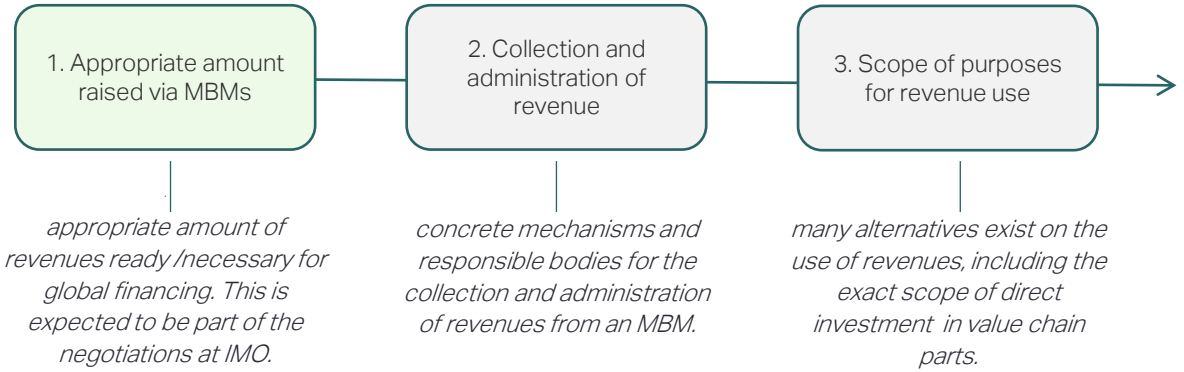
We have presented two possible setups for a carbon levy, including a scenario for a flat carbon levy without earmark and return, and a scenario for a flexible carbon levy, where some of the income collected is earmarked and returned to the industry, in order to close the cost gap between fossil and alternative fuels.

We have additionally briefly covered the relevance and timing of stopping the earmark and return policy ahead of 2050, as well as the benefits associated with combining this with a ban on new fossil fuel vessels at a later point in time.

In doing so, we have structured our analysis and input, in order to accommodate two key objectives: enabling a fair, equitable transition and closing the fuel cost gap between fossil and alternative fuels.

Key focus areas outside the scope of this Options Paper

Based on the work presented in this paper, additional considerations and possibilities become relevant in this work, including investigating the following three key elements in a carbon levy scheme design:



We welcome the upcoming IMO and MPEC discussions on MBMs, as well as the work carried out by other organizations on this matter and follow the discussions closely.