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Working Paper

Tracking international aid projects for ocean conservation and climate action

ADB Working Paper, No. 1308

Provided in Cooperation with:

Asian Development Bank Institute (ADBI), Tokyo

Suggested Citation: Shiiba, Nagisa; Maekawa, Miko; Vegh, Tibor; Virdin, John (2022) : Tracking international aid projects for ocean conservation and climate action, ADB Working Paper, No. 1308, Asian Development Bank Institute (ADBI), Tokyo

This Version is available at:

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ADB Working Paper Series

**TRACKING INTERNATIONAL AID
PROJECTS FOR OCEAN CONSERVATION
AND CLIMATE ACTION**

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No. 1308
March 2022

Asian Development Bank Institute

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Suggested citation:

Shiiba, N., M. Maekawa, T. Vegh, and J. Virdin. 2022. Tracking International Aid Projects for Ocean Conservation and Climate Action. ADBI Working Paper 1308. Tokyo: Asian Development Bank Institute. Available: <https://www.adb.org/publications/tracking-international-aid-projects-for-ocean-conservation-and-climate-action>

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The authors are profoundly grateful for the financial support from the Nippon Foundation and the support provided by colleagues at the Ocean Policy Research Institute of the Sasakawa Peace Foundation. The authors express deep and sincere gratitude to Biliana Cicin-Sain for her guidance, advice, and encouragement. We are greatly indebted to her and dedicate this work to her memory.

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Abstract

Ocean conservation and sustainable use cannot be pursued or achieved without consideration of the planetary impacts of climate change, and particularly the role of the oceans in both mitigation and adaptation. For this reason, the international community has increasingly committed to providing aid to help finance public goods for ocean conservation and climate action. Although many organizations have set up mechanisms to track both aid and climate finance, such trackers are usually not focused on financial flows related to ocean conservation and climate action. In the absence of such coordinated tracking and monitoring of aid, policymakers cannot assess the attention or priority of international funding mechanisms on oceans and ocean-related climate issues. As such, the purpose of this study is to contribute to efforts to track aid for ocean conservation and climate action by providing a comprehensive baseline of international flows, by relevant global goal and target. We will build upon recent efforts that have established a baseline for international institutions operating at the global level. According to the data collected, we estimate that the cumulative public financing for ocean conservation and climate action grew from USD579 million in 2013 to over USD3.5 billion in 2019.

Keywords: ocean financing, sustainability and climate change, international aid

JEL Classification: F35, H84, Q54, F64

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1. INTRODUCTION

Ensuring ocean conservation and sustainable ocean use has been an international priority since the United Nations Convention on the Law of the Sea (UNCLOS) was adopted in 1982. In particular, coastal developing states and the Small Island Developing States (SIDS) depend heavily on ocean ecosystems and resources for economic development and people's livelihoods. These states consequently emphasized ocean conservation and sustainable use goals in national policies (Ghina 2003). However, climate change has presented numerous challenges to ocean and coastal zones. In September 2019, the Intergovernmental Panel on Climate Change (IPCC) issued the Special Report on the Ocean and Cryosphere (SROCC), which alerted the global community that "over the 21st century, the ocean is projected to transition to unprecedented conditions" (IPCC 2019: 42). Increased temperatures, further acidification, and an oxygen decline have been observed over the past 50 years, and this trend is predicted to continue (IPCC 2019). Climate change will reduce productivity and change the spatial distribution of marine species, and is projected to cause the loss of coral reef cover and reduce tourism revenues, particularly in SIDS (Gaines et al. 2019). As such, global agendas, including the Paris Agreement and Sustainable Development Goals (SDGs), cannot be pursued or achieved without consideration of the effects of climate change on the ocean environment and coastal communities (Singh et al. 2019; Santos et al. 2020) and the role of the oceans in the global climate system.

On the other hand, there is a growing awareness of a sustainable ocean economy as part of the solution to climate change. In 2010, it was estimated by the Organisation for Economic Co-operation and Development (OECD) that the global gross value added to ocean industries, including fishing, shipping, offshore wind, maritime and coastal tourism, and marine biotechnology, would increase from US\$1.5 trillion to \$3.0 trillion by 2030 (OECD 2016). The trajectory of the ocean economy is upward in various parts of the world, although the global impact of COVID-19 may slow the overall growth for a while (Sharma and Sharma 2020). It is also cautioned that the expansion of the ocean economy must be pursued in a sustainable manner, with consideration of environmental as well as social and equity aspects, which necessitate more sophisticated practice of a "blue economy" (Lee, Noh, and Khim 2020). Otherwise, it is cautioned that ocean economy projects will end up as mere "ocean grabbing," which refers to actions, policies, or initiatives that deprive small-scale fishers of the use of resources and access to areas of sea (Bennett, Govan, and Satterfield. 2015). Although there is no universal definition of a sustainable ocean economy or blue economy, a large part of the literature tends to encompass multiple aspects of economic, ecological, and social dimensions, with a specific focus on climate change.

Ocean and coastal habitats can play a significant role in mitigating and adapting to climate change (Duarte et al. 2013; Cooley et al. 2019). For instance, the High-Level Panel for a Sustainable Ocean Economy published *The Ocean as a Solution to Climate Change: Five Opportunities for Action* last year indicating the significant potential of ocean-based solution options for addressing climate crises (Hoegh-Guldberg et al. 2019). This report estimates that ocean-based climate mitigation can reduce the emissions gap by up to 21% on a 1.5 °C pathway and by approximately 25% on a 2.0 °C pathway by 2050. One of the promising measures is ocean-based renewable energy, such as offshore wind, wave, and tidal power; the total mitigation potential is estimated to be equal to taking > 1 billion cars off the road per year (Hoegh-Guldberg et al. 2019). Another method with significant mitigation potential is coastal and marine ecosystem conservation. Coastal ecosystems, including mangroves, salt marshes, and

seagrasses that store carbon, are commonly known as “blue carbon” and account for 46.9% of the total carbon burial in ocean sediments (Nellemann et al. 2009).

There has also been growing interest in ecosystem-based climate adaptation in coastal zones. Coastal habitats, for instance, serve as restoration and conservation for protection from flooding and erosion (Arkema et al. 2013). Analyses of field measurements conducted by Narayan et al. (2016) indicated that coastal habitats—particularly coral reefs and salt marshes—have significant potential for reducing wave heights. Ruckelshaus et al. (2013) reported that ecosystem-based climate adaptation in fisheries and along coastlines can improve the resilience of species and habitats to future environmental challenges. Such restoration and preservation of coastal habitats provide combined services (coastal protection, nutrient cycling, food provision, etc.) at relatively low cost and thus constitute a cost-effective strategy (Duarte et al. 2013).

Against this backdrop, the importance of financing public goods for ocean conservation and sustainable use is increasing alongside calls for concrete actions by the international community as a whole. Ocean-related public goods are attracting interest from both the public and private sectors, and with the increase in environmental, social, and governance investments, investors are increasingly turning their attention to opportunities in ocean conservation and sustainability (Scott 2020). The Friends of Ocean Action—an informal multi-stakeholder coalition—was launched at the 2018 World Economic Forum Annual Meeting in Davos and released *The Ocean Finance Handbook* in 2019. The report attests to the growing interest of investors in the blue economy and the emerging trend of ocean financing for public goods. However, private funding is not plentiful, as is the case for many environmental projects (Friends of Ocean Action 2020). Therefore, the public sector still plays a major role in funding the public goods required for ocean conservation and climate action. Governments and multilateral aid agencies have recently committed programs and funds to provide financing for the sustainable management of public goods for ocean conservation and climate actions. The World Bank established a multi-donor trust fund called the “PROBLUE” in 2018 as a part of its Blue Economy program, aiming to support fisheries and aquaculture, reduce the amount of plastic pollution, and resolve other ocean issues. In 2019, the Asian Development Bank (ADB) announced the launch of the “Action Plan for Healthy Oceans and Sustainable Blue Economies for the Asia and Pacific Region” and launched the Oceans Financing Initiative, which aims to expand investment to USD5 billion between 2019 and 2024 to promote a blue economy and create opportunities for the private sector to invest in bankable projects. The European Investment Bank (EIB) launched the Blue Sustainable Ocean Strategy (Blue SOS) to enhance the sustainability of ocean-related activities, committing to more than double its lending to sustainable ocean projects (to EUR2.5 billion) between 2019 and 2023.

As such, studies have recently been conducted on these types of financial flows as policy instruments to achieve international goals, including the ocean-related Sustainable Development Goals (SDGs). For example, Guggisberg (2019) tracked marine fishery projects financed under the climate change adaptation funding regime and identified 25 projects. Piñeiro-Antelo Villa, and Santos (2019) analyzed Official Development Aid (ODA) in Galicia, Spain, focusing on the fishery sector. Blasiak and Wabnitz (2018) examined the global ODA trend from 2010 to 2015 and concluded that the grant for fisheries decreased by approximately 30%. Berger, Caruso, and Peterson (2019) analyzed the trends of total ocean-related grantmaking from philanthropic and ODA sources between 2015 and 2016. Despite the gradual emergence of such attempts, many questions regarding ocean funding remain unanswered. As indicated by the aforementioned examples of the World Bank and the ADB, multilateral aid

organizations are providing a growing pledge of global ocean funding, but there remains a question of whether the funding reaches each sector in an unbiased manner and reaches people in need. Do the funds reach each ocean economy sector effectively, and are they fully utilizing the available resources? These points should be evaluated, and lessons should be taken into consideration in future projects. However, although an estimated \$8 billion from philanthropy and \$5 billion from official development assistance were invested over the past 10 years (Sumaila et al. 2020), this level of investment is insufficient for the necessary change to a sustainable ocean economy in the first place, which is pointed out in another Blue Paper commissioned by the High-Level Panel. Despite the fact that many organizations have set up mechanisms to track both aid and climate finance (e.g., the OECD Development Assistance Committee), such trackers typically do not focus on financial flows related to ocean conservation and climate action, and particularly relevant internationally agreed policy goals such as the Paris Agreement and SDG 14 for oceans. In the absence of such coordinated tracking and monitoring of aid projects, it is difficult for policymakers to assess the attention to, or prioritizing of, international funding mechanisms related to oceans and ocean-related climate issues. This results in disjuncture between regional ocean priorities and development assistance (Hills et al. 2019).

Thus, more detailed monitoring of international aid flows to ocean conservation and climate change projects should offer greater insights into the gaps between current efforts and what may be needed to achieve global goals. With this issue in mind, the objective of the present study was to track international aid projects for increasing resilience against environmental stressors, by analyzing public financing of ocean conservation and climate action. This is a crucial step in identifying the current and future challenges and gaps for ultimately maximizing the potential of ocean-based solutions to climate change. This study contributes to current efforts to track aid for ocean conservation and climate action. The existing ocean-specific trackers that we recognize include the OECD's new database, the Sustainable Ocean Economy Database, which provides data sets of ocean-related funding from the OECD and partner organizations. FundingTheOcean.org is another example; it offers a fund map targeting philanthropic, US Federal, and bi- and multilateral aid grants from the OECD. These databases showcase efforts toward ocean conservation in general but do not track specific funding for climate action, and FundingTheOcean.org does not include the amount of loans provided, which also makes up a significant part of the overall funding structure. Therefore, our tracking study will build upon (but not duplicate) such existing tools by covering multilateral development banks (MDBs) and global climate funds and identifying a finance gap in ocean and climate actions. Section 2 details the methodology used, including the scope of the research and the analytical framework. Section 3 presents the collected baseline information, followed by an analysis of the progress and challenges in facilitating ocean conservation and climate action. In Section 4, we discuss the potential gaps between this aid baseline and existing estimates of the levels of financing for public goods that would be needed in lower- and lower-middle-income countries to achieve global ocean sustainability goals and targets. This is followed by policy recommendations in Section 5 and conclusions in Section 6.

1.1 Snapshot of Ocean Financing and Multilateral Public Finance

Understanding the scale and impact of aid to developing countries for ocean conservation and climate action includes tracking financial flows from national sources (e.g., government aid agencies) as well as international sources. In this study, aid at the international level is defined as aid provided by global funds (e.g., the Global Environment Facility (GEF)) and multilateral and regional development banks (e.g., the World Bank Group (WBG), the African Development Bank (AfDB), the ADB, and the Inter-American Development Bank (IDB)). Additionally, climate funds, which are developed under the United Nations Framework Convention on Climate Change (UNFCCC) (e.g., the Adaptation Fund (AF), Least Developed Countries Fund (LDCF), Special Climate Change Fund, and Green Climate Fund (GCF)) to fulfill global adaptation needs, play significant and growing roles in funding ocean conservation and sustainable fisheries in developing countries. Tracking aid for ocean conservation and climate action could include tracking grants and concessional investments provided by public institutions operating at the national or international level, i.e., public financing, as well as philanthropy and private capital for public goods (e.g., “impact investing”), but tracking these sources of funding is outside the scope of the present analysis. The following is a brief description of the multilateral financial institutions covered in this article and their activities related to ocean conservation.

The GCF is entrusted with administering the financing instruments under the UNFCCC to help developing countries reduce greenhouse gas emissions (mitigation) and cope with the impacts of climate change (adaptation). Although the GCF has not identified specific funds for the ocean, it plays a tremendous role in supporting small island developing countries, which are particularly vulnerable to climate change and degraded marine resources. For instance, it upgraded support for Pacific nations by strengthening its ties with the Pacific Community in 2019 (GCF 2019).

The AF is another global climate fund, established in 2001 under the Kyoto Protocol to finance projects that facilitate adaptation to climate change in developing countries. It is financed with a share of proceeds from the Clean Development Mechanism (CDM), which amounts to 2% of certified emission reductions (CERs) issued for a project under the CDM. The AF also serves the Paris Agreement, a new framework for global climate action adopted in 2015. The AF is active in many developing countries and has a wide range of investment themes, e.g., urban and rural development, agriculture, disaster risk reduction, and food security. Coastal zone management is one of the areas that the AF supports, and they have supported projects globally in various developing countries.

The Global Environmental Facility (GEF) is another of the largest aid providers for ocean conservation and climate action. The GEF manages two global climate change funds established under the UNFCCC in 2001: the LDCF and the Special Climate Change Fund (SCCF). The LDCF is mandated to address the needs of LDCs, particularly the preparation and implementation of National Adaptation Programs of Action. The SCCF is designed to finance activities, programs, and measures in developing countries relating to adaptation, technology transfer and capacity building, energy, transport, industry, agriculture, forestry and waste management, and economic diversification (FCCC/CP/2001/13/Add.1).

The WBG has been one of the largest international aid providers for ocean conservation and climate action projects since the early 2000s when it launched the Global Program on Fisheries (PROFISH) with development partners and subsequently leveraged fishery investments. PROFISH has merged with PROBLUE Umbrella 2.0, established in 2018, to support sustainable development of ocean and coastal resources more broadly, beyond just fisheries (World Bank Group 2020). PROBLUE has four pillars: (1) improving fishery governance, (2) strengthening management of marine litter and pollution, (3) reducing the environmental footprint of oceanic sectors, and (4) supporting integrated ocean management policies (“seascapes”). Its 2021 annual report indicates that the PROBLUE initiative had invested USD60.3 million to support 85 activities across 71 countries as of 2021 (World Bank Group 2021).

The ADB has traditionally focused on ocean conservation and sustainable use in the fishery sector. Recently, the ADB created an ocean financing initiative entitled “The Action Plan for Healthy Oceans and Sustainable Blue Economies” with targets from 2019 to 2024, covering a wide range of fields including sustainable tourism and fisheries, coastal and marine ecosystem conservation, reduction in land-based sources of marine pollution, and port and coastal infrastructure development. This initiative is expected to broaden the scope of the ADB’s financing for ocean issues (ADB 2018).

Additionally, the AfDB has traditionally provided aid to African states for the fishery sector. *Blue Economy Flagship*, which was established under the AfDB’s strategy for agricultural transformation targeting the period 2016–2025, reported an increase in its investments in agriculture and fisheries to USD1.0 billion per annum (FAO 2016). The AfDB also established a partnership with the FAO and the WB, which was called the *African Package for Climate- Resilient Ocean Economies* and planned to contribute \$665.4 million for the period 2017–2020, supplemented by other funding through the GCF, the GEF, and other partners (AfDB 2018).

The IDB is the largest donor to the Caribbean Island states, with numerous projects funding ocean conservation and sustainable use. In 2018, the IDB implemented the *Blue Tech Challenge* to facilitate, pilot, and scale up business models that are expected to provide technical solutions for the sustainable management of oceans, marine ecosystems, and coastal resources (IDB 2019).

The European Bank for Reconstruction and Development (EBRD) is relatively unique among MDBs with regard to its mandate. Since the EBRD initially supported the system transformation in the former Eastern Bloc, its focus has been to facilitate the market economy in targeted regions, including Central Europe and Central Asia, by providing loans, equities, and credit. It has started to explore the potential of offshore wind and wave energy in countries such as Turkey, but there is not yet a substantial amount of ocean-related investments. Although the EBRD does not pay special attention to ocean and marine conservation, it has an explicit environmental mandate in its history and currently takes the Green Economy Transition approach to accelerate the development of eco-friendly, low-carbon, and resilient economies. Its main investment tools are not grants but loans, which is another reason why soft approaches to ocean conservation are outside of its scope. Of the 39 countries and territories where the EBRD operates, 21 are landlocked, which may be a reason for the few ocean-related investments made by the EBRD to date.

2. METHODOLOGY

In this article, the international aid flows referred to were compiled annually by searching relevant databases for key terms related to ocean and climate goals and targets. The trends of the estimated annual disbursements provide a current snapshot of the aid provided by global multilateral financial institutions to governments and stakeholders in lower- and lower-middle-income coastal and SIDS countries.

The analysis of the financial data was supplemented with a series of semi-structured interviews with officers, including ocean conservation or blue economy experts, at four targeted international financing institutions. We conducted four sessions with five interviewees in total whom we could contact (two from the AfDB, one from the EBRD, one from the ADB, and one from the GEF) from October to December 2020. All the sessions were virtual and were conducted using an online meeting platform. The interview questions included the following topics: (1) the extent to which they see investment in ocean-related sectors as important, (2) particular areas of focus in ocean investment for each bank, (3) challenges of their current ocean financing initiative, and (4) expectations for future investments in ocean sectors.

2.1 Scope of Tracking

The study builds upon recent efforts that have established a baseline for international institutions operating at the global level, namely the GEF and the *World Bank*, and at the regional level, i.e., the ADB, the AfDB, the IDB, and the *European Bank for Reconstruction and Development* (EBRD). We also cover the climate funds established under the UNFCCC regime: the AF and the GCF. The other two climate funds, the LDCF and the SCCF, which are operated by the GEF, are not explicitly listed to avoid double-counting. We do not include the EIB, as it provides loans to countries within the region, and our focus is the banks that mainly target developing states and emerging economies. However, we note the EU's high level of ambition, as shown in its commitments at the Our Ocean Conference.¹¹ In total, we include eight multilateral funds in this study, tracked over the period from 2013 to 2019.

2.2 Analytical Framework

We searched the online project databases of selected multilateral finance providers using search terms tested according to relevance, erring on the side of inclusiveness. The coding process disaggregated the total project budgets into nine mutually exclusive project target categories: fisheries, pollution reduction, protected areas, ecosystem adaptation, greenhouse gas sinks, marine renewables, marine greenhouse gas emissions, population adaptation, and other ecosystem management and protection. For a detailed description of each category, see Table 1, where the project targets are matched to SDG targets. Table 2 presents the search terms used to extract the intended projects.

¹¹ The European Union made 77 commitments (worth €10 billion) at the Our Ocean Conference in 2014 and has already achieved approximately 80% of the total. Additionally, the EU announced 22 new commitments (worth €540 million) at the 2019 conference in Oslo. The EIB launched the *Clean Oceans Initiative* in 2018 to provide €2 billion by 2023 for marine plastic pollution reduction.

Table 1: Framework for Analysis of Public Financing of Ocean Conservation and Climate Action

Type of Intervention	SDG 14 Target	Subcategory of Intervention	SDG 14 Target
Ocean pollution reduction measures	14.1		
Coastal and ocean ecosystem management and protection measures	14.2	Coastal and ocean protected area measures	14.5
		Measures explicitly targeted to help ocean ecosystems adapt to climate-related impacts	14.3
		Measures explicitly aiming to enhance coastal sinks of greenhouse gases	
		All other coastal and ecosystem management and protection measure	
Ocean fisheries management measures	14.4	Measures targeted to support small-scale fisheries	14.7
Measures to help coastal populations adapt to climate-related impacts*	13.1		
Measures to reduce ocean-linked anthropogenic sources of greenhouse gases	7.2		
Measures to increase ocean-based sources of renewable energy			

Source: Created by authors.

Table 2: Search Terms

Type of Intervention	Subcategory of Intervention	Finance Category	Search Terms
Ocean fisheries management measures		Fisheries	Marine OR Ocean OR Oceanscape OR Seascape OR Coastal
			Fish* OR Coral OR Reef
Ocean pollution reduction measures		Pollution	Marine OR Ocean OR Oceanscape OR Seascape OR Coastal
			Pollut*
	Coastal and ocean protected area measures	Ecosystems Protected Areas	Ecosystems – Protected Areas
			Marine OR Ocean OR Oceanscape OR Seascape OR Coastal
			MPA OR Protected Area OR Park OR Reserve
	Measures explicitly targeted to help ocean ecosystems adapt to climate-related impacts	Ecosystems Adaptation	Marine OR Ocean OR Oceanscape OR Seascape OR Coastal
			Adapt* OR Climate OR Sea Level Rise OR Coastal Erosion OR Coastal Disaster Risk
Ecosystem management and protection measures	Measures explicitly aiming to enhance coastal sinks of greenhouse gases	Ecosystems GHG Sinks	Marine OR Ocean OR Oceanscape OR Seascape OR Coastal
			Methane or carbon dioxide OR greenhouse gas OR GHG OR Mangrove OR Seagrass OR Marsh OR Coastal Wetland
			Sink OR Sequestration OR Storage OR Mitigation

continued on next page

Table 2 *continued*

Type of Intervention	Subcategory of Intervention	Finance Category	Search Terms		
	All other coastal and ecosystem management and protection measures	Ecosystems Management	Marine OR Ocean OR Oceanscape OR Seascape OR Coastal	Management OR Protection OR Ecosystem-Based Adaptation OR Ecosystem Approach OR Integrated OR Zone OR Spatial Planning	Ecosystem
Measures to increase ocean-based sources of renewable energy		Marine Renewables	Marine OR Ocean OR Oceanscape OR Seascape OR Coastal	Renewable OR Wind OR Wave	Energy OR Generat*
Measures to reduce ocean-linked anthropogenic sources of greenhouse gases		Marine GHG Reduction	Marine OR Ocean OR Oceanscape OR Seascape OR Coastal	Methane or carbon dioxide OR greenhouse gas OR GHG	Mitigat* OR Reduc*
Measures to help coastal populations adapt to climate-related impacts		Coastal Populations	Marine OR Ocean OR Oceanscape OR Seascape OR Coastal	Population OR Displace* OR Migrat*	

Source: Created by authors.

We excluded projects approved before 2013 or after 2019, canceled projects, projects in landlocked countries, and projects explicitly targeting inland or freshwater ecosystems (e.g., lakes). Furthermore, we excluded projects whose objectives involved interventions or targeted ecosystems that were clearly not related to oceans, according to the following keywords: “pastoral range management,” “grazing,” “cloud forests,” “archaeology,” “National Biodiversity Strategy,” “BSAP,” “terrestrial renewable energy,” “mountain,” “livestock,” “grassland,” “water supply,” “POPs,” “desertification,” and “health.” Additionally, “Enabling Activities” to support nationwide assessments or strategies were excluded. With regard to projects that spanned multiple categories, we applied the equal division rule; if two categories applied, we divided the total project budget (less overhead) into two categories (50% each). If three categories applied, the budget was divided into equal thirds.

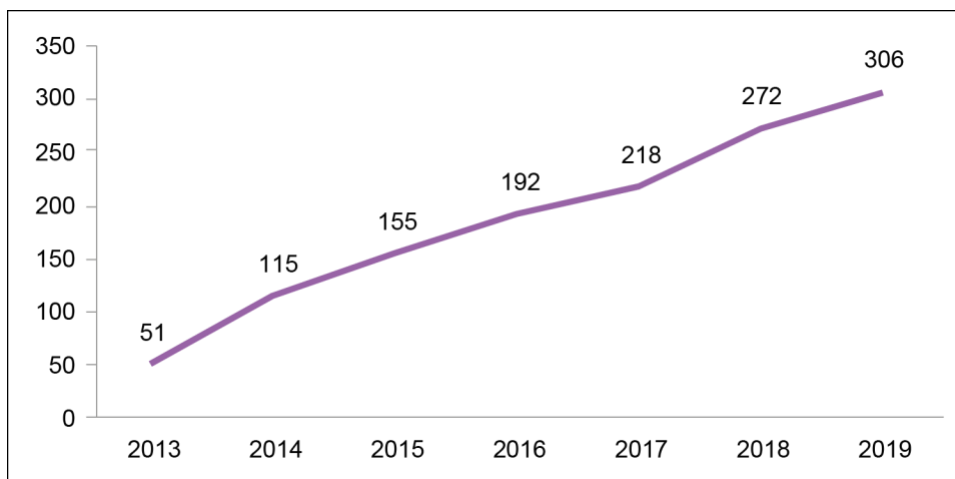
3. RESULTS

3.1 Project Identification

We retrieved publicly available project documents using the search methodology and subsequently prepared documents summarizing all relevant projects (n = 306) approved between 2013 and 2019. We found that the number of projects is increasing at a steady pace annually (Figure 1). With regard to the geographical distribution of these projects, 19% targeted states in Asia, 15% targeted the Pacific regions, 27% targeted Africa, 26% targeted the Caribbean, 11% targeted South America, and the remaining 2% targeted Europe. A total of 107 projects (38% of the total) targeted SIDS (Figure 2). Some projects targeted ocean and marine conservation but were excluded owing to the ambiguity of the categorization. Building or ramping up a financial mechanism specifically targeting ocean-related activities is an example. For instance, the project titled “Investment in the Althelia Sustainable Ocean Fund” finances the

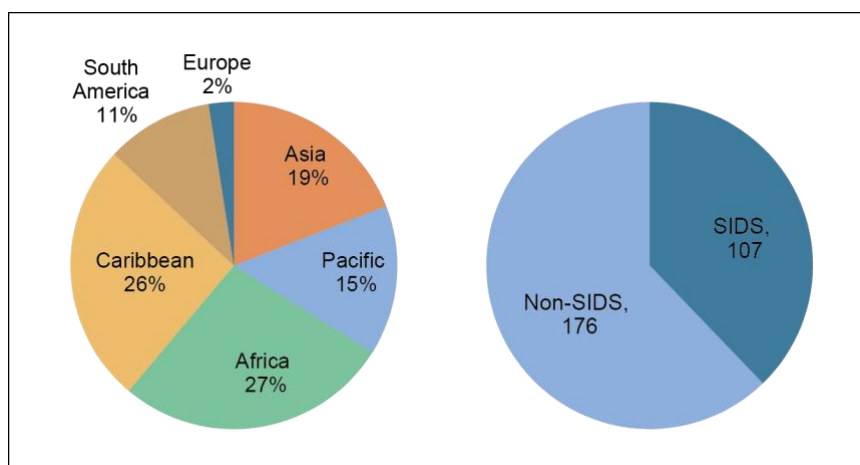
blue economy in the region, including seafood businesses, ecotourism, ecosystem conservation, sustainable coastal infrastructure, and access to energy.

Figure 1: Trend in the Number of Projects for Ocean Conservation and Climate Action (USD, Millions)



Source: Authors.

Figure 2: Regional Distribution of the Number of Projects for Ocean Conservation and Climate Action and SIDS/Non-SIDS Comparison, 2013–2019



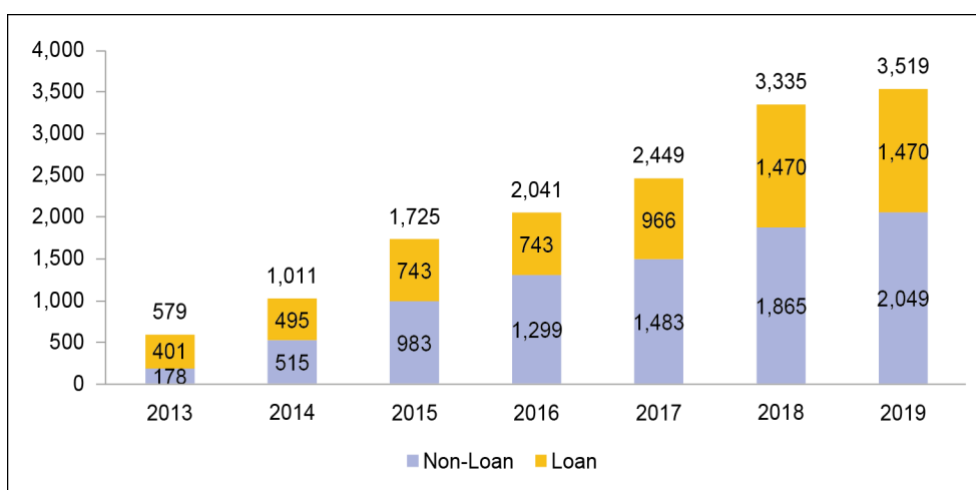
Source: Authors.

3.2 Tracking International Aid for Ocean Conservation and Climate Action

According to the data collected, we estimate that the total public financing (or aid) for ocean conservation and climate action increased from slightly over USD579 million in 2013 to over USD3.5 billion in 2019 (Figure 3). We also identify an increment in the scale of loans, while nonloan-based projects (including grants and no information projects). Figure 4 shows the total funding by category. More than half of the total funding aimed to help coastal populations adapt to climate-related impacts, followed by ecosystem management (excluding ecosystem adaptation) and fisheries. There was

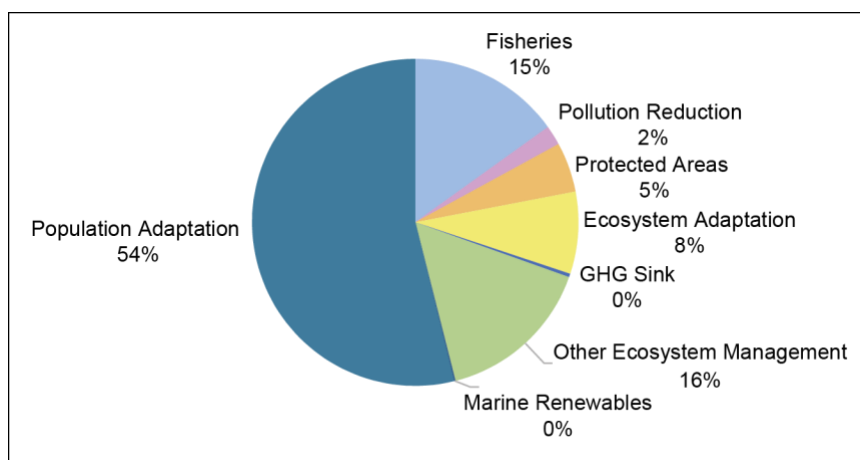
limited funding for marine GHG emissions and pollution reduction. The funding largely targeted SDG 13.1 (coastal population adaptation), followed by SDG 14.4 (fisheries) (Figure 5), which has grown rapidly since 2017. Conversely, the level of funding for SDG 14.2 (ecosystem management) and SDG 14.3 (ecosystem adaptation) remained lower than USD200 million per year, with the exception of an increase in 2016. SDG 14.5 (protected areas) did not receive finance of this magnitude in the study period. As regards the distribution of the funding, 51% of it went to Asia, 12% to the Pacific, 18% to Africa, 11% to the Caribbean, and 8% to other regions (Figure 6). Interestingly, Asia attracted the largest amount of funding, even though it accounted for only 19% of the projects. In contrast, Africa and the Caribbean received a relatively small percentage of the total funds, despite their large number of projects. To support SIDS for ocean conservation, there was total funding of USD891 million.

Figure 3: The Trend in Funding, 2013–2019



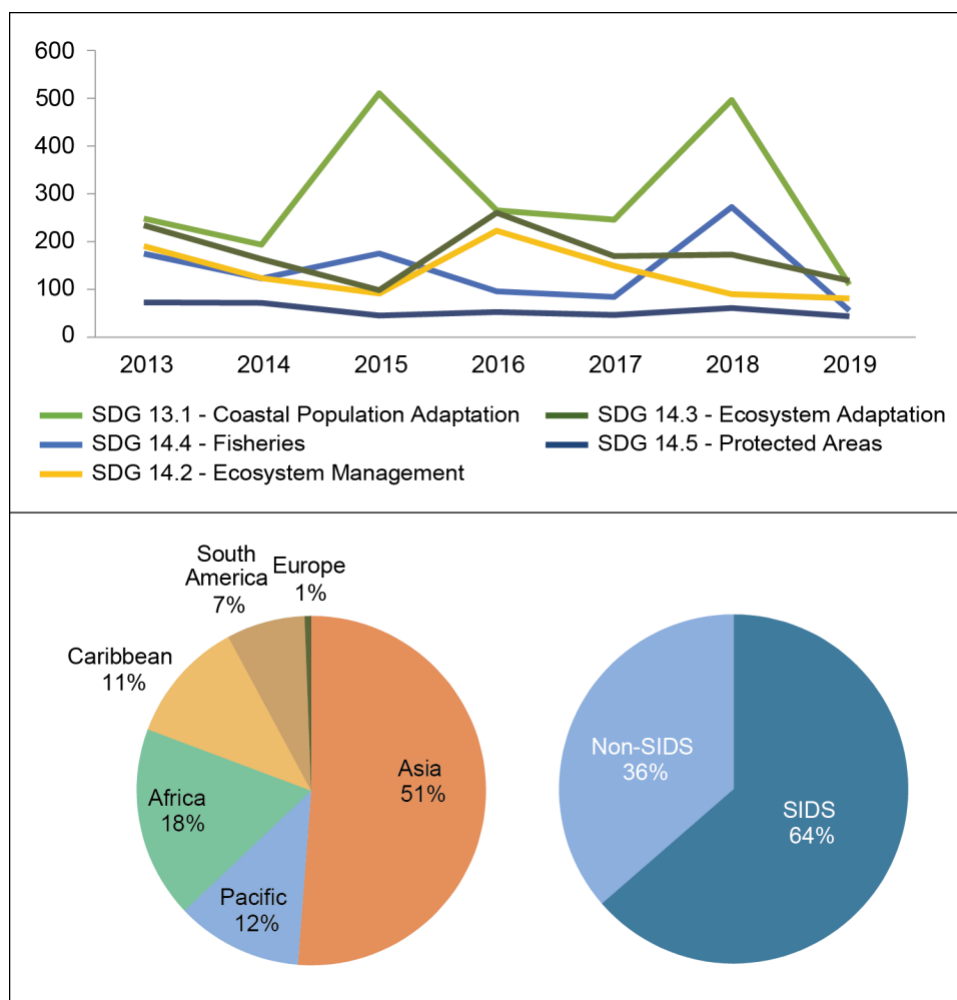
Source: Authors.

Figure 4: Finance by Category, 2013–2019



Source: Authors.

Figure 5: Finance by SDG Target



Source: Authors.

Fisheries

Listed projects targeting marine fisheries and aquaculture can be classified as fishery management, including development plans, resilience building, and financial mechanism establishment. The first category includes, for instance, establishment and operation of a regional system of fisheries; support for a sustainable development program; and improvement of research, planning, and administration capabilities. One of the IDB’s representative projects, which is entitled *Support for the Economic Empowerment of Fly Fishing Guides*, attempted to facilitate a locally driven sustainable fish industry in the Bahamas through the establishment of an association. In the second category, there are several projects aimed at strengthening the adaptive capacity of the fishery and aquaculture sector to climate change. One example is the project funded by the AF, which is called *Adaptation to the Impacts of Climate Change on Peru’s Coastal Marine Ecosystem and Fisheries*. It supports government agencies, the private sector, and local communities to strengthen the capacity for climate-resilient artisanal fishing and reduce the vulnerability of coastal ecosystem management. The third category is represented by the GEF’s project *The Meloy Fund: A Fund for Sustainable Small-scale Fisheries in Southeast Asia*, which involves investments in fishing- and seafood-related enterprises in the Philippines and Indonesia.

Pollution Reduction

We identify only a few projects that specifically focus on marine pollution reduction and target plastic pollution. The ADB has implemented “*promoting action on plastic pollution from source to sea in Asia and the Pacific*” projects, which help prepare action plans, form policy and regulations to encourage a circular economy, and provide investments in integrated solid-waste management and circular economy systems. Another example of a pollution reduction project is the GEF project, which supports the implementation of action programs for land-based pollution reduction to protect critical coastal ecosystems in the Western Indian Ocean, including improving river basin management.

Ecosystem Management

We divide the projects related to ecosystem management into four subgroups: coastal and ocean protected area measures, measures explicitly targeted to help ocean ecosystems adapt to climate-related impacts, measures explicitly aimed at enhancing coastal sinks of greenhouse gases, and all other coastal and ecosystem management and protection measures. With regard to marine protected areas (MPAs), the GEF has been the most active funding provider. Its activities range from the creation of an MPA to enhancing its governance and financial sustainability. In contrast, programs targeting ecosystem-based adaptation (EbA) have been financed by a variety of funders, such as the GEF, the GCF, and the AF. This includes encouraging local action plans to integrate EbA approaches. The GCF undertakes a unique approach, i.e., the Blue Action Fund, where adaptation subprojects of nongovernmental organizations have been pooled to improve climate-resilient coastal management in the Western Indian Ocean. Programs focusing on the coastal sinks of greenhouse gases involve updating local inventories for blue carbon ecosystems such as mangroves and managing production landscapes.

Marine Renewable Energy

The only identified project involving marine renewable energy is the *Support of Marine Energy Pilot Projects in Southern Chile* funded by the IDB. This project aims to support the market entry of marine renewables such as wave energy and tidal energy, which are mostly at the pre-commercial stage of development in targeted countries. Despite increasing interest in marine renewable energy, SIDS face challenges, including a lack of available data and human resources, the need for policy and regulatory frameworks, and the scarcity of funding (Lucas et al. 2017). Studies have been increasingly performed on the potential of offshore wind power generation in developing countries and emerging economies (Waewsak, Landry, and Gagnon 2015; Nagababu et al. 2017; Rusu and Onea 2017; Rueda-Bayona et al. 2019), providing insights and evidence to countries who aspire to develop projects in the future.

Population Adaptation

This category lays out a variety of projects related to climate change adaptation in coastal zones such as coastal protection, disaster risk management, and resilience building in industries. It should be noted that investments in infrastructure (e.g., coastal roads, ports and shipping, evacuation shelters or water walls) aimed at resilience building are included in this category, and are typically financed by loans. Meanwhile, grant-based approaches such as disaster information dissemination and coastal governance and support for policymaking are also identified. The project in Timor-Leste funded by the UNDP and the GEF focuses on reducing climate-induced disaster risks

for small-scale rural infrastructure planning and management, by supporting integration of climate risk into policies, regulations, and institutions. While these reactive measures are identified, we find no projects that deal with planned relocation or retreat, which are often cited as adaptation options (Dannenbergh et al. 2019; McMichael, Katonivualiku, and Powell 2019).

Intersection

Some projects bring multiple benefits across categories. For example, the ecosystem approach to fishery management implemented by the GEF in Indonesia promotes ecosystem management for achieving sustainable fisheries. The ridge-to-reef project in Fiji is another example of approaches that are beneficial in multiple aspects; preservation of blue carbon ecosystems such as seagrass and mangroves and coral reefs by addressing the problem of land-sourced pollution will also contribute to enhancing the adaptive capacities of island and coastal communities.

4. DISCUSSION

The Total Global Financing for Ocean Conservation and Climate Actions

In this study, we tracked the international aid/loan projects for ocean conservation and climate actions funded by multilateral and regional banks to provide an overview of the past and current trends of these projects, funding needs, and results to date. Our estimate of the total global financing for ocean conservation and climate action is USD3.5 billion for the period 2013–2019. The question here is whether this amount is sufficient as compared to the global demand for ocean and coastal climate actions. Although there are few estimates of the funding required specifically for ocean conservation, existing assessments imply that our estimates of global ocean funding are far from sufficient. For instance, the OECD reports climate finance provided and mobilized by developed countries between 2013 and 2018 (OECD 2020). According to its estimate, total multilateral public climate finance attributable to developed countries amounts to USD128.1 billion for the given years. Assuming that our estimate covers nearly all outflows from multilateral institutions to developing countries, only a small amount of funding is provided for ocean conservation and climate action. The UNEP's Adaptation Gap report indicates that the cost of climate change adaptation will range from USD140 billion to USD300 billion per year by 2030 (UNEP 2018). Given that over three billion people depend on marine and coastal biodiversity for their livelihoods (UN 2017), further funding and efforts to implement it through concrete projects will be needed.

By comparing the current baseline and past investments in ocean conservation and climate action projects and the estimated future costs for ocean conservation and climate action, we should be able to evaluate the overall financing gap for lower- and lower-middle-income countries to help achieve international targets related to ocean conservation and climate action. Unfortunately, there are no existing plausible estimates of the total costs of ocean-based solutions to climate change. In future studies, the costs should be estimated through scientific and gray literature or submitted "nationally determined contributions" (NDCs) for the Paris Agreement that include cost estimates. Gallo, Victor, and Levin (2017) analyzed 112 of 161 NDCs (70%), including marine issues, although few of the contributions identified quantitative targets for financing and investment.

Geographic Distribution and Different Types of Financial Assistance

In regard to geographical distribution, we find that the Asia and the Pacific region accommodates relatively large-scale projects compared with the rest of the world. These include projects that are fully or partly funded by loans. We identify 13 loan projects, of which nine are implemented in Asia and the Pacific. All are funded either by the ADB or the WB. Most loans have been directed to coastal disaster risk mitigation, including infrastructure construction and coastal fishery development, along with funded ecosystem preservation projects such as the WB's Coral Reef Rehabilitation and Management Program in Indonesia. For grant projects, South Asia and South America receive the largest amounts of global ocean finance.

The identified predominance of grant projects should be noted. Comparisons between loans and grants have been made since 2000 (Bulow and Rogoff 2005; Cohen, Jacquet, and Reisen. 2007). In numerous developing countries, small-scale grant-based projects may be ideal and feasible with regard to implementation and capacity building rather than large-scale loans at this stage. However, Cordella and Ulku (2007) argued that neither loan-dependent nor grant-dependent situations should be the most desirable outcome, albeit the optimal mix of grants and loans depends on the characteristics of the recipient country. There is a long-standing debate on which loans or grants are more effective in supporting the poorest countries. Cohen, Jacquet, and Reisen (2007) pointed out that loans or grants should not be taken in isolation, and that a more flexible mechanism that incorporates a mixture of those two mechanisms performs better than grants only or loans only, offering empirical evidence. They concluded that there is a rationale for loans as effective aid delivery mechanisms and that donors should build on a capacity to use a wide range of financial instruments, including loans. It is critical to explore other financial schemes for ocean-related projects rather than depending heavily on grant-based aid. Thus, ensuring the bankability of ocean and climate actions is a key issue. There is increasing interest in the role of public finance in catalyzing private finance through a mix of private and public finance schemes such as public and private partnerships (PPPs). Researchers are increasingly investigating the potential of PPPs to resolve development issues, e.g., disaster risk reduction, solid-waste management, and carbon emission reduction (Stewart Kolluru, and Smith. 2009; Aliu Adeyemi, and Adebayo 2014; Khan et al. 2020), whereas few studies have focused on ocean and coastal conservation. Golden et al. (2017) stated that private capital must play an active role in helping ocean industries be financed, while public finance is crucial for the introduction of sustainable policies. They proposed a PPP focused on the oceans under an international cooperation scheme, such as UNCLOS, to facilitate international cooperation and support.

Blended finance, which is defined by the OECD as “the strategic use of development finance and philanthropic funds to mobilize private capital flows to emerging and frontier markets” (OECD 2018), is another possible method for leveraging public finance to promote private investment (pump-priming). Recent literature focusing on water resource management highlighted the role of blended finance in mobilizing private financing to achieve SDGs in developing countries (Kolker et al. 2016; Leigland, Trémolet, and Ikeda 2016; Winpenny et al. 2016). Additionally, the OECD DAC admits that blended finance will be crucial for unlocking commercial finance to satisfy the 2030 Agenda and the Paris Agreement and for developing a common policy framework and guidance to implement the principles developed in 2018 (OECD 2018).

To ensure private-sector involvement and achieve bankability, incorporating ocean conservation into national, regional, or local economic systems offers stakeholders incentives to sustain investment in ocean and coastal natural resources. Kathijotes (2013) argued that introducing innovative technology to generate new cash flows, which creates jobs and builds social capital, is crucial. However, in reality, the major challenge in facilitating a sustainable blue economy is the lack of practical models that indicate how development aid drives regional and local economic cycles. Although emerging literature reviews the practices of a successful blue economy (Wenhai et al. 2019), developing sustainable models is challenging, particularly at the local level. Bennett et al. (2019) pointed out that assumptions of a “trickle-down” blue economy are problematic because unregulated economic growth can produce economic inequality and generate limited local benefits. Designing blue economy projects that ensure local benefits and private-sector participation would be a significant step toward maximizing and maintaining the effect of development aid from public funding and toward developing sustainable models of ocean conservation. We identified six projects that are labeled as “blue economy” from the AfDB and the IDB, and an increase in such projects is expected given the increasing attention being paid to this field.

Potential for Future Funding

Our findings also reveal that global ocean financing is likely to be directed toward specific categories such as coastal population adaptation, ecosystem management, and the fishery industry. A relatively small amount of finance flows to the MPA and pollution reduction. In terms of the balance between climate change mitigation and adaptation, the current flows of ocean financing have concentrated on the adaptation side. The total financing scale of projects related to marine carbon sink, which is known as “blue carbon,” and marine renewable energy appears to be limited to < USD30 million for a given period of time. Additionally, we found few projects targeting GHG emission reduction in the ocean industry. These findings imply that ocean-based or ocean-related mitigation measures for climate change and their potential have not been sufficiently recognized by potential recipients. The aforementioned Blue Paper provided by the High Level Panel for Sustainable Blue Economy indicates the global potential of the ocean for carbon neutrality, but it is also worthwhile to identify contributions on regional and local scales. Furthermore, there is a need for efforts to reduce the uncertainties and limitations of currently available ocean-based climate-change mitigation measures. The carbon sink potentials of various coastal and marine ecosystems have been assessed with regard to long-term effectiveness (Howard et al. 2017; Gattuso et al. 2018), and the results can assist decision-makers in designing effective projects. Marine renewable energy, such as offshore wind power, appears to take a long time to be expanded to developing countries owing to costs, legal barriers, and technological challenges, while international donors such as the WB are already seeking opportunities in emerging markets (ESMAP 2019).

This study has several methodological limitations. Our estimate does not represent total outflows from multilateral institutions to ocean-related projects but only those from several major multilateral financial institutions with online available project data sets. However, this study is the first attempt to compile the data from eight regional development banks and climate funds and provides a rough picture of the global flows of public multilateral finance to ocean and climate actions, supplementing the existing ocean finance tracking data sets, which focus on bilateral finance.

5. POLICY RECOMMENDATION

Tracking multilateral aid flows to lower- and lower-middle-income coastal areas and SIDS for comparison against required funding to fully implement and build on NDCs and SDGs allows us to identify significant gaps and prospects for greater impact of aid for ocean conservation and climate action. The findings of this study suggest that adaptation and mitigation efforts in lower- and lower-middle-income coastal and SIDS countries/communities can receive increased funding through: 1) directing a significant portion of the current climate funds to coastal and SIDS issues, and 2) developing supplementary financing to support adaptation and mitigation methods through innovative approaches and partnerships. To achieve the first objective, enhancing access to available financial resources is crucial. Given the recent wave of commitment to ocean sustainability among political leaders (UNESCO 2020), without appropriate efforts, a significant gap will be generated between implementation and available resources. In addition to identifying the potential needs of ocean-related projects, capacity building helps countries develop proposals for financial institutions. To facilitate financing where it is needed and to support matchmaking between project needs and available financial resources, a practical guide would be helpful. Such a guide should include a list of available financial sources, procedures, and guidelines for project formulation and implementation, a menu of ocean and climate project models, and necessary environmental safeguarding and restoration measures.

6. CONCLUSIONS

Comprehending the scale and distribution of international aid is a critical first step in advancing ocean conservation and climate action on a global scale. In this study, baseline data were obtained by reviewing the online project databases of selected multilateral financial providers. In conclusion, the world has seen a steady increase in investment in ocean and climate actions. This quantitative analysis is expected to inform both donors and recipients of the emerging importance of the roles of multilateral aid in ocean-based solutions to climate change. We also identify future challenges, including the insufficient scale of funding, bias between regions and categories, the predominance of grant projects, and the lack of projects targeting climate change mitigation. These issues will be addressed by the international community through a discussion on relevant platforms such as the UNFCCC. To overcome the challenges and sufficiently leverage the increasing commitments to ocean financing, tools and communications that bridge multilateral donors and potential recipients must be developed. We propose the development of a guide that helps lower- and lower-middle-income countries map out ocean-related projects and access available financial resources as well as informing climate finance providers. Furthermore, global efforts to raise ambitions toward sustainable investment in ocean and coastal climate actions by creating ecosystems, including universal language for ocean financing, evidence-based bankable project models, and PPP platforms, are proposed. This work contributes to the enhancement of global ocean financing and, in particular, the linkage between ocean and climate finance solutions for achieving international goals for ocean conservation and climate action.

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