Grantham Research Institute on Climate Change and the Environment

LSE Global School of Sustainability

Scaling up blue finance to support mangrove-based livelihoods in the Philippines

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Policy report

May 2026

Grantham Foundation for the Protection of the Environment

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Acknowledgements

The authors are grateful for funding support from the LSE Pilot Research, Dissemination and Impact Fund (grant number: 112127). The authors would also like to thank Denyse S. Dookie (Grantham Research Institute), Thong Q. Ho (Environment for Development — Vietnam) and Arlan Brucal (World Bank) for their valuable feedback.

Sarah King edited the report and Georgina Kyriacou provided editorial oversight.

Digital tools disclosure: The authors did not use AI in the preparation of this report beyond tools used to check language usage.

The views expressed in this report represent those of the authors and do not necessarily represent those of the host institutions or funders. The authors declare no conflict of interest in the preparation of this report.

This paper was first published in May 2026 by the Grantham Research Institute on Climate Change and the Environment.

Suggested citation: Bian A, Howai N, Cayetano C, Creencia L, Gibb M and Robinson E (2026) *Scaling up blue finance to support mangrove-based livelihoods in the Philippines*. London: Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science.

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Summary

'Blue finance' is an emerging area of climate finance that aims to channel investment towards activities that promote the long-term health and sustainability of the ocean and the marine environment. Mobilising blue finance to scale up investment in the protection of mangroves in the Philippines can improve the health and livelihoods of coastal fishing communities and contribute to climate change mitigation, adaptation and resilience. Our analysis assesses the use of 'debt-for-mangrove swaps', and proposes a high-level conceptual framework for operationalising these swaps.

The importance of mangroves for the blue economy and the Philippines

The blue economy, which refers to economic activities associated with the ocean, seas and coastal regions, is a critical source of livelihood, in addition to an important food source, for over 60% of the population of the Philippines. It is especially vital for small-scale fishers, who depend on healthy coastal and marine ecosystems for fishing to improve their food (particularly protein) and income security. The Philippines is also one of the countries most vulnerable to weather and climate shocks. Around 20 tropical storms (typhoons) make landfall each year, with the worst impacts on coastal populations and economies. Remote and coastal areas lack the quality of physical and institutional infrastructure required to protect vulnerable populations from climate-induced disasters, such as storms and flooding, and from overfishing and unsustainable fishing practices.

Mangrove forests, comprising salt-tolerant intertidal trees and shrubs, are an important form of nature-based coastal protection from storm surges, a habitat for fish, and a carbon sink. As a form of natural capital, mangroves provide ecosystem services that include stabilising shorelines and reducing erosion, and create buffers for coastal defence that improve the resilience of local coastal communities to weather and climate shocks. They are major habitats for fishery nursery grounds and can help support fish stocks that have been degraded by overfishing and other unsustainable fishing practices. Mangroves also contribute to sequestering carbon below ground at rates over four times higher than in terrestrial tropical forests, contributing to global climate change mitigation.

Over half of the world's mangrove species are found in the Philippines. As the Philippines 'Last Ecological Frontier', the province of Palawan was declared a protected area in 1981, known as the Mangrove Swamp Forest Reserve. The main drivers of mangrove loss include conversion to aquaculture and rice paddies, and land reclamation for economic and industrial development. Over time, governance of mangrove ecosystems in the Philippines has shifted from expansion of the breeding, rearing and harvesting of shrimp (i.e. aquaculture) as a national development and poverty reduction strategy, to mangrove conservation and climate resilience, and finally to a focus on carbon mitigation and community resilience. However, there are challenges to protecting and restoring mangroves in the Philippines, primarily due to a lack of clarity on ownership and under-enforcement of access rights and management of coastal mangrove resources.

The current focus of blue financing and the gap related to mangroves

Our analysis of a non-exhaustive list of 88 official development assistance (ODA) funded projects in the Philippines between 2010 and 2025, compiled from available data sources in multilateral and bilateral development agencies, identified blue economy project funding of nearly US$6 billion, which is less than 2% of total ODA flows in the country. This is mostly concentrated in priority sectors of sustainable fisheries management (approximately US$3.3 billion) and ecosystem management and restoration (approximately US$1.5 billion). Most

mangrove-related activities have primarily been included as sub-project components of official development assistance projects focused on coral reefs, fisheries and plastic pollution.

The Philippines, like many other countries, is exploring innovative finance mechanisms, such as debt-for-nature swaps and blue bonds, to reduce the funding gap in coastal and marine ecosystems. As a fiscal and economic instrument, debt-for-nature swaps work by cancelling or reducing a country's sovereign debt in exchange for that country making conservation commitments. Blue bonds are debt instruments issued by governments and development banks, or corporates, which are used to raise capital specifically earmarked for marine and ocean-related projects with positive environmental and economic benefits.

Our analysis of 20 debt-for-nature swaps around the world between 2010 and 2024, totalling approximately US$6.3 billion, reveals that debt-for-nature swaps have increasingly been used as an effective tool by countries facing liquidity problems to convert sovereign debt into conservation commitments when agreed with bilateral creditors or other parties, including non-governmental organisations (NGOs) and commercial creditors. Of these 20, nine involved multipartite arrangements, yet less than 30% of funding went to conservation investments relative to the total volume of debt treated during the same period, highlighting effectiveness challenges, due in part to complex financial arrangements associated with high transaction costs. These also reflects broader governance challenges, including creditor-driven incentives in the design and implementation of debt swaps, which limit their scalability and raise social equity concerns.

A conceptual framework for 'debt-for-mangrove' swaps

Used as a complementary funding tool, better-designed debt-for-nature swaps could be mobilised to create the fiscal space necessary for the Philippines to direct finance towards investments in mangrove protection and restoration, estimated at a minimum to be US$71–97 million. Debt in the Philippines is not distressed, providing little incentive for generating fiscal savings through large-scale debt buyback mechanisms, as seen in past debt swaps in Belize and Ecuador where sovereign debt is traded at significant discounts in secondary markets. By contrast, in Barbados, the Bahamas and El Salvador, the use of credit enhancements from development finance institutions has generated meaningful fiscal savings through interest rate reduction. Given that multilateral development banks (MDBs) are among the Philippines' largest external creditors, we propose an innovative financing structure that links MDB debt management tools, specifically flexible loan products, which potentially allow sovereign borrowers to modify repayment terms, to channel fiscal savings towards the establishment of a mangrove trust fund. This could include a community fund and an endowment fund, to support income-generating community projects and long-term financial sustainability. Improving the policy environment is critical to operationalising this trust fund.

Policy implications for operationalising 'debt-for-mangrove' swaps

Improving institutions and governance mechanisms for managing mangrove ecosystems is key to de-risking investments directed towards coastal communities. Local actors, such as local governments, face capacity gaps in effective project development and lack revenue streams from community mangrove initiatives, which are among the barriers to accessing climate-related development finance. Improved co-management of marine protected areas (MPAs) with communities can play a critical role in fisheries management, biodiversity conservation and the enhancement of local livelihoods.

Scaling up financing for protecting and restoring mangroves has the potential to boost ecotourism development, including through partnerships with local philanthropic foundations in the Philippines and Southeast Asia. We identify the following research priorities to support implementation of 'debt-for-mangrove' swaps for financing mangrove-based ecotourism and contributing to development and conservation outcomes while tackling climate change.

- Exploring how debt-for-nature swaps could fit into large-scale lending programmes as a complementary fiscal tool.
- Strengthening the economic case for mangroves-based livelihoods.
- Co-designing a blue carbon market for mangroves.
- Evaluating policies to support resilient and sustainable ecotourism.

1. Introduction

This report examines how 'blue finance' (finance that supports a sustainable marine economy) can be mobilised in the Philippines to scale up investment in the protection and restoration of mangroves. Innovative financing mechanisms are needed to support this crucial coastal ecosystem and thus improve the health and livelihoods of coastal fishing communities and contribute to climate change mitigation, adaptation and resilience.

Climate vulnerability and disaster risk management in the Philippines

The Philippines is one of the most vulnerable countries in the world to the impacts of climate change including typhoons, flooding, landslides, drought and sea-level rise. These impacts have devastating impacts on human and ecosystem health and livelihoods (Bollettino et al., 2018; UNSDG, 2024). The Philippines was ranked seventh in the countries most affected by extreme weather events in 2025 (GermanWatch, 2025). Typhoons have had the greatest impacts, accounting for almost half of all disasters in the country since 1990, with major losses suffered in agriculture and fisheries (Brucal et al., 2020). The Philippines experiences an average of 20 typhoons annually, which frequently displace communities and cause widespread damage to infrastructure and the environment, and in the most critical situations, threaten lives and livelihoods (Santos, 2021). In 2021, Typhoon Rai (locally known as Super Typhoon Odette) demonstrated the devastating potential of extreme tropical cyclones, bringing intense rainfall, strong winds and widespread destruction across the country, including in Palawan province, where significant damage to ecosystems, infrastructure, and local communities was reported (Clarke et al., 2026). There is evidence that climate change is already making many of these hazards more extreme; for instance, climate change is estimated to have amplified rainfall intensity by 10.5% and increased direct economic damages by 42% during Typhoon Fung-wong, the most severe typhoon to make landfall in the Philippines in 2025 (Taylor, 2025).

Approximately 60% of the population of the Philippines lives in coastal areas, making disaster risk management a top priority. Disaster risk managers play a key role in the delivery of disaster preparedness and relief, with a focus on post-disaster response. However, less economically developed provinces of the country lack resilience against future events exacerbated by climate change, and their local government units are inadequately prepared for the impacts of typhoons (Brucal et al., 2020).

The importance of mangroves and risks to their survival

Mangroves play a key role in protecting coastal populations against climate-related disasters such as storms, flooding and extreme heat, while also sequestering carbon (Walters et al., 2008). They also enhance breeding, spawning and hatching grounds for offshore fisheries, making a crucial economic contribution to the food security and rural livelihoods of fishing communities. However, mangroves tend to be under-protected, largely due to insufficient regulation and under-enforcement of laws (Quevedo et al., 2021). More than half of the Philippines' extensive mangrove ecosystems, estimated at 450,000 hectares in 1918, have been lost, primarily due to fuelwood extraction, conversion to fishponds and brackish water fisheries, and coastal tourism development (Primavera, 1995; Haworth et al., 2024). Approximately 22.2% (56,261 hectares) of the country's remaining mangrove forests are located in Palawan (Long and Giri, 2011). As reported by Cayetano et al. (2023), mangrove cover in the province declined by 5.2% (2,693 hectares) between 1988 and 1998, before recovering from 2013 to 2020, with an 8.6% (4,371 hectares) increase recorded.

Mangroves are an increasingly important nature-based solution for tackling climate change. The term 'blue carbon', introduced in 2009, initially referred to the carbon captured and stored by rooted coastal vegetated ecosystems, specifically mangroves, tidal marshes and seagrasses, characterised by high organic carbon accumulation rates and large, persistent soil carbon stocks (Nellemann et al., 2009). Since then, blue carbon science has evolved. The global scientific

community increasingly focuses on the management of these three blue carbon ecosystems, particularly how their conservation and restoration can support climate change mitigation by enhancing carbon capture and avoiding emissions from their degradation or loss, while also delivering adaptation co-benefits such as coastal protection and biodiversity support (Macreadie et al., 2026). Participatory management has not resulted in ecological or socioeconomic gains. A group of global scientists has identified the top 10 priority issues for blue carbon science, of which the most important is the challenge of managing blue carbon ecosystems while supporting the livelihoods of coastal communities (Macreadie et al., 2026).

This report examines how funding can be mobilised to protect mangroves and to maximise benefits for local communities. We examine the extent to which blue finance can be mobilised to scale up investments in the protection and restoration of mangroves, and how this might be achieved to improve the health and livelihoods of coastal fishing communities while also contributing to climate change mitigation, adaptation and resilience.

We undertook an in-depth review of the published and grey literature on mangrove loss, policy priorities in the Philippines, and the global and national blue finance landscape, followed by an assessment of funding gaps for preserving coastal and marine ecosystems for mangroves, to inform priority actions. Further, we compiled and analysed lists of major blue economy projects in the Philippines and global debt-for-nature swaps. We also conducted interviews with key informants[1] to help identify and deepen our understanding of key policy bottlenecks and strengthen the policy-relevant findings, ensuring they are appropriate for the country context and account for social equity considerations.

The report is structured as follows:

Section 2 provides an overview of the state of mangroves and the associated policy and funding landscape in the Philippines.

Section 3 examines the barriers to mobilising blue finance through innovative finance instruments such as debt-for-nature swaps and blue bonds.

Section 4 discusses completed debt-for-nature/development swaps in the Philippines and proposes a high-level conceptual framework for 'debt-for-mangrove' swaps, focusing on how debt swap mechanisms can better be designed to create the fiscal space needed for investment in mangrove ecosystems.

Section 5 presents policy implications for operationalising such 'debt-for-mangrove' swaps, with a particular focus on an improved policy environment.

Section 6 concludes and suggests future research priorities.

[1] Key informants include eight leading scientists, experts and governmental officials. Ethical approval for this project was obtained from LSE Research Ethics No. 534951.

2. The mangrove policy and funding landscape in the Philippines

This section provides an overview of the state of mangroves in the Philippines, associated policy, and challenges for their preservation. The country's blue economy funding landscape is also discussed, including an assessment of blue finance flows and funding gaps for mangroves.

2.1. Context: the state of mangroves, the policy environment and challenges to preservation

The Philippines has extensive mangrove cover, measured at around 311,216 hectares in 2020, representing 1.1% of the country's total land area (Philippine Statistics Authority, 2025). At least half of the world's 65 mangrove species are found there, with the most common being *Avicennia marina*, *Nypa fruticans*, *Rhizophora apiculate*, *R. mucronate*, *R. stylosa* and *Sonneratia alba* (UP Diliman, 2022; Cayetano et al., 2023). The province of Palawan, which was declared a Mangrove Swamp Forest Reserve in 1981, has the country's largest mangrove ecosystem, representing approximately 22% of the country's total (Official Gazette, 1981). Coastal populations, particularly small-scale fishers and low-income households, have traditionally relied on mangroves as a source of food, fuel and construction wood. Mangrove non-timber forest food products include fishery resources, tannin, medicine, wine, and vinegar derived from the sap of the nipa palm (Song et al., 2021).

Typhoons pose a significant threat to these mangrove-dependent coastal communities, and are more intense and more destructive as a consequence of climate change (Montoya and Shrestha, 2024). After a typhoon, mangrove-dependent households have been found to experience declines in their yields of shrimp, crabs, mangrove clams, snails, sea cucumbers and nipa palm, as well as ecotourism revenue (Montoya and Shrestha, 2024). However, the harvesting of woodworms (*tamilok*; a form of folk medicine that can potentially provide reproductive and maternal health benefits for women [Tsuji, 2022]), collection of mangrove woods, and recreational activities have been found to have increased due to a change in the utilisation of mangrove resources, driven by reduced incomes resulting from typhoon damage During Typhoon Rai in 2021, total annual household revenue from mangrove resources decreased by about 50%, from PHP232,745.50 (US$4,201.71) in 2021 to PHP154,886.90 (US$2,796.15) in 2022 (Montoya and Shrestha, 2024). This highlights the urgent need for targeted coping strategies for vulnerable households to enable them to stabilise their incomes when mangrove ecosystems are recovering following typhoons, and to improve management for preserving and restoring mangroves to improve community welfare and conservation.

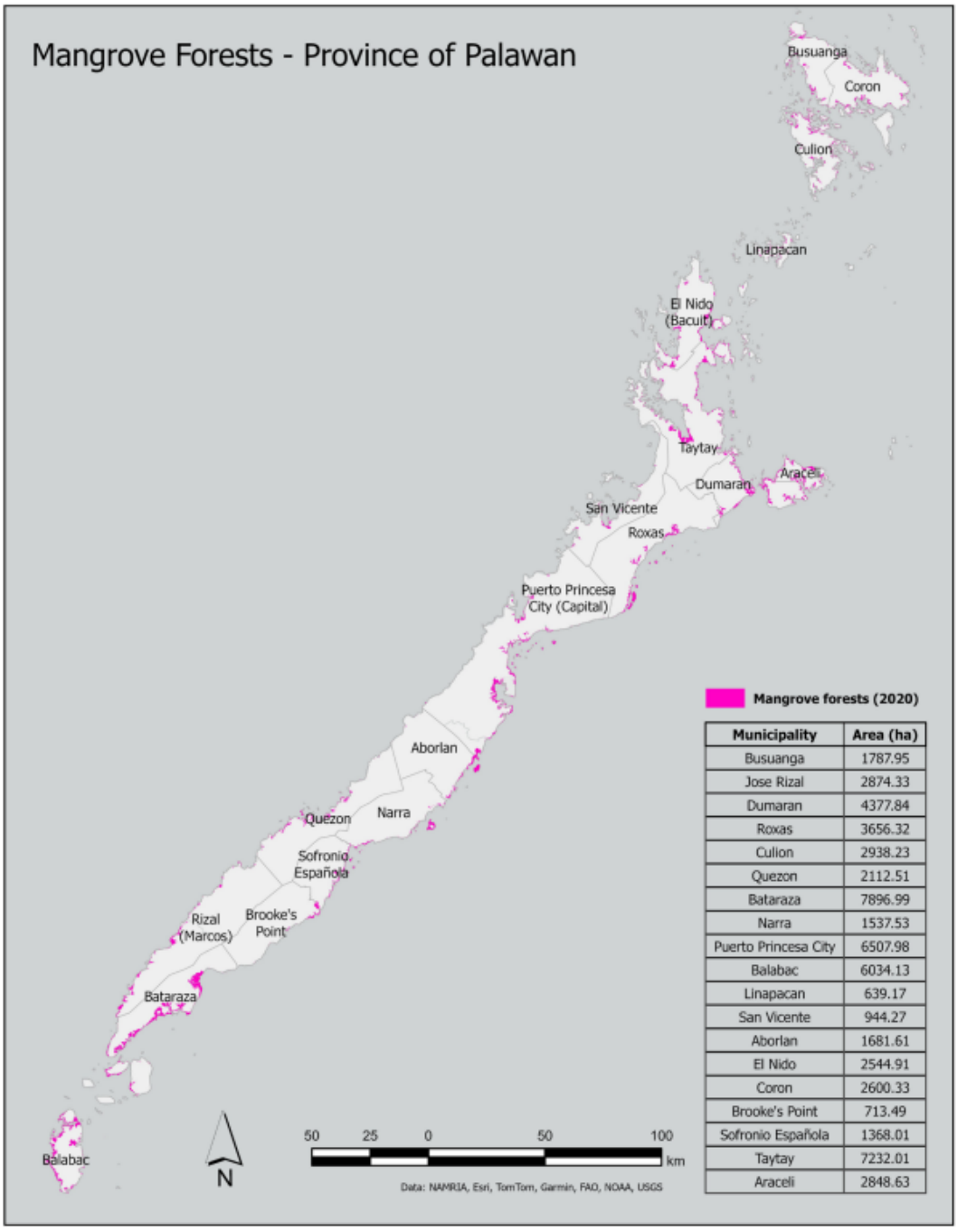
Historically, mangrove management in the Philippines focused on the expansion of shrimp aquaculture as a national development agenda and poverty reduction strategy from 1947 until the 1980s (Song et al., 2021). Mangrove ecosystem goods and services at this time were undervalued compared to aquaculture and commercial fisheries, which was one of the key drivers of their conversion to shrimp ponds and the rapid growth of farmed fish production for the country's food and nutritional security (White and Cruz-Trinidad, 1998). To accelerate fisheries development, from the 1960s, the government transferred substantial investments for fishpond construction and leases for fishponds to private operators. This resulted in legal disputes when the Department of Environment and Natural Resources of the Philippines (DENR) refused to issue mangrove clearing permits for fishpond development that had been supported by the Department of Agriculture (Song et al., 2021).

Mangrove protection and restoration still face challenges in the Philippines. The average annual mangrove deforestation rate in the country was 0.11% between 2000 and 2012, increasing to 0.5% over the last decade (Friess et al., 2019; Camacho et al., 2020). The underlying drivers of

mangrove degradation and deforestation are the development and expansion of aquaculture, conversion to rice paddies, land reclamation for settlement and industrial development, and typhoons/storms (Quevedo et al., 2021; Sofue et al., 2025). However, in contrast to the rest of the country, Palawan has experienced an increase in mangrove cover, from approximately 50,000 hectares in 1992 to over 60,000 hectares in 2020, representing 4.2% of the province's total land area, due to increased efforts in mangrove protection (see Figure 2.1) (Haworth et al., 2024).

Increasingly, mangrove conservation efforts in the Philippines emphasises their ecological function as effective buffers against storm surges and as nursery habitats for fisheries. In the 1990s, the negative ecological impacts of the loss of mangroves for aquaculture were widely recognised and prioritisation of use and access to mangrove ecosystems by private owners was also criticised (Song et al., 2021). In response, the government launched a community co-management agenda that placed greater emphasis on social forestry and property rights over mangrove areas.

Figure 2.1. Distribution and extent of Palawan mangrove forests in 2020



Municipality	Area (ha)
Busuanga	1787.95
Jose Rizal	2874.33
Dumaran	4377.84
Roxas	3656.32
Culion	2938.23
Quezon	2112.51
Bataraza	7896.99
Narra	1537.53
Puerto Princesa City	6507.98
Balabac	6034.13
Linapacan	639.17
San Vicente	944.27
Aborlan	1681.61
El Nido	2544.91
Coron	2600.33
Brooke's Point	713.49
Sofronio Española	1368.01
Taytay	7232.01
Araceli	2848.63

Source: Haworth et al. (2024). Reproduced with permission

At the community level, public awareness of mangrove protection is increasing. The introduction of environmental laws to protect the remaining mangrove forests, such as the Palawan Mangrove Conservation Rules of 2006, has improved understanding of the benefits of mangroves within local communities which has increased compliance with regulations (Fabro, 2022). In addition, when in 2013 mangroves were substantially damaged (particularly in the Visayas region of the Philippines) by Super Typhoon Haiyan (locally known as Yolanda) (Long et al., 2016), the extreme weather event marked a turning point in climate change awareness in the country. Evidence from survey responses shows that local populations in Palawan increasingly recognise mangrove loss and climate change as major risks to marine ecosystems and related livelihood decline through reduced incomes (Alcantara et al., 2023). Temperature increases and excessive rainfall have also been identified by local residents in Palawan as key indicators of climate change while sea-level rise is perceived as a significant climate risk that causes coastal erosion and damage to mangroves (Alcantara et al., 2023).

Mangrove rehabilitation has, however, faced significant implementation challenges at both the local community and local government levels due to limited resources and enforcement capacity, and competing livelihood needs. Increasing mangrove cover in the Philippines has mainly been implemented through seafront planting and in adjacent coastal habitats, such as seagrass ecosystems (Primavera et al., 2014). However, without proper assessment of hydrological and ecological conditions, mangrove planting on seagrass beds can lead to the destruction of these ecosystems (Sharma et al., 2017). The first large-scale mangrove replanting programme in the country was supported by the World Bank in 1984, and was subsequently funded by international development agencies in collaboration with national governments, and implemented by local government units, NGOs and local communities through People's Organisations (Primavera and Esteban, 2008). A major government mangrove restoration programme was led by the Department of Environment and Natural Resources (DENR) between 2015 and 2017 (Reliefweb, 2015). However, long-term survival rates of mangroves have remained low, at only 10–20%, largely due to inappropriate species and site selection (Primavera and Esteban, 2008; Lee, 2019). For example, *Rhizophra* species were frequently planted in sandy coastal suberates instead of the naturally occurring *Avicennia* and *Sonneratia* species. And the general planting sites were often located in lower intertidal zones, whereas mangroves typically thrive in middle to upper intertidal areas.

Community-based forest management has enhanced collective efforts to rehabilitate degraded coastal ecosystems. Involvement of local communities is a critical factor for sustainable mangrove management, particularly for addressing the challenges that arise when communities do not benefit from payments for ecosystem services or when their access is reduced through the establishment of protected areas (Van Lavieren et al., 2012). Mangrove rehabilitation requires a holistic approach that addresses environmental, economic and social factors across different timescales and geographical areas, in addition to the planting of trees (Camacho et al., 2020).

Climate resilience has more recently gained importance on the policy agenda. The urgency of tackling climate change has led to the emergence of blue carbon governance, which is a global framework that aims to design economic incentives, policies and financing mechanisms for coastal ecosystems, particularly given the ability of mangrove and other coastal ecosystems such as tidal and salt marshes and seagrasses to capture and store atmospheric carbon. The carbon sequestration potential of mangroves is increasingly being utilised in market-based instruments including carbon offset crediting schemes and payment for ecosystem services mechanisms. The DENR has strengthened its efforts to assess potential areas for mangrove restoration, particularly in abandoned, underdeveloped and underutilised (AUU) fishponds where mangroves were previously cleared for aquaculture (Cabico, 2024). Such fishponds are mainly the result of failed fishpond projects, unclear property rights, and a government policy shift towards mangrove restoration (Camille Rivera, 2021). The local academic community identifies reversing and restoring AUU fishponds and a shift towards an ecological mangrove restoration approach that restores natural tidal flow before planting mangroves as urgent priorities (University of Philippines, 2026).

Further, the Bureau of Fisheries and Aquatic Resources (BFAR) under the Department of Agriculture promotes Fisheries Management Areas (FMAs) as an effective tool for improving fishery management and conservation. These prioritise mangrove-friendly aquaculture, or aquasilviculture, defined as aquaculture-based livelihood initiatives to support mangrove rehabilitation, food security and income-generation opportunities. However, even such purportedly mangrove-friendly aquaculture can have significant environmental impacts, including the destruction of seagrass, water pollution, and the use of antibiotics (Tahiluddin et al., 2025), and may have minimal livelihood benefits. An aquasilviculture livelihood project in the Bicol region was found to have improved incomes and reduced poverty for fewer than 10% of those involved in the project (Velza et al., 2022).

2.2. The Philippines' blue economy landscape

The concept of the 'blue economy' originated at the United Nations Conference in 2012 and has been widely supported as a broad strategy for protecting the world's oceans and water resources (UNCTAD, 2014). The World Bank has defined the blue economy as the "sustainable use of ocean resources for economic growth, improved livelihoods, and jobs, while preserving the health of the ocean ecosystem" (World Bank, n.d.c). This encompasses activities such as renewable energy, fisheries, maritime transport, tourism, climate change and waste management (World Bank, 2017).

Within this approach, the protection of blue carbon ecosystems is classified as an indirect contribution to economic activities and environments. In Palawan province, which contains the largest mangrove forest reserve in the Philippines, these ecosystems are critical for sustaining fisheries, supporting coastal livelihoods and storing carbon. Mangrove loss in the province not only threatens local food security but also has implications for national seafood profits, estimated at over US$4 billion per year (World Bank, 2017; Venturillo, 2016). However, the literature suggests that the scope of the blue economy, as well as the key stakeholders and their interests and roles, remains vague (Lee et al., 2020).

The blue economy plays an increasingly important role in economic growth in the Philippines. According to national statistical accounts, the blue economy in the Philippines includes fisheries, manufacturing of ocean-based products, tourism-related services, shipping and offshore energy. In 2024, key blue economy sectors contributed PHP1.01 trillion (approximately US$17.17 billion) to the country's economy, equivalent to 3.8% of gross domestic product (GDP) (ADB, 2025).

Overfishing and the depletion of fish stocks

The country's capture fisheries production (i.e. the volume of fish catches landed by a country for all commercial, industrial, recreational and subsistence purposes) has been declining since 2008, reaching 1.7 million metric tons in 2023, while aquaculture production (i.e. the farming of aquatic organisms including fish, molluscs, crustaceans and aquatic plants), which are designated for final harvest for consumption, has increased significantly, reaching over 2.3 million metric tons in the same year (World Bank, n.d.a).

In December 2025, the Philippines approved a landmark law, the Blue Economy Act, which aims to establish a national framework for sustainable development of coastal and marine ecosystems through a holistic and cross-sectoral approach (Senate of the Philippines, 2025). Under this Act, a National Maritime Council will be established, the membership of which includes national agencies, to establish a policy framework for the blue economy, including the priority areas of fisheries, aquaculture and marine and coastal tourism (House of Representatives, 2025). This includes the establishment of Blue Economic Zones to spur investments in key priority sectors, particularly fisheries and aquaculture. It also aims to establish a blue finance programme, particularly through the issuance of blue bonds (this financial instrument is described in more detail in Section 3), to support projects that can provide clear benefits to ocean health and coastal communities. It is unclear how much of the focus of this Act is on mangroves and measures to effectively support small-scale fishers who depend on capture fisheries for food security and livelihoods.

The Philippines depends largely on international development finance for various blue economy initiatives, particularly fisheries governance (Mendoza and Valenzuela, 2017). However, there is no centralised official database to track the flows of finance provided by external development finance institutions to sector-specific blue economy investment projects

2.3. Identifying gaps in funding for mangrove ecosystems in the Philippines

We compiled a list of official development assistance (ODA) projects focused on the blue economy in the country between 2010 and 2025 (see Annex 1). First, we identified the Philippines' major donors and development partners, including multilateral and bilateral development finance institutions: the Green Climate Fund (GCF), the Global Environment Facility (GEF), the Asian Development Bank (ADB), the World Bank, the Japan International Cooperation Agency (JICA), the United States Agency for International Development (USAID), the UK Government, and United Nations agencies. Second, we screened project databases from the official websites of these institutions. Our analysis covers ODA-funded projects approved during this period which were either country-specific to the Philippines or part of regional cooperation projects, such as those in Southeast Asia that included the Philippines. This resulted in a non-exhaustive list of 98 projects.

A review of the grey literature indicates that the estimated total value of ODA funding during the period 2010–25 reached at least US$350 billion[2] in the Philippines. In 2024 alone, the Philippines received nearly US$40 billion in ODA funding in loans and grants, mostly driven by increased investments in transport infrastructure, compared to US$37.3 billion in 2023 (Cordero, 2025). Despite the global decline in ODA among donors, the Philippines received over approximately US$41 billion in 2025, of which total loan and grant commitments from Japan amounted to nearly US$14 billion (DOF, 2026b). In 2026, the country is expected to formalise 25 ODA agreements exceeding US$10 billion, in partnership with Japan, South Korea and France (Bilyonaryo, 2026). Japan remains the country's largest bilateral development partner, while the ADB and the World Bank are the largest multilateral partners.

Our analysis of 88 projects indicates that approximately US$5.9 billion was invested in blue economy projects in the Philippines between 2010 and 2025. The list of 88 projects includes 54 Philippines-specific projects totalling over US$4.3 billion, with the remaining 34 projects involving the Philippines as a beneficiary country in regional initiatives, such as in Southeast Asia. This represents less than 2% of total ODA during the period, suggesting that blue economy projects accounted for a relatively small share of the development finance landscape.

To identify funding gaps for mangrove ecosystems specifically, we disaggregated the 88 blue economy projects into specific sub-areas. However, there is limited harmonisation in how blue economy projects are defined and classified across development agencies, which makes comparison challenging. To address this, we compared the classification frameworks used by the World Bank and the ADB.

The World Bank's overall ocean portfolio exceeded US$8 billion in active projects between 2019 and 2023 (World Bank, n.d.c.). Its PROBLUE Blue Economy Programme is a Multi-Donor Trust Fund established in 2018 and running through to 2030 that supports the development of integrated, sustainable and healthy marine and coastal resources. As of 30 June 2025, total contributions from 12 development partners, including the UK, had reached US$291.9 million (World Bank, n.d.c). In 2025, every US$1 invested in PROBLUE initiatives leveraged approximately US$82 in World Bank financing (World Bank, 2025c). PROBLUE is structured under four pillars: (1) Fisheries and aquaculture; (2) Marine pollution; (3) Oceanic sectors; and (4) Seascape management. Mangroves and blue finance are classified under the seascape management pillar (World Bank, n.d.c.). Building on the World Bank's historical fisheries programme, PROFISH (2005–18), the first pillar of PROBLUE has received the largest share of funding.

[2] This accumulated sum of ODA flows is based on publicly available data from the annual ODA Portfolio Review Reports published by the National Economic and Development Authority, supplemented by reliable news releases from Philippine news agencies.

The ADB's Action Plan for Healthy Oceans and Sustainable Blue Economies includes an Ocean Finance Framework with the following focus areas: (1) Ecosystem and natural resource management; (2) Pollution control; (3) Sustainable coastal and marine development; and (4) Ocean finance (ADB, 2022). Compared with the World Bank framework, the ADB's framework provides a more detailed breakdown by ocean objectives and sectors (see Annex 1). This allows clearer identification of projects related to ecosystem management and restoration. Therefore, we adopt the ADB Ocean Finance Framework and focus on its first priority area, ecosystem and natural resource management, particularly ecosystem management and restoration, sustainable fisheries management and sustainable aquaculture. This approach allows us to more precisely identify specific blue investments and assess funding gaps.

Of the total amount allocated to blue economy projects, the majority (81%) focused on ecosystem and resource management, followed by 19% on pollution control, and the remaining on sustainable coastal and marine development and ocean finance. As illustrated in Table 2.1, the top three priority sectors were sustainable fisheries management (approximately US$3.32 billion) and ecosystem management and restoration (US$1.47 billion).

Table 2.1. A non-exhaustive list of blue economy projects in the Philippines, 2010–25

Blue economy project category (based on the ADB's Ocean Finance Framework)	Number of projects	Funding amount (including co-financing) (US$ million)
A. Ecosystem and natural resource management		**4,733.8**
A1. Ecosystem management & restoration	33	1,407.0
A2. Sustainable fisheries management	20	3,320.0
A3. Sustainable aquaculture	1	6.8
B. Pollution Control		**1,095.0**
B1. Solid Waste Management	12	37.3
B2. Resource efficiency & circular economy	9	88.7
B3. Non-point source pollution control	1	89.0
B4. Wastewater management	1	880.0
C. Sustainable coastal and marine development		**31.1**
C1. Coastal resilience	3	9.0
C2. Coastal & marine tourism	1	18.0
C3. Ports & shipping	2	2.0
C4. Marine renewable energy	3	2.1
D. Ocean finance	2	**6.1**
Grand Total	**88**	**5,866.0**

Source: Authors

Over half of the total blue economy funding was directed towards sustainable fisheries management (56%), making it the dominant investment area. Over 90% of large-scale fisheries and aquaculture investments provided by the World Bank are in the form of loans mainly through loans. The most recent World Bank project, Fisheries and Coastal Resiliency (FishCoRe), is a multi-year investment approved in 2023 and running until 2030, aimed at improving fisheries management and aquaculture value chains in FMAs (World Bank, 2023a). The project also includes a pilot study exploring the carbon sequestration potential of mangroves and seagrass in FMAs 6 and 9, covering Manila Bay and the Bohol Sea in the Philippines (UP Diliman, n.d.). This suggests that the fisheries sector is a country priority for economic growth and food security, with a strong capacity to generate economic returns through fisheries production, value chain development and exports. Additionally, the GEF is the main funder providing grants to support fisheries management and governance, and marine protected areas, implemented primarily through the United Nations Environment Programme (UNEP) and UN Development Programme (UNDP), Conservation International, and Food and Agricultural Organization, among others.

In contrast, ecosystem projects are small in scale and mainly funded through technical assistance and grants from the ADB and the World Bank's PROBLUE project, USAID and the UK Government, highlighting a focus on capacity building for marine spatial planning and ecosystem management plans and policies. Under the category of coastal resilience, through the Japan Fund

for Poverty Reduction, a US$2 million grant provided by the ADB to a regional project for Indonesia and the Philippines enhanced sustainable alternative livelihoods in coastal fishing communities in Palawan. The project results show that more than 400 households improved their ecosystem-based livelihoods through increased incomes, benefiting from the development of 42 business plans covering goat raising, poultry, handicrafts, weaving and seaweed farming (ADB, 2013a; ADB, 2019).

Less than 25% of funding went to ecosystem management and restoration and coastal resilience. USAID and the GEF are major funders in biodiversity and the protection of MPAs and coastal ecosystems. Further, coastal resilience investments mainly targeted regional projects focused on Indonesia and the Philippines, with funding support primarily from the ADB, the UK and Canada. A research project funded by the JICA between 2017 and 2023 explored blue carbon ecosystem conservation policies to tackle climate change in Indonesia and the Philippines (JICA, 2023). Most recently, Canada has developed a nature-based solutions partnership with the Philippines, which aims to provide nearly US$6 million to support small-scale projects in protected areas (Global Affairs Canada, 2024). In December 2025, the ADB launched a US$500 million policy-based loan to the Philippines to fund a programme on the protection of marine ecosystems and plastic pollution, co-financed by French and German development banks.

Only one standalone research project explicitly focused on mangrove rehabilitation. In this project, USAID, through the US Department of Agriculture, provided a technical assistance grant of less than US$40,000 to a collaborative research project on the rehabilitation of degraded mangroves to tackle climate change through sustainable management (MERF, 2023).

Mangroves were mainly included as sub-project components in a limited number of ODA projects focused on coral reefs, fisheries and plastic pollution, primarily funded by the GEF, the ADB and the UK Government. For example, the UK's Global Challenge Research Fund-supported project on Blue Communities, led by the University of Plymouth, focused on marine ecosystems for health, wellbeing, food and livelihoods of coastal communities and developing an improved understanding of the role of mangroves in addressing the impact of climate change. The UK's marine ODA portfolio is delivered through the Blue Planet Fund, co-managed by the Foreign, Commonwealth and Development Office and Department for Environment, Food and Rural Affairs. It includes the Climate and Ocean Adaptation and Sustainable Transition (COAST) programme, budgeted at up to £154 million globally, to be delivered between 2023 and March 2030, with the Philippines as a beneficiary country. Through this programme, the UK provided US$450,000 in grant funding (2023–26) to support the Philippines' National Blue Carbon Action Partnership. Implemented by the Zoological Society of London as Secretariat, it funded the co-design, with the DENR, of a strategic roadmap for blue carbon ecosystems, particularly mangroves and seagrass, which was released in April 2026 (Fernandez, 2025; Manila Bulletin, 2026).

The funding gap estimates do not fully account for total blue economy activities in the Philippines. In the case of the UK, we identified relevant ODA blue economy projects and programmes for the Philippines through the UK Development Tracker. However, country- and regional-level budget allocations are not generally published on the Development Tracker. Further, this analysis covers some community projects implemented by the Zoological Society of London, but it does not fully account for projects carried out by not-for-profit organisations, nor for non-sovereign private sector initiatives. For example, Blue Alliance, supported by the Global Fund for Coral Reefs, developed a financing model for public–private partnerships in 2024, providing a US$35 million impact loan facility designed to finance 115 community-based MPAs for coral reefs, with an initial funding from BNP Paribas (Blue Alliance, 2024). In addition, the International Financial Corporation supported the largest bank in the Philippines, BDO Unibank, Inc., in issuing a US$100 million blue bond in 2022 for projects focused on solid waste management and marine plastics (IFC, 2022a). The bond proceeds have been used to improve access to clean water in Bulacan, and to support wastewater treatment in Tarlac City (Manila Bulletin, 2024a). Further, in 2025, the JICA and the Philippine Fisheries Development Authority met to discuss ongoing

initiatives and explore areas for potential collaboration on the blue economy to support balanced growth between coastal and marine ecosystem conservation and priority sectors, including fisheries, transportation and finance (PCAARRD, 2025). In the same year, the Government of Japan partnered with the UNDP to support a blue carbon ecosystem financing project in the ASEAN region (UNDP, 2025).

3. Blue economy initiatives and barriers to mobilising blue finance

Many countries, including the Philippines, are exploring innovative finance mechanisms to scale up investments in the blue economy. This section reviews existing blue economy initiatives that use innovative finance instruments, such as debt-for-nature swaps and blue bonds, and examines barriers and challenges to mobilising finance.

3.1. Brief overview of blue finance

There is a significant global funding gap for nature-based solutions. It is estimated that the global biodiversity finance gap has widened to US$942 billion per year until 2030 for implementation of the Kunming-Montreal Global Biodiversity Framework (Bromley, 2024). Ocean and coastal conservation currently receive less than 1% of international climate finance, which is mainly in the form of philanthropic funding and ODA (Barber et al., 2021; Swift and Baines, 2025). This highlights the urgent need to mobilise private capital to meet countries' demands in addressing the intertwined challenges of climate change and biodiversity loss. A World Wide Fund for Nature (WWF) study estimates that mangrove restoration requires US$0.3–1.6 billion in annual funding until 2050, with additional funding required for the management of protected areas (US$192 billion) and sustainable fisheries (US$47 billion) (Brook et al., 2023). Public finance is estimated to deliver about two-thirds of the US$4 billion of investment required to protect and restore 15 million hectares of mangroves globally by 2030, and its role is critical for leveraging commercial sources to fill the funding gap in restoration costs (Systemiq and Mangrove Breakthrough, 2023). Recognising that the economic and business benefits of nature's recovery cannot be met through public funding alone, many countries, including the UK Government, aim to enable the private sector to play a vital role in restoring natural capital (Defra, 2025).

The World Bank categorises blue finance instruments into five primary types: thematic bonds, outcome-based finance, risk mitigation tools, dedicated funds, and fiscal and economic instruments (World Bank, 2025a), presenting a variety of instrument choices for policymakers. Public and private investment, including through outcome-based finance such as carbon credits and payments for ecosystem services, have been emphasised as key financial mechanisms (IDS, 2021). De-risking mechanisms, through blended finance and risk-sharing instruments such as first-loss tranches or political risk insurance, are also important options for enhancing the bankability of projects and attracting commercial capital (Lankes, 2021). Providing an example of a risk mitigation tool, in 2025, the Philippines launched the first-ever pilot parametric insurance product, which pays out a fixed amount automatically when a pre-defined extreme weather event occurs, for more than 14,000 small-scale fishers, to protect them against income loss from climate shocks (Schweigart, 2025). Sovereign catastrophe bonds are another emerging type of risk mitigation instrument designed to provide ex-ante financial protection for governments. They are particularly gaining interest in small island developing states and provide coverage for specific high-severity, low-frequency weather shocks (Reitmeier et al., 2025).

Given the high frequency of typhoons in the Philippines, mobilising capital towards increased investment in long-term resilience is an urgent priority. Philippines Senator Loren Legarda has also called for pioneering debt-for-nature swaps and blue bonds that can turn "capital into community-led revival" (British Embassy Manila, 2025). Debt-for-nature swaps are an important category of fiscal and economic instrument which aim to encourage sustainable practices by pricing negative environmental impacts, mobilising revenue for conservation, and scaling up sustainable investments (World Bank, 2025a). Blue bonds, a type of thematic bond, aim to mobilise large-scale private capital, and are often issued as part of debt-for-nature swaps. These two instruments are described below.

3.2. Debt-for-nature swaps

Debt-for-nature swaps originated in the 1980s as a mechanism to convert sovereign debt into conservation commitments (Hansen, 1988; Resor, 1997). The evolution of debt-for-nature swaps is commonly categorised into three phases, progressing from initiatives led by environmental NGOs, to bilateral government-driven arrangements, and finally to privately intermediated debt buy-backs (Dryden, 2025). Early debt swap transactions were mainly bilateral and declined after the 2000s due to the rise of alternative debt relief mechanisms, linked to poverty reduction and macroeconomic reforms. Since 2014, multipartite transactions involving third-party actors such as NGOs and international financial institutions have re-emerged. They aim to enable larger savings that can be directed towards conservation commitments. This trend has mainly been driven by the devaluation of sovereign debt from lower-income countries in financial markets, which has increased the financial attractiveness of debt-for-nature swaps (ibid.).

Debt-for-nature swaps are an effective tool for countries facing liquidity problems rather than serious solvency challenges (Nedopil et al., 2022). They are well suited for supporting climate and nature investments in countries with high but sustainable debt levels, limited access to concessional finance and strong political will (Fresnillo, 2023). The willingness of creditor countries to forgive a portion of debt plays a critical role in enabling public debt swaps (Yue and Wang, 2021).

Debt swaps primarily take the form of bilateral and multipartite arrangements, depending on the type of creditors involved (Green Climate Fund, 2024). Bilateral debt swaps usually involve an agreement between an official creditor and a debtor government, under which official bilateral debt is written off or 'swapped' in exchange for agreed payments, usually in local currency, earmarked for nature or development objectives. Multipartite debt swaps, also known as commercial debt or buyback swaps, target sovereign debt held by private creditors (International Monetary Fund, 2024).

The first debt-for-nature swap arrangement took place in 1987, when Conservation International purchased approximately US$650,000 of Bolivia's foreign debt (Resor, 1997). The distressed debt, which was considered risky and unlikely to be fully repaid, was purchased by a financial intermediary, Citicorp Investment Bank, on the secondary market at a reduced price of US$100,000 (Binnie, 2023). This 85% discount rate on the outstanding debt demonstrated the success of commercial debt-for-nature swaps (Yue and Wang, 2021); a higher discount rate allows a larger volume of debt to be restructured. In return, the Government of Bolivia committed to the legal protection of 3.7 million acres of tropical forests through the creation of three adjacent protected areas, and provided US$250,000 in local currency for the management of the Beni Biosphere Reserve (Nedopil et al., 2022).

However, this first-of-its-kind swap faced significant challenges. Weak enforcement failed to prevent illegal logging of the tropical forests, leading to the depletion of mahogany trees within the protected areas. There was also controversy over land rights, primarily due to the lack of meaningful participation by local organisations and communities (Collett, 1989; Resor, 1997). While debt-for-nature swaps are widely viewed as a successful tool for helping to manage foreign debt while promoting conservation and development programmes, the Bolivian case highlights an important lesson learned in the necessity for including local participation in decision-making.

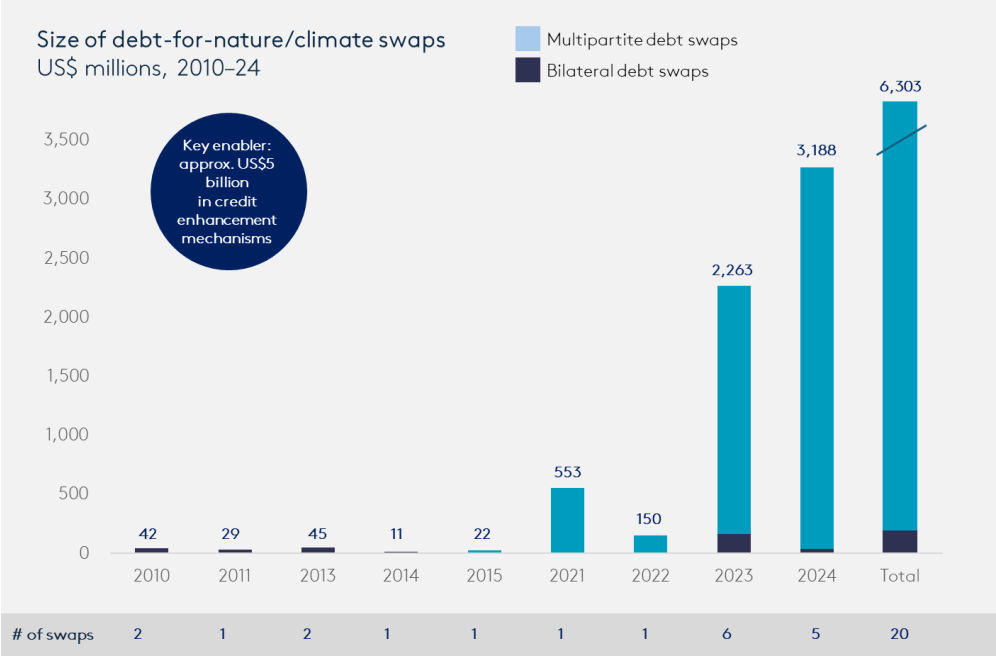
Following the passage of the Tropical Forest Conservation Act of 1998, the US Congress established a programme for debt-for-nature swaps that enabled 14 lower-income countries, including Indonesia, the Philippines, Peru and Costa Rica, to reduce or restructure sovereign debt owed to the US Government by redirecting debt service payments towards forest conservation activities. Indonesia has received the largest share of funding through bilateral agreements with the US Government, in 2009 and 2024, to protect tropical forests and coral reefs (US Department of the Treasury, 2009; US Embassy Jakarta, 2024). However, recent research that assessed the socio-ecological impacts of debt-for-nature swaps in Indonesia found that government policies have undermined environmental protection and local rights, raising concerns about structural inequalities (Choi, 2026).

Multipartite debt swaps have increasingly been structured as sovereign debt buyback mechanisms. Subsidies provided by donors or through the participation of MDBs in the provision of credit guarantees are critical for generating debt service reductions/savings[3] and to mobilise investors, who require investment-grade ratings (IMF, 2024). The main benefits of credit enhancements[4] — primarily in the form of political risk insurance or partial guarantees — are to increase the availability of financing and to crowd in investors while reducing borrowing costs and enhancing the creditworthiness of debtor countries (Dryden, 2025). However, credit enhancements can also increase governments' fiscal burdens and have received criticism for diverting development finance towards the de-risking of private investors (European Parliament, 2020).

As part of our research, we compiled a list of 20 debt-for-nature/climate swaps undertaken between 2010 and 2024, comprising 11 bilateral swaps and 9 multipartite swaps (see Annex 2 for the full list). These swaps are geographically concentrated in small island developing states, as well as in Central and South America and Africa. Barbados and Ecuador, countries that are highly exposed to climate change risks and biodiversity degradation while also facing increased levels of debt vulnerability, have already completed two transactions.

Debt swaps for nature and climate action have grown rapidly since 2023 (as shown in Figure 3.1), driven primarily by multipartite debt swap structures that treat much larger volumes of sovereign debt, reaching a total of approximately US$6.3 billion. The key enabler has been the use of approximately US$5 billion in credit enhancements provided by multilateral and bilateral development finance institutions, used in multipartite debt swaps in Belize, Barbados, Ecuador, Gabon, Bahamas and El Salvador.

Figure 3.1. Growth in debt-for-nature/climate swaps



Note: The size of the swap is measured by the face value of the debt restructured through bilateral and multilateral arrangements, including debt relief in exchange for conservation funding and debt buyback mechanisms.

Source: Authors

[3] Debt service is the sum of principal repayments and interest actually paid in currency, goods or services on debt owed by government entities. Debt service savings are the difference in debt service between the old and new debt.

[4] The use of credit enhancements in development finance usually provides partial credit guarantees to eligible borrowers against the risks associated with lending either on concessional or market-based terms. Typical guarantee amounts are 30–50% of total financial obligations.

Credit enhancements have been used as an enabler for refinancing sovereign debt owed to commercial creditors. As shown in Table 3.1, external commercial creditors dominate across the nine transactions. Barbados launched the world's first debt-for-climate resilience swap in 2024, which is the only transaction where a sovereign sustainability-linked loan was used to refinance domestic government debt. Specifically, this used a debt buyback mechanism to refinance outstanding and more expensive public debt, generating fiscal savings of US$125 million for increased investments in water infrastructure and food security (IDB, 2024). Under this transaction, Barbados repurchased US$293 million of its existing domestic bonds through a Sovereign Sustainability-Linked Loan (SSLL) provided by multiple domestic banks and backed by credit guarantees from the European Investment Bank and the Inter-American Development bank, each providing US$150 million (IDB, 2024). This arrangement includes performance-based conditionality, under which loan terms are linked to Barbados's achievement of agreed water security targets (Aqua Tech, 2025).

In addition, credit enhancements can reduce foreign currency risks, which can help lower the cost of capital (Ramos et al., 2023). This currency risk specifically arises from the mismatch between debt denominated in foreign currencies and revenues that are typically denominated in local currencies, which is common in climate projects. Local currency depreciation can make debt repayment more expensive, undermining the financial viability of projects (Yahmed et al., 2024).

Effectiveness challenges: does the instrument achieve its intended outcome?

The transactions in Table 3.1 primarily target sovereign debt held by private investors, and rely on refinancing mechanisms through blue bonds, impact bonds or sustainability-linked loans. In recent transactions in Seychelles, Belize, Ecuador and the Bahamas, special purpose vehicles (SPVs) have been established to issue a bond as a financing or refinancing instrument to raise capital from investors and thus lower the cost of borrowing. The proceeds from these bond issuances are then used to extend a loan to the debtor government to repurchase or buy back its older and more expensive debt in capital markets, with a portion of the resulting debt service savings committed to conservation objectives (Fresnillo, 2023).

Debt swaps are typically limited in scale. The transactions are complex and involve substantial administrative costs, such as in relation to technical assistance, feasibility studies and legal frameworks. In particular, debt swap mechanisms are heavily reliant on donor funding through grants, concessional financing or credit enhancements. Between 1987 and 2021, the total face value of debt treated through swaps averaged US$100 million per year, with many of the transactions below US$10 million (IMF, 2024). Multipartite debt swaps are primarily applied to privately held sovereign debt and are best suited to cases where a country's debt is trading significantly below face value and transactions are larger in scale. Despite this, the transaction size is generally too small to influence debt prices in secondary markets. Further, the use of an SPV[5] is particularly common in treating private debt in multipartite debt swaps, such as for those used in Seychelles, Belize, Barbados, Ecuador and Gabon, to finance the buyback mechanisms. The benefits of using an SPV lie in its ability to support bond issuance that attracts lower borrowing costs, with part of the proceeds agreed to be directed towards conservation activities. The bond proceeds are then used to extend a loan to the debtor government, which uses the funds to buy back older more expensive debt (Dryden, 2025). However, setting up an SPV involves the establishment of complex structures for implementation and monitoring frameworks, which often exceed the technical and administrative capacities of debtor countries (Mazzucato et al., 2024).

Debt-for-nature swaps are less likely than comprehensive debt restructuring initiatives to create meaningful fiscal space to address debt sustainability problems. Major challenges include the limited amount of actual debt relief and the inadequate allocation of debt service savings to marine conservation which have fallen short of the intended outcomes (Rogge, 2025). Between 2021 and 2024, the average debt reduction achieved through debt-for-nature swaps was

[5] An SPV is often created and financed by either issuing a new bond or receiving a loan from a financial institution.

approximately 3%, with the fiscal burden reduced by just 1%, compared with around a 21% reduction achieved through post-pandemic debt restructuring initiatives (Woolfenden, 2025). Ecuador generated the largest net debt relief of US$963 million, of which US$450 million was allocated to environmental proceeds, with nearly half of the debt relief absorbed into the wider fiscal budget (Dryden, 2025). In the Seychelles' debt-for-nature swap (see Box 3.1), US$21.6 million of sovereign debt was restructured, resulting in debt relief of just US$1.4 million (March et al., 2024), while committing US$5.6 million to marine conservation (Chandrasekhar and Quiroz, 2024). A key outcome of this debt swap is the Seychelles Marine Spatial Plan Initiative, adopted in 2020. As part of this initiative, the creation of MPAs increased the proportion of the island nation's Exclusive Economic Zone (EEZ) that is protected from 0.04% in 2012 to 32.8% in 2025 (TNC, 2025).

Other evidence shows that full protection of currently under-protected global biodiversity areas would reduce public debt by only about 0.1% for 67 countries under the World Bank's Debt Service Suspension Initiative (Nedopil et al., 2022). A large number of current studies of debt-for-nature swaps focus on exploratory concepts, highlighting the need to improve understanding of their practical outcomes, barriers and socioeconomic impacts (Nedopil and Sun, 2025).

The proportion of debt-for-nature funding allocated to conservation projects is low. Table 3.1 shows nine multipartite debt swap transactions with a total treated volume of approximately US$6 billion. Based on our assessment, the conservation-to-debt ratio, defined as the proportion of committed funding for conservation projects relative to the face value of sovereign debt treated, is approximately 27.5%. This means that for every US$1 of debt treated, about US$0.3 is committed to climate and nature action. The ratio ranges from a low of 14.5% in Belize to a high of 42.7% in Barbados.

Governance challenges: achieving alignment of interests among stakeholders is complex

Both bilateral and multipartite debt swaps are primarily driven by creditor incentives (Dryden, 2025). International private investors and NGOs tend to be overrepresented in decision-making processes concerning the role of local institutions in the design of financing structures and the governance of natural resources (Mazzucato et al., 2024). In the Seychelles and Ecuador, transaction design has prioritised the commercial interests of investors over the needs of local communities and small-scale fishers (Kilic, 2023; 2024). Further, negotiating debt swaps can take several years from initial engagement to conclusion, as parties seek to align incentives and maximise benefits for both debtors and creditors. For example, negotiations in Seychelles took approximately four years. In contrast, the El Salvador transaction was completed within one year, reflecting strong political will and governance in watershed conservation, and the involvement of development finance institutions (DFC, 2024). But, the recent democratic movement in the country may pose risks to its political stability (Huntington, 2024). Negotiations over financial mechanisms and terms involving multiple stakeholders and financial intermediaries are often not fully disclosed (Carbon Brief, 2024). This limits public scrutiny and has prompted criticism regarding accountability. Enhancing disclosure of financial transactions and creating benefit-sharing mechanisms for local communities in the design of financial instruments are important for addressing these challenges (Reitmeier et al., 2025).

Conditionality may limit project effectiveness when creditors inadequately consider local conditions and evolving conservation priorities in the design of debt swaps (Kilic, 2024). The use of conservation funding by the debtor country is strictly governed by the contractual terms agreed under the debt swap agreement. If debtor countries seek to reallocate funds towards emerging or other urgent priorities, they must renegotiate these terms with creditors, which can be time consuming. Inflexibility in the allocation of funding for eligible blue projects therefore limits the debtor country's ability to respond to changing development needs (Rogg, 2025).

Table 3.1. Multipartite debt-for-nature/climate swaps, 2015–24

Debtor country	Year	Type of debt buyback mechanism	Buyback composition	Face value of debt treated (US$ millions)	Expected funding to conservation commitments (US$ millions)	Debt-to-conservation ratio
Seychelles	2015	Use of grant and private loan to buyback/repurchase Paris Club debt at a minor discount	US$21.6 million official bilateral debt owed to Paris Club creditors (France, Italy, Belgium, South Africa, and the UK)	21.6	5.6	25.9%
Belize	2021	A blue loan (US$364 million) financed by a blue bond used to repurchase the 'Superbond' at a substantial discount	US$553 million 'Superbond' is the sovereign debt held by external commercial creditors	553	80[a]	14.5%
Barbados	2022	A blue loan (US$146 million) used to repurchase multiple bonds as external and domestic commercial debt (interest rate reduction)	US$77.6 million of 6.5% sovereign Eurobonds due in 2029 plus US$72.9 million of 8% domestic bonds due 2043	150	50	33.3%
Ecuador	2023	Issuance of a blue bond (US$656 million) to repurchase debt at a substantial discount	US$1.6 billion across three series of commercial sovereign bonds (2030, 2035 and 2040 maturities)	1,600	323	20.2%
Gabon	2023	A blue loan (US$500 million) financed by a blue bond used to repurchase Eurobonds at a minor discount	US$92.6 million of approx. 7% sovereign Eurobonds due 2025 plus US$349.4 million of 6.6% sovereign Eurobonds due 2031	500	125	25.0%
Ecuador	2024	A new loan issued to repurchase debt at substantial discount	US$1.53 billion across four series of commercial sovereign bonds (2030, 2035 and 2040 maturities)	1,530	460	30.1%
Barbados	2024	Issuance of a sovereign sustainability-linked loan to refinance domestic government debt	US$293.3 million of domestic sovereign bonds	293	125	42.7%
Bahamas	2024	A new loan issued to repurchase external debt	US$216 million in sovereign Eurobonds and US$81 million in external commercial bank debt	300	124	41.3%
El Salvador	2024	A new loan raised to issue an impact bond used to repurchase debt	US$1.03 billion of commercial sovereign bonds	1,030	350	34.0%
				5,977.6	1,642.6	27.5%

Note: a. Belize agreed to spend about US$4 million per year on marine conservation until 2041, and a US$23.5 million endowment fund was created to finance marine conservation after 2041 (IMF, 2022).

Source: Authors

Despite recent improvements, community engagement in debt-for-nature swaps remains insufficient (Fresnillo, 2023). The evolution of debt swaps shows that both debtor governments and creditors have improved their efforts to engage with communities in the debt swap processes. For example, the debt-for-nature swap between Costa Rica and the US in 2007 is a positive case, as public information is available on project activities in more than 200 Indigenous and local communities (Association of Costa Rica, 2023). In Seychelles, the government undertook extensive stakeholder consultations to understand threats to the livelihoods of small-scale fishing communities and to encourage them to protect marine resources for food security. However, there are concerns over the design of participatory approaches and the transparency in how meaningfully local communities were involved (Fresnillo, 2023; Carbon Brief, 2024). In Ecuador, a lack of consultation with local communities was reported, which led to a complaint from civil society organisations (Standing, 2025).

3.3. Blue bonds

The above governance challenges associated with debt swaps have implications for designing blue bonds with transparency, flexibility and meaningful community engagement. But what exactly are blue bonds, how do they work as a standalone financial instrument and how do they function as part of debt-for-nature swaps?

The notion of a blue bond was first defined by the World Bank as "a debt instrument issued by governments, development banks or others to raise capital from impact investors to finance marine and ocean-based projects that have positive environmental, economic and climate benefits" (World Bank, 2018). Blue bonds aim to deliver positive environmental and social impacts alongside a financial return on investment, with proceeds channelled towards projects primarily aligning with UN Sustainable Development Goal (SDG) 14, 'Life Below Water' and other SDGs (Thompson, 2022; March et al., 2024). Blue bonds fall into the category of use-of-proceeds bonds which comprise other thematic bonds, such as green bonds, social bonds and sustainability bonds. Blue bonds are a relatively new form of sustainability bond and a subset of green bonds, with issuance aligned with the Green Bond Principles and the Sustainability-linked Bond Principles (IFC, 2022b). The blue bond operates in the same way as a conventional bond, whereby investors lend capital to the bond issuer, who repays the principal plus a fixed interest rate (coupon) over the maturity period.

The issuance of a blue bond typically involves several practical steps, including a feasibility study, pre-issuance preparation, issuance, and post-issuance monitoring and reporting. During the pre-issuance stage, a bond framework is created to finance eligible blue projects, under which the issuer aligns the bond with the four core components: use of proceeds; process for project evaluation and selection; management of proceeds; and reporting of project allocation and expected impact (ADB, 2023). Sovereign blue bonds are issued by national governments and therefore tend to carry a lower risk profile than corporate blue bonds. As a result, they typically offer low coupon yields (European Commission, n.d.).

Sovereign credit ratings play a key role in determining bond pricing and investor demand (BIS, 2011). Climate change increases sovereign risk by weakening countries' financial positions (Volz et al., 2020). In countries with lower income and those with high climate vulnerability, sovereign credit ratings below investment grade and a limited project pipeline are among the key challenges affecting their ability to raise capital, due to higher borrowing costs. Therefore, MDBs are in a better position to issue blue bonds (March et al., 2023). In addition, if the projects financed by blue bond proceeds do not generate sufficient economic returns, or if interest rates are high, the resulting increase in debt obligations may lead to a potential credit rating downgrade (March et al., 2024). When bond repayment structures are not directly linked to revenues of investment projects, fiscal sustainability and a country's overall creditworthiness are weakened.

The primary condition for issuing a blue bond is a climate/nature commitment to the use of proceeds, which in turn will be invested in the development of the blue economy (March et al., 2023). For regular bond issuances, returns on investment mainly take the form of fixed interest

payments, whereas use-of-proceeds bonds are linked to the performance of the funded projects. Stable policy planning and a robust governance framework for successful blue economy initiatives are vital to incentivising investor decision-making in relation to blue economy investments (Robertson, 2021).

The blue bond market is still emerging. Between 2018 and 2022, there were only 26 blue bond issuances with a combined value of US$5 billion (Pandey, 2025). Blue bonds represent about 0.5% of the sustainable debt market, with proceeds primarily allocated to waste management, sustainable fisheries and aquaculture, coastal protection, and renewable energy (Bosmans and de Mariz, 2023). The supply-side, demand-side, and implementation challenges associated with blue bonds are summarised in Table 3.2.

Table 3.2. Challenges associated with blue bonds

Supply-side challenges (pre-issuance)	**Lack of a project pipeline; limited** monitoring, reporting and verification **systems**	**Small bond size, typically below US$500 million**	**Bond proceeds concentrated in aquaculture and commercial fishing, with impacts on small-scale fisheries often overlooked**
Demand-side challenges (investor confidence)	Lack of an enabling environment, reflected in underdeveloped and fragmented blue economy policies and regulatory frameworks	Inconsistent taxonomy and definitions in the blue economy	Barriers to bond issuance arising from higher borrowing costs in capital markets
Implementation challenges (post issuance)	Insufficiently defined impact metrics and measurement frameworks	Mismatch between bond repayment structures and revenue streams of eligible blue projects	High transaction costs and limited engagement with stakeholders, including local communities

Sources: Nefzi et al. (2025); March et al. (2024); Systemiq and Mangrove Breakthrough (2023); Bosmans and de Mariz (2023); March et al. (2023); Roth et al. (2019); Kilic (2023)

The use of impact metrics in blue bonds remains limited as there is a lack of standardised definitions, targets or metrics. Only two-thirds of blue bond issuers report on such metrics, with the remainder providing no publicly available information (Bosmans and de Mariz, 2023). A common impact target for marine conservation projects is the expansion of MPAs, as in Seychelles, Belize and Barbados. As in the case for debt-for-nature swaps, the impact of blue bonds on small-scale fisheries has also been insufficiently assessed, raising concerns about equity outcomes (March et al., 2024; Schutter et al., 2024). Eligible blue projects range from seafood, tourism and MPA creation, to fisheries management and, in some cases, oil and gas exploration (Thompson, 2022). A lack of a clear definition of the blue economy can therefore result in potential "bluewashing" (Kilic, 2024).

The International Capital Market Association (ICMA) provides a blue bond guidance for example project outputs and impact indicators, and establishes the global benchmark for eligible blue project activities. In contrast, the ADB and World Bank project classifications are primarily based on ODA and multilateral investment for development purposes. Under the ADB, ICMA, International Finance Corporation and UN agencies' blue project categories,[6] a key priority is coastal climate adaptation and resilience, with a potential social co-benefit of improved early warning systems (ADB, 2023). This includes an example of impact reporting for mangrove projects that aim to reduce the impact of waves and reduce storm surge and flood depth with mangrove forest under improved conservation and/or restoration as an example impact indicator (ibid.).

[6] The blue project categories include coastal climate adaption and resilience; marine ecosystem management, conservation, and restoration; sustainable coastal and marine tourism; sustainable marine value chains; marine renewable energy; marine pollution; sustainable ports; and sustainable marine transport (ADB, 2023).

There is increasing demand from investors for enhanced tracking, reporting and accountability of bond investments. Establishing specific measurable indicators, in terms of greenhouse gas emissions reductions and the number of beneficiaries from conservation and restoration activities, can increase investor demand. However, establishing comprehensive monitoring, reporting and verification (MRV) systems for blue bonds can be particularly challenging (March et al., 2023). There is also a lack of clarity regarding a robust monitoring and compliance framework, particularly in managing the use of loans and funding aligned with blue economy objectives (March et al., 2024). In contrast, MRV systems for green bonds are more developed, supported by a higher degree of standardisation and a clearly defined use-of-proceeds structure. Green bonds have accounted for 62% of total sustainability thematic bonds since 2006 (CBI, 2025), with nearly 40% of them being allocated to renewable energy projects, reflecting the high maturity of such technologies and their tangible economic benefits (IFC, 2024).

The tourism industry is positioned to benefit from investments in conservation and ecotourism through blue bond issuance. However, tourism development and expansion have been major drivers of mangrove loss for economic profit in many countries (Howai, 2025). Meanwhile, the tourism sector has faced increased operating costs driven by climate change impacts, including physical damage to coastal hotel facilities and higher insurance premiums (Sucharitakul and Hardy, 2021). For example, the Bahamas receives lower tourism revenues relative to other Caribbean islands (March et al., 2023), caused, in part, by the increased intensity and frequency of hurricane events (Pathak et al., 2021). The majority of tourism activities take place on beachfronts, where tourism infrastructure, such as hotels and resorts, is particularly vulnerable to coastal flooding, which leads to reduced visitor expenditures per capita (Pathak et al., 2021). Integrated coastal management has been identified as an important adaptation intervention. The organisations Caribbean Challenge Initiative and Bahamas Protected are involved in the effective management of MPAs in the country, to protect coral reefs and generate ecosystem services related to recreation, tourism fisheries and storm protection. The development of blue carbon credits is another intervention in the Bahamas, focusing on monetising seagrass meadows and aiming to raise up to US$300 million for marine protection.

Blue bonds can be issued as part of a debt-for-nature swap (see Box 3.1). For example, sustainability bonds, including green and blue bonds, can form part of a government programme for refinancing or restructuring debt through debt-for-nature or debt-for-climate swaps, while also making funds available for nature and climate action. However, blue bond labelling and terminology has so far been misleading, because most of the funds raised have actually been used for debt buybacks or refinancing existing debt, with conservation funding arising only indirectly through debt service savings (Fresnillo, 2023; Olsen and de Mariz, 2025). For example, in 2023, Gabon used the proceeds of its 'blue bond' to repurchase approximately 80% of debt maturing in 2031, compared with only 20% of debt maturing in 2025, in order to maximise nominal debt service savings (IMF, 2024).

Box 3.1. Case study: debt-for-nature swaps in Seychelles

In 2017, as part of debt restructuring initiatives linked to economic reform, the Seychelles' debt-for-nature swap was the first global swap specifically focused on marine conservation and climate adaptation. The transaction was designed to repurchase a portion of sovereign debt held by the Paris Club, a group of 22 major creditor countries. Instead of repayment, approximately US$21.6 million of sovereign debt owed by Seychelles to Belgium, France, Italy and the UK was restructured to free up investment for the blue economy. Seychelles' conservation commitments include protecting 30% of Seychelles' Exclusive Economic Zone (EEZ), which is roughly 400,000 square kilometres of ocean, developing Marine Spatial Plans for designated MPAs, and establishing both fully protected 'no-take' zones and sustainable use MPAs.

The Seychelles Conservation and Climate Adaptation Trust (SeyCCAT) was established by The Nature Conservancy as a public–private trust to manage the proceeds of the debt swap independently (TNC, 2025). SeyCCAT was created because TNC was not able to loan funding to the Government of Seychelles, due to independence and donor policies. As an alternative, TNC capitalised SeyCCAT through two funding sources: a concessional loan of US$15.2 million from its own impact investing unit, NatureVest, and US$5 million in grants mobilised from philanthropic donors. SeyCCAT issued a loan of US$21.6 million to the government to buy back its debt at a 6.5% discount paid at US$20.2 million, achieving a modest debt reduction of approximately US$1.4 million.

The Government of Seychelles issued two promissory notes to SeyCCAT: one for loan repayment of US$15.2 million over 10 years, and a second of US$6.4 million, payable over 20 years, funding two annual cash flows: US$200,000 per year to the Blue Grants Fund for marine conservation projects; and US$150,000 per year to capitalise an endowment fund, working towards a target endowment value of US$6.6 million. An endowment fund in a debt-for-nature swap is a permanently invested capital pool where only the investment returns, such as interest or dividends, are used to finance conservation activities. The endowment is built gradually from a portion of the annual debt service savings, accumulated over time, ensuring the continuity of funding after the completion of the debt swap, without relying on further donor funding. This reflects a dual approach, by allocating debt service savings between near-term spending on conservation projects through the Blue Grants Fund, and long-term financial sustainability through the endowment fund. The estimated amount to be invested in conservation activities and the endowment is US$13 million, of which nearly 70% of this is payable in local currency, further reducing the cost of foreign currency conversion.

Seychelles issued the world's first sovereign blue bond of US$15 million in 2018, with a fixed coupon rate of 6.5%, facilitated by the World Bank. The bond is managed by SeyCCAT and the Development Bank of Seychelles (DBS). The issuance of the blue bond received a partial guarantee from the World Bank, a concessional loan from the GEF, and grant funding of US$425,000 from the Rockefeller Foundation to cover transaction costs. By receiving an initial US$3 million from the blue bond, together with debt service savings and philanthropic capital, the Blue Grants Fund, also managed by SeyCCAT, has distributed approximately US$5.3 million to 96 local projects, including research into MPAs, voluntary fishery closures as a result of MPA implementation, aquaculture and climate change mitigation and adaptation. In addition, the DBS managed US$12 million of the loan through its Blue Investment Fund to support the expansion of sustainable fisheries value chains. Bond design faces several challenges (March et al., 2024). In the case of Seychelles, the bond repayment structure linked project outcomes to sovereign ability to repay principal payments, rather than repaying from project revenue streams, which increased the risk of defaulting on paying back the loan (ibid.). The misaligned and overlapping schedules for the disbursement of funding in the loan and grant from the DBS and SeyCCAT undermined the leveraging role of grants, which could have been used to reduce the cost of capital needed to invest in marine conservation and to provide technical assistance

to improve project feasibility through improved policy interventions. Also, the initial bond issuance was undersubscribed, due to limited project supply and weak investor demand, which resulted in a low price in the secondary market.

Bond proceeds were primarily directed towards large-scale fisheries rather than being allocated in a holistic, blue economy, approach. Lending requirements, including a 10% down payment and a 1:1.25 collateral ratio, created significant barriers that prevented small-scale fishers from accessing financing to ensure their food security and livelihoods. The blue bond is therefore mainly used for providing funding to well-established fisheries businesses.

The use of an SPV created major barriers to the delivery of conservation funding. Under the SPV financing structure, debt relief or concessional refinancing is governed by agreed rules and multi-level approval processes, which can delay the disbursement of ring-fenced funds or SeyCCAT funding. New reporting standards and compliance requirements established outside existing public financial management further increased additional administrative burdens.

By March 2020, Seychelles had declared 30% of its EEZ an MPA, including five High Biodiversity Protection Areas totalling 203,071 square kilometres (State House of the Seychelles, 2020). A Marine Spatial Plan has since been signed into law, underpinned by ocean mapping and a participatory planning process. The Blue Grants Fund has more than tripled its available funding since its establishment, disbursing over US$3 million in grants to 66 projects since 2018 (SeyCCAT, 2025). Blue bond proceeds were issued to SeyCCAT in six tranches of US$500,000 from 2018 to 2023, supporting MPA management, sustainable fisheries and climate adaptation activities. The blue bond initiative now operates as the largest financial partner at the national level for the management of the Aldabra Atoll World Heritage site, providing an estimated US$325,000 over five years to address challenges such as marine pollution and mapping of coral reef connectivity (UNESCO, 2023).

4. Conceptual framework: 'debt-for-mangrove' swaps in the Philippines

This section briefly discusses completed debt-for-nature/development swap transactions in the Philippines and outlines how a conceptual framework for a 'debt-for-mangrove' swap could potentially work for the country.

4.1. Examples of completed debt-for-nature/development swaps in the Philippines

The Philippines has engaged in debt for nature/development swaps amounting to over US$100 million since the 1980s. With support from USAID and the WWF, the early years of such swaps in the country focused on the protection and management of marine protected areas such as the creation of El Nido Marine Sanctuary in 1988 and through efforts in terrestrial protected areas to help fund the Puerto Princesa Subterranean River National Park in 1989 (CBD, 2003). In 2012, the Philippines signed a debt-for-development agreement with Italy, in which approximately US$3.7 million in debt service obligations were converted into a grant for the implementation of five development projects in priority areas: forest conservation and livelihoods, water management, ecotourism, environmental protection, and poverty reduction (DOF, n.d.). Since 2022, the Philippines and the US have also concluded two debt-for-nature swaps totalling US$40 million, redirecting debt service payments towards forest protection, biodiversity conservation and climate action (DOF, 2024).

The Puerto Princesa Subterranean River National Park on the island of Palawan, selected as one of the protected areas for the debt-for-nature programme in 1989 (IUCN, 2011), and supported under debt swap programmes with the US and Italy, was found to have a positive impact on coastal livelihoods through ecotourism (IUCN, 2020). More recently, to address tourist overcapacity in the park, a sustainable ecotourism project was funded between 2015 and 2017 through the Philippines' bilateral debt swap with Italy (IUCN, 2020). Local communities in Sabang, Palawan, benefited by taking more than 80% of the ecotourism jobs created in the park, owing to policy support from local government units (Jalani, 2012). Recent data from a key informant interview reveals that community-based ecotourism is a successful livelihood project for local communities in this park, with revenue streams reaching approximately PHP6–8 million (approximately US$100,000–136,000) in 2024. However, unclear land tenure, limited enforcement capacity and physical and socioeconomic vulnerability to typhoon damage may constrain the effectiveness of future debt-for-nature/development initiatives, indicating the need for improved governance and community engagement strategies.

4.2. A proposed 'debt-for-mangrove' swap framework for the Philippines

In this section we propose a proof-of-concept financing architecture for a 'debt-for-mangrove' swap in the Philippines, which we define as the use of an improved design of a debt swap mechanism to create the fiscal space the country requires for investments in mangrove protection and restoration (see also Figure 4.1). Recognising the scalability challenge, debt swap instruments are considered as a complementary lending tool (Liu, 2026).

Sizing the debt swap: mangrove funding gaps

In 2025, public debt stood at 63.2% of the Philippines' GDP, reaching its highest level since 2005, driven primarily by increased net issuance of both domestic and external debt (BSP, 2025; Cordero, 2026). The debt stock remains largely denominated in US dollars and Japanese yen. Multilateral and bilateral creditors account for the largest share of the total outstanding debt in the country, representing 39.3% (US$54.12 billion) in 2025 (BSP, 2024; 2025). The Philippines' largest multilateral creditors include the ADB and the World Bank, while key bilateral creditor countries are Japan (US$15.18 billion), Singapore (US$5.06 billion) and the Netherlands (US$4.55

billion) (BSP, 2025). The Government of the Philippines has set a policy target to reduce the debt-to-GDP ratio to below 60% by 2028 (DOF, 2025).

Estimating the investment needed for mangrove restoration indicates the potential scale of a debt swap. Wetlands International suggests that approximately 30,000 hectares of mangroves in the Philippines could be fully restored through the reversion of abandoned, underdeveloped and underutilised fishponds (Wetlands International, 2025). However, estimates of restoration costs per hectare are not available specifically for the Philippines. A recent study that estimates mangrove restoration costs to be, on average, US$7,409 per hectare in Southeast Asia, with viable afforestation areas and reversion of aquaculture ponds among the lowest-cost restoration methods, at approximately US$2,361 and US$3,236 per hectare, respectively (Goto et al., 2025), provides us with a reasonable proxy. Their costs are determined by biophysical, social and political contexts, including the degree of degradation, the intensity of restoration activities and cost variations across countries (Goto et al., 2025).

These proxy restoration costs imply that a potential investment requirement of approximately US$71–97 million could be applied in the Philippines (i.e. US$2,361–3,236 per hectare multiplied by 30,000 hectares of mangroves). Applying an average debt-for-conservation funding ratio of 27.5%, derived from our review of past debt swap transactions in Section 3, we estimate that at least approximately US$258–353 million of Philippine sovereign debt could be included for the proposed debt swap, subject to the level of discounts and borrowing terms. The resulting transaction size is well suited to initiating a multipartite debt swap mechanism in the Philippines.

Financing mechanisms

Refinancing sovereign debt owed to commercial creditors through a debt swap mechanism is financially less attractive for the Philippines. Philippine foreign debt is not distressed, and its major international bond issuances are generally priced at or very close to 100% of face value, offering attractive bond yields to investors (DOF, 2026a). The country maintains investment-grade sovereign credit ratings in the BBB range, indicating a relatively low risk of default and a strong capacity to repay debt (S&P Global, 2025). The debt service ratio (the ratio of debt service payments made by or due from a country to that country's export earnings) improved to 8.5% in 2025 from 11.5% in 2024, reflecting greater fiscal space driven by lower principal and interest payments and reduced borrowing costs (S&P Global, 2025). These conditions sustain strong investor confidence in Philippine government bonds, limiting opportunities to repurchase debt at a discount. As a result, debt refinancing through discounted debt buybacks would likely generate limited debt service savings in the Philippine context. This shifts attention towards the role of MDBs, which hold a significant share of Philippine external debt and whose participation would be critical. Growing evidence calls for the participation of multilateral creditors in advancing debt sustainability and tackling climate change (Zucker-Marques, 2023).

The role of MDBs

The International Monetary Fund and World Bank debt-for-development swap frameworks target external debt held by official bilateral and private creditors, including bonds and commercial loans, but do not include debt owed to MDBs and other international financial institutions (IMF, 2024). MDBs and international financial institutions generally do not participate directly in debt reduction or swaps, largely because of their preferred creditor status and the need to preserve their AAA credit ratings (Humphrey, 2025). In the 1990s, there was debate over the potential of conversions involving MDB debt, which was particularly relevant for highly indebted countries with a high level of MDB debt stock and servicing flows as part of their external debt (Resor, 1997). This reflects a foundational principle that multilateral debt cannot be bought back at a discount, because MDBs do not sell debt on secondary markets at below face value.

Debt reprofiling

Debt refinancing and debt restructuring are the primary financing mechanisms used in debt-for-nature swaps. Debt refinancing means replacing existing debt with new debt, whereas debt

restructuring aims to modify the existing debt under improved terms. In Belize (2021) and Ecuador (2023), refinancing and restructuring mechanisms have been used to tackle debt distress. In Belize, TNC supported the issuance of a blue bond to restructure about US$553 million debt owed to commercial lenders; a new blue bond was issued to replace existing commercial debt, and existing debt obligations were negotiated and modified with creditors (Standing, 2025). In 2023, Ecuador converted US$1.6 billion of its sovereign bonds held by commercial creditors into a US$656 million loan through a bond-to-loan conversion, the Galápagos Marine Bond, generating over US$1 billion in fiscal savings, of which an estimated US$323 million was directed towards marine conservation and US$227 million was capitalised into an endowment fund (DFC, 2023).

Given MDBs' preferred creditor status and the Philippines' non-distressed debt position, debt reprofiling emerges as a more viable option than debt restructuring. Debt reprofiling is a type of sovereign debt restructuring that focuses on extending the maturity of a government's short-dated liabilities, without changing the principal or coupon (Makoff, 2015). Reprofiling is likely to be less costly to the debtor and creditors than standard debt restructuring (IMF, 2016). The International Monetary Fund (IMF) was among the first organisations to propose reprofiling maturing debt as an effective policy tool in the global financial architecture for managing sovereign debt crises. It was originally conceived for countries facing liquidity stress or uncertain debt sustainability, and its motivation was to avoid the use of IMF funding resources to protect commercial creditors during the Eurozone debt crisis (Buchheit et al., 2014). The main benefit of debt reprofiling is that it provides temporary liquidity support to reduce near-term debt service obligations.

With an increased focus on addressing climate vulnerabilities within development mandates, MDBs have introduced new debt management instruments. For example, the World Bank offers climate-resilient debt clauses (CRDCs), under which debt service is temporarily frozen and repayment is postponed when triggered by disaster events (Cravero et al., 2025). This approach of pre-emptive reprofiling provides temporary liquidity support and does not affect the net present value of the credit, while providing greater certainty about repayments than ex-post debt restructuring, thereby reducing transaction costs and the risks of default and litigation. However, CRDCs are only available to certain International Development Association borrowers, mainly small island developing states, as opposed to middle-income countries, such as the Philippines (World Bank, 2023b).

As discussed in Section 3, credit enhancement is one enabler of debt reprofiling in recent debt-for-nature swap transactions. Recent debt-for-development swaps have used credit guarantees supported by MDBs to refinance existing debt with lower interest rates and longer maturities, generating fiscal savings that governments commit to development spending. For example, a debt-for-development swap in Cote d'Ivoire, a World Bank-supported refinancing operation, created approximately €330 million in fiscal space over five years without increasing net debt (World Bank, 2024b). This innovative debt swap structure involves refinancing €400 million of commercial debt facilitated through a credit enhancement guarantee, thereby improving debt sustainability and generating fiscal space for education infrastructure investment. Among transactions generating fiscal savings through interest rate reduction, El Salvador's 2024 swap generated the largest savings of US$352 million over 20 years, enabled by political risk insurance from the US Development Finance Corporation and credit guarantees from the Development Bank of Latin America and the Caribbean. However, fiscal savings do not automatically translate into conservation funding, particularly given that the transaction costs arising from SPV structures are not publicly disclosed (Woolfenden, 2025). In Belize (2021), transaction costs were estimated to be as high as US$85 million, nearly half of the US$180 million generated for conservation funding (Losos, 2025).

Flexible loan products can be a viable option to support a debt reprofiling approach. Modifying existing loan terms is a key feature in flexible loan products offered by MDBs. For existing loans, interest rate and currency conversion can be activated at the borrower's request at any time

during the loan period. For new loans, maturity extension is available only at loan origination and cannot be modified after the loan agreement is signed.

Interest rate conversion is a risk management tool where the key feature is converting a floating rate to a fixed rate, thereby reducing exposure to fluctuations in global interest rates. The Philippines has already executed transactions to reduce exposure to interest rate volatility in its International Bank for Reconstruction and Development (IBRD) debt portfolio by using the interest rate conversion feature of the Flexible Loan (the World Bank's leading loan product for public sector borrowers of middle-income countries) to achieve debt management objectives, including reducing interest rate risk and improving the predictability of debt service obligations (World Bank, 2024). This voluntary loan modification has not triggered any credit rating concerns and is estimated to have generated interest payment savings of approximately US$125 million across 40 loans through the conversion of US$11.13 billion of IBRD floating rate loans to fixed rate loans (DOF, 2023). Building on this practice, the Philippines could further explore interest rate and currency conversion on its existing sovereign loans owed to MDBs, while exploring the possibility of negotiating longer maturities on new borrowings under the flexible loan products, offered by the World Bank and the ADB. While fiscal savings generated from flexible loan products may be modest, as illustrated by the US$125 million saving above, they represent an opportunity to establish a ring-fenced fund as catalytic capital, rather than being absorbed into the general budget.

This structure does not impose the conditionality of a top-down approach. The Philippines could strengthen its collaboration with MDBs, which can provide technical assistance and leverage additional capital from the private sector and other donors. The critical enabling condition for attracting investment is an improved policy environment.

The role of a trust fund

Evidence of success can be found in past debt-for-nature swaps, in which resulting debt service savings were ring-fenced into trust funds to support conservation commitments. As shown in Seychelles, the SeyCCAT trust fund was established to provide grants to meet conservation objectives and to set up an endowment fund to ensure long-term financial sustainability. In May 2023, Ecuador converted US$1.6 billion of sovereign bonds into a concessional loan, generating over US$300 million in conservation funding to be channelled to independently managed marine conservation around the Galápagos Islands over 18 years (Norton Rose Fulbright, 2023).

Building on these examples, the earmarked savings from proposed debt swaps could be directed towards implementing long-term mangrove conservation commitments. A mangrove trust fund could be established in the Philippines, with the purpose of managing the proceeds of the potential debt swaps independently. This would include the development of two funds: a community fund to support mangrove-based livelihood projects; and an endowment fund to raise capital for large-scale mangrove restoration investments. The endowment fund could continue to finance mangrove conservation beyond the duration of the community fund, which could provide financing to community projects over the period agreed under proposed debt swaps.

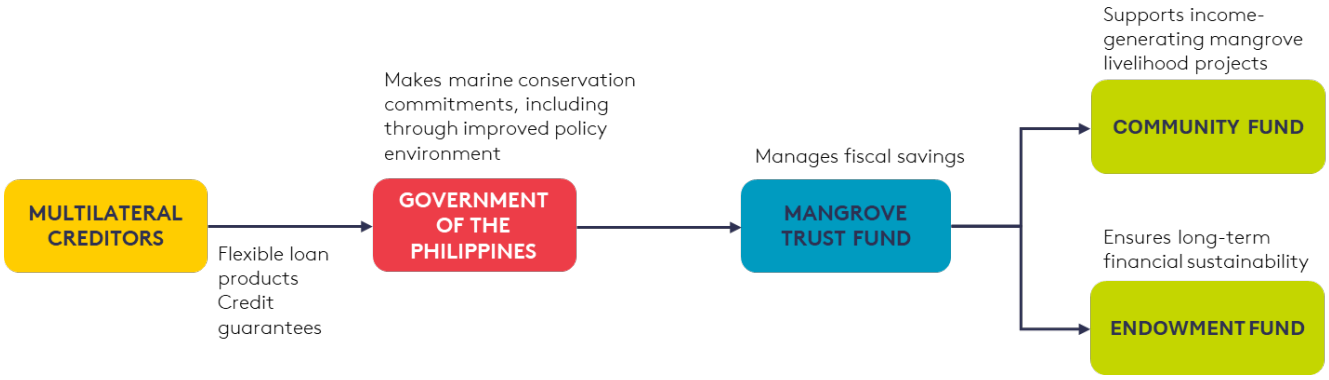
Establishing a community fund is vital for supporting mangrove restoration initiatives. Recent research by Howai et al. (2026) shows that protecting and restoring mangroves in MPAs is valued by Indigenous people and communities, including lower-income groups, in Palawan in the Philippines (Howai et al., 2026). It also finds that fishing, ecotourism and beekeeping projects are critical mangrove-based income-generating opportunities, for which sustainable business models could be further explored to identify viable revenue streams. Targeted investment in Palawan could harness this support to restore degraded mangrove areas, strengthen local enforcement and implement community-driven ecosystem service projects that align with blue finance objectives.

Development banks have a primary mandate of providing long-term and concessional capital to priority sectors and regions that are underinvested in by the private sector due to high upfront costs (Hochstetler, 2014). The Land Bank of the Philippines and the Development Bank of the

Philippines (DBP) are accredited entities of the Green Climate Fund and are committed to tackling climate change. The DBP has a dedicated development financing programme that aims to restore the Philippines' coastal forests, including mangroves, as part of its efforts to improve corporate social responsibility (DBP, n.d.). The Land Bank aims to raise at least PHP30 billion (approximately US$535.7 million) through bond issuances to fund eligible green projects, including those related to food security (Philippine Information Agency, 2026). The example of the first peso-denominated fixed-rate blue bond that was issued by Maynilad Water Services Inc. to fund sustainable water and wastewater projects (Ceballos, 2024), also demonstrates the viability of a local currency corporate blue bond in the Philippines.

An endowment fund, capitalised from fiscal savings and managed by national development banks, could serve as de-risking capital to attract large-scale investments in mangrove restoration. For example, the Bureau of the Treasury under the Department of Finance in the Philippines could issue a sovereign blue bond for mangrove MPAs, facilitated by national development banks, which can improve country ownership. With the support of MDB guarantees, sovereign blue bonds and debt-for-nature swaps tend to attract institutional investors, such as pension funds and sovereign wealth funds, which can reduce borrowing costs (World Bank, 2025a). Credit enhancements, through the use of guarantees, can improve terms and attract investors by de-risking investments. The proceeds from the blue bond could potentially generate a source of funding for mangrove restoration investments over the long term.

Figure 4.1. A proposed structure for a 'debt-for-mangrove' swaps



Source: Authors

5. Policy implications: the role of institutions

Building on the financing architecture proposed in Section 4, this section identifies key institutional arrangements that could be strengthened to enable the Government of the Philippines to operationalise 'debt-for-mangrove' swaps, aimed at channelling the flow of debt service savings towards empowering coastal communities.

5.1. Identifying key institutional arrangements for financing community action

Capacity constraints are among the key barriers to the effectiveness of development finance. While, according to an interviewee, MDBs and development agencies often improve project-based development outcomes, such as poverty reduction and improved health, they have not brought about sustained improvements in the technical and knowledge capacity of national governments. One reason for this is that project activities related to capacity building and institutional strengthening are relatively limited in climate-related sovereign project lending (ADB, 2021). Improved use of tools such as policy-based lending or development policy financing can provide budget support to public sector borrowers that agree to implement policy reforms, including those focused on climate resilience and nature-based solutions (ADB, 2024; World Bank, n.d.b). More recently, the ADB has established a Centre of Excellence, a learning platform to enhance knowledge sharing efforts in its developing member countries in Asia through capacity building initiatives (ADB, 2026). This could further support local policymakers in the Philippines in strengthening technical expertise to design and implement community projects.

Community-led and small-scale projects frequently struggle to meet financing requirements (Treichel et al., 2024). Local governments face several constraints, such as limited financial resources, in part due to the lack of direct access to international climate finance, limited technical capacity and policy inconsistencies (Delina et al., 2023; Zabala et al., 2026). Key informants noted that technical assistance in areas such as the economic valuation of ecosystem services remains limited within local government institutions, universities and not-for-profit organisations. Mangrove conservation requires a long-term investment horizon, with high upfront costs, long payback periods and limited revenue streams from mangrove conservation projects reducing their financial viability (Systemiq and Mangrove Breakthrough, 2023; Sheikh et al., 2025). Carbon credits from mangroves are an emerging priority to mobilise funding from the private sector; however, measuring and verifying carbon sequestration for high-quality credit certification remains particularly challenging. Recovering soil carbon content from abandoned fishponds is especially difficult, typically taking 30 years to reach the carbon stocks of natural mangroves (Yang et al., 2025). Beyond carbon sequestration, co-benefits of mangrove projects, including improved governance and income generation, remain under-researched. These risks and uncertainties reduce the bankability of mangrove projects, limiting their ability to attract private sector investment.

5.2. Improving governance of marine protected areas

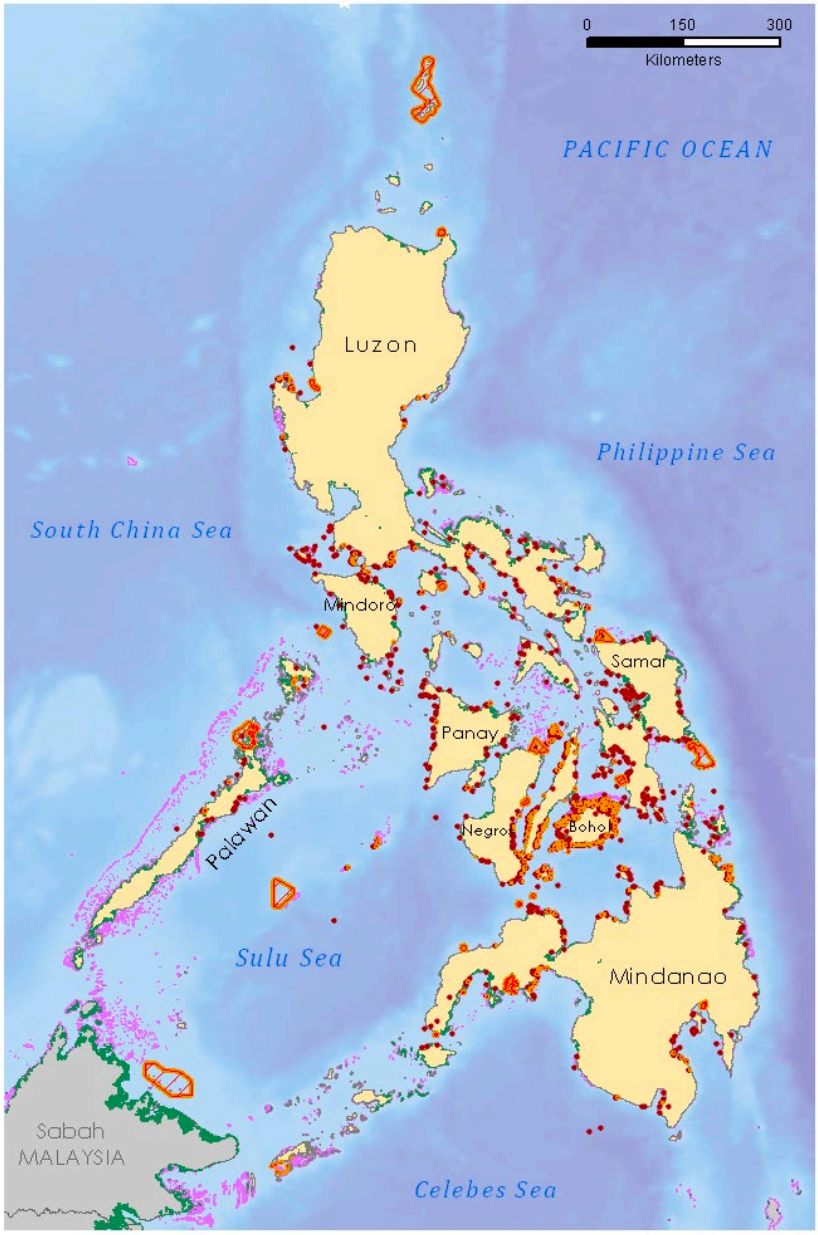
Strong local institutions and governance remain central to protecting the livelihoods of small-scale fishers in the Philippines (Mounier, 2021; SEAFDEC, 2025). As discussed previously in Section 3, successful implementation of debt-for-nature swaps requires transparent governance, clear conditionality and meaningful community engagement, as lessons learned from past swaps in the Philippines and other countries have shown. A precondition for a 'debt-for-mangrove' swap to work is an improved policy environment to ensure that finance effectively reaches and benefits coastal communities, improving conservation and livelihood outcomes. Debt-for-nature swaps have been widely recognised as a complementary tool for climate and nature finance, rather than a solution to debt distress. In the Philippines, the ADB has approved a US$500 million policy-based loan to support the blue economy, with an initial focus on protecting and restoring coastal ecosystems through policy reform, including for mangroves. Against this backdrop, this section

analyses how MPAs can support the Government of the Philippines in improving the policy environment as a precondition to unlock further funding.

MPAs are important policy tools for fisheries management and biodiversity conservation within a marine environment. They are particularly effective at recovering fish stocks and degraded ecosystems when they regulate or restrict destructive activities such as overfishing and mangrove cutting within designated no-take or multiple-use zones. Fish biomass can grow within a few years in well-enforced no-take zones where extractive use is not permitted (Carter, 2025).

The Philippines has over 1,900 designated MPAs, accounting for nearly 20% of the world's total (Eales et al., 2022; Marquez, 2025). However, only 1.6% of national waters are designated as MPAs, which falls short of the national target of protecting 30% of oceans as protected areas by 2030. The Philippine MPAs are shown in Figure 5.1. There are two main types of MPA in the Philippines: nationally designated and community-based. Mangroves tend to be less frequently included in MPAs, in part because of disparities in public awareness and understanding of their importance (Agduma et al., 2024).

Figure 5.1. Marine protected areas in the Philippines



Source: Palawan Council for Sustainable Development (2021). Reproduced with permission

Of all the Philippine MPAs, around 90% are community-based (typically multiple-use areas with a median size of less than 1 square kilometre), covering nearly 30,000 hectares of marine and coastal habitats. Important legislation encourages municipalities to establish fish reserves or sanctuaries covering 15% of their coastal waters, managed by local government units; these are commonly referred to as community-based MPAs. The BFAR primarily supports community-based fisheries and the development of MPAs, with an emphasis on co-management to protect local marine resources and to develop new revenue streams for artisanal fishing communities (Barboza et al., 2024). Locally managed MPAs often fail to account for ecological connectivity (the connection between the different natural environments within a landscape) and climate resilience, resulting in limited benefits for conservation and coastal communities (Weeks et al., 2010). One reason for this is that social acceptance by local fishers is a key driver of the expansion of community-based MPAs, rather than conservation objectives.

In contrast, nationally designated protected areas are managed by Protected Area Management Boards under the DENR, mainly for the protection of coral reefs (Mecha et al., 2022). As of December 2023, there were 248 terrestrial and marine protected areas registered under the Expanded National Integrated Protected Areas System (NIPAS) Act, covering 7,796,602.28 hectares (PH-EiTi, 2026). MPAs are classified into three zoning categories: marine sanctuary (all extractive practices, such as fishing, are prohibited), marine reserve (some access to controlled activities, such as boating and fishing), and marine park (multiple-use zones emphasising education, recreation and preservation) (Post, 2018). Evidence suggests that larger MPAs, particularly those designated as no-take zones and exceeding 100 square kilometres, are more effective for biodiversity conservation, particularly for coral reefs (Heinimann, 2024; Galveia and Macusi, 2025). Legislated MPAs are often labelled 'paper parks' because insufficient management allows illegal and destructive activities, due to gaps in enforcement, capacity and funding (Marriott et al., 2021).

Governance and enforcement challenges

Property rights for managing marine ecosystems are not well-defined in the Philippines. Mangrove management in multiple-use zones is governed through Protected Area Community-Based Resource Management Agreements under legislated sites, while Community-Based Forest Management Agreements are commonly applied in community-level MPAs. These legal tenurial instruments often overlap with Fishpond Leasing Agreements (FLAs), which grant leasehold rights to eligible individuals and corporations for commercial aquaculture. Many FLAs are located in areas originally classified as mangrove forests, where local rights to access and manage mangrove areas are largely absent (Song et al., 2021). Land rights and equity in benefit-sharing mechanisms between Indigenous peoples and local governments remain insufficiently addressed.

FMAs have been established in the Philippines based on fish stock distribution to enhance cooperation between the BFAR and local governments in fisheries management using an ecosystem-based approach to address overfishing and promote sustainability. Weak enforcement is a critical driver of illegal and unsustainable fishing within FMAs (Fabro, 2021; Smith et al., 2026). Evidence shows that marine capture fisheries are also at risk from climate change, highlighting that further efforts are needed to integrate climate resilience into MPAs for sustainable fisheries (Talbot et al., 2024). While FMAs and MPAs are both effective tools for improving fishery management and conservation, MPAs are primarily used to increase fish biomass and abundance, as well as to restore and preserve natural ecosystems for food security (Talbot et al., 2024; Cabral et al., 2019).

MPA management

The success of an MPA depends on its management. Compared with terrestrial protected areas, which mainly focus on conserving nature and biodiversity, MPAs typically encompass broader management objectives, including those related to sustainable fisheries management, the policy

impacts on nearby villages and the role of tourism. Effective MPAs depend on three critical aspects: enforcement, equitable benefit-sharing with local communities and income-generating livelihood activities (Robinson et al., 2012; Albers et al., 2015). During the early years of MPA implementation, local governments and park managers can foster cooperation with villagers to accelerate fish stock recovery through increased community engagement, which is vital for changing households' behaviour towards protecting mangroves. See Box 5.1 for an example of an effectively managed MPA in the Tubbataha Reefs Natural Park in the Philippines.

It is important to increase engagement with communities in MPA co-management. Investing in mangroves requires a long-term horizon, with benefits of increased fish stocks and storm protection that accrue over time. Alternative livelihood opportunities are therefore necessary to protect fishers whose incomes are affected by MPA restrictions on the use of the mangroves, particularly in the early years after the introduction of (or improved management of) an MPA, while stocks recover (Robinson et al., 2012). An agreement between Palawan local government units and the NGO Blue Alliance was signed in 2024 to co-manage over 40 MPAs for 10 years as part of the Northeast Palawan MPA network and illustrates this approach (Blue Alliance, 2025). This agreement includes efforts to engage with local communities by sharing management responsibilities for MPAs, and empowering local enforcement through women-led patrol initiatives (called Bantay Dagat). Reef livelihood projects, such as aquaculture and ecotourism, have been created to provide alternative incomes for local communities. Including mangrove-dependent households in future debt-for-nature swaps could similarly provide measurable income benefits, as these communities rely heavily on small-scale fisheries, nipa palm harvesting and ecotourism-related activities.

Box 5.1. Case study: marine protected area management in Tubbataha Reefs Natural Park, the Philippines

The Tubbataha Reefs Natural Park (TRNP) was first established as a strictly enforced MPA in 1988, representing 78% of the no-take zone in the Philippines (IUCN, n.d.). Located in the Sulu Sea, the TRNP covers approximately 970 square kilometres and forms part of Fisheries Management Area 4, which spans about 349,000 square kilometres (BFAR, n.d.). It was designated a UNESCO World Heritage Site in 1993. The TRNP Act of 2010 was introduced to provide the legal basis for the management, protection and establishment of the Tubbataha Reefs as a protected area under the NIPAS Act. Angelique Songco, the long-serving park manager of TRNP, is widely recognised for her leadership in addressing illegal fishing and poaching in the park (ShareAmerica, 2025).

According to an expert interview, effective management of the TRNP relies on several key success factors, including increased community engagement, a sustainable funding model and the introduction of alternative livelihood projects. Strengthening trust with local communities has been identified as the most important and a low-cost strategy to prevent conflict and reduce funding gaps in enforcement and patrol activities. Local communities are invited by the Tubbataha Protected Area Management Office (PAMO) to participate in sustainable fisheries and park management to address concerns about loss of fishing rights due to the establishment of the MPA (UNESCO, n.d.).

The TRNP has secured a stable source of MPA revenues for over two decades. Over 50% of MPA management funding comes from tourism through the collection of national park entry fees (TRNP, 2024). Ten per cent of tourism revenues are allocated annually to local community projects in the nearby municipality of Cagayancillo, supporting women's economic empowerment through the sale of souvenir items to tourists, as well as the planting of beach forest trees, which are naturally found near mangroves in the Philippines as a key part of coastal greenbelts that buffer against typhoons and sea level rise (TRNP, 2024). To reduce its reliance on grant donations from philanthropic foundations, the TRNP is exploring sustainable financing models such as nature credits to enhance long-term funding support for MPAs (Gamboa and Enriquez, 2025).

Seaweed farming is an important reef livelihood project in Cagayancillo (GEF, 2004; WWF, 2016). The development of a cold storage facility for fish storage has also been an important intervention in improving food security for local villages, particularly during extreme weather events. However, the expert's insights indicated that obstacles include continuity issues due to changes in village leadership and infrastructure conditions affecting farm-to-market roads.

6. Conclusion and next steps

This report has examined how funding can be mobilised to protect mangroves in the Philippines and to maximise benefits for local communities. It has addressed a specific policy-relevant research question: to what extent and how can blue finance be mobilised to scale up investments in the protection and restoration of mangroves to improve the health and livelihoods of coastal fishing communities, while also contributing to climate change mitigation, adaptation and resilience?

Closing the funding gap for mangroves

Many communities across Southeast Asia are already experiencing the increasing impacts of climate change, particularly in coastal areas where populations have climate-sensitive livelihoods but there is limited access to finance, technology and institutional support. Our analysis and the literature suggest that major debt-for-nature swaps have focused on the countries with distressed debt owed primarily to commercial and bilateral creditors, driven largely by creditor incentives. This report has contributed to addressing a gap by proposing an MDB-focused debt-for-mangrove mechanism anchored in domestic policy reform over external conditionality.

We have proposed the use of debt-for-nature swaps as a fiscal instrument to contribute to reducing financing gaps in mangrove investments in the Philippines. Research shows that Asian economies have fewer incentives for debt-for-nature swaps, largely because they have little debt held in international markets available for debt restructuring, compared with other small island developing states with distressed debt (Dryden, 2026). In our proposed conceptual framework for a 'debt-for-mangrove' swap, the Philippines could, in principle, reprofile its MDB sovereign loans through flexible loan products to generate the fiscal space needed to establish a catalytic fund for community-based mangrove initiatives. Establishing a mangrove trust fund, including a community fund and an endowment fund, could improve financial sustainability over both the short and long terms. However, operationalising this process depends on the extent to which institutional challenges can be addressed, particularly improving the governance of MPAs that protect and restore mangroves for the benefit of artisanal fishers. Improved policy and regulatory frameworks are vital for improving investor confidence and mobilising capital from the private sector, while ensuring the livelihoods of local communities are improved.

Protecting and restoring mangroves within a marine park as part of a well-managed MPA has great potential to boost the growth of ecotourism. Mangrove-based ecotourism is rapidly expanding in Southeast Asia, as demonstrated in the Bohol Mangrove Forest in the Philippines (Blanton et al., 2024). Evidence also shows that increased tourism revenues in Southeast Asia have stimulated infrastructure development, through which local communities have particularly benefited from increased access to basic services, such as clean water, electricity and health services (Hein et al., 2013; Blanton et al., 2024). Establishing MPAs could generate and increase revenues through associated user fees and ecotourism (Brown et al., 2023), with differentiated pricing strategies such as higher park entry fees for foreign tourists offering additional revenue opportunities to ensure the income security of local communities in exchange for their mangrove conservation efforts (Thirumarpan and Robinson, 2025). As an example, a trust fund has been established in the Philippines for the Puerto Princesa Subterranean River National Park to manage revenue generated from the collection of entrance and user fees (PPSRNP, n.d.).

Well-designed incentives, such as payments for ecosystem services, a financial mechanism that compensates communities or landowners for protecting and restoring natural ecosystems that provide ecosystem service benefits, can increase community participation in mangrove conservation initiatives (Robinson et al., 2012). However, it is important to note that market-based mechanisms alone cannot sufficiently provide funding to reduce biodiversity loss, and there is an urgent need to establish a long-term funding mechanism (Hein et al, 2013).

Building on these experiences, proposed 'debt-for-mangrove' swaps could channel international climate finance through debt service savings into targeted mangrove restoration projects, linking revenues from ecotourism to sustainable community livelihoods. Mangrove ecotourism also creates an important economic opportunity for increasing private sector engagement, which makes it increasingly important for private investors to recognise the financial risks that result from mangrove degradation. One example is a mangrove project, supported by the DENR and San Miguel Corporation, that has been developed through public–private collaboration and aims to support marine science research and protect the fisheries and tourism industries while generating economic benefits for local communities that also accrue to private sector actors (WEF, 2025a).

Strengthening financing partnerships

Aside from accruing the fiscal benefits from debt swaps, there is still greater scope for Philippine foundations to engage in supporting mangrove conservation initiatives. The Philippines has one of the largest civil society sectors in Asia (ADB, 2013b), with a growing interest in climate change mitigation, adaptation and resilience, which are interlinked with food security, health and education (Manila Bulletin, 2024b). For example, the Zoological Society of London, Wetlands International, the WWF, the Haribon Foundation and the Forest Foundation Philippines are committed to addressing mangrove loss and conservation activities through capacity building. However, according to expert insight, there is still a gap in philanthropic sustainability investments. One example of such an investment is the Jollibee Foundation, the philanthropic arm of the Jollibee Group, which has engaged in food security policy objectives through mangrove reforestation and has become a partner of the Philippines National Blue Carbon Action Partnership, an organisation committed to using blue carbon investments to strengthen community resilience (Jollibee Group, 2024; WEF, 2025b). Successful employee engagement has resulted in the planting of over 7,000 mangrove propagules (the plant material used for propagation), in collaboration with the DENR and local government units (Jollibee Group, 2024).

Based on our analysis, we identify the following priority areas for future research on implementing 'debt-for-mangrove' swaps:

- **Exploring alongside MDBs how debt-for-nature swaps could fit into large-scale lending programmes as a complementary fiscal tool.** As an example, the ADB has approved a US$500 million blue economy policy-based loan for the Philippines. 'Debt-for-mangrove' swaps could be explored in this case to improve debt sustainability while addressing MPA implementation challenges to create an enabling environment for increased investments in mangrove protection and restoration. Involving small-scale fishers in vulnerable communities in debt swap negotiations can also help to minimise any potentially negative impacts MPA interventions might have on coastal livelihoods.
- **Strengthening the economic case for mangrove-based livelihoods.** Further research in livelihood diversification is needed to identify income-generating community projects with viable revenue streams. Developing sustainable business models for mangrove-based projects such as artisanal fisheries value chains and beekeeping could strengthen the financial viability of long-term investments in mangroves while increasing the ecological and economic benefits of preserving mangroves in MPAs for local communities.
- **Co-designing a blue carbon market for mangroves.** In collaboration with scientists and economists, policymakers could co-design blue carbon policy regulations, including through international and regional cooperation on carbon markets. For example, an increased focus on the quality of mangrove restoration and associated co-benefits for climate resilience, food security and livelihoods could attract greater investment, particularly from the private sector, to unlock blue carbon financing that rewards local communities for their preservation efforts.

- **Evaluating policies to support resilient and sustainable ecotourism.** Assessing the effectiveness of existing MPAs could inform the development of a marine national park for mangroves. Mangrove-based ecotourism could become an economic driver to increase jobs for local fishers and households, while maximising ecological and fisheries outcomes.

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