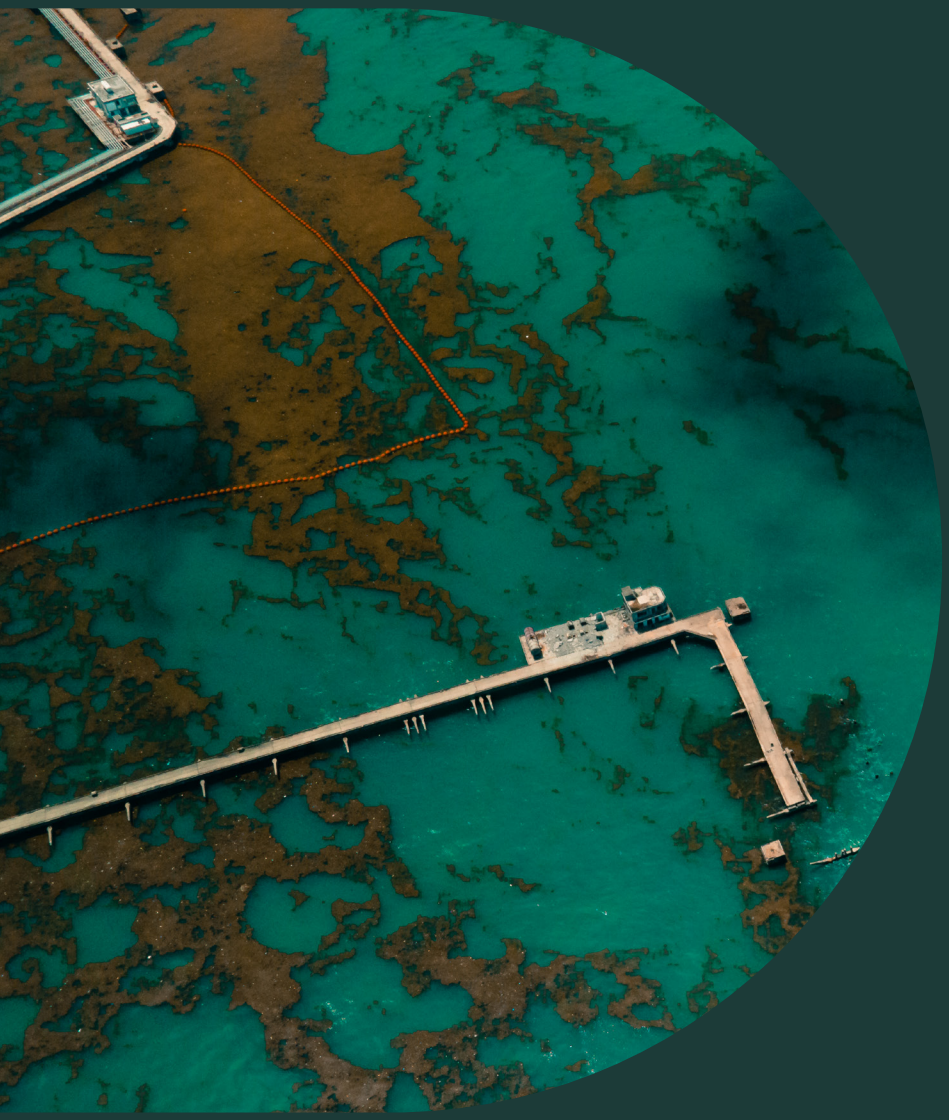
OPPORTUNITY GREEN

A just and equitable transition for shipping

Considerations for the disbursement of revenue from the IMO Net-Zero Fund



June 2025

A just and equitable transition for shipping
Considerations for the disbursement of revenue from the IMO Net-Zero Fund

June 2025

About Opportunity Green

Opportunity Green is an NGO working to unlock the opportunities from tackling climate change using law, economics and policy. We do this by amplifying diverse voices, forging ambitious collaborations, and using legal innovation to motivate decision makers and achieve climate justice,with particular emphasis on the aviation and shipping industries.

Acknowledgements

Opportunity Green would like to thank Oscar Leonard for authoring this report; Vivian Rambarath-Parasram and Michael Razack for their significant work on earlier drafts of this report; Sustainable Innovative Maritime Solutions, Ana Laranjeira and Goran Dominioni for their work and review of early drafts of this report; and European Climate Foundation and Climate Works Foundation for funding this vital work.

Further information

Opportunity Green
www.opportunitygreen.org

Disclaimer

This document is prepared by Opportunity Green for general informational purposes only. It does not constitute legal advice and should not be relied upon as such. Opportunity Green gives no warranty, express or implied, to the accuracy of the information in this document and does not accept liability for any action made in reliance on this document

Cover image: A container ship travelling beside an oil depot in Lagos Nigeria.
Credit: Kehinde Temitope Odutayo (iStock Photos). Also featured on p. 10

Contents

List of abbreviations

AF: Adaptation Fund

AFIDE: Agency for Financing and Investment for Development

BAU: Business As Usual

BNCCO: Belize National Climate Change Office

CAF: Banco de Desarrollo de América Latina y El Caribe (Development Bank of Latin America and the Caribbean

CCCCC: Caribbean Community Climate Change Centre

CIA: Comprehensive Impact Assessment

CIFs: Climate Investment Funds

CORFO: The Production Development Corporation of Chile

DFI: Development Finance Institution

DNI: Disproportionate Negative Impacts

DWT: Deadweight Tonnage

EIB: European Investment Bank

EU: European Union

FAO: Food and Agriculture Organization

FRLD: Fund for Responding to Loss and Damage

FYNSA: Finanzas Y Negocios Servicios Financieros Limitada

GCF: Green Climate Fund

GDP: Gross Domestic Product

GEF: Global Environment Facility

GHG: Greenhouse gas

IADB: Inter-American Development Bank

IEA: International Energy Agency

IFAD: International Fund for Agricultural Development

IFI: International Financial Institution

IMF: International Monetary Fund

IMO: International Maritime Organization

ISWG-GHG: Intersessional Working Group on the Reduction of GHG Emissions from Ships

KfW: Kreditanstalt für Wiederaufbau

JET: Just and Equitable Transition

LDCF: Least Developed Countries Fund

LDCs: Least Developed Countries

LNG: Liquefied Natural Gas

MARPOL: International Convention for the Prevention of Pollution from Ships

MDB: Multilateral Development Bank

MED: Ministry of Economic Development

MEPC: Marine Environment Protection Committee

MIC: Middle-income country

NASPA-CCN: National Adaptation Strategy and Plan of Action on Climate Change for Nigeria

NCCC: National Council on Climate Change

NDA: Nationally Designated Authority

NDC: National Determined Contribution

ODA: Official Development Assistance

PACT: Protected Areas Conservation Trust

PDB: Public Development Bank

PDP8: Eighth Power Development Plan

SCCF: Special Climate Change Fund

SIDS: Small Island Developing States

SME: Small and Medium Enterprise

UN: United Nations

UNFCCC: United Nations Framework Convention on Climate Change

USAID: United States Agency for International Development

WFP: World Food Programme

ZNZs: Zero or near-zero GHG emission technologies, fuels and/or energy sources

01
Introduction

The 2023 International Maritime Organization (IMO) Strategy on Reduction of Greenhouse Gas (GHG) Emissions from Ships (2023 IMO GHG Strategy), adopted at the 80th session of the Marine Environment Protection Committee (MEPC 80), marked a significant step towards the global transition to phase out GHG emissions from international shipping. At MEPC 83, in April 2025, the text of a proposed regulatory amendment to Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL), called 'the IMO Net-Zero Framework' was approved by countries.[1] This regulation contains the details of a mechanism intended to help reach the IMO's decarbonisation goals. The IMO Net-Zero Framework is scheduled for adoption in October 2025, therefore at the time of writing it is still a proposed amendment rather an adopted regulation, and will be referred to as such throughout this report.

The core emissions reduction mechanism in the IMO Net-Zero Framework is a two-tiered global fuel standard that includes GHG pricing on a limited portion of emissions above a certain threshold. Each year, ships are given two target levels for the GHG intensity of the fuel used on board, which get stricter over time until 2050. However, ships with higher emissions may still be compliant; they must either buy 'remedial units' to balance their 'compliance deficit', or, in more limited circumstances, they may be able to buy 'surplus units' from another ship or use a 'banked' surplus unit from a previous year. The possibility to bank and trade surplus units introduces the potential for a private credit trading system that involves moving money from underperforming (higher GHG emitting) ships to overperforming (lower GHG emitting) ships. This could entrench financial flows in ships/regions with high access to capital or existing GHG regulation, increasing regressive effects on other states. The potential impacts of a credit trading system could be balanced by targeted revenue investment, however the limited revenue generating capacity of the proposed measure and lack of clarity regarding spending priorities risks revenues being prioritised in a way that compromises achieving a just and equitable transition.

The limited revenue generation is likely around $10bn per year (Transport and Environment, 2025). The revenue will be received, managed and disbursed by the IMO Net-Zero Fund. Revenue will be available for allocation to a range of goals related to climate change and the energy transition in shipping, outlined below. How this revenue is distributed – and the extent to which it can be distributed to achieve broader climate and resilience goals – is pivotal in trying to ensure that the measures agreed at the IMO deliver a just and equitable transition to net-zero for international shipping (a core objective of the 2023 IMO GHG Strategy).

1 The text of the IMO Net-Zero Framework as approved at MEPC 83 is available in: International Maritime Organization (IMO), 2024. *Draft amendments to MARPOL Annex VI on the IMO Net-Zero Framework: Note by the Chair of the Working Group on Reduction of GHG Emissions from Ships – New Chapter 5: Regulations on the IMO Net-Zero Framework*. MEPC 83/J/9 (henceforth 'IMO Net-Zero Framework'). It is publicly accessible at https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/Circular%20Letter%20No.5005%20-%20Draft%20Revised%20Marpol%20Annex%20Vi%20%28Secretariat%29.pdf

In order to inform decision makers on this crucial issue, this report reflects on several key questions:

- *What is the case for receiving revenues?* Some countries are wealthy enough that they never receive concessional assistance; others have limited fiscal space, or a debt burden large enough for such external funding to be a vital component of the green transition. Most are somewhere in between.

- *How can recipients access this money?* Revenue disbursement in existing climate funds is project-based, so this suggests that states must have a credible use case for revenues in order to benefit from revenue-raising mechanisms at all.

- *How will their potential broader climate spending needs connect to the central remit of an IMO Net-Zero Fund?* Some countries have clearer opportunities for maritime-sector decarbonisation spending than others, but ensuring that the transition is just and equitable depends on clarifying and interpreting elements of the text of proposed amendments to MARPOL Annex VI. Potential avenues for this are explored below.

This report explores the mechanisms that could be involved in the management and distribution of these revenues; how the goals of this fund might align with in-country needs and strategies; and how revenues might be used to maximise positive outcomes and offset the cost of the transition.

The first half of this report contains general information about how the IMO Net-Zero Fund might operate, drawing comparisons with existing funds. It looks at potential impacts from pricing emissions, how the approved IMO pricing mechanism might work in practice, and how revenues could be distributed in accordance with the purposes outlined in the IMO Net-Zero Framework.

The report then considers four case study countries and how they might benefit from and / or be affected by a GHG pricing mechanism. These country case studies cast a light on the potential experiences of other countries with similar contexts as those profiled.[2] Each case study is country-specific but is designed to offer insights on countries with similar socioeconomic characteristics. The case studies are:

- Countries geographically remote from their main markets - **Chile**

- Oil-producing (or with oil reserves, still on the ground) developing countries - **Nigeria**

- Small Island Developing States (SIDS) - **Belize**

- Coal-dependent, with high renewable potential - **Vietnam**

2 It is not assumed that the domestic context in any two countries is the same. Policymakers may, however, be able to identify similar characteristics that can be applied to their particular domestic context to better inform certain aspects of decision making.

02
Impacts from pricing emissions

The IMO has made significant strides towards decarbonising shipping, with its 2023 Strategy setting an ambition to achieve net-zero emissions by or around 2050, while promoting a just and equitable transition. A global and ambitious GHG pricing mechanism was identified as the most effective means to achieve this by providing an economic incentive to adopt cleaner fuels (Dominioni, 2024). The IMO Net-Zero Framework does not include universal pricing, however its design does result in a price on some emissions – those that fall foul of the regulatory limits on GHG emissions intensity. How the pending MARPOL amendments will measure against the goals of the 2023 IMO GHG Strategy is currently being assessed.

The impacts of implementing mid-term measures to achieve the 2023 IMO GHG Strategy were explored in the Comprehensive Impact Assessment (CIA), which modelled various policy scenarios under deliberation against a Business as Usual (BAU) scenario. A negative effect on global Gross Domestic Product (GDP), import and export volumes, and global consumer price index compared to BAU was observed across all policy scenarios. The assessment suggested lower-income countries would be worse affected than higher-income ones, also across all policy scenarios. Notably, the distinct nature of the mechanism approved in April 2025 means that its specific impacts were not assessed under the CIA's work programme.

Impacts on food security have been the subject of particular attention in IMO deliberations, as some states have indicated concerns that the increased costs of transport will exacerbate food insecurity.

Two counter arguments are important to note: first, as noted by Rojon et al (2021), that as ship running costs constitute just one component of maritime transport costs, and transport costs in total make up around 9% of the value of imports, increases as a result of the 2025 proposed amendments would be heavily 'diluted' in the overall cost of imports. The result of their modelling indicated the impact on import costs mostly remained below 1%.

Second, as many states noted during the 18th Intersessional Working Group on Reduction of Greenhouse Gas Emissions from Ships (ISWG-GHG 18), climate change itself poses a far greater threat to food security than the mid-term measures, and is already driving substantial price increases (Kotz et al, 2024).

More broadly, reaching the goals of the 2023 IMO GHG Strategy will by definition entail a substantial change to the global energy mix, requiring the rapid expansion of alternative, Zero or Net-Zero (ZNZ) fuels and decreasing demand for bunker fuels. Total aggregate investment costs for shipping decarbonisation by 2050 sit at around $1.65tn, with the vast majority of this – 87% – concentrated in the infrastructure for low carbon fuels (Carlo et al, 2020).

Early modelling indicates that the measures approved in draft form at MEPC 83 have the potential to raise around $10bn annually, distributed via a novel mechanism – the IMO Net-Zero Fund. Though significantly lower than the amounts that may have been generated by a universal pricing mechanism, such as a levy (ISWG-GHG 17/2/3; Dominioni et al., 2023)[3], this amount is still significant when compared to the amounts of funding available to climate funds under the United Nations Framework Convention on Climate Change (UNFCCC). To illustrate, the Green Climate Fund (GCF) mobilised $12.8bn in its second replenishment, intended to cover four years of operation, and the Global Environment Facility (GEF) runs at$1.33bn annually in its latest replenishment period.

Whether this revenue should be made available solely for re-investment within the international shipping sector (sometimes referred to as 'in-sector' uses) was the matter of considerable discussion during deliberations at the IMO in the lead-up to the approval of the IMO Net-Zero Framework. Ultimately, the specific revenue allocation categories agreed in the final text, outlined below, demonstrate a degree of flexibility. This is discussed in greater detail in Section 3.2. The categories of 'in-sector' and 'out-of-sector' are not clearly delineated (Fricaudet et al, 2024), and some of this ambiguity can be found in the phrase 'within the boundaries of the energy transition in shipping.' As the shipping industry is integrated and dependent on multiple supply chains, drawing a clear line that defines this boundary is far from straightforward.

Regardless of the final interpretation on this matter, recent developments in deliberations at the IMO allow us to consider some of the impacts that this revenue may have. Distributed with consideration of a just and equitable transition, this revenue would be able to support countries disproportionately negatively impacted by the measures. It could also be invested at a level of concessionality and risk-tolerance that helps countries out of the 'climate investment trap,' whereby high costs of capital keep countries from attracting investments that would positively contribute to their development (Fricaudet et al 2024).[4]

3 Bibliographical Note: Where relevant, submissions to ISWG-GHG and MEPC that are available on IMO Docs (docs.imo.org) are referred to by their code and the submitting country. References to GCF projects use the project code, for example 'FP117.' Information on these projects is publicly accessible at https://www.greenclimate.fund/projects) Unless otherwise stated, every reference to a GCF project by this code refers to the Approved Funding Proposal document for this project, also publicly available at the same location.

4 A 'concessional' loan is generally one that is offered on terms more favourable to the debtor than can be expected from a standard commercial lender. This can be below-market interest rates, more favourable grace and maturity periods, or anything else that reduces the burden of the debt.

03
The IMO pricing mechanism

3.1
A note on the funds discussed in this briefing

There are a wide range of actors in the climate finance space, from bilateral aid mechanisms to trust funds hosted at Multilateral Development Banks (MDBs). This briefing focuses on the climate funds that serve as the financial mechanisms of the UNFCCC. There are two reasons for this. Firstly, these funds were also established and decided on at United Nations (UN) deliberations like those underway at the IMO. Secondly, submissions to the IMO regarding the IMO Net-Zero Fund have suggested that it may, *inter alia*, i) resemble existing UNFCCC funds such as the GCF, or ii) channel money to such funds. In other words, there is some convergence that the UNFCCC funds could form a strong precedent for the operation of the IMO Net-Zero Fund. [5,6]

One of the goals of this section is to illustrate the contemporary practices in public international climate finance, insofar as they may inform future mechanisms adopted by the IMO to manage and disburse revenues. For this reason, the GCF, as the largest and the most recently operationalised of these funds, receives particular attention.[7]

These funds share a number of key similarities in their structure (GIZ, 2020), qualities which had also been identified in a number of submissions to the IMO prior to the acceptance of the IMO Net Zero Framework:[8]

- **Independent governing board**: Each fund is governed by a Board or Council with geographically-determined and gender-balanced quotas for membership. For example, the Board of the Fund for Responding to Loss and Damage (FRLD) is composed of 26 members, 12 of whom are from developed countries, and the remaining 14 from developing countries, with regional allocations as well as two seats reserved for each of the Small Island Developing States (SIDS) and Least Developed Countries (LDCs). This board has final responsibility for all funding decisions.

- **Independent legal identity:** the funds possess juridical personality.

- **Multiple implementing partners**: These funds channel money to other agencies to execute projects. The primary function of the fund is to select and evaluate projects and the bodies that undertake them, as well as provide capacity-building and feedback to bring project plans to viability.

5 For example see ISWG-GHG 17/2/3 and ISWG-GHG 18/2/9 (Republic of Korea), ISWG-GHG 17/2 (Austria et al.), MEPC 83/7 (Secretariat) and ISWG-GHG 18/2/16 (EDF).
6 The UNFCCC funds are the GCF, GEF, AF, SCCF, LDCF, and FRLD. The CIFs, although not a mechanism under the UNFCCC, have made noteworthy green infrastructure investments that merit mention in this briefing. The writers have endeavoured to ensure that this brief reflects the latest developments in the FRLD, but notes that the design of this mechanism is ongoing.
7 The FRLD was established more recently, but as of March 2025 is still in the set-up phase, and has not made any disbursements.
8 For example see ISWG-GHG 17/2/3 and ISWG-GHG 18/2/9 (Republic of Korea), ISWG-GHG 17/2 (Austria et al.), MEPC 83/7 (Secretariat) and ISWG-GHG 18/2/16 (EDF)

- **Trusteeship**: The funds are held in trust by a separate entity, in most cases the World Bank. The World Bank acts as Trustee of each of the funds under the UNFCCC listed above, as well as the Climate Investment Funds (CIFs). This does not place these funds under the authority of the World Bank, but merely means that the World Bank holds the funds in trust, and releases them to the relevant recipient only on the instruction of the Board. It generally performs this role on a cost-recovery basis (World Bank, 2019).

Receiving revenues from a fund is not a 'given' based on need. Interventions are likely to require applications for funding, which require a pipeline of credible projects, a network of partnerships, and a clear justification for the intervention of that fund. Thus, the capacity to develop such a pipeline and make these applications is just as important as need.

However, the design of climate funds is not fixed. It is better understood as an iterative process underway since the creation of the GEF in 1991, with new mechanisms emerging in response to new challenges, or as the result of gaps in the existing funding/aid architecture becoming evident. Creating a new fund to manage the revenues from GHG pricing on international shipping will be another step in this process; it is likely to reflect lessons learned from similar projects, and be the product of similar constraints, but it is not bound to follow their template.

3.2
Revenue categories in the proposed amendments to MARPOL Annex VI

Regulation 41 of the recently accepted IMO Net Zero Framework specifies a number of purposes for which collected revenues may be disbursed by the IMO Net-Zero Fund. It states:

1. The IMO Net-Zero Fund shall disburse collected revenue for the following purposes, as shall be specified in its governing provisions:
    1. rewards for the use of ZNZs [...];
2. in the context of the implementation of this chapter and, promoting a just and equitable transition in States by facilitating environmental and climate protection, adaptation and resilience building within the boundaries of the energy transition in shipping, paying particular attention to the needs of developing countries, in particular least developed countries` (LDCs) and small island developing States (SIDS), allocating sufficient revenue, for:
    1. researching, developing and making globally available and deploying zero and near-zero GHG emission technologies, fuels and/or energy sources, supporting the energy transition of shipping, and developing the necessary maritime, coastal and port-related infrastructure and equipment;
    2. enabling a just transition for seafarers and other maritime workforce;
    3. facilitating information-sharing, technology transfer, capacity-building, training and technical cooperation supporting the implementation of the regulations in this chapter;
3. supporting the development and implementation of National Action Plans (NAPs), including fleet renewal and upgrade; and
4. addressing, as appropriate, disproportionately negative impacts on States, including on food security, resulting from the implementation of the regulations in this chapter; and
5. cover the administration and operational costs of the Fund and its Governing Board.

The text is ambiguous in some aspects, although appears broadly preferential to revenue usage that can be demonstrated to support the global energy transition in international shipping and associated activities. However, a certain amount of ambiguity in the text suggests that broader spending could be permissible under the Regulation. The 2023 IMO GHG Strategy commits to a "just and equitable" transition, and this may prove crucial in determining the actual remit of the IMO Net-Zero Fund. Ultimately, further clarity on the scope of disbursement of revenue will develop with time.

The subsequent sections broadly categorise the different uses that were identified in the IMO Net Zero Framework text.

3.2.1 Shipping, ports, and the maritime workforce

Prior to the approval of the IMO Net Zero Framework, there was general agreement that funding should be used to achieve a just and equitable decarbonisation of the shipping industry itself, with explicit focus on SIDS and LDCs. This is reflected in several paragraphs of Regulation 41 – notably paragraph 1.1 on the provision of rewards.

It is important to note the risk that – if prioritised – a large portion of revenue will be required to meet the reward claims of ships that use ZNZs, in accordance with guidelines yet to be established.[9] Just how the revenue will be prioritised between the rewards for ships and other identified spending purposes under the IMO Net Zero Framework remains to be seen.

3.2.2 Addressing Disproportionate Negative Impacts

Disproportionate Negative Impacts (DNI) on states is one of the specific criteria by which the basket of mid-term emissions reductions measures was to be evaluated under the 2023 IMO GHG Strategy. The need to address DNI also appeared in many submissions to the IMO deliberations from states that otherwise disagreed on the precise design of an instrument (e.g. ISWG-GHG 17/2/7 Angola et al, 18/2/5, '50+ Group').

How exactly Regulation 41, paragraph 1.5 should be operationalised remains unclear. For example, there is an ambiguity between this and the chapeau text of Regulation 41 para 1.2. as quoted above, which could be interpreted as confining revenue use "promoting a just and equitable transition" to "within the boundaries of the energy transition of shipping." This prompts the key question: is it possible that some states will argue that DNI have to be addressed by interventions that also fulfil the criterion of staying within the boundaries of the energy transition of shipping? If this is not directly possible, i.e. if no clear opportunity exists within those boundaries to cancel out the impacts, how will states have DNI addressed? This issue is explored below in section 3.2.3, and throughout this briefing.

3.2.3 A just and equitable transition

Noting the above, and taking into account the requirement agreed upon by states that the transition be "just and equitable," it may be the case that the words "within the boundaries of the energy transition of shipping" require some flexibility in order to satisfy all criteria and remain operationally feasible.[10] Or another reading could be that it only applies to the "adaptation and resilience building" part of the text, giving a wider remit for disbursement, though acknowledging it is limited by the concrete bullet points on where that disbursement can go. Some of the issues involved here are outlined on the following page.

9 IMO Net-Zero Framework, Regulation 39
10 The legality of using funds for a wide range of uses is well established (see Sheeran, 2024).

- **Technical inclusivity**: As noted by Fricaudet et al (2024), "Some countries are likely to be negatively impacted, or will suffer from the consequences of climate change, but don't have the techno-economic potential for participating in the transition (small fleet, no large ports, etc) so they are unlikely to absorb significant in-sector investments". In some countries, furthermore, there may be more cost-effective opportunities for climate change mitigation and adaptation that are not directly related to the maritime sector, and in turn fewer opportunities to reach those goals within the maritime sector (Dominioni et al 2023).

- **Non-distinction**: Another line of thinking goes that the distinction between 'in-sector' and 'out-of-sector' is not as practicable as it first appears. For example, it has been argued that no hard line can be drawn between maritime workforces, and the communities in which they are situated. That is to say, climate-vulnerable infrastructure will play a vital role in the lives of the maritime workforce, without itself having any direct link to the shipping industry. This argument is outlined in Document ISWG-GHG17/2/13 (Fiji et al.), using the examples of the hospital that cares for port-side workers and their families, without which the port would not be operable (Fiji et al. 2024). Note the text "… developing the necessary maritime, coastal and port-related infrastructure and equipment," in particular noting the word 'coastal.' The infrastructure in these domains that is necessary for the continuation and energy transition of maritime trade may not itself be strictly speaking maritime-related. As is highlighted in the case of Belize below, the trade and energy system upon which the maritime sector depends is very often coastal, and in need of resilience-building and adaptation financing, but not itself maritime.

- **Project limitation**: Climate funds such as the GCF attempt to make holistic interventions to ensure the long-term viability of a project (GCF, 2023b). Some projects require multiple elements in order for the central priority to function; for example, a GCF project developing green hydrogen in Barbados (FP224) also contains a small agricultural component which was necessary to satisfy local land-use laws, without which the project would not have been feasible.[11] In other cases, various economic interventions might be required up or down supply chains to enable the central project, and the connection between them might not be immediately apparent. If project financing were strictly ringfenced, such interventions might not be possible. As is explored below, this is of particular relevance to states with few immediate opportunities for investments in the maritime energy transition, and where foundational 'upstream' investments may first be necessary. Also explored below, in the case study on Nigeria, is the possibility for projects that are not supported by these prior interventions to fail and even have harmful results for the state (see section 5).

Thus, any interpretation of the agreement amendments must take into account the complexity of the shipping energy transition, and the interdependence of the maritime sector with many other sectors.

11 See Approved Funding Proposal, available at https://www.greenclimate.fund/project/fp224

3.3
Funding available within the existing landscape

3.3.1 The evolution of climate fund financing philosophies over time

The GEF was initially established within the World Bank, but after recipient countries raised concerns over its independence and what they felt was disproportionate influence wielded by donor countries, it was restructured in 1994 as a separate institution, with the World Bank acting as trustee (Lattanzio, 2013). This structure was imitated by subsequent climate funds established under the UNFCCC.

In recent years 'country ownership' has become a central mantra of these institutions, with the GCF describing it as one of the crucial conditions necessary for creating a "paradigm shift towards low-emission and climate resilient development" (Zamarioli et al, 2020). Country ownership is not clearly defined, but essentially means that the recipient country takes the lead in determining its goals and priorities, and that the Fund 'meaningfully' engages with stakeholders at all levels (i.e. from national authorities to local community stakeholders) (GCF IEU, 2019), rather than imposing a development agenda 'from above.'

This is also reflected in the composition of the Governing Boards of funds. While the GCF is split evenly between developing and developed country representatives, the more recently established FRLD is weighted towards developing countries, i.e. recipients. This is also reflected in the role of the National Designated Authority (NDA), which has expanded over time (Zamarioli et al, 2020).

The GEF channels funding mostly in the form of grants, but established a requirement for co-financing. The GCF (and subsequently the FRLD) was established without this requirement, opening the door to the possibility of financing a project exclusively using grant finance from that fund, albeit alongside a stated focus on stimulating private sector activity through de-risking. The landscape has moved towards financialisaton in recent years, with a focus on using limited public finances to mobilise or 'unlock' more extensive private resources (Treichel et al, 2024). As explored earlier in this briefing, IMO Net-Zero Framework revenues may be limited in comparison to the cost of the maritime energy transition. In light of this, it may be more likely that the IMO Net-Zero Fund will seek to use its relatively limited resources to mobilise private finance in cases where a small amount of public financing has the potential to de-risk a project and unlock its viability for private investment.

Similarly, these funds do not follow a fixed path from the moment of their establishment. The Board of the GCF maintains a degree of independence and is the site of robust debate over its purpose, strategic priorities, and favoured mechanisms (GCF IEU, 2023). In other words, it is in a continuous state of development.

Any fund established to manage revenues generated by the mid-term measures will represent another step in this evolution: as much as it may have in common with existing UNFCCC funds, significant differences are likely to have a knock-on effect. The lack of 'donors' in the traditional sense and replenishment periods, for example, replaced by a steady and predictable stream of carbon revenues, would represent a significant departure from the structure and dynamics of existing funds.

The GCF allows for contributions in the form of concessional loans from public sources (GCF, 2023a). To date, this constitutes almost $1bn of the total of contributions (World Bank, 2024). These loans must themselves be repaid, making them unavailable for grant instruments.

This dynamic is thought to contribute to a broader 'assumption of scarcity', whereby climate finance is assumed to be insufficient (Treichel et al, 2024), justifying a preference for a) mobilising private finance rather than using public resources to reach strategic goals, and b) loans instruments, which allow for the same money to be lent, recovered, and lent again.

Crucially, an IMO Net-Zero Fund replenished by a steady and predictable stream of revenues would not be constrained in its financing offerings by a need to service its own loans, allowing for a greater focus on grant-based finance – but this itself may be offset by the limited scope of revenues as mentioned above.

3.3.2 Common financial modalities used by the UNFCCC funds

The UNFCCC funds use a variety of funding modalities. The GCF, for example, offers grants, 'high-' and 'low-concessionality' loans, guarantees, and equity.

- **Grants** are simple transfers of funds. In some cases, a grant can be reimbursable, meaning that the principal is eventually repaid to the fund.
- **'High concessionality'** indicates a loan with a period of maturity of 40 years, a grace period of 10 years, and an interest rate of 0%. Annual repayments of 2% of the principal are expected from years 11-20, and 4% thereafter.
- A **'low-concessionality' loan** entails a period of maturity of 20 years, a grace period of 5 years, interest at 0.75%, and 6.7% of the principal paid back to the fund annually throughout the period (GCF, n.d.).
- A **guarantee** is an agreement whereby the guarantor agrees to pay a loan in the case of default. Consider the following example: a number of small businesses need to invest in new materials and machinery in order to increase energy efficiency, or shift to more resilient agricultural practices. Local banks consider the risk of default too high, due to, say, unstable conditions faced by those small businesses, or inexperience in sustainable finance. In order to break this impasse, a climate fund offers to take on this risk itself, agreeing that if some of those small businesses default on some or all of their repayments, the GCF will reimburse the banks for the loss.[12]
- An example of the GCF's use of **equity** is FP186, in which the fund has bought $200m in shares in an e-mobility company.[13]

Grants account for 48% of total GCF financing, loans account for 38%, equity for 8%, guarantees for 2%, and 4% are result-based instruments.[14] In the GCF, this tends to be divided by 'bankability,' with non-grant instruments used for nearly-bankable private sector projects, and grant instruments focussing on public ownership, adaptation, and a low likelihood of returns (Amighini, 2022).

12 See GCF project FP168 for an example of this.
13 Green Climate Fund: https://www.greenclimate.fund/project/fp186
14 See the GCF Portfolio Dashboard: https://www.greenclimate.fund/projects/dashboard

When applying for funding from the GCF, a justification must be provided for the kind of financing sought. In requesting support, a case must be made that this financing is 'additional,' meaning that the project would not be likely to receive the required funding otherwise (GCF, 2022). In other words, the project proposal must credibly identify a gap in current financing opportunities, which means that the goals of the project are likely to stay out of reach in the absence of the intervention of the fund.

If the intervention involves a publicly-owned utility or service, it is often grant-funded on the grounds that returns are unlikely to materialise. This can also be done on the basis that the service is a vital public good and cannot be exposed to the risk of market failure.[15] This includes projects aimed at improving the climate resilience of the health system, water infrastructure, coastal defences, or early-warning systems. When it comes to scaling up green businesses, the opposite is often the case. With returns on the table, financing is used to de-risk projects that are expected to have revenue-generating potential at a later date.

This does not mean that the GCF only provides grants to the public sector and loans to the private sector; rather, the financing mix is decided on a case-by-case basis. Loans and other instruments are frequently provided to the public sector, but with a view to avoiding a) excessive indebtedness, or b) crowding-out investments that would have otherwise taken place in a business-as-usual scenario (GCF, 2022). Grants are also available for projects with revenue-generating potential in the case that debt would be unsustainable, if the realisation of that potential is subject to highly uncertain timelines, or if International Monetary Fund (IMF) programmes limit sovereign borrowing (GCF, 2022).

Moving to other funds, non-grant instruments make up a minority of GEF disbursements (109 of 5986 of projects),[16] but with the caveat that co-financing, which is usually non-grant, is obligatory for a project to get the go-ahead. This can be waived in extreme cases.

The CIFs offer various tiers of concessionality based on the economic status of the recipient country. Middle-income countries (MICs) are only eligible to receive loans, albeit at highly concessional rates, and all countries at a high risk of debt distress are eligible for 100% grant-funding (CIF, 2024a).

The FRLD is committed to providing grants and 'highly concessional' loans - the terms of which have not yet been established (FRLD, 2024). The Adaptation Fund (AF), Special Climate Change Fund (SCCF), and Least Developed Countries Fund (LDCF) offer grant financing exclusively.

3.3.3 Examples

Port infrastructure, one likely destination for the revenues generated by the implementation of the mid-term measures, has not been the focus of many climate fund projects to date. However, two projects offer illustrative examples of the kind of financing that can be deployed in the maritime sector by a climate fund:

15 See, for example, FP066, the approval document for which states: "coastal resilience (coastal protection, risk preparedness and long-term planning) considered a non-revenue generating public good, with no available market." FP034 states that the proposed interventions "are public goods and leaving it to the market will result in under provision." FP056 SAP030, FP161, FP002, and FP037, also provide similar examples of this rationale

16 Cancelled projects excepted

- A GCF project to build a climate-resilient port in Nauru (FP052) is entirely grant-financed; the fund itself providing $6.9m, with the remaining $38.29m co-financed by the Asian Development Bank, Government of Australia, and Government of Nauru itself. The rationale for this is that the small island nation would be unable to sustainably borrow enough to finance a project of such scale.

- A CIF project under the Renewable Energy Integration Program to construct infrastructure necessary for producing and exporting green hydrogen in the Pecém port complex in Ceará, Brazil is executed through a $33.5m concessional loan (at CIF tier 3 rates, see CIF, 2024a) and a $1.5m grant component (CIF, 2024b).

Renewable energy programmes can be financed either by grants or concessional instruments on a case-by-case basis as explained above. For example:

- In Chile:
  - Espejo de Tarapacá (FP115), was part-financed by $60m in GCF equity. (This project did not ultimately go ahead due to force majeure, as the COVID-19 pandemic caused the closure or withdrawal of several project partners).
  - The Atacama Solar Project (FP017) was executed with a $39m loan by the GCF.

- A project in Argentina (FP064), which is still underway, includes a $100m loan, and a small grant component targeted at providing technical assistance for local finance institutions and Small and Medium Enterprise (SME) recipients, to ensure the effectiveness of the main loan portion.

- In Vietnam, FP071, 'Scaling Up Energy Efficiency for Industrial Enterprises in Vietnam' is funded through a $100m credit line provided by the IBRD, along with $75m in guarantees from the GCF, as well as $11m in grants.

3.4
Defining the revenue distribution mechanisms (and recipients)

3.4.1 The project cycle

As mentioned earlier, there are some characteristics common to all UNFCCC climate funds. For one, none of the funds initiate projects, they only respond to project proposals. Furthermore, these funds do not provide money directly to projects or countries; instead, money flows from the fund to an Implementing Entity which has partnered with a country to propose a project to the fund.[17] This requires assent of the NDA, an entity or individual tasked with being the fund's main point of contact and ensuring that the project reflects the goals of that country. This means that although funding does not flow directly to national finances, the project does not take place without that country's assent, or in other words 'bypass' the state.

The GEF uses both funding floors and ceilings, entitling countries to a minimum grant amount every year. This is the only one of the funds discussed that uses this system. The GCF is purely demand-driven. Note that even the floor-level of finance must be allocated to a project, and it is not disbursed directly to governments if it

17 Different terminology is used. These are also referred to as 'Accredited Entities' and similar. This terminology reflects what is common in submissions to the IMO.

is not used. The GCF replaced this system with a governing principle that half of its funding should be set aside for SIDS and LDCs.

3.4.2 What does the application process look like?

Applications can take a long time to approve, though streamlining this has become a priority for the GCF and is likewise noted as a goal of the FRLD. For example, FP149, a finance facility providing green credit lines to local financial institutions in Chile, Peru, Ecuador and Panama, entered the GCF project pipeline in March 2017, was approved in November 2020, and began implementation in 2022. FP017, the Atacama Solar Project entered the pipeline in December 2015 and began implementation almost four years later.

The following are some of the aspects required for GCF project applications:

- An accredited entity in partnership with the project.
- Environmental and social safeguards and considerations.
- A justification for project financing that demonstrates that the project is in alignment with the goals of the fund and that the intervention of the fund is additional.
- A credible theory of change.
- A no-objection letter from the NDA.

The process of releasing funding generally begins with the submission of a proposal – either on a rolling, year-round basis as is the case with the GCF, or during a specific submission window in the case of the CIFs – which is then reviewed by the secretariat.

If a project proposal is lacking in some area, it will be sent back with comments added, and the process repeated until the submission is ready. The secretariat might, for example, identify social or environmental project risks and feel that they are not adequately addressed in the proposal (Commonwealth Secretariat, 2022). If the proposal is ready, it will be submitted to the board for approval. Capacity building projects, usually grant financed, can be undertaken by a 'delivery partner' and do not require a lengthy accreditation process.

3.4.3 What kind of entities?

Box 2: A note on terminology

'Accredited' and 'implementing' entities are two terms used to mean the same thing by funds. For the sake of clarity, this report uses 'accredited entity', as used in the GCF, but notes that the term 'implementing' is more common across other climate funds. 'Executing entities' are distinct from accredited / implementing agencies – as explained below.

Accreditation confers eligibility to receive money directly from a climate fund. The fundamental issue at play here is whether an organisation can prove it has the capacity to adhere to the fund's fiduciary responsibilities and safeguards. An entity's application for accredited status will examine the organisation against the fund's standards on monitoring and managing environmental risks, the protection of whistleblowers, and its anti-money laundering policy, among other criteria (Commonwealth Secretariat, 2022).

In the past, major funds only implemented projects through MDBs and UN Agencies. In the GEF, 18 international agencies can propose and lead projects - projects must be partnered with these agencies. The CIFs only implement projects through six MDBs. In the AF and GCF, a variety of entities can apply for eligibility. The GCF has sought in recent years to increase 'direct access,' which refers to the accreditation of regional and national entities. Public Development Banks (PDBs) are among the organisations often awarded this status.

The 'accredited entity' has primary responsibility for oversight through the project's lifespan, and reports to the fund. The fund itself will only occasionally exercise direct oversight over the project. The GCF distinguishes between three kinds of accredited entities: national (direct access); regional (direct access); and international. See the individual case study sections below for examples of what this can look like in practice.

The 'executing entity' is one step further downstream, and can refer to one or more entities on the ground that actually undertake the project. An accredited entity can perform both roles; for instance, this would be the case if the UN Food and Agriculture Organization (FAO) received funds from the GCF to finance a project also undertaken in the main by FAO staff using in-house capacities.

The executing entity is frequently a national ministry or department therein. Put simply, finance flows from the fund, to the implementing entity, to the executing entity. Depending on the kind of project, funding might then pass directly to beneficiaries (in the case, for example, of a project dedicated to giving smallholders access to credit) or be used to undertake projects. Examples of this are provided in the various case studies below.

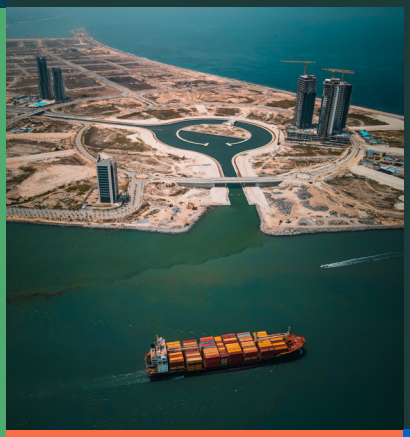
The attempt to mainstream direct access has had its own challenges (World Bank, 2019), and it remains the case that projects brought about through international entities vastly outnumber projects brought to fruition by national entities. For example, in the GCF, 76% of projects are still implemented by international entities.[18] This is also considered in the case studies below.

18 Source: GCF Portfolio Dashboard; https://www.greenclimate.fund/projects/dashboard

Case studies

04 Chile

Countries geographically remote from their main markets



05 Nigeria

Oil-producing (or with oil reserves, still in the ground) developing countries

06 Belize

Small Island Developing States (SIDS)

07 Vietnam

Coal-dependent, with high renewable potential

04
Chile

Geographically remote from main market

Financing needs and barriers

Chile is poised to be a first-mover in the global transition to zero or near-zero shipping fuels.

The country has some of the highest potential in the world for hydrogen production powered by solar and hydro, and is aiming for 25GW of hydrolysis capacity by 2030 and to supply 15% of global demand in 2050.

However, the investment needs are huge: Chile will require eight times its current solar and wind generation to power green hydrogen to meet the needs of announced projects.

There is a need for external financing to bring ZNZ fuel infrastructure online: domestic finance is insufficient, and the private sector too risk-averse at present. Furthermore, relying solely on de-risking for the private sector could create a debt trap.

The measures put forward at MEPC83 are unlikely to drive sufficient investments in ZNZs alone, financing will still be required.

The case for receiving revenues

A predictable, steady, and well-resourced IMO revenue stream could provide financing for the green transition on terms that do not increase public debt, with a higher tolerance for risk than the private sector, and on highly concessional terms.

Impacts on GDP and transport costs in Chile are low: as transport costs are only one small component in the overall cost of goods to consumers, prices may only rise by 1%.

Chile's main import is oil, making up around 20% of the total. Chile plans to end its imports of foreign fossil fuels entirely, and as such the impacts of the mid-term measures on the price of imported fuel will be temporary.

Unlike many other multilateral actors, climate funds can provide concessional finance to MICs. However if LDCs and SIDS get priority in revenue allocation, a well-resourced fund would be needed to cover higher income countries such as Chile.

Key revenue allocation areas

- Financing to de-risk investments in ZNZ fuel bunkering infrastructure.
- Broad-spectrum green hydrogen development programs, in alignment with the established priorities and methods of Chile's Green Hydrogen Facility, potentially overseen by the Production Development Corporation of Chile (CORFO). It is crucial that the 'energy system of shipping' includes renewable feedstocks.
- Port efficiency upgrades to offset increased transport costs and reduce disproportionately negative impacts.
- Adaptation programmes, which are currently underfinanced in Chile, in particular those targeting water stress, which may be exacerbated by heavy renewable development.
- Education and training programs to ensure a just and equitable transition for seafarers, and increase green jobs in the ZNZ fuel sector.

Image: Iquique, Tarapaca Region, Chile.
Credit: tifonimages (iStock Photos). Also featured on p. 20

4.1
Country profile

Chile is highly remote and distant from its main markets in the United States, Japan, and China; it is also highly dependent on international maritime trade. The majority of its external trade (95%) is handled through ports, and 38% of its GDP accounted for by exports (OECD, 2016). As such, it is particularly sensitive to fluctuations in global shipping and trade policies (OECD, 2016).

On the other hand, the basket of measures is likely to create a strong demand for the country's emerging green hydrogen sector (Baresic et al, 2022) and provide it with the opportunity to increase energy exports, while also providing a potential case for receiving funding on the basis of mitigating DNI.

Chile's own existing sustainable development goals, in particular its ambitions to become a regional leader in ZNZ fuel production and export, specifically green hydrogen, are closely aligned with IMO revenue disbursement priorities. The country's nascent but ambitious domestic hydrogen sector needs both a rapid market shift to ZNZ fuels and significant capital investment on patient and debt-conscious terms. The measures put forward at MEPC83 will not exclude biofuels from categorisation as a ZNZ, and do not provide the amount of market certainty for ZNZs as some parties had hoped. The business case for investments in green hydrogen is therefore likely to remain subject to some uncertainty, and continue to require de-risking interventions (Smith et al., 2025).

Deliberations at the IMO suggest that a wide range of countries will be eligible for financing, but that SIDS and LDCs will be the priority. Chile is not among these, and as such would benefit from a revenue stream deep enough to go above and beyond these prioritised countries.

Climate policy in Chile has recently undergone a pivotal shift, reflecting increased ambitions and a recognition of the need for action to be coordinated at the national level. The existing policy landscape and administrative capacity is already in place to take advantage of a revenue-disbursement scenario. For example:

- In 2022, the Framework Law on Climate Change set a binding national target of reaching net zero by 2050.
- The global green transition is expected to increase demand for Chile's main exports, in particular lithium and copper, making the uptake of renewable energy in the mining sector a crucial pillar of its overall strategy, outlined in the 2050 Mining Plan.
- A green taxonomy based on that of the European Union (EU) is under development, which will help direct investments to national priority areas and increase investor confidence.
- The National Hydrogen Strategy sets a goal of reaching 25GW of electrolysis capacity by 2030, and lays out comprehensive regional strategies for developing a hydrogen-ready workforce.
- The country's vast capacity for renewables underpins a goal to become at least the third largest global exporter of green hydrogen by 2040, and to make that fuel available at the cheapest rates globally (CORFO, 2024).

- The CORFO has experience channelling finance from international partners to domestic green hydrogen programmes, and the recently established Agency for Financing and Investment for Development (AFIDE) will be well-positioned to do the same once it has been operationalised.

- The country plans to end all imports of foreign fossil fuels entirely (Ministry of Finance, 2023). Oil makes up around 20% of Chile's total imports (UNCTADa) and as such the impacts of the mid-term measures on the price of imported fuel will be temporary.

The country faces a general shortfall in financing for its climate goals, and anticipates that responding to increased climate shocks will strain public finances in the coming decades. Implementing the Long Term Climate Strategy, for example, is anticipated to cost 18.6% of GDP through 2050 (Ministry of Finance, 2024).

Financing for adaptation projects has proven particularly difficult to mobilise, with international public finance highly concentrated on green infrastructure (OECD, 2025). Domestic fiscal space is limited and external financing has been required, and will continue to be required to finance first-movers in the ZNZ fuel sector (Scholvin, Black & Robbins, 2025).

4.2
Application of revenues in Chile

As discussed, Chile will experience its share of negative impacts from the basket of measures, but at the same time is well-positioned to receive revenues raised, due to a well-developed climate policy portfolio which is well aligned with the latest text governing disbursement.

The ambitions are high; including a goal to reach 80% of electricity from renewables in 2030, phase out coal entirely by 2040 (2050 Energy Policy), and reduce direct emissions from the transport sector by 2050 (Long Term Climate Strategy). But implementation will be costly. This means Chile could benefit significantly from revenues allocated from the IMO Net-Zero Fund, if it is well-capitalised enough to provide them.

4.2.1 Hydrogen

Perhaps the most relevant policy objective in the context of IMO deliberations is Chile's ambitious plan to develop the hydrogen sector. As of December 2023, 72 hydrogen-sector projects were in the planning phase. Estimates of the actual installed capacity in 2030 vary widely (CORFO, 2024).

With plans for the sector well underway and interest from international financial institutions (IFIs) growing rapidly, at first glance it may appear that the sector's financing needs are well in hand. But despite a massive growth in committed finance in the last five years, the industry remains nascent, given the national ambitions for its eventual scale.

The International Energy Agency (IEA) estimates that Chile will require eight times its current solar and wind generation to power green hydrogen to meet the needs of announced projects (IEA, 2024a). Chile is estimated to have the capacity for 70 times its current installed renewable energy capacity (Ministry of Energy, 2021). Furthermore, existing projects remain focussed on land-based applications, so there is still a large space for maritime fuels supply investments.

Investments in vessels that run on alternative fuels remain hampered by significant uncertainty over the precise fuel mix of the coming transition – as fuel suppliers wait for ZNZ-capable vessels to be built and shipbuilders wait for ZNZ supply to become available (Dominioni & Englert, 2022). The measures put forward at MEPC83 do not appear to negate this uncertainty entirely, and will leave the industry requiring further sources of financing (Smith et al., 2025).

The disbursement of revenues to compliant vessels could help close the price gap between ZNZ and fossil fuels, creating a strong market incentive for the rapid uptake of ZNZs that will create demand for green hydrogen, while on the supply side providing risk-tolerant capital to get the industry moving.

The measures may help drive demand but will not fully offset the presence of complex nonlinear dynamics inherent to energy markets. Key to initiating and accelerating the shift will be first-movers with a strong risk appetite, who can provide "patient capital" (Kedward, Gabor, Ryan-Collins, 2022) to a greater degree than the private sector.

The IMO Net-Zero Fund could act as this first-mover in a market that will still be subject to considerable uncertainty and competition from other, more well-established fuels. Despite a significant increase in ambition in Chile, the sector has so far struggled to find private investors with the risk appetite required (Scholvin & Kalvelage, 2025).

Fiscal space is constrained, and the state is unlikely to provide the financing required to fully realise Chile's potential in the hydrogen sector alone. Carbon revenues offer a path to doing so without taking on risks of debt stress. CORFO and AFIDE are well positioned to channel these funds, and the former brings experience of both interfacing with multilateral finance mechanisms and implementing projects.

Countries have taken various approaches to stimulate the hydrogen market and mitigate risk, such as tax incentives and contracts-for-difference. In Chile, the preference for using concessional instruments and Development Finance Institution (DFI) partnerships to de-risk the market is well-established.

A recently established $1bn Green Hydrogen Facility (Fondo para el Desarrollo del Hidrógeno Verde) was set up using funds provided by CORFO, the World Bank, the Inter-American Development Bank (IADB), Kreditanstalt für Wiederaufbau (KfW), and the European Investment Bank (EIB). It operates under the auspices of CORFO, and offers concessional loans, partial credit guarantees, and credit lines (Ministerio de Energia, 2024). Notably, CORFO would not have been able to offer financing at the level of concessionality needed without that external funding (Scholvin et al, 2025).

As referenced above, climate funds are debt-conscious in their lending strategy. De-risking has the potential to create a debt trap if the risk is borne entirely by the state in service of creating attractive conditions for private sector investments (Gabor & Sylla, 2023), which may be exacerbated by the sheer scale of the transformation planned by Chile. However, these credit schemes can entail substantial risk to state finances. (Scholvin, Black, and Robbins, 2025).

This risk may be offset by retaining the assistance of a climate fund. The GCF and FRLD have had a debt-conscious approach baked into their governing frameworks, which could be considered in the design of a shipping fund, given its just and equitable mandate.

A climate fund also offers a country-led approach to climate financing. So far, small- and medium-sized local firms have been hesitant to get in on the hydrogen industry, with the landscape dominated by large mining firms, something which threatens to create an extractive, non-inclusive and ultimately inequitable scenario (Scholvin & Kalvelage, 2025).

AFIDE, in particular, is a promising destination for projects of this nature, with a stated focus on small firms. The GCF's approach to creating an 'enabling environment' in order to facilitate the long-term viability of an intervention represents a strong alignment with the need to create an 'ecosystem' to deliver on Chile's renewable capacity (CORFO, 2024) and will be dependent on interpreting the text of the measures such that the renewable feedstocks for ZNZs and other enabling conditions for their development and uptake are eligible for revenue allocation.

4.2.2 Ports and seafarers

The Chilean-flagged international fleet is relatively small, but there is a large cabotage fleet of 26,000 vessels, mostly too small to be captured under IMO regulations but nonetheless important to decarbonise as part of the nation's own net-zero goals (Perez-Osses & Reusser, 2024). Nevertheless given the size of the fleet, the opportunities to decarbonise and to make use of carbon revenues are not concentrated on-board, but further along the supply chain.

One such area with a strong case for receiving carbon revenues is port development. With a port system characterised by a large number of medium sized ports spread over a vast area (OECD, 2016), investments in port decarbonisation including ZNZ fuelling facilities will not be able to take advantage of economies of scale.

This is likely to be the most capital-intensive element of the shipping transition (Carlo et al, 2020). As indicated above, the use of revenues for this purpose is uncontroversial and is subject to broad convergence among parties at the IMO.

Many of these are private ports, and evidence from the operation of the GCF would suggest that these are less likely recipients of grant-based finance (Amighini, 2022). However, the recent upgrade of a public port in Nauru, the only comparable GCF project, is entirely grant-financed. A CIF program to finance a green port in Brazil and surrounding infrastructure is being executed through a loan. Due to Chile's middle-income status, the latter is arguably a more likely outcome for such projects.

Port inefficiency can also have an impact on the final cost of goods (Rojon *et al.*, 2021) and interventions here may be a good candidate for the use of carbon revenues as a means of offsetting DNI.

Education and training for seafarers and those working in alternative fuels will also be essential in delivering a just and equitable transition for the maritime sector. As the national seafaring workforce numbers just over 7,000 (UNCTADa), much larger opportunities for job creation lie in the energy/ZNZ fuels sector (Osorio-Aravena et al, 2025).

4.2.3 Adaptation, water and training

Adaptation projects in the country are currently underfinanced (OECD, 2025). As these are rarely profitable, private sector interest is limited, and the state has struggled to finance them itself (OECD, 2024). This shortfall has also been seen in the country's applications for public international climate finance. No GCF projects in Chile target adaptation, and the AF has funded just three programmes.[19] This shortfall is out of step with the climate risk faced by Chile, and would benefit from enlarged sources of concessional or grant-based financing.

Meanwhile, green hydrogen production is expected to increase in the most water-stressed areas and, as such, water management will require special attention (IEA, 2024a) to minimise the cost to communities and ecosystems. The mining of lithium and copper is also anticipated to increase in green transition scenarios and has already caused conflict over water (IEA, 2024b).

Ensuring a policy/regulatory environment that takes account of hydrogen as a priority across different policy areas – e.g. energy, land use, security, and trade – will be necessary, in particular in light of Chile's desire to align its outputs with EU regulations for hydrogen derivatives (IEA, 2024a). Given that such projects have a role in mitigating negative social and environmental impacts resulting from the development of ZNZ fuels for shipping, they will have a strong case for requesting revenues.

4.3
Multilateral finance distribution in Chile

Climate governance in Chile is decentralised by design. As part of the National Framework Law on Climate Change, what was once the sole responsibility of the Ministry of the Environment was spread across 17 different ministries, with the goal of embedded climate considerations across sectors and strategies (Ministry of the Environment, 2022).

It is therefore beyond the remit of this paper to assess every possible accredited entity and revenue stream in the country. Some examples of implementing/accredited entities that have partnered with GCF are given below:

- National (Direct Access): Finanzas Y Negocios Servicios Financieros Limitada (FYNSA)

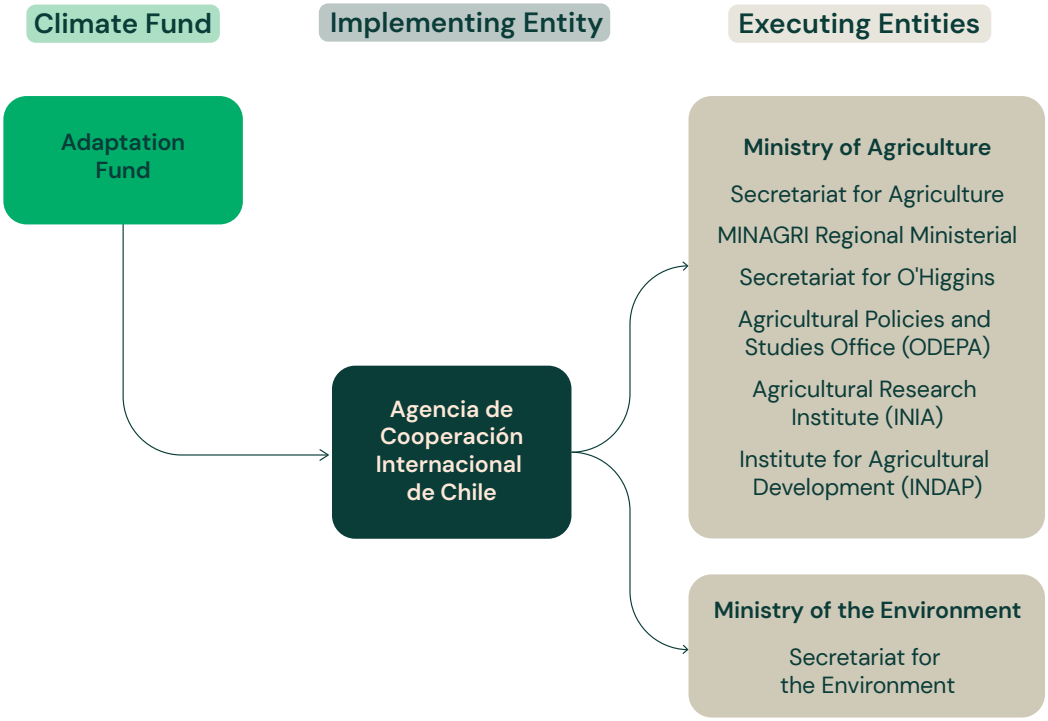
19 (as of February 2025, according to GCF project database)

- Regional (Direct Access): Banco de Desarrollo de América Latina y El Caribe (CAF)
- International: International Fund for Agricultural Development (IFAD)

The figure below illustrates a possible project structure:

Given its high levels of administrative capacity and strong governance frameworks, which will be the case in other MICs, the problems encountered by attempts to mainstream direct access referenced in section 3.4.3 are less relevant for Chile.

Figure: Enhancing resilience to climate change of the small agriculture in the Chilean region of O'Higgins (Adaptation Fund)



05 Nigeria

Oil-producing developing country

Financing needs and barriers

Readiness to undertake the transition to ZNZ fuels is relatively low in Nigeria. Other factors also hamper the development of a ZNZ fuel ecosystem, and may need to be addressed in order to ensure a just and equitable transition.

Climate impacts are already extremely severe, with floods and desertification causing widespread displacement and food stress, while fuelling conflict.

Little-to-no adaptation finance is channelled to Nigeria, but without efforts to stabilise areas affected by climate impacts, widespread development of renewables and other mitigation efforts will be difficult.

Although mitigation finance is concentrated in solar energy development, the funding available has so far been insufficient to stimulate a large-scale transition: renewables make up a tiny percentage of the energy mix, with gas accounting for 72% of the total.

The case for receiving revenues

A predictable, steady, and well-resourced IMO revenue stream could provide financing for the green transition on terms that do not increase public debt, with a higher tolerance for risk than the private sector, and on highly concessional terms.

Past climate funds have focussed on developing an 'enabling environment,' identifying and creating the conditions necessary for GHG emissions to be reduced in future.

Such an approach may be beneficial in Nigeria, depending on a broad interpretation of the text of the proposed amendments to MARPOL Annex VI, in particular the definition of the "boundaries of the energy transition in shipping" and "supporting the energy transition of shipping."

Unlike many other multilateral actors, climate funds can provide concessional finance to MICs. However, if LDCs and SIDS get priority in revenue distribution, a well-resourced fund will be needed to cover MICs such as Nigeria.

Key revenue allocation areas

- Conflict-sensitive adaptation finance – augmenting existing funding streams that ensure stability and create an enabling environment for the deployment of renewables, in particular solar Photo Voltaics (PV), which has enormous untapped potential in the country.
- Port efficiency and resilience investment, both to offset the increased costs of transport, and potential impacts on food prices.
- It may be difficult to offset DNI solely through investment in the maritime sector. Taking into account the existing pressure on food supply and affordability in the country, investments into food security elsewhere along the supply chain may be more appropriate and effective, and may be possible within the text of the proposed amendments to MARPOL Annex VI

Image: A container ship,Lagos Nigeria.
Credit: Kehinde Temitope Odutayo (iStock Photos). Also featured on p. 20

5.1
Country Profile

Nigeria's needs for external financing are evident, and well-established in national policy frameworks. The country is highly dependent on fossil fuels for both export revenue and domestic fuel supply, but seeks opportunities for diversification. Despite being a major regional economic power, it is highly vulnerable to the effects of climate change, and as of 2025 it is in a poor fiscal position to address this

External sources of financing *must* be mobilised in order for it to be able to take part in a just and equitable transition, as laid out in the 2023 IMO GHG Strategy. Recent progress has been made in developing policy at the national level to guide this, but much capacity-building assistance will be needed to operationalise.

- The 2021-2025 Medium Term Development Plan highlights the need for economic diversification. Nigeria's economy is tightly linked to the performance of its oil exports, making it highly vulnerable to external shocks. This dependence is illustrated by the recession of 2016, which was caused by falling oil prices, only to be solved in part by higher prices not one year later (Federal Ministry of Finance, Budget and National Planning, 2021).

- The Energy Transition Plan sets out a roadmap for reaching carbon-neutrality by 2050 - however, it also makes the case for using Nigeria's extensive natural gas reserves as a 'transition fuel.' Nigeria aims to reach 30% of its on-grid energy production from renewables by 2030 but emissions are set to continue to increase (UNFCCC, 2024). Gas flaring remains common (UNFCCC, 2024). The country has immense potential to produce solar energy, and a strong potential to become a ZNZ fuel producing country, but to date these industries remain nascent (GIZ, 2023).

- The National Adaptation Strategy and Plan of Action on Climate Change for Nigeria (NASPA-CCN) outlines sectoral needs and strategies, but is somewhat dated. A new roadmap outlining the country's needs and how they converge with the goals of the IMO shipping fund, will be a vital step in creating a pipeline of feasible projects.

Nigeria suffers from a particularly stark financing gap. Merely servicing and settling the national debt accounts for 80% of government spending in Nigeria (CPI, 2024). Despite this, climate finance comes to the country mostly in the form of concessional (54%) and non-concessional debt (35%), underlining the need for a debt conscious actor going forward.

The cost of funding national mitigation goals is around $177bn (ECOWAS, 2022). Mitigation funding has made up the bulk of Nigeria's climate finance so far, overwhelmingly concentrated in solar PV investment (CPI, 2024). Despite this, it still makes up a trivial percentage of total use: gas makes up over 70% of energy use in the country (CPI, 2024).

Minimal finance has been made available for climate-resilient infrastructure for energy systems, buildings, transport, and industry. Adaptation finance received so far makes up only 6% of projected needs. In fiscal terms, riverine flooding was by far the biggest cause of economic damages (UNFCCC, 2024), but received almost no tracked finance (CPI, 2024).

The UNFCCC climate funds have so far had limited involvement in the country; Nigeria is mostly involved in regional GCF programmes targeting mitigation, and only one AF project, also regional. Domestic fiscal space is limited, not least by a very high level of national debt. Servicing this debt absorbs around 80% of federal government revenue. Despite this, climate finance received to date has been almost entirely debt-based.

Over 95% of Nigeria's international trade is conducted through shipping. With little immediate readiness to convert to ZNZ fuel supply, the country will pay its share of the costs of the mid-term measures.

5.2
Application of revenues in Nigeria

Nigeria has a strong case for receiving revenues generated under the mid-term measures. Although it stands to benefit from so-called 'in-sector revenues' i.e. those that focus on decarbonised vessels and ports, its ability to undergo a just and equitable transition also depends on the availability of a large amount of revenues that are not strictly conditioned for maritime purposes. Nigeria also needs an 'enabling environment' for decarbonisation.

The existing climate funds are debt-conscious in their lending strategy, and an IMO fund based on similar principles could be an ideal candidate to support certain elements of Nigeria's transition. Achieving a just and equitable energy transition in Nigeria will be a vast infrastructural undertaking that crosses sectoral lines. Thus, a more literal 'de-risking' approach is required here than in many other countries, whereby the *groundwork* for the transition is laid by increasing resilience and promoting stability in ways that may not *prima facie* appear related to the decarbonisation of shipping.

5.2.1 Conflict, climate resilience, and the green transition

In Nigeria climate change, food security, and conflict are deeply intertwined issues. At the same time, climate financing sources have in the main avoided conflict areas, impairing the mobilisation of funding in these places (Scartozzi, 2021).

Infrastructure investments entail high up-front costs and a long wait for returns, and as such require a high level of confidence on the part of investors; guaranteeing a sufficiently acceptable risk profile for large-scale private investments in clean energy has proven difficult across the globe, regardless of local political conditions. Market uncertainty alone has been sufficient to deter investment, and has led to the need for risk-tolerant investors such as the GCF.

Instability and conflict intensify this dynamic and may preclude even the initiation of an energy transition. Nigeria's solar energy potential is concentrated in the North of the country. This part of the country, however, is also the flashpoint of armed conflict and destabilisation (Wang, Gao & Liu, 2024), in no small part due to desertification, which places stress on agricultural livelihoods and intensifies conflict over water and pastures (Efobi, Adejubo & Kim, 2025).

This creates a 'toxic feedback loop,' whereby climate impacts deter climate finance from reaching areas in greatest need (IRC, 2024). Climate resilience projects that ease the root causes of conflict and increase regional stability could have strong downstream effects on economic development and act as the base required for large-scale clean energy development, itself a base condition for the production of ZNZ shipping fuels.

Indeed, such projects may be required to establish the necessary conditions for a renewable infrastructure programme to commence. Thus, such financing aligns with the goals of a just and equitable transition as established in the 2023 IMO GHG Strategy. Any new IMO Net-Zero Fund would not have to solve this problem itself: awareness of this issue has increased in the climate finance world of late, and much can be learned from existing research, analysis and expertise gained in recent years among other UN actors (see Goering, 2024 & SPARC, 2021).

The impacts of the mid-term measures on food security are dwarfed by the impacts of climate change and conflict. However, there is an argument to be made that any *further* disruption from the mid-term measures merits offsetting through revenues under the heading of DNI/just and equitable transition.

There has been some uncertainty to date in IMO deliberations over how exactly revenues could feasibly be deployed to offset the impact on food security from increased transport prices. However, in Nigeria's case, programmes that address other root causes of food price inflation could be used to offset the inflation driven by increased transport costs. As noted elsewhere in Section 3.2.3, the language of the proposed amendment to MARPOL Annex VI contains some ambiguity in this regard. As conflict, desertification, and climate shocks drive inflation in food prices, and there is strong existing experience among implementing partners in internationally-funded food security programmes in the country, similar programmes could be undertaken using revenue from the IMO Net-Zero Fund under the banner of offsetting DNI and ensuring a just and equitable transition. Without the potential for this allocation, there may exist a need for a 'lucky coincidence' to occur, whereby DNI on states can be offset by an equivalent opportunity that is itself situated solely within the shipping industry.

5.2.2 Hydrogen and ZNZ fuels

There is strong potential for green ammonia and hydrogen production in Nigeria, due to favourable climatic conditions as well as the presence of a significant amount of relevant infrastructure and expertise due to the large oil industry. However, concrete actions to take advantage of this have so far been lacking, and to date little action has been taken to develop the green hydrogen sector (GIZ, 2023).

This does not necessarily preclude Nigeria benefitting from revenue disbursement in this sector: on the contrary, the extremely nascent state of the industry suggests that projects will be quite far from market readiness for some time, rendering them well-positioned to receive concessional/grant-based finance on the basis of additionality.

In particular, exploratory work, capacity building and training efforts, as well as pilot programmes, are good candidates for external financing. As noted, this early-stage work, itself required to create private-sector interest, aligns with the renewable energy strategy of the GCF and may likewise be reflected in the governing priorities of an IMO Fund.

Despite the concentration of climate finance in solar energy, there is still a massive unmet need for financing – much of which must be raised externally. With 40% of the Nigerian population still lacking access to any electricity, there is some way to go to create an environment in which sufficient renewable energy is available to meet the country's own goals as well as power a ZNZ fuel production industry. The gap between the availability of renewable energy and its use is striking. The annual solar energy capacity of Nigeria alone may be 27 times larger than its fossil fuel capacity, and 115,000 times the electrical power it currently generates (CPI, 2024).

A situation where revenue investment in fuels is limited to the point of production has the potential to be highly exclusive, limiting the revenue for use. The shortcomings of a recent programme financed by the United States Agency for International Development (USAID) in Nigeria highlight this issue. The programme de-risked investment in natural gas production by means of USAID funding and a take-or-pay agreement; that is, a private company built a production facility on the grounds that the state would pay for electricity generated but not used by customers. Following its completion, it became clear that the poor condition of the grid precluded the transmission of the plant's full output, and a Nigerian state-owned energy utility has been left paying for energy that cannot be delivered to customers (Gabor, 2025).

There are several issues with this agreement which are beyond the remit of this paper to discuss, but this example highlights how infrastructure up and downstream of energy projects can be crucial in determining the success of their outcomes. In order for the effectiveness of projects to be assessed comprehensively, the "boundaries of the energy transition of shipping" may need to be interpreted to include the entire value chain of the energy and fuel supply.

5.2.3 Flooding and infrastructure

As noted, adaptation and resilience funding are low compared to the country's needs. However, a closer look at the sectoral breakdown of this funding reveals an even starker gap: despite flooding being the cause of most of Nigeria's costs from climate impacts, programmes addressing flood resilience receive almost no financing, domestic or external (CPI, 2024). Interventions in this area would therefore be justified by a high degree of additionality.

Increasing the resilience of infrastructure will also be vital for Nigeria in coming years. A lack of blended finance or domestic de-risking measures discourages private sector uptake of climate projects. A high cost of capital is credited with discouraging private investors from long-term and large-scale projects in the country. A GCF project, the Infrastructure Climate Resilient Fund (FP205), is designed to offer first-loss concessional equity to precisely these programmes.

A huge proportion – 95% – of Nigeria's international trade is maritime. However, its ports operate inefficiently, and infrastructure upgrades are required (UNFCCC, 2024). As port efficiency plays a major role in determining the cost of transport and thereby the price of consumer goods, there is a strong justification for the use of revenues for this purpose; reducing any disproportionately negative impacts on the population from increased consumer prices, and contributing to Nigeria's technical readiness to decarbonise its maritime sector.

5.3
Multilateral finance distribution in Nigeria

The National Council on Climate Change (NCCC) is responsible for coordinating intra-governmental cooperation on climate policy in Nigeria, and has been tasked with operationalising a National Climate Change Fund. It also currently serves as the NDA, or primary contact, for the GCF.

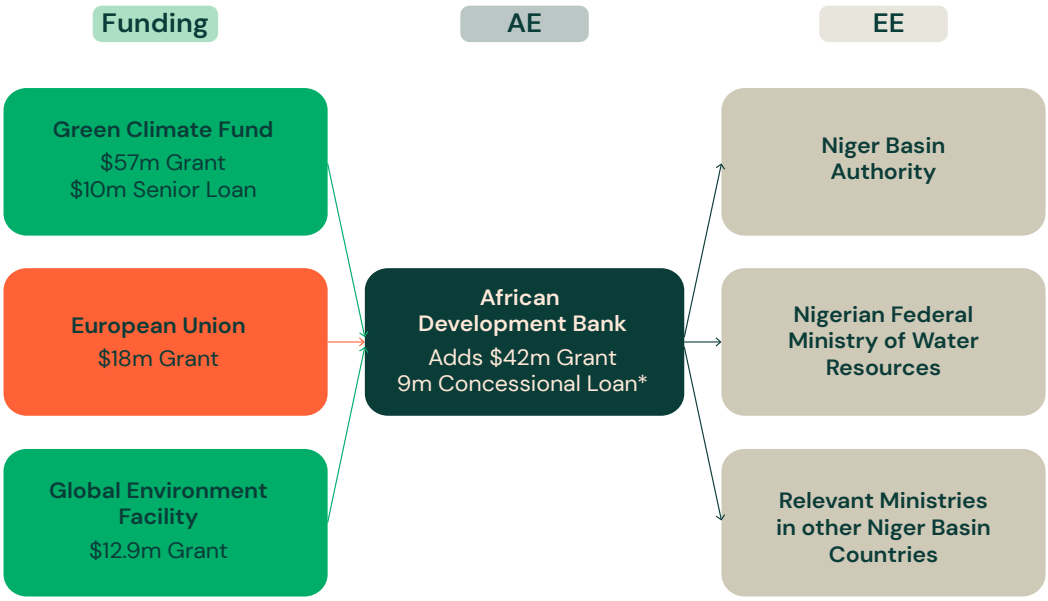
However, GCF reports that the capacity of this organisation remains weak in comparison to this considerable remit, a fact widely acknowledged by stakeholders in-country (GCF, 2024). The institutional politics of the NCCC also remain contested and unclear (CPI, 2024).

The Development Bank of Nigeria is the only entity of the country to have received accreditation from the GCF to date, and may play a prominent role in projects from any future fund. A Maritime Development Bank is currently in development, and should be positioned in advance to interact with any future IMO revenue streams.

Examples of potential accredited entities for IMO levy revenues in Nigeria are as follows:

- National (Direct Access): Nigerian Development Bank
- Regional (Direct Access): Africa Finance Corporation
- International: African Development Bank
- An executing entity could be, for example, the Nigerian Federal Ministry of Water Resources (FP092) or the Department of Forestry under the Federal Ministry of Environment (GEF project 10809).

Figure: Example project structure for multilateral finance under a Nigerian Ministry



With regards to direct access, Nigeria and other LDCs might encounter difficulties undertaking certain programmes due to administrative constraints. In this case, they may find applications more likely to succeed if partnered with an international entity.

Indeed, one of the primary barriers to receiving revenues under any scenario is a lack of administrative capacity to both deal with climate funds and undertake projects in line with their strict fiduciary standards. A number of steps to address this are suggested below:

- **Advance accreditation process with current climate funds**. Any work done now to develop accreditation applications with existing climate funds is likely to be beneficial in interacting with any future IMO fund, as existing accreditation with one climate fund can expedite applications to another. In particular, this should be factored into consideration in the development of the Maritime Development Bank. Experience of working with the GCF indicates that this task requires significant buy-in from the organisation involved, and multiple dedicated staff (Commonwealth Secretariat, 2022).

- **Clarify the role and strengthen the capacities of the NCCC.** There is a significant lack of certainty over the role and political ownership of the NCCC, the focal point for multilateral climate finance and the entity tasked with the role of coordinating intra-governmental cooperation (CPI, 2024). GCF reports furthermore indicate that this organisation lacks the administrative capacity to carry out its duties effectively (GCF, 2024). As the NCCC has such a central role in climate finance in Nigeria, any shortfalls have a major impact on the overall readiness to receive climate finance.

- **Identify a work programme** that considers the upstream links required to make a maritime just and equitable transition feasible in Nigeria, to expedite future applications for revenue disbursement. In particular, this includes seeking projects that are nearly-bankable but require a smaller de-risking investment from a climate fund (due to the limited scope of likely revenues compared to the cost of the transition). Domestic climate budget tagging is not yet common practice in Nigeria, and would create more certainty around unmet financing needs (CPI, 2024). It is also important to note that Nigeria has extremely high financing needs but is not among the SIDS or LDCs, and therefore will benefit from a well-resourced fund with the liquidity to assist a wider range of countries than just those in the priority categories.

06
Belize

Small Island Developing State

Financing needs and barriers

The economy of Belize is heavily reliant on agriculture and tourism, which are threatened by changing precipitation patterns, intensifying storms, sea-level rises, and degradation of the marine environment.

Key transport infrastructure and population centres are concentrated on the coast, which is highly vulnerable to storm surges, and is protected by threatened mangroves and coral reefs.

Belize has a limited budget, and limited ability to borrow on regular terms, due in part to high levels of public debt. The economic situation in the country has also discouraged private sector interest in climate investments to date. As such, other external sources of finance are needed to address urgent climate vulnerabilities.

The case for receiving revenues

A predictable, steady, and well-resourced IMO revenue stream could provide financing for the green transition on terms that do not increase public debt, with a higher tolerance for risk than the private sector, and on highly concessional terms, or entirely in grant form.

Belize's climate finance needs are extremely small in comparison to the predicted revenues; the country needs just over $1.6bn total to meet all of its climate targets for the next 25 years, or 16% of revenue the IMO Net-Zero Fund is likely to take every year.

Belize has a low readiness to undertake ZNZ fuelling and shipbuilding activities, and requires a wide interpretation of the wording of the proposed amendments to MARPOL Annex VI in order to guarantee a just and equitable transition, as laid out in the 2023 IMO GHG Strategy.

Key revenue allocation areas

- Food security and climate-resilient agriculture: climate change poses a significant threat to the viability of agriculture in Belize, which provides much of the domestic food supply and about 11% of total employment in the country. As the IMO decarbonisation measures may slightly increase the cost of imported food and introduce a secondary threat to food security, there is a strong case for revenue disbursement aimed at offsetting this. Overall, Belize's adaptation needs (for all sectors) have been estimated at $158.8m – small compared to the potential scale of the revenues.
- Infrastructural resilience: Belize's ports are concentrated in population centres, meaning that wider benefits can be provided by making the connection between shipping infrastructure and the resilience of coastal communities at large. Inland transport infrastructure is also concentrated along the low-lying coast, and is highly vulnerable to climate shocks. The language of the proposed amendments to MARPOL Annex VI has the potential to support this. Improvements to port efficiency may also help offset the slightly increased costs of imports due to the mid-term measures.

Image: Belize City, Belize.
Credit: Dave Primov (iStock Photos). Also featured on p. 20

6.1
Country profile

Climate change poses a high risk to Belize. The country is vulnerable to hurricanes and storms, and its low-lying profile makes pluvial and coastal flooding particularly hazardous (World Bank, n.d.).

The economy of Belize is heavily dependent on agriculture and tourism, which employ around 11.3% and 12.1% of the workforce respectively, and contribute 10% and 21% of GDP (National Task Force, 2023). Agricultural products make up around 70% of total exports (UNCTADc, n.d.). Both of these sectors are highly vulnerable to climate change – tourism due to damage to Belize's environment, including the loss of beaches and bleaching of coral reefs, and agriculture due to many factors, including dramatic changes to the seasonal distribution of rainfall, which are already occurring (Government of Belize, 2021). The country faces a stark economic impact from climate change; the most recent Climate Risk Index ranks Belize as the country second-worst economically affected by climate change globally in 2022 (Germanwatch, 2025).

These needs have so far gone unmet by climate finance streams with the total cost of implementing the plans outlined in Belize's Nationally Determined Contribution (NDC) estimated to be $1.9bn in 2020, of which only $261m had been mobilised (Commonwealth Secretariat, 2021a).[20]

At the same time, Belize faces a series of barriers to mobilising the extensive finance needed, making this a particularly 'wicked problem.' Limited finances constrain the public sector's ability to finance mitigation and adaptation activities and the cost of borrowing remains high. Extremely high public sector debt, regularly around 100% of GDP, constrain the government's ability to borrow and impose high debt-servicing costs on the public purse, as well as discouraging it from seeking climate finance in the form of debt (Commonwealth Secretariat, 2021b).

Multilateral sources of financing will therefore continue to play a large role in Belize's efforts to secure itself against mounting climate risks and meet its NDC commitments. Belize is fully dependent on external support to meet its mitigation targets (Mohan, 2023). At the same time, there is little motivation in-country to access funding that comes with co-financing conditions that would require it to take on further debt (Commonwealth Secretariat, 2021b). Thus, Belize demonstrates a particular need for debt-conscious financing.

The majority of climate finance in Belize comes from MDBs, and mostly in the form of concessional loans (Commonwealth Secretariat, 2021a).[21] The vast majority of the financing received from bilateral partners has been in the form of grants, although this makes up relatively small $36m between 2010-2018. Financing for mitigation vastly outstrips that which has been mobilised for adaptation. Domestic government finance has been so far concentrated in adaptation activities (Commonwealth Secretariat, 2021a).

20 To 2020

21 A 'concessional' loan is generally one that is offered on terms more favourable to the debtor than can be expected from a standard commercial lender. This can be below-market interest rates, more favourable grace and maturity periods, or anything else that reduces the burden of the debt.

On a positive note, the country has a well-developed policy framework related to climate change, and a demonstrated capacity to propose and implement climate resilience projects with both international and domestic/regional partners. Its overall institutional capacity to interact with and apply to climate funds has been expanded rapidly in recent years. (Commonwealth Secretariat, 2021a). Notably, national plans do not yet include a substantial strategy for maritime decarbonisation; a National Maritime Transport Policy is still in development, and will represent a key lever in establishing national goals.

6.2
Application of revenues in Belize

Belize's case for receiving revenues generated by the measures implemented under the 2023 IMO GHG Strategy rests primarily on the nation's vulnerability to climate change, in particular the threat posed to its agriculture and transport infrastructure. Revenues generated by the mid-term measures could help fill Belize's finance gap. Although the situation may appear stark at first glance, Belize is a small country, and the cost of meeting its adaptation and mitigation needs is small in comparison to the scale of the revenues discussed.

Due to its classification as one of the world's SIDS, Belize could be prioritised for any assistance that becomes available as a result of the basket of measures. However, interpreting the text governing revenue in the proposed amendment to MARPOL Annex VI will be pivotal. According to modelling by Fricaudet et al (2024), Belize currently has a very low level of techno-economic readiness for the transition, meaning that it is unlikely to be a 'first-mover' in the technological side of shipping's decarbonisation. There are no shipyards and ZNZ fuel development does not appear among the country's energy transition plans, meaning that revenues targeted at the research, development and deployment of ZNZs are unlikely to find compatible projects in the country in the near-term.

If the IMO outcome is interpreted so that funds are restricted solely for use "within the boundaries of the energy transition of shipping"[22] in the proposed amendments to MARPOL Annex VI, this at first glance seems to limit Belize's potential to receive revenues. However this is potentially offset by i) the requirement that the transition be both just and equitable, and ii) the text allowing revenue allocation towards "developing the necessary maritime, coastal and port-related infrastructure and equipment."

6.2.1 Agriculture

Belize is already experiencing negative climate impacts in the agricultural sector. A high degree of income disparity, and the large dependence on agriculture for both local use and export, make securing domestic food production against climate change a matter of some urgency. The sugarcane industry highlights this stark vulnerability: sugar accounts for 14% of agricultural earnings, 14% of national export revenue, and 15.5% of the population are directly or indirectly reliant on it for their livelihoods.

22 Regulation 41, paragraph 1.2

Under worst-case climate models, this load-bearing industry will be unviable in the country by the 2050s without adaptive intervention. Increased variability of rainfall is already having a severe impact on yields, with a drought in the country in 2019/20 resulting in a 30% reduction that year.[23] Overall, the country anticipates a 10-20% reduction in total agricultural production this century (Government of Belize, 2021). Recent political developments impacting the global aid architecture may also reduce the food security assistance available through the World Food Programme (WFP) and FAO, both of which have recently undertaken projects in the country.

At the same time, the space for domestic fiscal intervention is extremely tight, and the country is forced to borrow at unfavourable rates. A growing emphasis on debt instruments and private sector mobilisation in the climate finance sector give rise to reluctance or indeed inability to participate and in doing so deepen the national debt (Treichel et al, 2024). The high cost of capital and difficult economic situation discourages the private sector (Commonwealth Secretariat, 2021b) and compounds the general difficulty in attracting investment to infrastructural resilience and adaptation activities. Multilateral sources that are debt-conscious in their funding strategy will therefore play a key role in Belize's climate ambitions going forward.

6.2.2 Port infrastructure and coastal protection

The vast majority of maritime trade in Belize passes through the Port of Belize and the port of Big Creek (CME, 2022). The Port of Belize is located within Belize City, essentially co-located with residential and economic areas. The resilience of this piece of maritime infrastructure and of the workforce that staffs it is inseparable from the city at large. As a result, the continued development and resilience of the maritime infrastructure of the country, the supply chains that connect it, and its vulnerable coastal communities are deeply intertwined.

As noted in Document ISWG-GHG 17/2/13 (Fiji et al.), the infrastructure of this port itself is at the end-point of a much larger infrastructural network, and therefore there is a strong argument that its functioning depends on the resilience of that infrastructure.

Key inland transport infrastructure is exposed to hazards, and there is little redundancy in the system - meaning that trade can easily be disrupted by adverse weather. Most agricultural production, as well as a significant proportion of the country's population, is located below the projected high tide level (Government of Belize, 2014). Thus, enhancing coastal resilience beyond port areas would have extensive co-benefits.

Coral reefs and mangroves protect the low-lying coast (Guannel et al, 2016) and as such conservation and infrastructural resilience are likewise inseparable. These are also a key driver of tourism, which is one of the country's key economic sectors and employs around a third of the population. The deterioration of the maritime environment will therefore have a considerable impact on Belize's blue economy, as well as all coastal communities and infrastructure.

23 See GCF project SAP035

Reefs and mangroves extend almost the entirety of the coastline; those areas that tangibly increase the resilience of port and transport infrastructure may have a relatively clear case for revenue use, but much of it does not. Despite this, the impacts of its loss would be vast and far-reaching, and the possibility of their exclusion should be reflected on in considerations around revenue disbursement.

6.2.3 Food security

Food security is another avenue through which Belize may be able to access revenues. Food makes up 70% of all exports (UNCTADc, n.d.) so adapting the agricultural industry to the effects of climate change is vital to the overall functioning of trade in Belize. Food, as a bulk low-value commodity, is likely to be subject to relatively high price increases as a result of the mid-term measures (Rojon et al, 2021).

As it is already under strain due to the effects of climate change, there is a strong case for offsetting any further negative shocks to this sector as a means of guaranteeing food security, and maintaining its competitiveness as a DNI / Just and Equitable Transition revenue stream.

As discussed elsewhere in this briefing, this issue is addressed in the proposed amendments to MARPOL Annex VI, but the mechanism by which this will be operationalised remains to be seen.

Given Belize's difficulties in accessing financing for such projects due to i) high borrowing costs, ii) limited public finances, and iii) high levels of public debt, there is a strong case for these revenues to be disbursed primarily in the form of grants. The recent prioritisation of non-grant financial instruments and 'bankability' among the climate funds has the potential to leave countries with high public debt behind (Treichel et al 2024). Belize and countries in a similar position will only receive proportionate and fair benefits from revenue disbursement if the IMO Net-Zero Fund's governing principles adequately account for their concessionality needs.

6.3
Multilateral finance distribution in Belize

Belize has the advantage of a well-developed administrative framework supporting climate action, and thus relatively strong readiness to receive funding. The Ministry of Economic Development (MED) serves as the NDA to the GCF and AF. The Climate Finance Unit within this ministry is tasked *inter alia* with finding new sources of finance that address the country's climate financing gap and concessionality needs, as well as leading the process of gaining GCF accreditation for the MED.

The National Climate Change Office (BNCCO) led the development of the Climate Finance Strategy 2021-2026 and is tasked with intra-governmental coordination on climate strategy in the country. The Caribbean Community Climate Change Centre (CCCCC), headquartered in Belmopan has acted as implementing entity for a number of projects, along with The Protected Areas Conservation Trust (PACT) which is also accredited with the GCF.

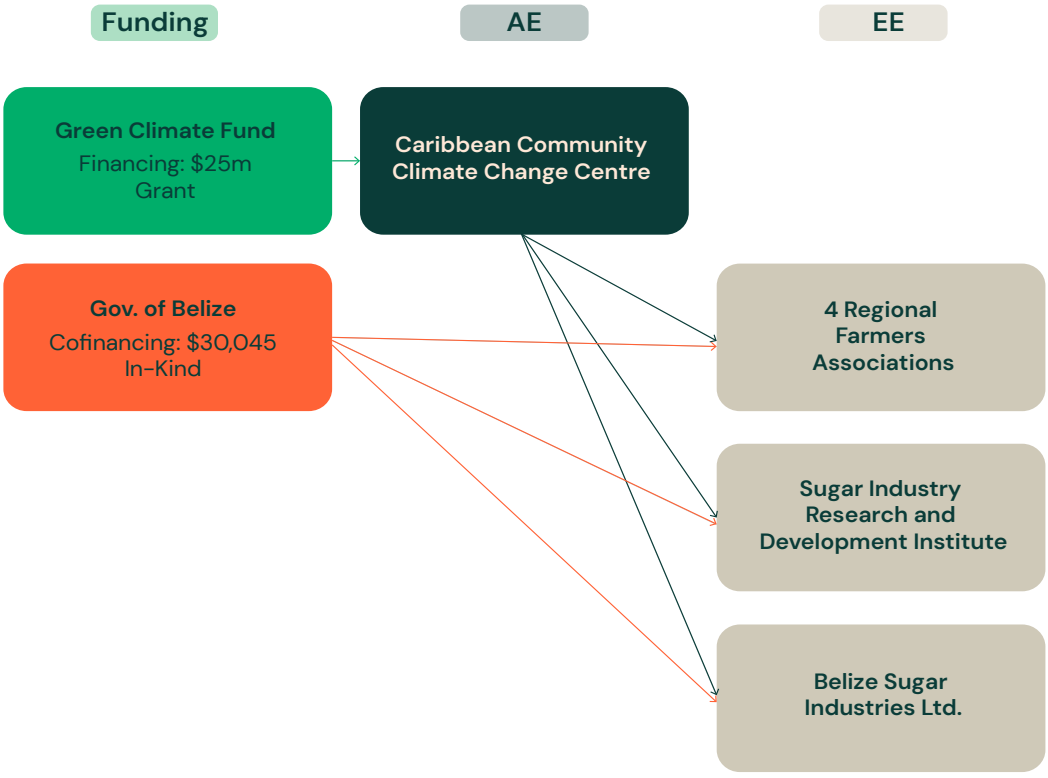
One of the few remaining shortfalls, apart from that of concessional financing, is the lack of trained local personnel, which is noted in the 2021-2026 Climate Finance Strategy. Current efforts to gain accreditation with the GCF, including the expansion of capacities with staff dedicated to climate finance, are likely to yield positive outcomes for interaction with any future IMO Fund.

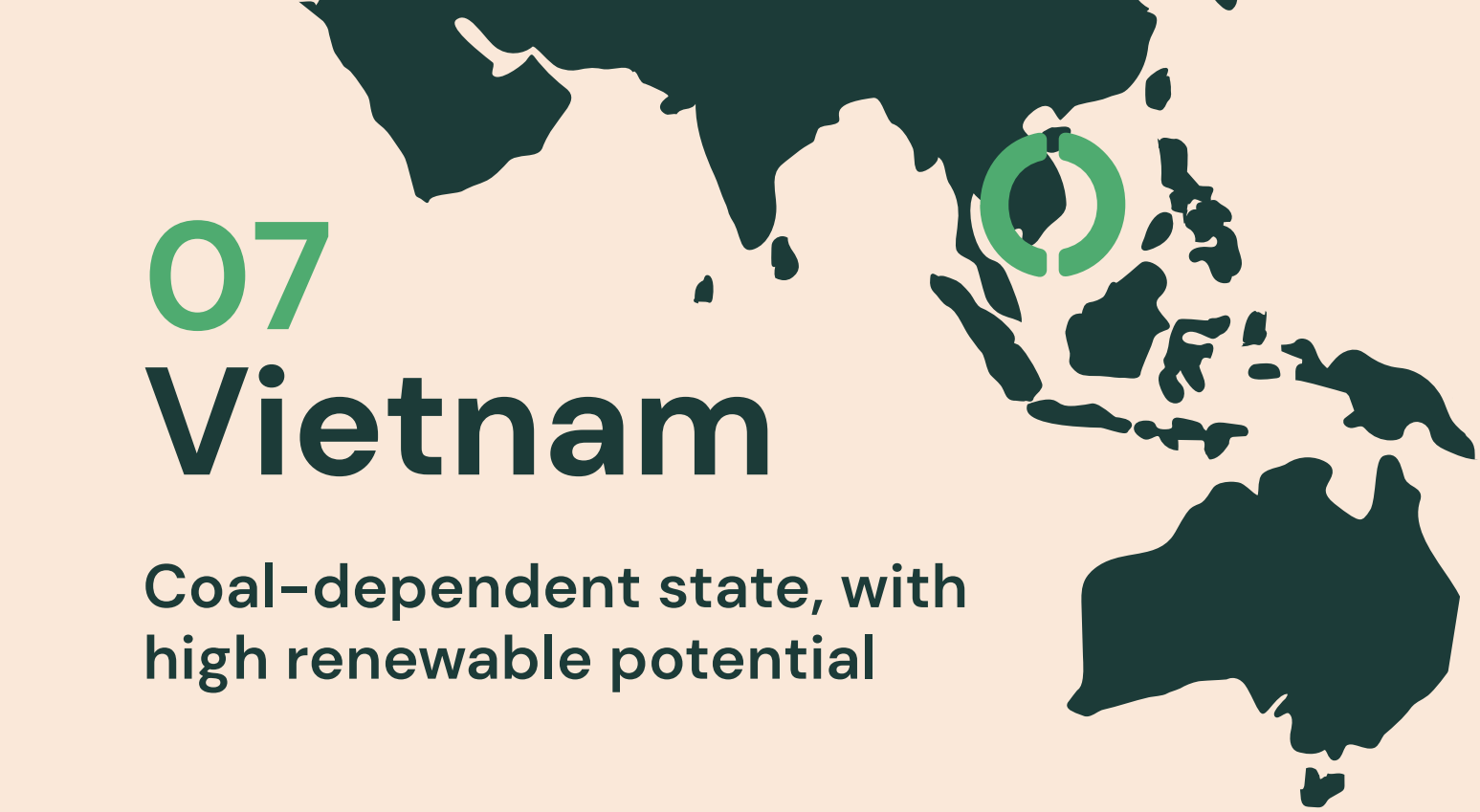
The Climate Finance Strategy also identifies a lack of in-country expertise in project development and lack of a co-ordinated strategic framework for its climate finance needs as crucial obstacles to accessing climate finance. These factors lead to a 'reactive' approach to dealing with MDBs such as the World Bank, and other IFIs. Further work to develop a unified framework is likely to be crucial to the timely and effective access of carbon revenues.

Examples of potential 'accredited entities' in Belize are:

- National Direct: Protected Areas Conservation Trust (PACT)
- Regional Direct: Caribbean Community Climate Change Centre (CCCC)
- International: IFAD

An example project – SAP035
(Simplified: for illustrative purposes only):





07 Vietnam

Coal-dependent state, with high renewable potential

Financing needs and barriers

- All newly-built, converted and imported ships after 2035 using electricity and green energy, and 100% of ships operating on domestic routes converted by 2050.
- 60% of national energy use from renewables by 2050.
- Hydrogen production capacity reaching 10-20m tonnes by 2050.

There is a need for significant port upgrades, which are currently understaffed, underdeveloped, and increasingly prone to flooding due to climate change.

State finances are insufficient to cover adaptation and mitigation goals. Multilateral/ Official Development Assistance (ODA) financing has declined, leading to a need for new external sources of financing. Existing financing to renewable energy projects has so far been insufficient.

For mitigation alone, $400-520bn will be needed from 2031-2050 to meet power development goals.

The case for receiving revenues

A predictable, steady, and well-resourced IMO revenue stream could provide financing for the green transition on terms that do not increase public debt, with a higher tolerance for risk than the private sector, and on highly concessional terms.

Climate funds do not necessarily require low-income status to receive concessional finance. However, as LDCs and SIDs will get priority, a well-resourced fund will be needed to cover higher-income countries such as Vietnam.

Vietnam is highly vulnerable to the effects of climate change. The country has the world's highest exposure to flood risk, which places port infrastructure at particularly high risk, as well as associated roads and power supply.

Key revenue allocation areas

- Shipbuilding: funds could be used to upgrade Vietnam's significant existing shipbuilding capacity, which is capable of outputting 2.6m Deadweight Tonnage (DWT) a year. A larger, more modern and greener domestic fleet would have the added benefit of reducing reliance on foreign lines, in particular when operating in the EU, which requires large expenditures in foreign currencies.
- Port upgrades: ports are not currently able to operate at full capacity due to labour shortage and underdeveloped facilities. Vietnam's ports are also understaffed and suffer from a chronic lack of skilled labour, so there is a strong case for educational and training programmes under the banner of ensuring a just and equitable transition for seafarers.
- Hydrogen production: Vietnam plans to reach hydrogen production from currently negligible amounts to 10-20m tonnes per year by 2050. However, far more renewable capacity will be required to do this while attaining the goal of removing coal from the domestic energy mix in the same period.
- Infrastructure: further along the supply chain, investment into increasing the resilience of infrastructure will be needed, particularly in roads and electricity supply, which are highly vulnerable to flooding and storm damage at present.

Image: Hochiminh City, Vietnam
Credit: quangpraha (iStock Photos). Also featured on p. 20

7.1
Country profile

Four factors are key to determining the allocation of carbon revenues from shipping in Vietnam: an ambitious climate policy portfolio, a high vulnerability to climate change, a large domestic shipbuilding industry, and a shortfall in the investment needed to undertake the transition and mitigate the impacts of the mid-term measures.

Vietnam is highly vulnerable to the impacts of climate change: climate impacts alone are expected to cost as much as 14.5% of GDP through 2050 (World Bank, 2022) and national finances are only projected to cover 30% of the total cost of planned adaptive measures (National Adaptation Plan, 2023). The World Bank estimated in 2022 that an additional $54bn of external financing will be required to undertake planned climate actions, in an optimistic scenario where sufficient private finance is mobilised to make up the largest share of the total.

Fiscal space in the country is constrained, and new, external sources of financing will be required to rise to this challenge. Vietnam has experienced a significant drop in ODA funding in recent years - from $4.2bn to just $1bn between 2014 and 2019 - due to its accession into the ranks of upper-middle income countries (OECD, 2023). For example, it is only able to receive funding from IFAD at 'ordinary' (i.e. non-concessional) rates.[24]

This change in economic status has not affected its standing with the UNFCCC climate funds, as all non-Annex I countries are eligible for financing through these mechanisms. No such limitation currently exists in the IMO text.

However, the costs of climate change are already starting to undermine growth: climate impacts are estimated to have cost the country as much as $10bn in 2020, or 3.2% of GDP (World Bank, 2022). This leaves Vietnam in a tricky position - excluded from major sources of financing due to economic success, largely measured in the growth of its private sector, which has so far lacked the risk appetite to be a major player in climate investment.

On the plus side, the country has a strong regulatory framework and a high level of ambition to decarbonise, underpinned by the Eighth Power Development Plan (PDP8) of 2023, the Electricity Law of 2024, and the Prime Minister's Decision No.876/QĐ-TTg (2022), concerning the development of a green transportation system. This plan sets out an ambition to have all domestic routes served by vessels running on electricity and green energy by 2050.

Impressive strides have been made in developing renewable energy in recent years, with investment in the sector increasing from around $500m in 2016 to $7.4bn in 2020. Despite this, the total share of fossil fuels in the energy mix rose in the same period, indicating that there is some way yet to go.

Meanwhile, a number of areas within the maritime sector stand out as needing investment to keep up with the transition. The country has an aging fleet, much of which is already not in compliance with EU shipping regulations, and may struggle to compete under a similarly stringent IMO framework without assistance. The resulting reliance on foreign shipping lines requires a large spend in foreign currency.

24 For example, see GCF Project FP250

A large domestic shipbuilding industry can go some way to solving this, with sufficient investment. This aligns with the Prime Minister's Decision mentioned above, which aims for all ships built and converted after 2035 to be electric/ZNZ fuelled (Office of the Prime Minister, 2022).

7.2 Application of revenues in Vietnam

Vietnam has a strong case for receiving revenues generated by the mid-term measures, both within the shipping sector and more broadly. Revenues could, among other things, make up vital financing that will allow for Vietnam to maintain and expand a competitive shipping sector in the context of a global shift to ZNZ fuels.

With eligibility to receive ODA funding at concessional rates dropping, funding will be required from an entity that does not operate on the same principles. Existing UNFCCC funds fit this requirement, and deliberation at the IMO suggests strong and relatively unified support for the wide disbursement of revenues. Therefore, a fund based on similar principles to existing climate funds is an ideal source of financing to support Vietnam's energy and shipping transition.

As referenced in 3.3.2, climate funds are debt-conscious in their lending strategy. De-risking may be necessary to leverage the kind of investment required to finance Vietnam's transition, but also has the potential to create a debt trap if the risk is borne entirely by the state in service of creating attractive conditions for private sector investments (Gabor & Sylla, 2023).

For example, credit schemes aiming to de-risk green hydrogen infrastructure can entail substantial risk to state finances (Scholvin, Black, and Robbins, 2025). This risk may be offset by retaining the assistance of a climate fund rather than other investors. The GCF and FRLD have had a debt-conscious approach baked into their governing frameworks, which could be considered in the design of a shipping fund given its mandate to deliver a just and equitable transition. This will likely be established in the governing instrument of the IMO Net-Zero Fund, in line with previous climate funds, and is not specifically addressed in the text agreed upon at MEPC83.

The IMO's commitment to prioritise support for the most vulnerable countries adds an important dimension to this: as Vietnam is not among the lowest-income or most vulnerable countries, it is unlikely to be the first priority of any IMO fund. However, it also lacks the financing, domestic or ODA, to undertake the transition itself. It follows then that in order for countries like Vietnam not to be left behind, substantial revenues will have to be left over for disbursement once annual rewards to vessels are accounted for. Vietnam's outdated fleets and port infrastructure may be left behind by countries with greater domestic capacity to be first-movers in terms of ZNZ fuels and shipbuilding. Sufficient revenues to support not only the most vulnerable countries but also MICs will thus be required.

Vietnam can prepare by reflecting on lessons learned from interaction with existing UNFCCC climate funds. Specifically, it will benefit from having a strong pipeline of projects already aligned with the latest developments in the governance of any new fund as negotiations progress. Viable, comprehensive proposals that 'tick the boxes' will have an advantage when it comes to speeding up the release of funding. In developing these proposals, it is crucial to underline the connections between various sectors and the condition laid down in the 2023 IMO GHG Strategy that the measures be just and equitable.

7.2.1 Maritime sector

The need for financing is particularly highlighted by the state of Vietnam's maritime sector, which also provides perhaps the strongest use case for revenues generated under the mid-term measures.

Much of the country's aging fleet will not be able to operate in the EU without continuous upgrade (VNN, 2022). Its maritime trade relies on foreign vessels, with foreign lines making up over 90% of international shipping market share - adding large outlays in foreign currency to the cost of trade. There is a large indigenous shipbuilding industry, which is in recovery following the collapse of state-owned shipbuilding firm Vinashin in 2010, now replaced with the Ship-Building Industry Corporation (UNDP, 2022).

The 2023 IMO GHG Strategy therefore comes at a key time for the sector. The country has a medium techno-economic readiness (Fricaudet et al, 2024), strong ambitions to decarbonise energy generation and create a hydrogen fuel industry, a clear need for new, locally-owned ships, and the essential manufacturing base in place to build them. As the age and inefficiency of the current fleet makes it likely to incur disproportionately heavy costs from the mid-term measure, it provides a clear case for eligibility to receive carbon revenues.

PDP8 allows for certain 'transition' fuels to remain in play in the production of hydrogen, as well as allowing for the expansion of Liquefied Natural Gas (LNG). Due to the decision to assess fuels on a well-to-wake basis, hydrogen produced with the use of fossil fuels may not be a competitive choice for ship operators. Investment in this supply chain is therefore likely to quickly transform into a sunk cost as other nations develop cleaner fuels that are cheaper to use under the mechanism of the 2023 IMO GHG Strategy.

The revenue disbursement text in the proposed amendments allows for revenue to be allocated to programmes that ensure a just transition for both seafarers and "other maritime workforce."[25] As the Vietnamese port network experiences a chronic labour shortage, with a particularly acute need for skilled technical workers tasked with infrastructure repair and maintenance (VCCI, 2024), this may be a particularly efficient use of such revenues.

25 Regulation 41 para 1.2

7.2.2 Transport infrastructure

Transport infrastructure also has a potential case for revenue allocation, depending on the precise interpretation of the proposed amendments. The largest maritime port, Ho Chi Minh City, is projected to become five times more prone to flooding in the near future. Overall, flood events that used to have a one-in-1,000-year rate of occurrence are now expected every five years (World Bank, 2022). By 2030, road failure due to flooding is expected to increase by 40%. Modernisation, in line with Decision 442-QD, can also help to offset increased transport costs elsewhere in the supply chain by improving efficiency (Rojon et al, 2021). Vietnam's ports are currently unable to operate at full efficiency, due to both the aforementioned labour shortage as well as underdeveloped facilities (UNDP, 2022).

With a coast at high risk from flooding and extreme weather events, ports and associated transport links will be a key candidate for resilience investments, if a case can be made for individual elements to play an important role in the maritime sector. This therefore lies within the scope of "adaptation and resilience building within the boundaries of the energy transition in shipping" as per the proposed amendments.[26]

7.3
Multilateral finance distribution in Vietnam

Policymakers can consider several options in terms of developing domestic accredited entities to lead transition projects, including identifying potential government entities to seek accreditation, or expanding capacities within the Vietnam Development Bank.

The latter is already accredited with the GCF and therefore has the potential to be fast-tracked through the accreditation process, if best practices from the UNFCCC funds are followed in the governance of an IMO fund. Experience of the GCF suggests that several staff within this entity should be dedicated to this task (Commonwealth Secretariat, 2022).

Examples of possible 'accredited entities' in Vietnam are:

- National (Direct Access): Vietnam Development Bank
- Regional (Direct Access): None currently accredited in Vietnam or SE Asia, often a regional development bank.
- International: United Nations Development Programme

A wide range of organisations can take the role of executing entity, such as the Ministry for Agriculture and Rural Development (GCF: FP125), Ministry of Finance, or Provincial People's Committees (FP250).

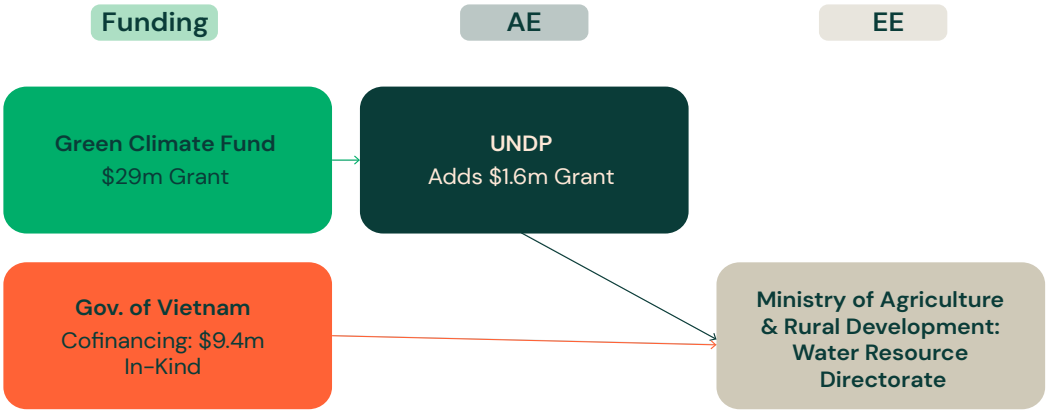
26 Regulation 41 para 1.2.1

With respect to direct access, the problems encountered are less relevant to middle-income countries with high levels of administrative capacity, strong governance frameworks, and a strong track record of implementing climate programmes such as Vietnam.

However, it is worth noting that bureaucratic barriers have been blamed for causing expensive project delays in Vietnam. For example, changes to an approved project funded by ODA and subject to the Prime Minister's approval until recently required the entire suite of approval documentation to be re-written and resubmitted for approval. Recent reform to the law governing ODA funded projects (Government of Vietnam, 2021) has removed this requirement, but the efficacy of this recent reform remains to be seen.

The delays created by this regulatory burden can lead to cost overruns (ADB, 2024). High reporting requirements are not necessarily negative, as they align well with the fiduciary requirements of funds, but must continue to be assessed so as not to pose a barrier to the cost-effectiveness of programmes.

Figure: An example project structure for a programme in Vietnam receiving multilateral finance



References

ADB (2024) Asian Development Outlook (ADO) April 2024: Viet Nam

Amighini, A., Giudici, P., Ruet, J. (2022) 'Green finance: An empirical analysis of the Green Climate Fund portfolio structure,' in *Journal of Cleaner Production* 350, 131383

Baresic, D., Rojon, I., Shaw, A., Rehmatulla, N. (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*

Carlo, R., Bonello, J.M., Suárez de la Fuente, S., Smith, T., Søgaard, K., (2020) Aggregate investment for the decarbonisation of the shipping industry, presentation delivered in January 2020 by UMAS, accessible at https://globalmaritimehub.com/wp-content/uploads/2020/02/Aggregate-investment-for-the-decarbonisation-of-the-shipping-industry.pdf

CIF (2024a) *CIF Financial Terms and Conditions Policy - FY24*

CIF (2024b) Expanding Green Hydrogen in Brazil – Ceara Green Hydrogen Hub, Decision Document, available at https://www.cif.org/projects/expanding-green-hydrogen-brazil-ceara-green-hydrogen-hub

Commonwealth Maritime Economies (CME) Programme (2022) Belize Maritime Economy Plan

Commonwealth Secretariat (2021a) Climate Finance Landscape of Belize 2015 – 2019

Commonwealth Secretariat (2021b) National Climate Finance Strategy of Belize 2021–2026

Commonwealth Secretariat (2022) *Toolkit to Enhance Access to Climate Finance: A Commonwealth Practical Guide*

CORFO (2024) *First Call for the Financing of Green Hydrogen Projects in Chile*

CPI (2024) *Landscape of Climate Finance in Nigeria 2024*

DNV (2024) Report of the Comprehensive impact assessment of the basket of candidate GHG reduction mid-term measures – full report on Task 2 (Impacts on the fleet), MEPC 82/INF.8/Add.1

Dominioni, G., (2024) Carbon pricing for international shipping, equity, and WTO law. *Review of European, Comparative & International Environmental Law, 33 (1);, 19-30*.

Dominioni, G. and Englert, D., 2022. *The Role of International Shipping in Climate Mitigation: Potential and Challenges of Decarbonizing the Sector*. Washington, DC: World Bank.

Dominioni, G., Rojon, I., Salgmann, R., Englert, D., Gleeson, C., Lagouvardou, S. (2023) 'Distributing Carbon Revenues from Shipping.' Report, World Bank.

ECOWAS (2022) ECOWAS Regional Climate Strategy (RCS) and Action plan (2022-2030)

Efobi, U., Adejumo, O., Kim, J., (2025) Climate change and the farmer-Pastoralist's violent conflict: Experimental evidence from Nigeria, in Ecological Economics 228, 108449

Federal Ministry of Finance, Budget and National Planning (2021) National Development Plan, 2021-2025FRLD (2024) *Background paper on financial instruments, modalities and facilities*, FLD/B.2/12

Fiji et al. (2024) *Further Consideration of the Development of Candidate Mid-Term Measure(s): A just and equitable disbursement framework for revenues generated by mid-term measures combinations and associated draft MARPOL Annex VI, chapter 5 text*. ISWG-GHG 17/2/13

FRLD (2024) Background paper on financial instruments, modalities and facilities, FLD/B.2/12

Fricaudet, M., Baresic, D., Vallejo, L., Smith, T., (2024) 'Who gains, who loses? Navigating the (in)equity of the shipping low-carbon transition' in *One Earth,* forthcoming.

FRLD (2024) Background paper on financial instruments, modalities and facilities, FLD/B.2/12

Gabor, D., (2025) 'How to DOGE USAID,' in Phenomenal World, 22/02/2025

Gabor, D. and Sylla, N.S. (2023), 'Derisking Developmentalism: A Tale of Green Hydrogen' in *Development and Change, 54:,1169-1196*.

GCF (2022) *Sectoral Guide: Energy Access and Power Generation*

GCF (2023a) *Updated policy for contributions to the Green Climate Fund for the second replenishment*

GCF (2023b) *Investment framework for GCF-2*

GCF (n.d.) *Financial terms and conditions of grants and concessional loans*

GCF IEU (2019) *Independent Evaluation of the GCF's Country Ownership Approach*

GCF IEU (2023) *Second performance review of the Green Climate Fund, Final report, Volume I*

Germanwatch (2025) *Climate Risk Index 2025*

GIZ, (2020) *Climate Change-related Trust Funds at the Multilateral Development Banks: Final Report*

GIZ (2023) *Development of a Local Green Hydrogen Offtake Study for Nigeria*

Goering, L., (2024) *'Can climate funders overcome fear to tread in conflict zones?,' in Climate Home News, November 19, 2024*.

Government of Belize (2014) *National Climate Change Policy, Strategy and Action Plan to Address Climate Change In Belize*

Government of Belize (2021) *Belize's Updated Nationally Determined Contribution, August 2021*

Government of Vietnam (2021) *Decree No. 114/2021/ND-CP on management and use of official development assistance (ODA) and concessional loans provided by foreign donors*

Government of Vietnam (2023) *Decision 500/QD-TTg approving the National Electricity Development Plan For 2021 – 2030, with a Vision To 2050 ("PDP8")*

Government of Vietnam (2024) *Law No. 61/2024/QH15 'the Electricity Law'*

Guannel G, Arkema K, Ruggiero P, Verutes G (2016) *The Power of Three: Coral Reefs, Seagrasses and Mangroves Protect Coastal Regions and Increase Their Resilience, in PLoS ONE 11(7): e0158094*

International Maritime Organization (IMO), 2024. *Draft amendments to MARPOL Annex VI on the IMO Net-Zero Framework: Note by the Chair of the Working Group on Reduction of GHG Emissions from Ships – New Chapter 5: Regulations on the IMO Net-Zero Framework*. MEPC 83/J/9

International Maritime Organization (IMO), 2025. *Circular Letter No.5005, Subject: Draft Revised MARPOL Annex VI. Circular letter, 11 April*. Available at: https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/Circular%20Letter%20No.5005%20-%20Draft%20Revised%20Marpol%20Annex%20Vi%20%28Secretariat%29.pdf [Accessed 24 Apr. 2024].

International Rescue Committee (2024) *How to Make the New Climate Finance Target Work for Conflict-Affected Communities*

IEA (2024a) *Global Hydrogen Review 2024*

IEA (2024b) *National Climate Resilience Assessment for Chile*

IMO (2025) Circular Letter No.5005, Subject: Draft Revised MARPOL Annex VI: (Circular letter, 11 April 2025). (Online). Available from: https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/Circular%20Letter%20No.5005%20-%20Draft%20Revised%20Marpol%20Annex%20Vi%20%28Secretariat%29.pdf. [Accessed 24 April 2025].

Kedward, K., Gabor, D., Ryan-Collins, J., (2022) *Aligning Finance with the Green Transition: From a risk-based to an allocative green credit policy regime*, UCL IIPP

Kotz, M., Kuik, F., Lis, E. et al. (2024) 'Global warming and heat extremes to enhance inflationary pressures.' in *Communications Earth & Environment* 5, 116. https://doi.org/10.1038/s43247-023-01173-x

Lattanzio, R., (2013) *International Environmental Financing: The Global Environment Facility (GEF),* Congressional Research Service Report

Ministry of Energy of Chile (2021) *Identification and Quantification of Renewable Energy Potentials*

Ministry of Finance of Chile (2023) *Debt Management Strategy, Labelled Bonds & Updated SLB Framework, June 2023*, Presentation

Ministry of Finance of Chile (2024) *Estrategia Financiera frente al Cambio Climático (anteproyecto)*

Ministerio de Energia de Chile (2024) *Plan de Acción Hidrógeno Verde 2023-2030*

Ministry of the Environment (2022) *Ley 21455: Ley Marco de Cambio Climatico;* available at https://www.bcn.cl/leychile/navegar?idNorma=1177286.

Ministry of Natural Resources and Environment of Vietnam (2023) Report: National Adaptation Plan for the Period 2021-2030, with a Vision to 2050

Mohan, P.S (2023), 'Financing needs to achieve Nationally Determined Contributions under the Paris Agreement in Caribbean Small Island Developing States.' Mitigation & Adaptation Strategies for Global Change 28, 26.

National Task Force (National Convenor, FAO, WFP, PAHO/WHO UNRCO) (2023), Belize Food System Transformation Pathway 2023-2030

OECD (2016) *Case-Specific Policy Analysis Ports Policy Review of Chile*. The International Transport Forum.

OECD (2023) *OECD Economic Surveys: Viet Nam 2023*

OECD (2024) *OECD Environmental Performance Reviews: Chile 2024*

OECD (2025) *OECD Economic Surveys: Chile 2025*

Office of the Prime Minister of Vietnam (2022) *Decision No. 876/QD-TTg on approving the Action Program for Transition to Green Energy and Mitigation of Carbon Dioxide and Methane Emissions from Transportation*

Osorio-Aravena, J.C., Ram, M., Aghahosseini, A., Breyer, C., (2025) Evaluation of employment effects during the transition of the Chilean energy system, *Energy* 318, 134839

Perez-Osses, J.R., & Reusser, C.A., (2024) Review of the Chilean Shipping Industry: Challenges to Achieving Emissions Reductions by 2030, 2050, and Beyond by Applying Alternative Fuels, in *Atmosphere* 15 (11)

Rojon, I., Lazarou N.J., Rehmatulla, N., Smith, T., (2021) 'The impacts of carbon pricing on maritime transport costs and their implications for developing economies,' *Marine Policy* 132, 104653

Scartozzi, C.M., (2021) Conflict sensitive climate finance: lessons from the Green Climate

Fund, in Climate Policy 24: 3

Scholvin, S., Black, A., Robbins, G. (2025) *De-risking green hydrogen? Insights from Chile and South Africa,* Energy Policy 198, 114485

Scholvin, S., & Kalvelage (2025) 'New development paths through green hydrogen?: An ex-ante assessment of structure and agency in Chile and Namibia' in *Energy Research & Social Science* 120 103904

Sheeran, B., (2024) *The Legality of Revenue Disbursement from an Economic Measure Agreed at the International Maritime Organization for Purposes Other than the Decarbonisation of International Shipping,* Sabin Center for Climate Change Law, *available at:* https://scholarship.law.columbia.edu/sabin_climate_change/239

Smith, T, Frosch, A., Fricaudet, M., Majidova, P., Oluteye, D., Baresic, D. &

Rehmatulla, N. (2025) An overview of the discussions from IMO's 83rd Marine Environment Protection Committee

SPARC (2021) Exploring the Conflict Sensitive Blind Spots in Climate Adaptation Finance: Synthesis Report

Transport and Environment (2025) Is the IMO on Track? Assessing the Impact of the IMO's Draft Net-Zero Framework available at https://www.transportenvironment.org/articles/is-the-imo-on-track

Treichel, P., Robertson, M., Wilkinson, E., Corbett, J., (2024) 'Scale and access to the Green climate Fund: Big challenges for small island developing States,' in *Global Environmental Change*89, 102943

UNCTADa, Maritime Profile: Chile, https://unctadstat.unctad.org/CountryProfile/MaritimeProfile/en-GB/152/index.html

UNCTADb, Maritime Profile: Nigeria, https://unctadstat.unctad.org/CountryProfile/MaritimeProfile/en-GB/566/index.html

UNCTADc, Maritime Profile: Belize, https://unctadstat.unctad.org/CountryProfile/MaritimeProfile/en-GB/084/index.html

UNCTAD (2024) Report of the Comprehensive impact assessment of the basket of candidate GHG reduction mid-term measures – full report on Task 3 (Impacts on States), MEPC 82/INF.8/Add.2

UNDP (2022) *Blue Economy Scenarios for Vietnam*

UNFCCC (2024) Nigeria's First Biennial Transparency Report to the UNFCCC

VCCI & Australian Aid (2024) *Skills Report for Vietnam's Port Industry 2024-2028*

Vietnam News (2023) 'VN's fleet struggling with EU's new environmental laws,' published 20/12/2023

Wang, F., Gao, J. & Liu, Y. (2024) Spatiotemporal evolution of Nigeria's armed conflicts and terrorism and the associated shift in social perceptions, in Humanities and Social Sciences Communications 11, 1301

World Bank (n.d.) Climate Change Knowledge Portal - Belize - Vulnerability https://climateknowledgeportal.worldbank.org/country/belize/vulnerability

World Bank (2019) *Financial Intermediary Fund Management Framework, 2019*

World Bank (2022) Vietnam: Country Climate and Development Report

World Bank (2024) *Green Climate Fund Trust Fund Financial Report, as of March 31, 2024*

Zamarioli, L.H., Pauw, P., Grüning, C., (2020) 'Country Ownership as the Means for Paradigm Shift: The Case of the Green Climate Fund' in *Sustainability*, 12(14), 5714; https://doi.org/10.3390/su12145714

OPPORTUNITY GREEN