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# FINANCING CORAL REEF CONSERVATION: A CASE STUDY ON BELIZE



Columbia University  
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## About the Capstone

This report was developed as part of the Capstone Workshop at Columbia University School of International and Public Affairs (SIPA), a core and culminating component of the school's graduate programs. Capstone Workshops are live consulting engagements in which small teams of graduate students from the Master of International Affairs (MIA), Master of Public Administration (MPA), and related programs partner with external clients to address real-world, policy-oriented challenges. Guided by a faculty advisor, these teams deliver rigorous analysis and actionable recommendations, drawing on their interdisciplinary training and diverse professional backgrounds.

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## Disclaimer

The views and analysis presented in this report are those of the authors alone and do not necessarily reflect the official positions of the Independent Evaluation Office of the Global Environment Facility (GEF-IEO) or Columbia University. Unless explicitly stated otherwise, the content should not be interpreted as an endorsement, recommendation, or formal approval by these institutions.

## Acronyms

**BFSF** – Belize Fund for a Sustainable Future

**DFC** – Development Finance Corporation

**EIP** – Ecosystem Investment Partners

**GCRMN** – Global Coral Reef Monitoring Network

**GEF** – Global Environment Facility

**GEF-IEO** – Independent Evaluation Office of the Global Environment Facility

**GFCR** – The Global Fund for Coral Reefs

**HRI** – Healthy Reefs Initiative

**IDB** – The Inter-American Development Bank

**KPI** – Key Performance Indicators

**IUCN** – International Union for Conservation of Nature

**JNCC** – Joint Nature Conservation Committee

**MAR Fund** – Mesoamerican Reef Fund

**MAR2R** – Integrated Transboundary Ridges-to-Reef Management of the Mesoamerican Reef

**MBR** – Mesoamerican Barrier Reef

**MPA** – Marine Protected Area

**MRV Systems** – Monitoring, Reporting, and Verification Systems

**NOAA** – National Oceanic and Atmospheric Administration

**ORRAA** – Ocean Risk and Resilience Action Alliance

**PACT** – Protected Areas Conservation Trust

**PFP** – Project Finance for Permanence

**RBB** – Resilient Bold Belize Initiative

**SGP** – Small Grants Program

**SIDS** – Small Island Developing States

**SME** – Small and Medium Enterprises

**SST** – Sea Surface Temperature

**TASA** – The Turneffe Atoll Sustainability Association

**TNC** – The Nature Conservancy

**UNCTAD** – United Nations Conference on Trade and Development

**UNESCO** – United Nations Educational, Scientific and Cultural Organization

**WWF** – World Wildlife Fund

## 1: Executive Summary



Source: Rennie, Dustin. "The Belize Barrier Reef." RE/MAX Belize Real Estate. December 5, 2022.  
<https://remaxbelizerealestate.com/ambergris-caye/the-belize-barrier-reef/>.

Coral reefs are critical ecological and economic assets, yet the systems used to finance their protection remain structurally misaligned with the nature of the challenge. This report examines the coral reef financing gap as a mismatch between long-term, capital-intensive conservation needs and the short-term, fragmented funding sources that currently dominate. Using Belize as a case study, it argues that closing this gap requires not only more funding but a fundamental shift toward coordinated, system-level financing approaches.

*"The central lesson of this report is that aligning financial structures with the long-term nature of conservation challenges is essential to sustaining both reef ecosystems and the economies that depend on them."*

Globally, coral reefs are under intensifying pressure from climate change and local stressors. Rising sea temperatures, ocean acidification, and more frequent bleaching events are accelerating reef decline, while pollution, overfishing, and coastal development reduce reef resilience. These dynamics are increasing both the urgency and cost of conservation. At the same time, reefs underpin major economic sectors, including tourism, fisheries, and coastal protection. Their degradation therefore represents not only an environmental crisis, but a direct threat to economic stability, livelihoods, and public finances in reef-dependent economies.

Belize illustrates these dynamics in a particularly clear way. As part of the Mesoamerican Barrier Reef system, it combines high ecological value with deep economic dependence on reef systems. Like many Small Island Developing States (SIDS), Belize faces structural constraints, including limited fiscal space, high climate vulnerability, and capacity challenges. Despite these constraints, it has demonstrated leadership in conservation policy and innovation.

However, Belize's broader conservation finance landscape remains fragmented. While the country has relatively advanced legal and regulatory frameworks, its financing system is characterized by disconnected actors and limited integration. Conservation financing continues to rely heavily on donor funding, multilateral support, and short-term project cycles, which are not well-suited to sustaining long-term ecosystem management.

To address these challenges, the report proposes a set of system-level interventions centered on the catalytic role of GEF. These include establishing a national reef finance and oversight entity to coordinate actors and align funding flows; developing a blended finance platform anchored by GEF to crowd in private capital; and strengthening credit enhancement and risk mitigation mechanisms to improve the investability of reef-linked sectors. Together, these measures aim to transition from a fragmented, donor-driven model to an integrated financing system capable of supporting long-term conservation and resilience.

Belize offers a valuable precedent for other SIDS and reef-dependent economies. Its combination of ecological importance, policy ambition, and experience with innovative financial instruments demonstrates that more coordinated and scalable conservation finance systems are achievable, even under structural constraints. The central lesson of this report is that aligning financial structures with the long-term nature of conservation challenges is essential to sustaining both reef ecosystems and the economies that depend on them.

## 2: Problem Statement: The Coral Reef Financing Gap

This section outlines the core dimensions of the coral reef financing challenge, establishing why a structural gap exists between conservation needs and available funding. It first situates coral reef degradation within a broader context of intensifying climate and ecological pressures, highlighting how these forces are increasing both the urgency and cost of intervention. It then examines the economic importance of coral reefs globally, demonstrating that they function not only as ecological systems but as critical drivers of tourism, fisheries, and coastal protection. Finally, the section identifies the central financing mismatch: a long-term, capital-intensive conservation need that is currently met by short-term, fragmented funding sources. Together, these elements frame the reef financing gap not simply as a question of insufficient funding, but as a systemic misalignment between the nature of the problem and the structure of existing financial solutions.

*The annual need for global biodiversity financing at \$700 billion per year, with current active financing estimated at only \$124–143 billion.*

### a. Climate & Ecological Pressures

Coral reef degradation is an intensifying climate and ecological challenge that directly affects reef-dependent economies and increases the cost of conservation. Globally, coral reefs have already suffered major losses from marine heat stress and bleaching. The Global Coral Reef Monitoring Network (GCRMN) estimated that the world lost about 14% of its coral between 2009 and 2018.<sup>1</sup> In a subsequent report, the National Oceanic and Atmospheric Administration (NOAA) confirmed in 2024 that the world had entered its fourth global coral bleaching event.<sup>2</sup> By September 2025, bleaching-level heat stress had affected 84.4% of the world's coral reef area, making it the most extensive event on record.<sup>3</sup>

The main climate pressures affecting coral reefs globally include rising sea surface temperatures, ocean acidification, stronger storm systems, and sea-level rise. Ocean warming is especially damaging because corals can survive only within a narrow thermal range; prolonged exposure to unusually warm water causes bleaching and, when repeated or severe, can lead to large-scale coral mortality. These climate pressures do not operate in isolation. They interact with ecological stressors such as pollution, sedimentation, overfishing, coral disease, and habitat destruction, thereby reducing reef resilience and weakening coral systems' ability to recover from disturbance. As a result, coral reef decline is not simply

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<sup>1</sup> Global Coral Reef Monitoring Network. (2021). *Status of coral reefs of the world: 2020*. <https://gcrmn.net/wp-content/uploads/2023/01/Status-of-Coral-Reefs-of-the-World-2020-Full-Report.pdf>; National Oceanic and Atmospheric Administration. (2024). *NOAA confirms fourth global coral bleaching event*. <https://www.noaa.gov/news-release/noaa-confirms-4th-global-coral-bleaching-event>

<sup>2</sup> A global coral bleaching event is declared when prolonged marine heat stress causes mass bleaching across multiple ocean basins simultaneously. During these events, coral expel the symbiotic algae that provide most of their energy or nutrients, increasing the risk of widespread mortality if heat stress persists.

<sup>3</sup> National Oceanic and Atmospheric Administration Coral Reef Watch. (2025). *Global bleaching status update*. [https://coralreefwatch.noaa.gov/satellite/research/coral\\_bleaching\\_report.php](https://coralreefwatch.noaa.gov/satellite/research/coral_bleaching_report.php)

a localized environmental issue but part of a broader global ecological crisis that is becoming more frequent, more severe, and more costly to reverse. These dynamics are particularly important in the Mesoamerican Reef region, where ecological pressures combine with the economic dependence of coastal communities on reef systems. The 2024 Healthy Reefs for Healthy People report card for the Mesoamerican Reef classifies overall reef health as “Poor,” even though there has been some recent improvement in herbivorous fish biomass. This regional evidence reinforces the seriousness of current reef pressures: coral ecosystems are not stable natural assets requiring minimal intervention, but stressed systems that increasingly require active management, resilience-building, and restoration.

Taken together, these climate and ecological pressures increase the funding needs associated with coral reef conservation. As reefs become more vulnerable to bleaching, storms, and ecological degradation, the cost of maintaining their ecological and economic functions rises. Conservation financing must therefore address not only routine protection, but also resilience, adaptation, and recovery in the face of intensifying climate risk. In this sense, the problem is not simply that reef conservation is underfunded; it is that climate and ecological pressures are expanding faster than existing funding models are designed to handle.

## **b. Why Coral Reefs Matter Economically**

Coral reefs are not only ecological assets, but they are also a source of revenue and serve as protective infrastructure for the economy. At the global level, reef tourism alone has been estimated at US\$35.8 billion per year across 102 reef jurisdictions, with roughly US\$19.5 billion tied to activities on reefs such as diving and snorkeling and another US\$16.3 billion tied to tourism adjacent to reefs such as beaches.<sup>4</sup> That distinction matters because coral reefs support not only direct visitor spending, but also the wider coastal tourism economy built around them.

Country examples show how large these reef tourism values can become. In the global tourism mapping, Indonesia, Mexico, Thailand, and Australia all ranked among the highest value coral reef tourism jurisdictions. More recent official estimates from Australia show the same logic at a national scale that the Great Barrier Reef contributes about AU\$9 billion annually, approximately 0.4–0.5% of Australian GDP, and supports around 77,000 full-time jobs, while tourism alone accounts for nearly 90% of the Reef’s economic value.<sup>5</sup> These figures help explain why reef degradation is not just an environmental loss, as in economies dependent on reefs it threatens a major source of employment and local business activity.

Fisheries are the second major economic channel. A study by Louise Teh (University of British Columbia) identified about 6 million reef fishers across 99 reef countries and territories and found that slightly over one-quarter of the world’s small-scale fishers depend on coral reefs.<sup>6</sup> Fiji provides a useful comparator for Belize. The World Wildlife Fund (WWF) estimated that Fiji’s Great Sea Reef contributes FJD 12-16 million annually through the inshore fisheries sector alone, and the report explicitly notes that

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<sup>4</sup> Mark Spalding et al., “Mapping the Global Value and Distribution of Coral Reef Tourism,” *Marine Policy* 82 (2017): 104–113, <https://doi.org/10.1016/j.marpol.2017.05.014>

<sup>5</sup> Department of Climate Change, Energy, the Environment and Water, “Great Barrier Reef Valued at \$95 Billion, Supports 77,000 Jobs,” *Australian Government*, October 28, 2025, <https://www.dcccew.gov.au/about/news/gbr-valued-95-billion-supports-77000-jobs>

<sup>6</sup> Louise S. L. Teh, Lydia C. L. Teh, and U. Rashid Sumaila, “A Global Estimate of the Number of Coral Reef Fishers,” *PLOS ONE* 8, no. 6 (2013): e65397, <https://doi.org/10.1371/journal.pone.0065397>

this is a conservative figure because much subsistence value is not captured.<sup>7</sup> The examples show that fisheries matter even where tourism is larger in cash terms.

Coral reefs also perform an economic function that does not appear directly in tourism receipts or fish landings, which they reduce physical risk. A coral reef study by Filippo Ferrario (University of Bologna) found that coral reefs reduce incoming wave energy by an average of 97%.<sup>8</sup> Another global assessment by Michael Beck (University of California, Santa Cruz) estimated that reefs avert more than US\$4 billion in flood damages every year.<sup>9</sup> Without reefs, annual expected flood damages would more than double, and damages from frequent storms would triple. In Belize, the avoided losses from reef shoreline protection have been valued at US\$231-347 million annually. Although not captured as cash revenues, these are economically meaningful benefits, as reef degradation results in cost shifting to households and the public sector.

Taken together, these findings underscore that the economic value of reefs extends beyond direct revenues.



Source: UNESCO World Heritage Centre. "Belize Barrier Reef Reserve System: Gallery." Accessed May 5, 2026. <https://whc.unesco.org/en/list/764/gallery/>.

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<sup>7</sup>World Wide Fund for Nature (WWF), *Economic Value of the Great Sea Reef* (WWF, n.d.), [https://wwfint.awsassets.panda.org/downloads/gsr\\_valuation\\_report\\_watermark\\_annex\\_3\\_1\\_1.pdf](https://wwfint.awsassets.panda.org/downloads/gsr_valuation_report_watermark_annex_3_1_1.pdf)

<sup>8</sup>Filippo Ferrario, Michael W. Beck, Curt D. Storlazzi, Fiorenza Micheli, Christine C. Shepard, and Laura Airolidi, "The Effectiveness of Coral Reefs for Coastal Hazard Risk Reduction and Adaptation," *Nature Communications* 5 (2014): 3794, <https://doi.org/10.1038/ncomms4794>

<sup>9</sup>Michael W. Beck, Iñigo J. Losada, Pelayo Menéndez, Borja G. Reguero, Pedro Díaz-Simal, and Felipe Fernández, "The Global Flood Protection Savings Provided by Coral Reefs," *Nature Communications* 9 (2018): 2186, <https://doi.org/10.1038/s41467-018-04568-z>

### c. The Financing Mismatch

A central challenge in coral reef conservation is the gap between the financial resources required to protect reef ecosystems and the funding currently available to support those efforts. Reefs require sustained, multi-decade investment for activities including ecosystem monitoring, enforcement of fisheries regulations, water quality management, and long-term restoration efforts. Yet the dominant funding streams available for reef protection remain short-horizon: grants, project-based donor support, and public budgets tied to limited programming cycles. This creates a structural mismatch between a long-term conservation need and financing that is typically temporary, fragmented, and not designed to underwrite ongoing stewardship.

The issue is not only that there is too little money overall, but also that the type of capital currently available is poorly aligned with the duration and risk profile of reef conservation. The Convention on Biological Diversity assesses the annual need for global biodiversity financing at \$700 billion per year, with current active financing estimated at only \$124–143 billion.<sup>10</sup> Within that broader shortfall, marine systems appear particularly underfunded as the UN Environmental Program reports that marine nature-based solutions receive only 9% of total nature based solution investments, equating to less than a billion annually.<sup>11</sup> In comparison, terrestrial investment was estimated to be \$23 billion yearly.

The financing mis-match is particularly pronounced in reef-dependent economies such as Belize, where conservation funding remains heavily dependent on international donors, multilateral institutions, and philanthropic organizations.<sup>12</sup> These sources of finance are typically short- to medium-term in nature—often structured as project-based funding cycles lasting between three to five years, with some multilateral development bank programs extending to seven or ten years at most. However, these time horizons are poorly aligned with the long-term and continuous financing needs of coral reef conservation. While recent initiatives such as the Belize Blue Bond have begun to establish more durable financing mechanisms for marine conservation, significant gaps remain between the financial resources required to protect reef ecosystems and the funding currently available to support those efforts.<sup>13</sup>

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<sup>10</sup> Secretariat of the Convention on Biological Diversity, *Resource Mobilization: Review of the Implementation of the Strategy for Resource Mobilization* (CBD/SBI/6/2), February 19, 2026

<sup>11</sup> United Nations Environment Program, “Ocean, Seas and Coasts: Finance,” <https://www.unep.org/topics/ocean-seas-and-coasts/finance>

<sup>12</sup> As defined by the Global Fund for Coral Reefs, reef-dependent economies refers here to economies or local livelihood systems in which coral reefs make a material contribution to income generation, employment, food security, shoreline protection, or fiscal revenues, especially through tourism, fisheries, and coastal protection services.

<sup>13</sup> Additional material and information on the Belize Blue Bond initiative can be found in Annex A

### 3: Belize as a Case Study

Figure 1: Map of Belize



Source: Encyclopædia

Britannica. "Belize." <https://www.britannica.com/place/Belize>.

Coral reefs are among the most ecologically and economically significant marine ecosystems on the planet, covering less than 1% of the ocean floor yet supporting an estimated 25% of all marine species. They also provide coastal protection, fisheries, and tourism revenues to hundreds of millions of people worldwide.<sup>14</sup> They are concentrated in tropical and subtropical waters across three main regions: the Indo-Pacific, the wider Caribbean, and the Coral Triangle, with the greatest reef biodiversity found in Southeast Asia and the most extensive reef systems in the Western Hemisphere located along the Mesoamerican coast.<sup>15</sup> The economic value generated by reef systems is substantial: global estimates

<sup>14</sup> Cesar, Herman, Laurant Burke, and Lida Pet-Soede, *The Economics of Worldwide Coral Reef Degradation* (Cesar Environmental Economics Consulting, 2003), [https://www.icriforum.org/sites/default/files/Economics\\_of\\_worldwide\\_coral\\_reef\\_degradation.pdf](https://www.icriforum.org/sites/default/files/Economics_of_worldwide_coral_reef_degradation.pdf).

The Coral Triangle, as defined by Coral Reef Alliance, is defined as “a vital marine region spanning six countries—Indonesia, Malaysia, the Philippines, Papua New Guinea, Solomon Islands, and Timor-Leste” and “is home to 76% of the world’s coral species.” Coral Reef Alliance. (n.d.). *Coral Triangle*. <https://coral.org/en/where-we-work/coral-triangle/>

<sup>15</sup> Mark D. Spalding, Corinna Ravilious, and Edmund P. Green, *World Atlas of Coral Reefs* (Berkeley: University of California Press, 2001), [https://resources.unep-wcmc.org/products/WCMC\\_RT104](https://resources.unep-wcmc.org/products/WCMC_RT104).

place the goods and services provided by coral reefs at USD 375 billion annually, with reef-dependent tourism and fisheries forming the economic backbone of many coastal and island economies.<sup>16</sup>

Within this global landscape, SIDS represent a particularly critical and vulnerable subset. SIDS are disproportionately dependent on reef ecosystems for food security, livelihoods, coastal protection, and tourism revenue. They simultaneously face the highest exposure to the climate-driven threats, including ocean warming, acidification, and intensifying storm events, that are degrading those ecosystems.<sup>17</sup> They also face a structural paradox: the countries most in need of conservation finance and climate adaptation investment are precisely those with the least fiscal space, the highest borrowing costs, and the most limited institutional capacity to design and implement complex financial instruments.<sup>18</sup> For these reasons, SIDS represent both the highest-priority context for reef conservation finance and the most instructive testing ground for whether innovative mechanisms can be made to work under constrained conditions.

Situated on the northeastern coast of Central America, Belize is bordered by Mexico to the north and Guatemala to the west and south, with the Caribbean Sea stretching along its eastern coastline. The country spans approximately 22,966 square kilometers and, as of 2024, has a population of roughly 417,000 people, a very small population by any measure, with direct consequences for institutional capacity and the ability to deliver complex, cross-cutting policy at scale.<sup>19</sup> Despite its modest size, Belize occupies a significant position in global conservation and climate discussions, owing to the extraordinary richness of its coastal and marine ecosystems.

Having gained independence from Britain only in 1981, Belize has been sovereign for fewer than 50 years, and as a former colony, inherited a narrow economic base, limited public institutions, and significant debt vulnerabilities that have persisted into the present day.<sup>20</sup> Therefore, its development trajectory has been closely intertwined with its natural resource base, and particularly with the health of the sea. More than 40% of the country's population lives and works along the coast, depending on these ecosystems for their livelihoods.<sup>21</sup> The country's defining ecological asset is its stretch of the Mesoamerican Barrier Reef, extending roughly 1,000 kilometers along the coastlines of Mexico, Belize,

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<sup>16</sup> Coral reefs generate both goods and services. Goods include tangible, extractable products such as fish and shellfish harvested for food and trade, raw materials including corals and shells used in construction and jewellery, and compounds derived from reef organisms used in pharmaceutical research. Services are typically categorised across four types: provisioning services (the flows of marine products that sustain food security and livelihoods); regulating services (coastal protection through wave attenuation, storm surge buffering, and erosion control); cultural services (tourism, recreation, and the spiritual and aesthetic value placed on reefs by coastal communities); and supporting services (nutrient cycling, habitat provision for thousands of marine species, and the maintenance of broader ocean biodiversity). The USD 375 billion figure aggregates these categories globally.

Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-Being: Synthesis*. Washington, DC: Island Press.

<https://www.millenniumassessment.org/en/index.html>

NOAA Coral Reef Conservation Program. n.d. "General Program Description." NOAA Coral Reef Information System. Accessed April 2026.

<https://www.coris.noaa.gov/activities/>

Costanza, Robert, et al., "Changes in the Global Value of Ecosystem Services," *Global Environmental Change* 26 (2014): 152--158,

<https://doi.org/10.1016/j.gloenvcha.2014.04.002>.

<sup>17</sup> United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, *Small Island Developing States: Key Facts* (UN-OHRLS, 2022),

<https://www.un.org/ohrls/content/small-island-developing-states>.

<sup>18</sup> World Bank, *Climate and Development: An Agenda for Action* (Washington, DC: World Bank, 2022),

<https://www.worldbank.org/en/topic/climatechange/publication/climate-and-development-an-agenda-for-action>.

<sup>19</sup> United Nations Department of Economic and Social Affairs, Population Division, *World Population Prospects 2024: Summary of Results* (UN DESA, 2024), <https://population.un.org/wpp/>.

<sup>20</sup> Embassy of Belize in Washington, D.C. n.d. "Facts About Belize." Accessed April 2026.

<https://www.belizeembassyusa.mfa.gov.bz/copy-of-about-belize>

<sup>21</sup> World Wildlife Fund, *Valuing Belize's Barrier Reef* (WWF, 2016),

<https://www.wwf.org.uk/what-we-do/projects/valuing-belize-barrier-reef>.

Guatemala, and Honduras.<sup>22</sup> Belize's portion forms the backbone of this network and supports tremendous marine biodiversity, including threatened species such as marine turtles and manatees.

Belize also provides a strong foundation for evaluating innovative conservation finance mechanisms. In November 2021, The Nature Conservancy (TNC) and the Government of Belize completed a USD 364 million debt conversion for marine conservation, structured as a Blue Bond, the world's largest debt refinancing for ocean conservation to date, which reduced Belize's debt by 12% of GDP and created an estimated USD 180 million in conservation funding over 20 years.<sup>23</sup> This transaction is one instrument within a broader arc of conservation effort, but is significant as evidence that complex conservation finance transactions are achievable within the structural constraints of a SIDS-type economy.

Although located on the Central American mainland, Belize shares the acute systemic vulnerabilities that define SIDS and is formally classified as such.<sup>24</sup> With approximately 34% of its population living at elevations below five meters and over 12% of its landmass equally low-lying, the country is highly exposed to sea-level rise and coastal flooding.<sup>25</sup> The economic fragility tied to this topography was demonstrated in 2022 by Hurricane Lisa: despite being only a Category 1 storm, it affected nearly 40% of the population and inflicted damages equivalent to 0.4% of GDP, underscoring the systemic financial risks posed by climate-driven events.<sup>26</sup> Belize exemplifies the broader SIDS condition: its economy is heavily dependent on tourism, agriculture, and marine ecosystems, making it particularly vulnerable to both environmental and external demand fluctuations.

A key structural issue is scale. Small populations and limited domestic demand restrict economies of scale, raising per-unit costs for infrastructure, public goods provision, and service delivery.<sup>27</sup> For instance, fixed costs of a power grid, hospital, or road network are spread across far fewer taxpayers, leaving small states spending more per capita to deliver the same standard of provision as larger economies. This is compounded by high import dependence, with imports accounting for roughly 60–70% of GDP and covering the majority of energy, food, and capital goods needs, which exposes SIDS to global price volatility and foreign exchange pressures.<sup>28</sup> In Belize, this manifests in persistent current account deficits, which have averaged between 5–10% of GDP in recent years, and a reliance on external financing to support development and balance-of-payments stability.<sup>29</sup> These structural constraints are further reflected in public debt levels that have historically exceeded 80–100% of GDP prior to recent restructuring efforts, limiting fiscal space and complicating long-term investment planning, particularly for large-scale infrastructure or climate adaptation projects.<sup>30</sup>

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<sup>22</sup> Healthy Reefs for Healthy People, *Report Card for the Mesoamerican Reef* (Healthy Reefs for Healthy People, 2024), <https://www.healthyreefs.org/cms/report-cards/>.

<sup>23</sup> The Nature Conservancy, *Belize Debt Conversion for Marine Conservation: Case Study* (TNC, 2021), <https://www.nature.org/content/dam/tnc/nature/en/documents/TNC-Belize-Debt-Conversion-Case-Study.pdf>.

<sup>24</sup> United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States, *Small Island Developing States: Key Facts*.

<sup>25</sup> United Nations Environment Program, *Regional Seas Program: Caribbean Environment Program* (UNEP, 2020), <https://www.unep.org/cobsea>.

<sup>26</sup> Government of Belize, *Hurricane Lisa Post-Disaster Needs Assessment* (Belmopan: Government of Belize, 2023), <https://www.pressoffice.gov.bz>.

<sup>27</sup> World Bank, *World Development Report 2020: Trading for Development in the Age of Global Value Chains* (Washington, DC: World Bank, 2020), <https://www.worldbank.org/en/publication/wdr2020>.

<sup>28</sup> World Bank, *World Development Indicators 2023* (Washington, DC: World Bank, 2023), <https://datatopics.worldbank.org/world-development-indicators/>.

<sup>29</sup> International Monetary Fund, *Belize: 2023 Article IV Consultation* (Washington, DC: IMF, 2023), <https://www.imf.org/en/Publications/CR/Issues/2023/06/15/Belize-2023-Article-IV-Consultation>.

<sup>30</sup> International Monetary Fund, *Belize: 2023 Article IV Consultation*; United Nations Conference on Trade and Development, *Trade and Development Report 2023* (Geneva: UNCTAD, 2023), <https://unctad.org/publication/trade-and-development-report-2023>.

Moreover, climate events impose significant fiscal burdens. Hurricanes and extreme weather events can cause damages equivalent to large shares of GDP, forcing governments to reallocate spending toward reconstruction and recovery.<sup>31</sup> This creates a cycle in which scarce fiscal resources are diverted from long-term development priorities to short-term crisis response. For Belize, repeated climate shocks have strained public finances and increased reliance on external assistance, concessional financing, and debt restructuring mechanisms.<sup>32</sup> Heightened physical and transition risks can deter private capital, increase insurance costs, and raise the cost of borrowing, creating a paradox in which countries most in need of climate adaptation investment face the highest barriers to accessing affordable capital.<sup>33</sup> This underscores the importance of innovative financing mechanisms, such as blended finance and conservation-linked instruments, that can help de-risk investments and crowd in private capital for resilience-building projects.<sup>34</sup>

In sum, Belize combines ecological significance, deep and measurable economic dependence on reef systems, and a demonstrated track record of institutional innovation in marine finance. This makes it a strategically relevant case for assessing whether conservation efforts can evolve beyond grant-based models toward scalable approaches capable of mobilizing private capital at meaningful scale.

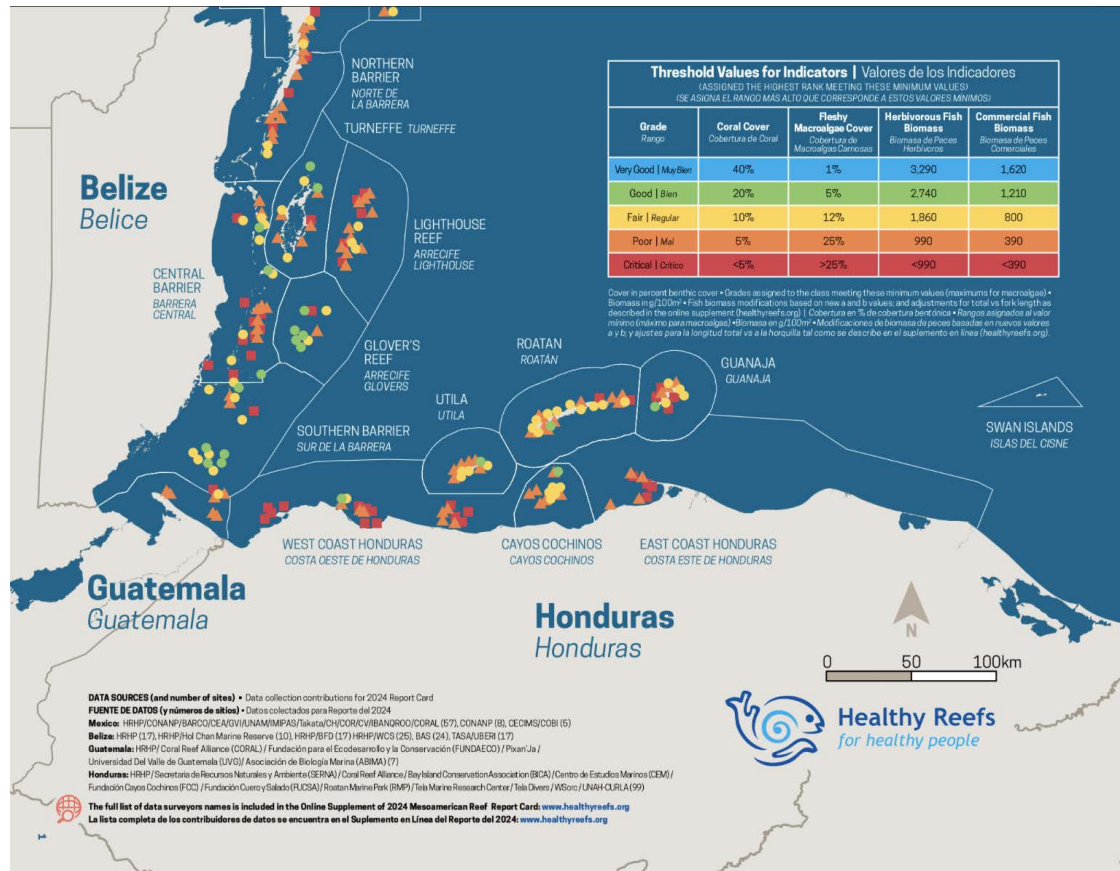
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<sup>31</sup> Intergovernmental Panel on Climate Change, *Sixth Assessment Report: Impacts, Adaptation and Vulnerability* (Geneva: IPCC, 2022), <https://www.ipcc.ch/report/ar6/wg2/>.

<sup>32</sup> World Bank, Belize Country Climate and Development Report (Washington, DC: World Bank, 2021), <https://www.worldbank.org/en/country/belize>.

<sup>33</sup> World Bank, *World Development Report 2020*; Inter-American Development Bank, *Bridging the Finance Gap in Climate Action* (Washington, DC: IDB, 2020), <https://publications.iadb.org>.

<sup>34</sup> International Monetary Fund, *Global Financial Stability Report* (Washington, DC: IMF, 2022), <https://www.imf.org/en/Publications/GFSR>.



Source: Healthy Reefs for Healthy People. 2024 Mesoamerican Reef Report Card. Healthy Reefs Initiative, 2024.  
<https://www.healthyreefs.org>.

## 4: Causes and Consequences of Coral Reef Degradation in Belize

Belize's reefs are under pressure from multiple, interacting directions and the consequences of that pressure extend well beyond the marine environment. This section examines both the drivers and the downstream effects of coral reef degradation in Belize. Section 4a traces the causes, identifying the interaction between system-wide climate stressors and geographically differentiated local pressures. Section 4b examines the consequences across ecological, economic, and social systems. Together, they establish reef degradation not as a discrete environmental problem but as a compounding, system-wide risk with direct implications for fiscal stability, community livelihoods, and Belize's long-term development trajectory.



**Healthy Coral in Belize (Left), Bleached Coral in Belize (Right)**

Source: Kessler, Rebecca. "Restoration, Protection Aim to Save Belize's Coral Reef from Extreme Heat and Disease." *Mongabay*, July 9, 2025.

<https://news.mongabay.com/2025/07/restoration-protection-aim-to-save-belizes-coral-reef-from-extreme-heat-and-disease/>

### a. Causes of Coral Reef Degradation in Belize

Findings indicate that coral reef degradation in Belize is driven by the interaction of system-wide climate stressors – marine heatwaves/bleaching and increasingly severe disease dynamics – with geographically differentiated local pressures – water quality degradation, runoff/sediments, and coastal development impacts. Evidence from long-term monitoring across the Belizean Barrier Reef indicates a substantial decline in hard-coral cover, from 26.3% in 1997 to 10.6% in 2016, with major losses associated with prior bleaching and hurricane disturbance periods.<sup>35</sup>

This trajectory mirrors the pattern documented in Section 2a: while the world lost approximately 14% of its coral cover between 2009 and 2018, Belize experienced a steeper relative decline over roughly the same period, confirming that the global bleaching and degradation dynamics described earlier are manifesting with intensity at the national scale. Recent national monitoring confirms that acute heat stress

<sup>35</sup>Catherine Alves et al., "Twenty Years of Change in Benthic Communities across the Belizean Barrier Reef," *PLOS ONE* 17, no. 1 (2022): e0249155, <https://doi.org/10.1371/journal.pone.0249155>.

is occurring at levels of direct managerial concern. For example, in-situ loggers in southern Belize recorded temperatures spiking to 33°C in June 2023, prompting urgent bleaching surveys and government and partner site visits to confirm.<sup>36</sup>

Local stakeholders reinforced that these climate-linked stressors are not evenly distributed as they cautioned against a single national narrative and described northern reefs as more degraded while some southern reefs have fared better, implying distinct baselines and intervention priorities across the seascape.<sup>37</sup> Beyond the uneven spatial distribution of heat stress, stakeholders also identified sargassum influxes and Stony Coral Tissue Loss Disease (SCTLD) as serious operational concerns – observations rooted in direct field experience and corroborated by the research. SCTLD has emerged as a major concern in Belize, with stakeholders noting earlier and more severe impacts in northern sites and the use of surviving southern coral stock in restoration efforts.<sup>38</sup> While this requires careful local attribution, research supports plausible ecological pathways: Caribbean studies show that when sargassum accumulates and decomposes, it can reduce light, oxygen and pH levels (creating “brown tide” conditions), contributing to nearshore coral mortality and, under warmer conditions, increasing the likelihood of severe hypoxia events.<sup>39</sup> Belize policy signals also indicate that sargassum is now treated as a material coastal management challenge, with a coordinated national response focused on priority tourism destinations and monitoring tools, and explicit attention to longer-term operational and investment frameworks.<sup>40</sup>

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<sup>36</sup>Belize Coastal Zone Management Authority and Institute, "Coral Bleach Watch 2023," accessed April 15, 2026, <https://www.coastalzonebelize.org/coral-bleaching-project/>; P.S. Lobel and L.K. Lobel, "A Ten-Year Record Shows Warming Inside the Belize Barrier Reef Lagoon," *Diversity* 16, no. 1 (2024): 57, <https://www.mdpi.com/1424-2818/16/1/57>.

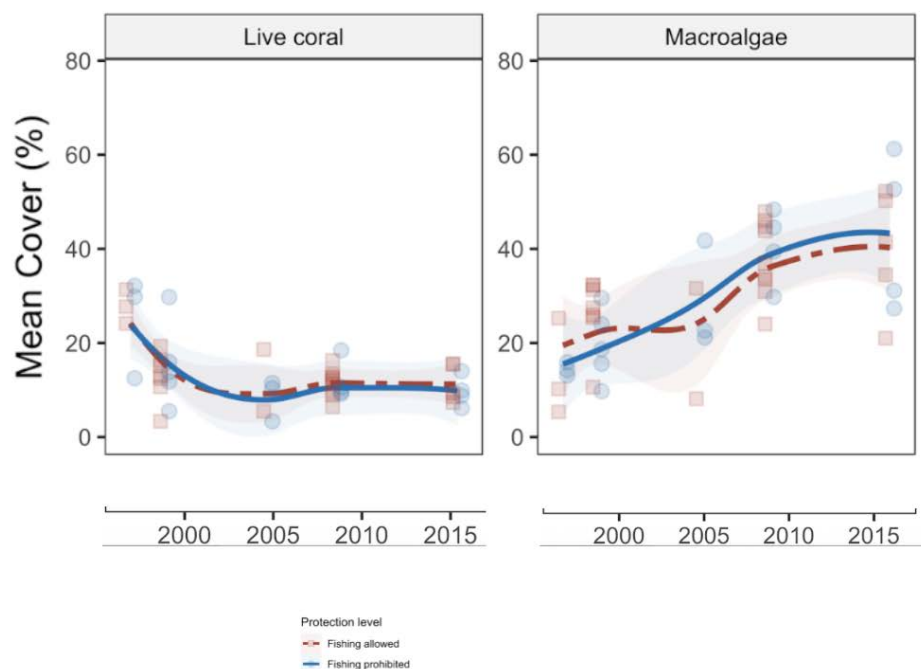
<sup>37</sup>Belize Fisheries Department — SCTLD <https://fisheries.gov.bz/tag/sctld/>

<sup>38</sup>Mesoamerican Reef Fund (MAR Fund), *Stony Coral Tissue Loss Disease (SCTLD) in the Mesoamerican Reef Region: Recommendations for Addressing SCTLD* (2020), <https://marfund.org/es/wp-content/uploads/2020/05/SCTLD-Recommendations-Final-2020.pdf>

<sup>39</sup>Mengqiu Wang et al., "The Great Atlantic Sargassum Belt," *Science* 365, no. 6448 (2019), [https://repository.library.noaa.gov/view/noaa/28540/noaa\\_28540\\_DS1.pdf](https://repository.library.noaa.gov/view/noaa/28540/noaa_28540_DS1.pdf); MAR Fund, *SCTLD Recommendations for Addressing Stony Coral Tissue Loss Disease* (2020), <https://marfund.org/es/wp-content/uploads/2020/05/SCTLD-Recommendations-Final-2020.pdf>.

<sup>40</sup>Government of Belize Press Office, "Government of Belize Takes Early Action Ahead of Sargassum Season," January 21, 2026, <https://www.pressoffice.gov.bz/wp-content/uploads/2026/01/Jan-21-PR018-26-Government-of-Belize-Takes-Early-Action-Ahead-of-Sargassum-Season.pdf>; Belize Ministry of Tourism and Diaspora Relations, "Sargassum Management," <https://tourism.gov.bz/programs-and-events/sargassum-management/>

**Figure 2: Changes in Live Coral and Macroalgae Cover on the Belize Barrier Reef by Fishing Protection Level (1997–2016)**



**Figure 2:** Mean benthic cover (%) across monitored fore-reef sites on the Belize Barrier Reef, 1997–2016, comparing live coral (left panel) and macroalgae (right panel) under two levels of fishing protection. Solid blue lines represent sites where fishing is prohibited; dashed red lines represent sites where fishing is permitted. Shaded bands indicate 95% confidence intervals. The data illustrate a long-term downward trend in live coral cover — from approximately 26.3% in 1997 to 10.6% in 2016 — alongside a corresponding increase in macroalgal cover over the same period. These trajectories reflect the *cumulative and compounding* effects of repeated bleaching events, tropical storms, coral disease, and persistent local stressors over nearly two decades, rather than the impact of any single disturbance. The divergence between protection levels — particularly visible in the macroalgae panel — further suggests that overfishing accelerates algal expansion and undermines reef recovery capacity. Source: Alves, C. et al. (2022). Twenty years of change in benthic communities across the Belizean Barrier Reef. *PLOS ONE*. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0249155><sup>41</sup>

At the same time, climate pressures are being compounded by persistent local stressors that are more directly shaped by land use, coastal development, and environmental governance. Belize-focused reef management materials and stakeholders point repeatedly to declining water quality, sedimentation, untreated sewage, agricultural runoff, overfishing, and coral disease as major local pressures on reef health.<sup>42</sup> These pressures matter not only because they damage reefs directly, but because they reduce reef resilience and make corals less able to recover after bleaching, storms, and disease outbreaks.<sup>43</sup>

<sup>41</sup>Live coral: the living tissue of hard corals covering the reef surface, and a key indicator of reef health, habitat quality, and ecosystem resilience. Macroalgae: large seaweeds that can expand when reefs are stressed, often competing with corals for space and slowing coral recovery.

<sup>42</sup>Belize World Heritage Site, “Belize Barrier Reef Reserve System,” <https://belizeworldheritagesite.org/index.php/about-bbrrs/>.

<sup>43</sup>Catherine Alves et al., “Twenty Years of Change in Benthic Communities across the Belizean Barrier Reef,” *PLOS ONE* 17, no. 1 (2022): e0249155, <https://doi.org/10.1371/journal.pone.0249155>.

Figure 3 captures the thermal stress underlying much of the bleaching risk described above. The graph compares two temperature measures — *in situ* readings, taken directly at reef sites by submerged sensors, and Sea Surface Temperature (SST), derived from satellite data — both of which show a warming trend within the Belize Barrier Reef Lagoon over the past decade. Coral bleaching occurs when sustained temperatures exceed approximately 1°C above the long-term summer maximum, disrupting the symbiotic relationship between coral tissue and the algae that sustain it. Critically, figure 3 shows this threshold is now crossed repeatedly during peak summer months, and each crossing before full recovery from a prior event compounds cumulative tissue loss across the reef system.

Two Belize-specific dynamics appear especially important. First, declining water quality from sewage, runoff, and sediment loading encourages algal growth, weakens coral health, and links reef outcomes directly to wastewater treatment, watershed management, and coastal planning rather than to marine protection alone.<sup>44</sup> Second, overfishing, particularly the depletion of herbivorous fish such as parrotfish, reduces the reef's ability to recover from disturbance by weakening an important ecological buffer against algal overgrowth (see figure 2).<sup>45</sup> Findings from interviews conducted in Belize further suggest that tourism-related development can intensify these local pressures, particularly through dredging, coastal construction, and infrastructure expansion in reef-adjacent areas, even where tourism also remains economically dependent on healthy reef systems.<sup>46</sup>

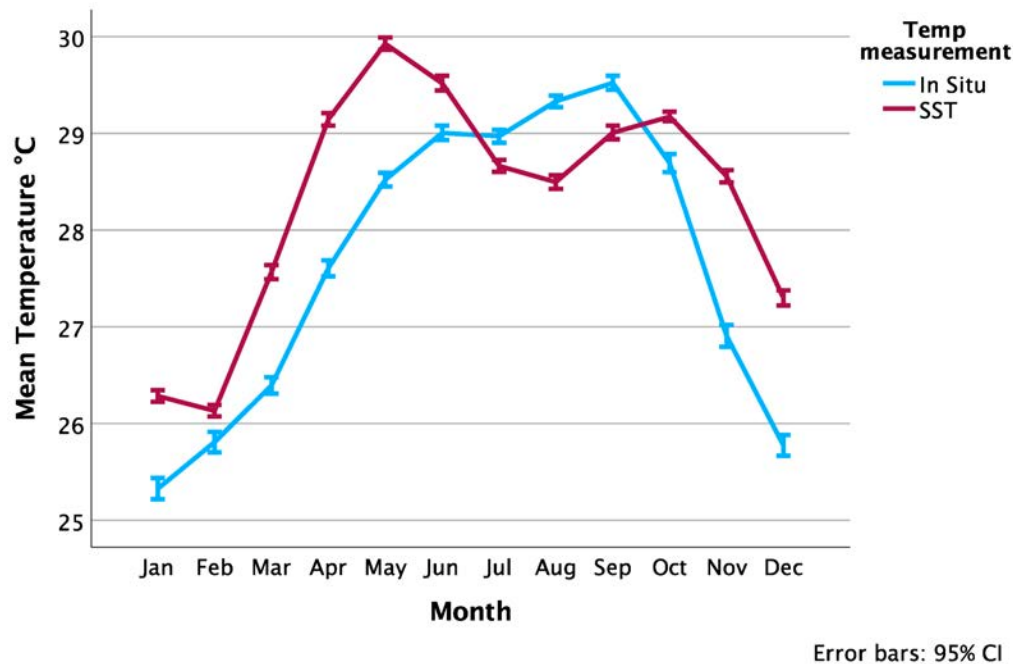
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<sup>44</sup>NOAA Coral Reef Conservation Program, *Assessing Land-Based Sources of Pollutants to Coastal Waters of Southern Belize*, Project No. 1395. [https://www.ncei.noaa.gov/data/oceans/coris/library/NOAA/CRCP/project/1395/assess\\_lbsp\\_southern\\_belize.pdf](https://www.ncei.noaa.gov/data/oceans/coris/library/NOAA/CRCP/project/1395/assess_lbsp_southern_belize.pdf)

<sup>45</sup>Reef Resilience Network, "Belize Fisheries Management," <https://reefresilience.org/case-studies/belize-fisheries-management-2/>.

<sup>46</sup>World Wide Fund for Nature (WWF), "Integrated Transboundary Ridges-to-Reef Management of the Mesoamerican Reef," <https://www.worldwildlife.org/our-work/funds/wwf-gef/projects/integrated-transboundary-ridges-to-reef-management-of-the-mesoamerican-reef>.

**Figure 3: Monthly Mean Sea Temperature in the Belize Barrier Reef Lagoon: In Situ vs. SST**



**Figure 3:** Ten-year in situ temperature record from the Belize Barrier Reef Lagoon showing rising temperatures and repeated exceedance of bleaching thresholds. Source: Alves, C. et al. (2022). Twenty years of change in benthic communities across the Belizean Barrier Reef. *PLOS ONE*. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0249155> Lobel and Lobel (2024).

Beyond Belize's immediate coastline, reef degradation must also be understood within a broader regional seascape. The Belize Barrier Reef forms part of the wider Mesoamerican Reef system, meaning that ecological pressures do not stop neatly at national boundaries.<sup>47</sup> Regional disease spread, warming seas, storm systems, and shared marine dynamics all shape reef conditions across neighboring waters, even where the intensity and manifestation of those pressures differ by site.<sup>48</sup> This is important because it means that some of the threats affecting Belize's reefs are partly transboundary, while the ability of reefs to withstand those threats still depends heavily on local conditions such as water quality, fisheries management, and coastal governance.<sup>49</sup> Taken together, these findings suggest that coral reef degradation in Belize cannot be explained by a single driver. Rather, it reflects the interaction of climate shocks, disease, declining water quality, unsustainable fishing pressure, tourism and coastal development impacts, and emerging challenges such as sargassum, all of which are mediated by uneven local governance and geography.<sup>50</sup> This also helps explain why reef conservation in Belize cannot be approached as a purely

<sup>47</sup>"Mesoamerican Reef," MAR Fund; "Mesoamerican Reef," WWF Central America. <https://marfund.org/en/mesoamerican-reef/> [https://www.wwfca.org/en/landscapes/mesoamerican\\_reef/](https://www.wwfca.org/en/landscapes/mesoamerican_reef/)

<sup>48</sup>World Wide Fund for Nature (WWF), "Integrated Transboundary Ridges-to-Reef Management of the Mesoamerican Reef," <https://www.worldwildlife.org/our-work/funds/wwf-gef/projects/integrated-transboundary-ridges-to-reef-management-of-the-mesoamerican-reef/>

<sup>49</sup>"Mesoamerican Reef," MAR Fund; "Mesoamerican Reef," WWF Central America. <https://marfund.org/en/mesoamerican-reef/> [https://www.wwfca.org/en/landscapes/mesoamerican\\_reef/](https://www.wwfca.org/en/landscapes/mesoamerican_reef/)

<sup>50</sup>Synthesis based on the combination of long-term reef monitoring, Belize reef management sources, and regional reef governance material cited above.

marine issue. It depends equally on wastewater treatment, watershed governance, fisheries regulation, coastal planning, and the capacity to manage cumulative pressures across land and sea.<sup>51</sup>

## **b. Consequences of Coral Reef Degradation in Belize**

*"Tourism can decline by 80-90% in severely degraded reefs."*

The consequences of coral reef degradation in Belize span ecological, economic, and social systems. As reef systems weaken, the services they provide, including fisheries, coastal protection, and tourism, become less reliable, increasing vulnerability across multiple sectors. Reef decline shapes fiscal stability, development outcomes, and long-term resilience, especially in a Small Island Developing State (SIDS) economy.

### **I. Ecological Consequences**

Reef decline is associated with loss of biodiversity and degradation of fish habitats, reducing fish populations and overall ecosystem productivity. As coral cover declines, reefs lose the complexity that supports a wide range of marine species.<sup>52</sup> Shifts in species composition can transition to algae-dominated systems that are less productive. These dynamics weaken reef resilience; algae overgrowth can limit the system's ability to recover between storm events or other disturbances.<sup>53</sup> Restoration efforts in Belize, including those discussed with local NGO, Fragments of Hope, have expanded through coral nurseries and transplantation models that engage local fishers and tour guides; however, stakeholders noted that increasing coral mortality is limiting the effectiveness of restoration; restoration cannot keep with rates of degradation.<sup>54</sup> Reef degradation reduces natural coastal protection, increasing exposure to storm damage and long-term climate risks. Reefs can mitigate up to 75 percent of wave energy, according to the World Resources Institute (WRI)<sup>55</sup>. More broadly, declining reef health disrupts ecological connectivity across mangroves, seagrass beds, and offshore systems, reducing overall marine productivity and weakening the resilience of the wider coastal ecosystem.<sup>15</sup>

### **II. Economic Consequences**

Hurricane damage creates additional fiscal pressure on the government, particularly for disaster response and recovery. In 2001, Hurricane Iris made landfall in Southern Belize as a Category 4 storm, causing damage to infrastructure, including fisheries and tourism assets; a post-disaster assessment compiled by

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<sup>51</sup>Synthesis based on Belize-specific and regional sources cited above.

<sup>52</sup>Tyler D. Eddy et al., "Global Decline in Capacity of Coral Reefs to Provide Ecosystem Services," *One Earth* 4, no. 9 (2021): 1278–1285, <https://doi.org/10.1016/j.oneear.2021.08.016>

<sup>53</sup>David Souter et al., eds., *Status of Coral Reefs of the World: 2020* (Global Coral Reef Monitoring Network and International Coral Reef Initiative, 2021), <https://doi.org/10.59387/WOTJ9184>

<sup>54</sup>Fragments of Hope is a Belize-based NGO focused on coral reef restoration through coral nurseries and outplanting, working with local fishers and coastal communities.

Fragments of Hope. (2025). Interview with Fragments of Hope, Belize;

Conservation protects existing reefs, while restoration involves active efforts to rebuild degraded reefs (e.g., coral nurseries and transplantation).

<sup>55</sup>World Resources Institute, *Coastal Capital: Belize* (Washington, DC: World Resources Institute, n.d.)

the World Bank estimated total damages at ~25% of the country's GDP.<sup>56</sup> In 2022, Hurricane Lisa, classified only Category 1 out of 5, caused severe flooding in Belize City, highlighting the ongoing exposure to climate-related shocks amplified by reef degradation.<sup>57</sup>

Belize annually invests approximately \$150M in tourism and recreation related to coral reefs and mangroves and approximately \$250M in shoreline protection. Those investments are critical; reefs and mangroves save the country between \$14-\$16 million USD in damages per year<sup>21</sup>. As damages rise, insurance premiums rise, diverting money from other development expenditure. Economic impacts also depend on the extent of reef damage. Tourism can decline by 80-90% in severely degraded reefs.<sup>58</sup> That loss in tourism would create job loss and decrease government revenue from taxes. The economic impacts of coral reef loss, as presented in a Coral Vita report, are summarized in the table below.<sup>59</sup>

| Economic Sector    | Annual Global Value                            | Projected Losses by 2050            | Communities Affected           | Jobs Impacted                             |
|--------------------|------------------------------------------------|-------------------------------------|--------------------------------|-------------------------------------------|
| Tourism            | \$10+ billion direct<br>\$36+ billion indirect | \$15-20 billion                     | 850+ coastal destinations      | 1+ million                                |
| Fisheries          | \$6.8 billion                                  | \$3-4 billion                       | 500+ million people            | 6+ million fishers                        |
| Coastal Projection | \$94 billion (damage prevented)                | \$32-41 billion (additional damage) | 100+ million coastal residents | Indirect impact on all coastal industries |

At the community level, reefs support livelihoods and local identity, and restoration programs provide employment and build local stewardship, though their scale remains constrained by broader capacity and financing limitations.<sup>60</sup> Overall, reef degradation in Belize represents a system-wide risk, linking environmental decline to economic vulnerability, fiscal exposure, and reduced community resilience.

<sup>56</sup>World Bank. Belize Climate Resilient Infrastructure Project (P127338): Project Information Document. Washington, DC: World Bank, 2013. <https://documents1.worldbank.org/curated/en/694551468006245293/pdf/PID-Print-P127338-06-05-2013-1370454862489.pdf>

<sup>57</sup>Eric S. Blake, *Hurricane Lisa* (Miami, FL: National Hurricane Center, National Oceanic and Atmospheric Administration, March 14, 2023), [https://www.nhc.noaa.gov/data/tcr/AL152022\\_Lisa.pdf](https://www.nhc.noaa.gov/data/tcr/AL152022_Lisa.pdf)

<sup>58</sup> Brander, L. M., Rehdanz, K., Tol, R. S., & Van Beukering, P. J. (2012). The economic impact of ocean acidification on coral reefs. *Climate Change Economics*, 3(1), 1250002. <https://www.worldscientific.com/doi/abs/10.1142/S2010007812500024>

<sup>59</sup> Coral Vita, "Economic Impact of Coral Reef Loss: A Comprehensive Analysis," Coral Café, accessed April 23, 2026, <https://coralvita.co/coral-cafe/economic-impact-of-coral-reef-loss/>

<sup>60</sup> Fragments of Hope. (2025). Interview with Fragments of Hope, Belize

## 5: Belize Policy and Legal Framework

While Belize performs relatively strongly in legal and regulatory design, its comparative position is more mixed in conservation finance, implementation capacity. This section reviews Belize's policy, legal, and institutional framework for coral reef conservation and sustainable finance. It first examines Belize's relative strengths in environmental regulation among SIDS, particularly through marine protected areas, fisheries reform, offshore oil restrictions, and integrated coastal governance. Then the section compares Belize with peer SIDS and more mature environmental markets on issues such as no-take protection commitments, national conservation fee systems, and credit-market development. Finally, the section assesses how these formal ambitions function in practice through co-management arrangements, the role of PACT, tourism-linked revenues, and coordination across ministries and agencies.

### a. Advanced Conservation Case among SIDS

Belize is considered one of the advanced SIDS in conservation and sustainability regulation due to its early regulatory commitments, strong policy signaling, and alignment with international environmental frameworks. Unlike many peer SIDS, where conservation efforts remain fragmented or largely donor-driven, Belize has embedded environmental protection directly into national law and policy, demonstrating a more proactive and institutionalized approach.



*Team TASA protecting the Belize Barrier Reef by installing a mooring network in the marine reserve to ensure proper moorings, channel markers, and zonation demarcation for tourism and fishing vessels to avoid damaging coral and seagrass ecosystems. Source: Travel Belize. "Marine Ecosystems: The Belize Barrier Reef Marine." January 19, 2023. <https://www.travelbelize.org/blog/marine-ecosystems-the-belize-barrier-reef-marine/>.*

This leadership is reflected in several key policy areas. Belize has established one of the most extensive marine protected area (MPA) systems among SIDS, covering approximately 23.5% of its marine waters

through a structured zoning system that includes no-take preservation zones and adaptive management mechanisms.<sup>61</sup> Additionally, the 2017 Petroleum Operations (Maritime Zone Moratorium) Act introduced a comprehensive and indefinite ban on offshore oil exploration, effectively eliminating large-scale extractive risks to the Belize Barrier Reef.<sup>62</sup> Belize has also modernized its sectoral governance through the Fisheries Resources Act (2020), which adopts an ecosystem-based management approach and formally integrates co-management arrangements with NGOs and local communities.<sup>63</sup> More recently, the Integrated Coastal and Ocean Management Act (2025) expands this framework by introducing marine spatial planning and requiring coordination across ministries, signaling a shift toward more integrated and science-based ocean governance.<sup>64</sup>

Compared with several peer island states, many SIDS have formalized tourism-based conservation financing through national taxes, levies, or environmental fees. Aruba applies a Sustainability Fee of \$20 per visitor, generating more than \$20 million annually for infrastructure improvements.<sup>65</sup> Bahamas uses a Tourism Sustainability Levy and Enhancement Levy on passengers, raising approximately \$80 million to support conservation and community development.<sup>66</sup> Bonaire combines a Visitor Entry Tax with a Nature Fee, with revenues directed toward infrastructure, environmental education, and national park management.<sup>67</sup> Maldives imposes a nationwide Green Tax on tourists, generating more than \$62 million annually for waste management, water treatment, and environmental protection.<sup>68</sup> Palau has established the Pristine Paradise Environmental Fee, which channels visitor revenues toward marine conservation, surveillance, and public infrastructure.<sup>69</sup>

By contrast, Belize remains more dependent on fragmented site-level entrance fees collected by individual co-managers, alongside donor-supported financing, without a fully integrated national fee capture system for conservation. However, Belize has been more successful in developing legal and regulatory frameworks than in converting tourism demand into stable, long-term financing for reef and marine ecosystem protection.

## **b. Co-Management Structure and Conservation Financing Mechanisms**

*"Responsibilities are spread across institutions, while no single authority consistently coordinates all reef-related policy areas."*

<sup>61</sup>The Commonwealth Secretariat, "Case Study: Belize – Towards Expansion of No-Take Areas in the MPA System," <https://thecommonwealth.org/case-study/case-study-belize-towards-expansion-no-take-areas-mpa-system>.

<sup>62</sup>Eco Jurisprudence Monitor, "Belize Policy: Petroleum Operations Infinite Moratorium," <https://ecojurisprudence.org/initiatives/petroleum-operations-infinite-moratorium/>.

<sup>63</sup>Government of Belize. *Act No. 7 of 2020: Fisheries Resources Act*. Gazetted February 1, 2020. <https://www.nationalassembly.gov.bz/wp-content/uploads/2020/03/Act-No.-7-of-2020-Fisheries-Resources-Act.pdf>.

<sup>64</sup>Ibid

<sup>65</sup>Aruba Wastewater Sustainable Solutions, "Sustainability Fee Policy," accessed April 22, 2026, <https://awss.aw/sustainability-fee-policy/>.

<sup>66</sup>Bahamas Customs Department, "Other Taxes," accessed April 22, 2026, <https://www.bahamascustoms.gov.bs/tariffs-and-various-taxes-collected-by-customs/other-taxes/>.

<sup>67</sup>STINAPA Bonaire National Parks Foundation, "Bonaire Nature Fee," accessed April 22, 2026, <https://stinapa.bonairenaturefee.org/>.

<sup>68</sup>Maldives Inland Revenue Authority, "What is Green Tax," accessed April 22, 2026, <https://www.mira.gov.mv/Pages/View/whatisgreentax>.

<sup>69</sup>Republic of Palau, *RPPL No. 10-02: Amendments to Environmental Impact Fee (Pristine Paradise Environmental Fee)*, March 29, 2017, <https://www.palau.gov.pw/wp-content/uploads/2017/04/RPPL-No.-10-02-re.-Amendments-to-Environmental-Impact-Fee.pdf>.

One of Belize's key advantages over many peer SIDS is the Protected Areas Conservation Trust (PACT), a statutory conservation financing institution established under national law. The 2024 amendment bill expands PACT's mandate beyond grant-making by assigning it a stronger role in ensuring the financial sustainability of Belize's protected areas system and setting priorities for conservation finance.<sup>70</sup> The bill also proposes that revenues from protected-area visitor fees, permits, and user charges flow into PACT, indicating movement toward a more centralized national funding mechanism.<sup>71</sup> In addition, at least 80% of PACT's programmatic budget must be directed to protected area management.<sup>72</sup> Taken together, these reforms suggest that Belize's comparative strength lies not only in conservation regulation, but in building institutions that can finance long-term environmental protection. PACT has since evolved into a national investment platform supporting co-managers, government agencies, and climate resilience initiatives.

Although the 2024 PACT amendment bill outlines an ambitious framework for centralized and sustainable conservation finance, our interviews suggest that implementation capacity remains a significant constraint. Multiple Belize-based institutions noted limited government resources and communication challenges across agencies. For example, Turneffe Atoll Sustainability Association (TASA) indicated that operations often depend on external grants, private support, and board-level fundraising; Government funding for conservation is also limited and largely indirect, often channeled through trust funds or supported by international partners rather than sustained budgetary allocations mandated by law.<sup>73</sup> This may partly reflect Belize's still-fragmented national fee system, which limits the consistent flow of tourism revenues to site-level co-managers. As a result, while PACT represents a promising institutional mechanism on paper, the practical scale and effectiveness of its current deployment remain difficult to assess. Broader implementation and capacity shortfalls are examined further in Section 7.

This implementation gap is particularly visible on the revenue side, where Belize has introduced several tourism-linked conservation charges but has yet to develop a fully integrated national fee system. Regarding coral reef conservation, the Belize tourism board has issued a statement stating that the entrance fee proceeds will be used to protect the corals in the protected area and manage it.<sup>74</sup> However, a study found that the PACT conservation fee increase paid by tourists from US\$3.75 to US\$20 in 2017 did not appear to lead to a decline in tourist arrivals, suggesting that conservation-linked tourism charges can be politically and economically viable in Belize.<sup>75</sup> This potential places Belize ahead of some SIDS, because it has already embedded environmental finance into national policy through a legal trust fund mechanism. However, compared with SIDS countries discussed above, they operate clearer nationwide visitor levies. Belize's broader fee capture and redistribution system remains less integrated. In short, Belize has been relatively innovative in establishing legal conservation funding tools, but less advanced in scaling them into a unified national financing architecture.

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<sup>70</sup>Government of Belize, *Protected Areas Conservation Trust (Amendment) Bill, 2024* (Belmopan: National Assembly of Belize, 2024)

<sup>71</sup>Government of Belize, *Protected Areas Conservation Trust (Amendment) Bill, 2024*, sec. 12.

<sup>72</sup>Government of Belize, *Protected Areas Conservation Trust (Amendment) Bill, 2024*, sec. 14.

<sup>73</sup>Turneffe Atoll Sustainability Association, 2026. Interview with Turneffe Atoll Sustainability Association, Belize

<sup>74</sup>Travel Belize. "Responsible Tourism in the Belize Barrier Reef." February 10, 2026.

<https://www.travelbelize.org/responsible-tourism-in-the-belize-barrier-reef/>.

<sup>75</sup>James F. Casey and Peter W. Schuhmann, "PACT or No PACT Are Tourists Willing to Contribute to the Protected Areas Conservation Trust in Order to Enhance Marine Resource Conservation in Belize?," *Marine Policy* 101 (March 2019): 8–14, <https://doi.org/10.1016/j.marpol.2018.12.002>.

### c. Institutional Structure Capacity and Inter-Ministerial Coordination

The Ministry of Blue Economy and Marine Conservation and the Fisheries Department are the institutions most directly responsible for marine governance and coral reef management in Belize, including fisheries regulation, marine reserve oversight, and enforcement within protected areas. However, reef outcomes are also shaped by several other ministries whose mandates extend beyond conservation. The Ministry of Tourism and Diaspora Relations influences hotel expansion, cruise activity, and coastal development, all of which can place pressure on coral reef ecosystems. The Ministry of Public Utilities, Energy, Logistics and E-Governance oversees waste, sewage, and water systems that directly shape coastal water quality. The Ministry of Agriculture, Food Security and Enterprise affects land-use practices, where runoff and sedimentation can harm coral reefs. The Ministry of Natural Resources, Petroleum and Mining remains relevant through its role in offshore resource governance and broader coastal land-use management. As reflected in several stakeholder interviews, responsibilities are spread across institutions, while no single authority consistently coordinates all reef-related policy areas.

While this structure allows sectoral specialization, it also creates overlapping mandates and coordination challenges. The U.S. Department of State notes that Belize does not operate a single-window regulatory system, and bureaucratic delays remain a recurring constraint in project implementation.<sup>76</sup> For larger investment decisions, the government has relied on cabinet-level subcommittees composed of multiple ministers, suggesting that cross-ministerial coordination often requires escalation to the highest political level.<sup>77</sup> Stakeholders similarly suggested that meaningful action often requires intervention from the Prime Minister's Office or cabinet level to align ministries and resolve bottlenecks. In practice, fragmented authority can slow implementation and weaken integrated reef governance.

This fragmentation has tangible consequences because the drivers of reef decline, and the policy levers needed to address them, cut across multiple systems at once, including fisheries enforcement, pollution control, coastal development, mangrove protection, monitoring, and public finance.<sup>78</sup> Belize's challenge is not only one of institutional design, but also one of implementation capacity: persistent staffing constraints, uneven technical capability, weak monitoring and compliance systems, and limited long-term public financing reduce the state's ability to translate plans into consistent delivery.<sup>79</sup>

One of the central constraints of coral reef conservation and reef-linked finance, then, is not the absence of policy ambition, but limited government capacity to implement, coordinate, and sustain action across a fragmented institutional landscape.<sup>80</sup> Existing research points to a governance system in which

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<sup>76</sup>U.S. Department of State, "2023 Investment Climate Statements: Belize," *U.S. Department of State*, <https://www.state.gov/reports/2023-investment-climate-statements/belize>

<sup>77</sup>Ibid

<sup>78</sup> JNCC, Belize Protected Area Management Effectiveness Recommendations Report.

<https://data.jncc.gov.uk/data/c2eacfa-d7e-4b30-a32c-e58dc436ecdc/belize-pame-recommendations-report.pdf>

<sup>79</sup> IDB — Delevaux, J.M.S. et al. (2024). *Monitoring Progress Toward a Prosperous, Sustainable Future: Belize Final Report*. IDB Technical Note No. IDB-TN-3193. <https://publications.iadb.org/publications/english/document/Monitoring>; World Bank, project documentation on wastewater, pollution control, and institutional service-delivery constraints in Belize. <https://documents1.worldbank.org/curated/en/099111723183531312/pdf/P18106421664d21-cb00-4942-8039-77cdcdc4f1f7.pdf>; JNCC, Belize Protected Area Management Effectiveness Recommendations Report. <https://data.jncc.gov.uk/data/c2eacfa-d7e-4b30-a32c-e58dc436ecdc/belize-pame-recommendations-report.pdf>

<sup>80</sup> Inter-American Development Bank — Delevaux, J.M.S. et al. (2024). *Monitoring Progress Toward a Prosperous, Sustainable Future: Belize Final Report*. IDB Technical Note No. IDB-TN-3193. <https://publications.iadb.org/publications/english/document/Monitoring-Progress-Toward-a-Prosperous-Sustainable-Future-Belize-Final-Report.pdf>; <https://data.jncc.gov.uk/data/c2eacfa-d7e-4b30-a32c-e58dc436ecdc/belize-pame-recommendations-report.pdf>

responsibilities relevant to reef outcomes are distributed across multiple ministries and agencies responsible for fisheries, coastal management, biodiversity, environmental regulation, and development approvals, with no single institution clearly positioned to align these functions in an integrated and sustainable way.<sup>81</sup>

Prominent stakeholders working in marine protection, restoration, and conservation finance, all indicate that non-state actors are increasingly operating in ways that compensate for limited state capacity rather than simply complementing it. In practice, this means that organizations are not only implementing site-level conservation work but also carrying out coordination, monitoring, revenue generation, and planning functions that, in a stronger institutional environment, would be more visibly anchored by government.<sup>82</sup>

Findings indicate that Belize's challenge in coral reef conservation financing is not primarily a lack of policy ambition, but limited implementation capacity across a fragmented institutional landscape.<sup>83</sup> Complementary insights from ministerial-level engagements with stakeholders, reinforce this diagnosis – highlighting persistent coordination gaps across ministries and a tendency for cross-cutting decisions to be escalated to central leadership.<sup>84</sup>

These constraints are visible in the infrastructure systems most directly linked to reef health. Sewerage coverage remains limited to a small share of the population and is concentrated in a few urban and tourism centers, while operational and maintenance constraints continue to limit expansion.<sup>85</sup> Solid waste management has improved through the construction of transfer stations and a regional sanitary landfill, yet plastics leakage and weak enforcement remain recurring concerns in coastal communities where tourism growth concentrates both waste burdens and political pressure.<sup>86</sup>

From a conservation finance perspective, this combination of institutional fragmentation, heavy reliance on externally financed capital projects, and weak lifecycle budgeting for maintenance increases the risk of delivery for long-term reef outcomes.<sup>87</sup> It also helps explain why Belize's protected areas have historically relied on short- to medium-term donor cycles rather than stable domestic funding – precisely the gap that newer mechanisms, including the Blue Bonds conservation commitments and the emerging PFP agenda, are designed to address.<sup>88</sup> At the same time, uneven land-use planning and compliance monitoring in

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<sup>81</sup> IDB, Monitoring Progress Toward a Prosperous, Sustainable Future; JNCC, Belize Protected Area Management Effectiveness Recommendations Report.

<sup>82</sup> Consistent themes raised during stakeholder interviews with actors working in marine conservation, restoration, and conservation finance in Belize during March 2026 fieldwork.

<sup>83</sup> Ibid.

<sup>84</sup> Stakeholder Interviews (April 10, 2026). For the legislative context of coordination mandates: Belize, *Integrated Coastal and Ocean Management Act*, Act No. 21 of 2025 (October 28, 2025),

<https://www.nationalassembly.gov.bz/wp-content/uploads/2025/10/Act-No-21-of-2025-INTEGRATED-COASTAL-AND-OCEAN-MANAGEMENT.pdf>

<sup>85</sup> Traci Kuratomi, Dougal Martin, Jorge Ducci, Alfredo Rihm, Maria del Rosario Navia Diaz, and Javier Grau, *Water and Sanitation in Belize*, IDB Technical Note No. IDB-TN-609 (Washington, DC: Inter-American Development Bank, 2014), <https://doi.org/10.18235/0009154>. At the time of the report, sewerage services reached approximately 11% of the population, concentrated in Belize City, Belmopan, and San Pedro.

<sup>86</sup> Hans M. Ewoldsen, *Terminal Evaluation Report: Belize Chemicals and Waste Management Project*, submitted to UNDP Belize (New York: United Nations Development Program, April 23, 2019), <https://erc.undp.org/evaluation/documents/download/15117>. On plastics leakage and coastal waste pressures: Break Free From Plastic, *TrashBlitz Belize 2024* (Break Free From Plastic, January 2025), <https://www.breakfreefromplastic.org/wp-content/uploads/2025/01/Belize-TrashBlitz-2024.pdf>

<sup>87</sup> International Monetary Fund, Fiscal Affairs Department, "Belize: Technical Assistance Report—Public Investment Management Assessment," *IMF Staff Country Reports* 2020, no. 221 (Washington, DC: International Monetary Fund, 2020), <https://doi.org/10.5089/9781513550954.002>.

<sup>88</sup> World Wildlife Fund, "CEO Endorsement Request: Resilient Belize—Project Finance for Permanence," GEF-8 Submission (Washington, DC: World Wildlife Fund, n.d.), [https://www.worldwildlife.org/documents/1586/7m9jev4q2\\_Submission\\_2\\_WWFGF\\_8\\_Belize\\_CEO\\_ER\\_Annexes\\_BOT1dpL.pdf](https://www.worldwildlife.org/documents/1586/7m9jev4q2_Submission_2_WWFGF_8_Belize_CEO_ER_Annexes_BOT1dpL.pdf). On the

fast-growing coastal zones can amplify runoff and nearshore pollution, raising the baseline costs of marine protection and restoration.<sup>89</sup>

This has important implications for consensus-building. While the conservation space in Belize appears to be developing greater cohesion among key actors, limited state capacity and fragmentation within government make it harder to convert that alignment into implementation, particularly where conservation priorities intersect with tourism, fisheries reform, blue carbon, or coastal development.<sup>90</sup> These constraints are also financially consequential, as they increase delivery risk, complicate coordination, and weaken the institutional credibility on which reef-linked conservation finance depends.

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Belize Fund as the Blue Bond implementation trust fund: Belize Fund for a Sustainable Future, "About," accessed April 15, 2026, <https://belizefund.bz/>.

<sup>89</sup>Government of Belize, *National Sustainable Tourism Master Plan* (Belmopan: Directorate General of Foreign Trade and Investment Promotion, 2017), <https://www.dgft.gov.bz/wp-content/uploads/2017/08/National-Sustainable-Tourism-Master-Plan.pdf>.

<sup>90</sup>Field reflections and stakeholder interviews conducted in Belize in March 2026; see also JNCC, Belize Protected Area Management Effectiveness Recommendations Report, <https://data.jncc.gov.uk/data/c2eacfa-db7e-4b30-a32c-e58dc436ecdc/belize-pame-recommendations-report.pdf>

## 6: Building Blocks of Conservation Finance: Models and Gaps in Belize's Ecosystem

Across SIDS and other reef-dependent economies, conservation finance has increasingly shifted from grant-based models toward market-based and blended finance approaches that link ecosystem protection to sustainable revenue generation. These models demonstrate that, under the right institutional and regulatory conditions, environmental assets can be translated into investable financial flows.

*However, in many SIDS, including Belize, structural constraints such as limited domestic revenue bases and high public expenditure needs have historically led to reliance on external financing, constraining the development of scalable private capital markets.*

Against this backdrop, Belize reflects many of the same structural components seen across SIDS, but lacks the integration and scale observed in more mature systems. Rather than a single coordinated market, Belize's conservation finance landscape is characterized by a set of partially developed, actor-driven initiatives that address different segments of the financing chain. This section maps these actors across the investment continuum from upstream development to enabling environment, capital deployment, and on-the-ground implementation, highlighting both their roles and the gaps between them.<sup>91</sup>

### **GEF**

GEF's portfolio spans several key areas. Through the Small Grants Program (SGP), GEF supports community-level initiatives in biodiversity conservation, sustainable livelihoods, and coastal resilience, helping build a pipeline of locally grounded, reef-positive activities. At a larger scale, GEF finances landscape and seascape programs such as the Integrated Management of Production Landscapes project, which addresses land-use practices, watershed management, and institutional capacity.

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<sup>91</sup>In marine contexts outside of Belize, firms such as GreenCollar in Australia illustrate how the environmental credit model can be successfully adapted to reef systems. Through the Reef Credit Scheme, environmental outcomes, specifically reductions in nutrient and sediment runoff into the Great Barrier Reef, are translated into verified, tradable credits purchased by governments and corporations. Critically, early government participation, regulatory backing, and mechanisms such as offtake agreements have been essential in de-risking the market and enabling access to commercial finance.

In parallel, blended finance platforms have emerged as a key tool for mobilizing private capital into conservation-linked sectors. The Global Fund for Coral Reefs (GFCR), for example, combines grant funding with concessional and commercial capital to invest in "reef-positive" businesses across sectors such as sustainable fisheries, wastewater management, and tourism. These models highlight the importance of pipeline development, risk-sharing mechanisms, and institutional coordination in building investable conservation markets.

One of the most developed examples of a successful transition to private finance can be found in the US through mitigation banking, where firms such as Ecosystem Investment Partners (EIP) finance ecological restoration projects that generate environmental credits under regulatory frameworks. These credits are sold to developers required to offset environmental impacts under policies such as the Clean Water Act, creating a compliance-driven market with predictable demand.

GEF also supports marine and biodiversity conservation efforts, including strengthening management of marine protected areas and key biodiversity areas, as well as regional initiatives such as the Integrated Transboundary Ridges-to-Reef Management of the Mesoamerican Reef Mesoamerican Reef (MAR2R) program, which targets transboundary threats like pollution and watershed degradation.

More recently, GEF has contributed to blue economy and coastal development initiatives, focusing on governance, pollution reduction, and sustainable resource management. Across these initiatives, GEF's role remains upstream, funding the ecosystem integrity, institutional capacity, and project pipelines necessary for subsequent private capital mobilization.

### ***Multilateral Development Banks: World Bank and IDB***

The World Bank and the Inter-American Development Bank (IDB) play critical roles in shaping the enabling environment for conservation finance in Belize. Through concessional finance, technical assistance, and policy support, these institutions work to reduce systemic risk and improve the investability of conservation-linked sectors such as wastewater management, coastal resilience, and fisheries governance.

The World Bank has increasingly focused on playing a system-level market-building role in Belize, focusing on creating the institutional, financial, and regulatory conditions required to mobilize private capital into conservation-linked sectors. Its work in Belize has traditionally centered on coastal resilience, fisheries governance, and marine protected area management, delivered through concessional financing, technical assistance, and policy support.

More recently, the World Bank has expanded its role toward developing environmental markets, particularly in carbon and biodiversity credits. In Belize, this includes support for:

1. Blue carbon frameworks, aimed at monetizing carbon sequestration from mangroves and coastal ecosystems.
2. Development of carbon credit methodologies and MRV systems (monitoring, reporting, verification) to ensure credits meet international standards.
3. Early-stage exploration of biodiversity credit systems, where conservation outcomes (e.g., habitat protection, species recovery) can be translated into measurable and potentially tradable assets.

Similarly, the IDB contributes by supporting regulatory frameworks, public-private partnerships, and financing structures that help crowd in private capital. In Belize, it supports projects in wastewater, coastal resilience, and sustainable tourism. Its primary contribution is de-risking at the system level through blended finance, regulatory support, and public-private partnership frameworks. By improving policy environments and financing structures, the IDB helps make conservation-linked sectors more investable. Together, these institutions operate at the system level, strengthening policy environments and financial infrastructure, but without directly bridging the gap to site-level conservation actors.

## **World Wildlife Fund and System-Level Structuring**

In partnership with The Nature Conservancy, The World Wildlife Fund (WWF) helped facilitate Belize's 2021 Blue Bonds. This transaction created a stable, dedicated funding stream for conservation through the Belize Fund for a Sustainable Future (BFSF), shifting marine protection from donor dependence toward predictable, performance-linked financing.

Building on this, WWF has also supported the development of a Project Finance for Permanence (PFP) known as the Resilient Bold Belize (RBB) initiative, which aims to secure approximately \$144 million in long-term funding for the national protected areas system. The PFP model aims to secure long-term, large-scale financing for conservation by aligning government commitments, donor funding, and private capital into a single, coordinated financing structure. In Belize, this approach focuses on ensuring sustained funding for marine protected areas, fisheries management, and biodiversity conservation, while strengthening governance and accountability mechanisms.

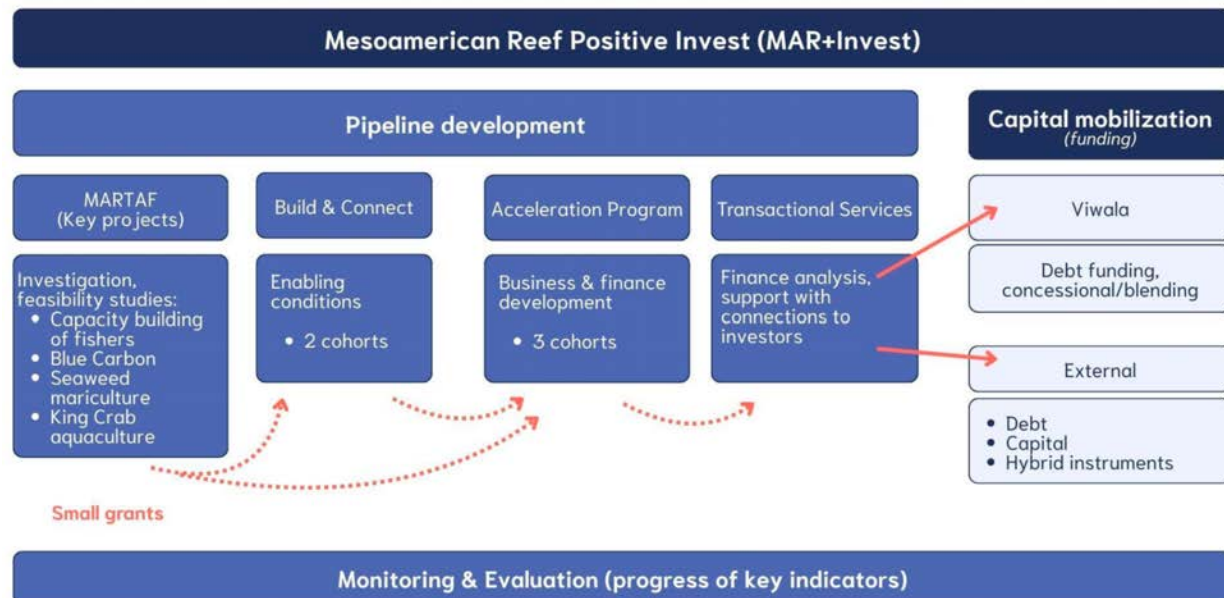
WWF's role across these initiatives is primarily structural and catalytic:

1. Designing financial mechanisms that align conservation outcomes with financial incentives.
2. Coordinating stakeholders across government, philanthropy, and private investors.
3. Ensuring long-term funding commitments are legally and institutionally embedded.

## **New Ventures & Mar+ Invest**

New Ventures acts as a pipeline builder for reef-positive enterprises, addressing the lack of investable projects in Belize. It provides technical assistance, incubation, and mentorship to small and medium enterprises (SMEs) in sectors such as sustainable tourism, aquaculture, and wastewater management, improving their investment readiness. This role is directly linked to MAR+Invest, a regional blended finance platform that represents the capital deployment layer. MAR+Invest combines grants, concessional capital, guarantees, and technical assistance to de-risk investments and channel private capital into reef-positive businesses. supports enterprises across key sectors including fisheries, aquaculture, wastewater treatment, and ecotourism, while applying impact measurement frameworks.

**Figure 4: The MAR+Invest Platform Structure and Pipeline**



**Figure 4:** Graphic provided as part of Mar+ Invest presentation on “The Business Development and Finance Facility of the Mesoamerican Reef”

To date, MAR+Invest has mobilized approximately \$6.1M in private capital, structured blended finance transactions, and deployed de-risking tools such as a \$500K guarantee facility and pilot insurance mechanisms. Its stated goal is to mobilize \$33M in private capital by 2030.

Together, New Ventures and MAR+Invest form a pipeline-to-investment mechanism, reducing early-stage risk and connecting reef-positive enterprises to private capital. However, the model remains relatively small-scale, highlighting the challenge of scaling blended finance platforms into institutional-grade markets.

## The Reef Co-Managers: TASA, Hold Chan, and Other Co-Managers

Reef co-managers represent the final stage of the conservation finance chain, where conservation outcomes are directly linked to revenue generation, yet most operate with limited ability to translate these revenues into investable financial structures. Within this group, the Turneffe Atoll Sustainability Association (TASA) stands out as the most advanced example of a site-level entity moving toward a more financially sustainable model.

TASA has demonstrated a stronger ability than its peer co-managers to engage private capital and align conservation with economic incentives, particularly through structured partnerships with tourism operators whose revenues depend directly on reef health. These relationships reflect an emerging model in which private stakeholders contribute to conservation as a function of long-term business sustainability. At the same time, TASA has worked to professionalize its user fee system, improving collection, enforcement, and pricing as a more strategic and reliable revenue stream.

In parallel, TASA has positioned itself at the forefront of innovative financing mechanisms, including early engagement with reef insurance models and participation in broader national and regional conservation finance initiatives. Its relatively strong institutional capacity and financial orientation distinguish it from other co-managers, many of which remain dependent on fragmented donor funding and lack the structure to engage meaningfully with private investors.

The Hol Chan Marine Reserve provides an important point of comparison. As one of the most visited marine reserves in Belize, Hol Chan generates significant and predictable revenue through visitor fees, allowing it to fund operations with a high degree of financial independence. However, despite this success, its model remains site-specific and difficult to scale, with limited mechanisms to aggregate or leverage revenues into broader investment structures.

Across the broader group of co-managers, similar constraints persist. While user fees and tourism-linked revenues provide important funding, they are typically localized, variable, and insufficiently structured to attract private capital at scale. As a result, even the strongest performers, such as TASA and Hol Chan, highlight a central challenge in Belize’s conservation finance landscape; the gap between revenue-generating conservation models and investment-ready financial assets.

**Table 1: Overview of all Research Models**

| Model                        | Example                 | Financing Structure                    | Revenue Source                        |
|------------------------------|-------------------------|----------------------------------------|---------------------------------------|
| Regulatory Credit Markets    | EIP (US)                | Private equity restoration funds       | Mitigation credit sales               |
| Environmental Credit Markets | GreenCollar (Australia) | Environmental credit markets           | Carbon/biodiversity credits           |
| Blended Finance Platforms    | GFCR                    | Grant + concessional + private capital | Returns from reef-positive businesses |
| Regional Platforms           | MAR+Invest              | Concessional loans, guarantees, TA     | Returns from reef-positive SMEs       |
| Ocean Impact Funds           | Sustainable Ocean Fund  | Impact investment fund                 | Ocean enterprises                     |

|                          |                                       |                               |                                   |
|--------------------------|---------------------------------------|-------------------------------|-----------------------------------|
| Venture/Technology Funds | Katapult Ocean,<br>SWEN Blue<br>Ocean | Venture capital               | Ocean technology startups         |
| Sector-Specific Funds    | Aqua-Spark                            | Aquaculture private<br>equity | Sustainable seafood<br>production |

This table synthesizes the range of conservation finance models both discussed above and examined throughout the research process, comparing their financing structures and revenue sources. It is intended as a summary of existing approaches, while also illustrating how these models could function together within a broader conservation finance ecosystem.

*Belize's conservation finance ecosystem contains many of the core components of a functioning market, spanning upstream development, enabling institutions, capital deployment platforms, and revenue-generating conservation models. However, these elements remain fragmented and weakly coordinated.*



Source: Sandy Point Resorts. "Exploring the Belize Barrier Reef: Your Ultimate Guide." Sandy Point Resorts Blog. March 7, 2025. <https://www.sandypointresorts.com/blog/guide-to-the-belize-barrier-reef/>.

The most significant gap lies between upstream and enabling actors, who focus on building conditions for investment, and site-level entities, which generate conservation outcomes but lack access to scalable financial structures. As a result, Belize has yet to transition from a collection of initiatives into a fully integrated conservation finance system capable of mobilizing private capital at scale.

## 7: Revenue Sources for Reef-Linked Finance

Belize's coral reef economy is supported by a set of interdependent sectors that both depend on and directly impact the health of marine ecosystems. Tourism, fisheries, and a growing pipeline of reef-positive enterprises together generate substantial economic value, employ thousands, and shape coastal livelihoods. At the same time, these sectors represent the most immediate and scalable opportunities for mobilizing sustainable, domestically anchored financing for conservation. This section examines the primary revenue streams linked to reef systems, assessing their economic scale, resilience, and capacity to contribute to long-term conservation finance. By grounding the analysis in these sectors, the discussion highlights not only where value is currently generated, but where financial flows can be more effectively captured, aligned, and reinvested to support reef preservation.



Source: National Geographic Expeditions. "Journeys: Explore Belize." Accessed May 5, 2026.

<https://www.nationalgeographic.com/expeditions/destinations/central-america-caribbean/journeys/caye-caulker-san-ignacio-belize-tour/>

### a. Tourism

***Tourism generates over 40% of Belize's GDP, making it the most significant industry in the country***

Tourism supports nearly 25,000 jobs across 2,200 establishments. Total internal tourism expenditure in 2019 reached BZD 1,099.2 million (approximately USD 549.6 million), of which inbound visitor spending alone accounted for BZD 1,020.6 million — more than double the value of all merchandise exports that year.<sup>92</sup> . Tourism generates over 40% of Belize's GDP, making it the most significant industry

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<sup>92</sup>Statistical Institute of Belize. (2024, June). *Tourism satellite account: May 2024* [TSA reference year 2019]. [https://sib.org.bz/wp-content/uploads/TSA\\_2024-05.pdf](https://sib.org.bz/wp-content/uploads/TSA_2024-05.pdf)

in the country, with marine-based activities such as diving, snorkeling, and reef tourism, constituting its primary draw. Approximately one in four Belizeans works in the tourism industry.

COVID-19 caused a sharp contraction, with revenues falling by approximately 53% to USD 247 million in 2020. Recovery has been strong; by 2024, Belize surpassed pre-pandemic levels, reaching 547,370 overnight visitors and approximately USD 813 million in international tourism receipts. Looking ahead, the sector's total contribution is projected to reach approximately 32% of GDP by 2033.<sup>93</sup>

### *Hotels, Accommodation, and Ecotourism*

Accommodation is foundational to the tourism economy, accounting for 44.3% of all direct tourism employment in 2019, the largest share of any tourism sub-sector. Belize's hotel market has continued to grow, rising from 620 licensed properties in 2008 to 934 as of December 2020, a 51% increase over twelve years.<sup>94</sup>

A limited number of lodges and hotels in Belize are voluntarily turning towards ecotourism; key stakeholders have developed a three-part model: allocating 1% of annual revenues to conservation as a member of 1% for the Planet<sup>95</sup>, building institutions to manage marine ecosystems, and aligning incentives between commercial fishers and tourism operators through the Fishermen and Ecotourism Alliance. This approach contributed to the establishment of Belize's largest marine reserve, the Turneffe Atoll Marine Reserve.<sup>96</sup> The reserve's co-management entity, TASA, subsequently attracted a USD 1.2 million blended finance investment as well.<sup>97</sup>

At the national level, Belize has already implemented partial mechanisms to capture tourism revenue for conservation. The PACT is primarily financed through a BZD 7.50 (approximately USD 3.75) conservation fee paid by all departing visitors and a 15% commission from cruise ship passenger head taxes. Since its establishment in 1996, PACT has invested more than BZD 44 million (approximately USD 22 million) in Belize's National Protected Areas System.<sup>98</sup>

## **Cruise Ships**

*Despite its scale, the segment generates relatively low per-visitor spending.*

<sup>93</sup>Belize Tourism Board, "Preliminary 2025 Tourism Figures Indicate Strong Forward Momentum," February 2026, <https://www.belize-tourism-board.org/preliminary-2025-tourism-figures-indicate-strong-forward-momentum/>; World Travel and Tourism Council, Belize: Travel & Tourism Economic Impact 2023 (2023), [https://assets-global.website-files.com/6329bc97af73223b575983ac/647ef2a0b3c577febd45f170\\_EIR2023-Belize.pdf](https://assets-global.website-files.com/6329bc97af73223b575983ac/647ef2a0b3c577febd45f170_EIR2023-Belize.pdf)

<sup>94</sup>Statistical Institute of Belize, Tourism Satellite Account: May 2024 (TSA Reference Year 2019) (June 2024), [https://sib.org.bz/wp-content/uploads/TSA\\_2024-05.pdf](https://sib.org.bz/wp-content/uploads/TSA_2024-05.pdf); Belize Tourism Board, Hotel Licensing Data - Accommodation Inventory December 2020 (2020), <https://www.belize-tourism-board.org/hotels/>; Harrison, R. (2017, October 23). Analysis of Belize Tourism Report 2016. *Breaking Belize News*. <https://www.breakingbelizenews.com/2017/10/23/belize-analysis-belize-tourism-report-2016/>

<sup>95</sup> 1% for the Planet. (n.d.). *About 1% for the Planet*. <https://www.onepercentfortheplanet.org/>; Turneffe Flats. (n.d.). *Sustainability plan*. <https://www.tflats.com/turneffe-flats-sustainability-plan>

<sup>96</sup>Turneffe Flats, "Our Work — Turneffe Atoll Trust," n.d., <https://www.tflats.com/turneffe-atoll-trust-our-work>; Emerger Strategies, "The Sustainable Angler: Turneffe Flats Owner, Craig Hayes," 2018, <https://emergerstrategies.com/the-sustainable-angler-turneffe-flats-owner-craig-hayes/>

<sup>97</sup>Blue Natural Capital, "Enhancing Marine Conservation and Sustainable Tourism at Turneffe Atoll Marine Reserve, Belize," 2021, <https://www.bluenaturalcapital.org/stories/tourism-and-mpa-turneffe-atoll-belize>; IUCN, "Belize's Ethereal Marine Protected Areas Receive Investment of US\$1.2 Million," June 2021, <https://iucn.org/news/marine-and-polar/202106/belizes-ethereal-marine-protected-areas-receive-investment-us-12-million-raised-latest-iucn-bnccf-project-nature-based-solutions>

<sup>98</sup>Protected Areas Conservation Trust (PACT), "Donate," n.d., <https://www.pactbelize.org/donate/>; Belize Fund for a Sustainable Future, "PACT and the Belize Fund," January 2025, <https://belizefund.bz/pact-and-the-belize-fund/>

Cruise tourism represents a large but more volatile segment. Arrivals peaked at 1.21 million passengers in 2018, declined sharply during COVID-19, and have since partially recovered to approximately 894,000 passengers in 2024.<sup>99</sup>

Despite its scale, the segment generates relatively low per-visitor spending. Total direct cruise expenditure was approximately USD 88.6 million in the 2023–2024 season, supporting 2,293 jobs and USD 23.3 million in wages. Average per-passenger spending across 33 Caribbean destinations was USD 104.36, significantly lower than overnight tourism.<sup>100</sup>

While cruise tourism presents an opportunity for additional conservation revenue, evidence from comparable markets suggests that cruise operators are highly price-sensitive and may reroute itineraries in response to new per-passenger fees. Belize's ability to expand this revenue stream will therefore depend on careful coordination with industry stakeholders.<sup>101</sup>

## **b. Fisheries**

***Fisheries contribute approximately 1% of GDP and generate \$13.8 million USD annually.***

Fisheries remain a critical but increasingly vulnerable sector. Between 2015 and 2021, the sector accounted for approximately 12% of total national exports and directly employed over 3,000 fishers, with more than 15,000 livelihoods dependent on fishing activities.<sup>102</sup>

Fisheries contribute approximately 1% of GDP and generate \$13.8 million USD annually. The dependence on reef-associated species is acute: spiny lobster and queen conch together comprised 95–98% of all marine exports between 2016 and 2022. This concentration exposes coastal communities to significant ecological risk: of 20 species analyzed in a 2023 fisheries assessment, 19 were found to be at unsustainable levels, underscoring the urgency of linking conservation outcomes to economic resilience.<sup>12</sup> As reef health declines, these livelihoods become increasingly at risk.

While there has been partial recovery in recent years with lobster exports reaching USD 24.1 million in 2022 and conch generating USD 6.56 million in 2023, underlying resource pressures remain severe. An independent stock assessment conducted by the Belize Fisheries Project found that 19 of 20 commercially important species are being harvested at unsustainable levels, raising significant concerns about long-term viability and the risk of stock collapse. The Belize Fisheries Department disputes this finding.<sup>103</sup> The UN Conference on Trade and Development (UNCTAD) analysis also suggests declared export values

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<sup>99</sup>Belize Tourism Board, "Preliminary 2025 Tourism Figures Indicate Strong Forward Momentum," February 2026, <https://www.belizetourismboard.org/preliminary-2025-tourism-figures-indicate-strong-forward-momentum>

<sup>100</sup>Florida-Caribbean Cruise Association and Business Research and Economic Advisors, *Economic Contribution of Cruise Tourism to the Destination Economies, 2023/2024 Cruise Year, Volume I* (2024), <https://www.f-cca.com/downloads/2024-Caribbean-Cruise-Analysis-Vol-I.pdf>

<sup>101</sup>Travel Weekly, "FCCA Blasts Mexico Passenger Tax in Letter to Country's President," 2024, <https://www.travelweekly.com/Cruise-Travel/FCCA-blasts-Mexico-cruise-tax-proposal>

<sup>102</sup>Inter-American Development Bank, "Charting a Sustainable Path: Revitalizing Belize's Fisheries through Science, Policy, and Empowerment," September 2023, <https://blogs.iadb.org/sostenibilidad/en/charting-a-sustainable-path-revitalizing-belizes-fisheries-through-science-policy-and-empowerment/>

<sup>103</sup>Belize Fisheries Project, "Findings: Stock Status and Sustainability of Belize's Commercial Fisheries," 2023, <https://belizefisheriesproject.org/data/>; Earth Journalism Network, "Revisiting the Science of Conch Maturity Five Years Later in Belize," 2024, <https://earthjournalism.net/stories/revisiting-the-science-of-conch-maturity-five-years-later-in-belize>

understate actual production because Belize-flagged vessel catches are often landed and registered in third countries.<sup>104</sup>

The IDB's five-year Blue Economy Program (BL-L1042), approved July 2023 with a USD 7 million loan, will fund the first comprehensive national stock assessments for lobster and conch and strengthen the Fisheries Department's data management capacity.<sup>11</sup> Separately, the BFSF has allocated BZD 8.1 million to government programs, of which BZD 3.04 million (approximately USD 1.52 million) has been directed as a strategic grant to the Fisheries Department, directly linking sovereign conservation finance to fisheries governance.<sup>6</sup>

### **c. Upstream Investments**

As discussed in section 5, platforms such as MAR+Invest are building this pipeline by connecting early-stage businesses to blended finance. The program is led by the Mesoamerican Reef Fund (MAR Fund) in partnership with New Ventures, Viwala, and others. Notable transactions include USD 3.5 million raised by Royal Mayan Shrimp Farms in Belize from the Development Finance Corporation Belize for a closed-loop aquaculture operation that eliminates marine effluent, alongside additional investments in waste treatment and circular materials businesses across the region.<sup>105</sup> Another key organization, TASA, received a USD 1.2 million blended finance investment to develop sustainable tourism, blue carbon, and fisheries governance revenue streams across 132,000 hectares.<sup>106</sup>

These investments are not a direct source of recurring conservation revenue in the near term. Instead, their value lies in demonstrating commercially viable, reef-positive business models, attracting private capital, and gradually shifting economic activity away from extractive practices. Over time, this pipeline can reduce pressure on reef systems and lower the long-term cost of conservation.

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<sup>104</sup>UN Conference on Trade and Development (UNCTAD), *Oceans Economy and Trade Strategy: Belize Marine Fisheries and Seafood Processing Sectors* (2020), [https://unctad.org/system/files/official-document/ditctedinf2020d5\\_en.pdf](https://unctad.org/system/files/official-document/ditctedinf2020d5_en.pdf)

<sup>105</sup>Mesoamerican Reef Fund (MAR Fund), "Update 2024: MAR+Invest," 2024, <https://update.marfund.org/2024/>

<sup>106</sup>Blue Natural Capital, "Enhancing Marine Conservation and Sustainable Tourism at Turneffe Atoll Marine Reserve, Belize," 2021, <https://www.bluenaturalcapital.org/stories/tourism-and-mpa-turneffe-atoll-belize>; IUCN, "Belize's Ethereal Marine Protected Areas Receive Investment of US\$1.2 Million," June 2021, <https://iucn.org/news/marine-and-polar/202106/belizes-ethereal-marine-protected-areas-receive-investment-us-12-million-raised-latest-iucn-bncff-project-nature-based-solutions>

## 8: Catalyzing a Conservation Finance System: The Role of GEF in Belize

While a range of financial mechanisms for reef conservation already exist globally, including blended finance, insurance, and environmental credit markets, the central constraint in Belize is not the absence of solutions, but rather the lack of institutional capacity to coordinate, scale, and govern them. This creates a clear opportunity for the GEF to play a catalytic role, not simply as a funder, but as a system architect.

The following subsections outline priority areas where the GEF could be at the forefront of structuring and enabling a scalable conservation finance system.

### a. Establishing a National Reef Finance & Oversight Entity

*A foundational intervention would be the creation of an overarching national entity positioned above existing MPA co-managers, responsible for coordinating both financial flows and revenue streams across Belize's reef system.*

As previously highlighted, Belize's current MPA system is highly fragmented, with co-managers operating independently and often lacking the authority, capacity, and financial stability to effectively manage their sites. This fragmentation not only weakens ecological outcomes but also limits the system's ability to attract and absorb private capital. A centralized MPA Oversight Board or Reef Finance Facility could address this gap by serving as both a governance and financial aggregation layer, with core functions including:

- Pooling and managing revenues from tourism fees, conservation funds, and future income streams (e.g., credits), creating more predictable and diversified cash flows
- Aggregating and deploying capital from public, philanthropic, and private sources across MPAs
- Standardizing governance, monitoring, and reporting frameworks, reducing transaction costs and increasing investor confidence
- Allocating funding strategically based on ecological priorities and performance
- Supporting co-managers operationally, reducing their reliance on fragmented, site-level fundraising

By consolidating revenues and financial flows into a single coordinated structure, this entity would create the financial backbone necessary to support investment at scale, including enabling debt structures and blended finance instruments that are not currently feasible at the individual MPA level. Importantly, this entity would not replace co-managers but instead sit above them, preserving local expertise while enabling national-level coordination, scale, and financial sophistication. Such a structure would reduce transaction costs, as seen in the Blue Bond example, to a significant degree and allow for smaller transactions to be aggregated.

For the GEF, this represents a high-impact entry point that could be implemented through multilateral implementing agencies. GEF coordination should be at the nexus of conservation projects in SIDS to create an environment where governments have the capacity to implement these efforts. In particular, supporting the project and funding priorities, design, and capitalization of such an entity would directly address Belize's core capacity constraint and unlock the broader suite of conservation finance mechanisms.

## **b. Structuring a Blended Finance Platform Anchored by GEF**

*A critical next step would be the development of a national blended finance platform designed to mobilize private capital at scale.*

Building on the establishment of a centralized reef finance and oversight entity, a critical next step would be the development of a national blended finance platform designed to mobilize private capital at scale. While Belize has demonstrated early success through instruments such as the Blue Bond, these efforts remain transaction-specific and have not yet translated into a repeatable, pipeline-driven investment platform. A GEF-supported blended finance structure could address this gap by systematically aligning public, concessional, and private capital within a single coordinated framework.

At its core, this platform would use concessional capital provided by GEF and other development partners to de-risk investments and improve the risk-return profile for private investors. This could take the form of first-loss capital, subordinated debt, or grant-funded technical assistance that reduces project preparation costs and enhances bankability. By absorbing a portion of downside risk, the platform would enable private investors to participate in sectors and projects that would otherwise be considered too risky, particularly those linked to conservation outcomes and nature-based revenue streams.

Importantly, the platform would be designed to aggregate a pipeline of investable opportunities across the reef economy, including sustainable tourism, fisheries management, coastal resilience infrastructure, and blue economy enterprises. This aggregation function is essential, as individual projects in Belize are often too small or too risky to attract standalone investment. By bundling projects and standardizing financial structures, the platform would create scale, reduce transaction costs, and improve investor access.

For GEF, anchoring such a platform represents system-level market creation. Rather than funding isolated interventions, GEF would help establish a durable financing mechanism capable of continuously mobilizing capital over time. This approach aligns directly with the objective of moving beyond grant dependence toward sustainable, investment-driven conservation finance, while positioning Belize as a replicable model for other SIDS contexts. In order for this to be accomplished, the right institutional and policy framework is a precondition to any potential solution and can ensure any capital invested will be

put to its best use.<sup>107</sup> This will reinforce the efforts for system-level market creation and transformational change.

### **c. Designing Credit Enhancement & Risk Mitigation Infrastructure**

*A complementary priority area is the development of credit enhancement and risk mitigation mechanisms that address the structural barriers preventing private investment in Belize's conservation economy.*

Even with a blended finance platform in place, investors remain constrained by a range of risks, including project-level uncertainty, revenue volatility, regulatory risk, and exposure to climate shocks. Without targeted risk mitigation tools, these factors will continue to limit the scale and cost of capital available for conservation-linked investments.

GEF could play a central role in designing and capitalizing a suite of credit enhancement instruments tailored to SIDs' specific context. These may include partial credit guarantees, political risk insurance, and revenue stabilization mechanisms that provide greater certainty around cash flows. For example, guarantees could be used to backstop debt issued by the proposed reef finance entity or by project-level special purpose vehicles, thereby lowering borrowing costs and extending maturities. Similarly, insurance products linked to climate risks, such as parametric hurricane coverage, could protect both public and private investors from extreme downside scenarios.

Another key component would be the development of mechanisms that enhance the predictability and monetization of conservation-linked revenues. By strengthening the reliability of these revenue streams, such mechanisms would improve the creditworthiness of underlying projects and enable greater participation from institutional investors.

For GEF, investing in credit enhancement infrastructure represents a high-leverage intervention. Rather than deploying capital directly into projects, GEF resources would be used to unlock significantly larger volumes of private investment by reducing perceived and real risks. This approach not only improves capital access in the short term but also contributes to the long-term development of a more resilient and self-sustaining conservation finance market in Belize.

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<sup>107</sup> Independent Evaluation Office of the Global Environment Facility. (2020). *Evaluation of GEF Support for Transformational Change*. Washington, DC: Global Environment Facility.

## 9: Belize as a Precedent

The central question the Belize case raises is whether the systemic interventions proposed in this report carry logic that travels beyond Belize's borders. Two dimensions of applicability merit examination: relevance to SIDS more broadly, and replicability within the Mesoamerican regional context.

### a. Applicability to SIDS

#### *The more immediately applicable elements are the lower-cost, institution-building interventions*

The four proposed solutions respond to structural constraints that are not unique to Belize. Across most SIDS, Marine Protected Area (MPA) governance is similarly fragmented, conservation revenues are similarly dispersed, and the gap between policy ambition and implementation capacity is similarly pronounced.<sup>108</sup> The proposed National Reef Finance and Oversight Entity addresses precisely this fragmentation by creating a centralized coordination and financial aggregation layer above existing site-level co-managers. The underlying logic, that pooling revenues and standardizing governance can unlock capital that individual MPA managers cannot access independently, is transferable to any SIDS with a comparable governance structure and a reef-dependent economy.<sup>109</sup>

The proposed Blended Finance Platform and Credit Enhancement and Risk Mitigation Infrastructure are similarly portable in principle. Development finance institutions such as the IDB and the U.S. International Development Finance Corporation (DFC) have already demonstrated willingness to extend credit enhancement to SIDS conservation transactions beyond Belize, including a USD 150 million debt conversion in Barbados in 2022, and an earlier sovereign conversion in the Seychelles in 2016.<sup>110</sup> The proposed approach of using concessional capital to de-risk private investment and aggregate a pipeline of reef-positive enterprises also has direct regional analogues: the GFCR MAR Fund investment platform has already mobilized blended finance across the region using a comparable pipeline logic.<sup>111</sup>

What is not straightforwardly transferable is the institutional foundation on which these solutions would rest. The proposals in this report are designed in part to compensate for Belize's own governance fragmentation, as outlined in Section 7. In SIDS where that fragmentation is more severe, or where the non-state actors who currently carry coordination and monitoring functions in Belize are absent, the transaction costs of establishing equivalent infrastructure would be considerably higher.<sup>112</sup> For such contexts, the more immediately applicable elements are the lower-cost, institution-building interventions:

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<sup>108</sup>Priyatma Singh, Björn-Ola Linnér, and Ashneel Ajay Singh, "Marine Spatial Planning and Ocean Governance in Small Island Developing States," *Regional Environmental Change* 25 (2025): 91, <https://link.springer.com/article/10.1007/s10113-025-02412-x>.

<sup>109</sup>Catherine Cheney, "'Build Back Bluer': Small Island Developing States Pursue New Finance Mechanisms," *Devex*, February 5, 2021, <https://www.devex.com/news/build-back-bluer-small-island-developing-states-pursue-new-finance-mechanisms-99043>.

<sup>110</sup>The Nature Conservancy, "TNC Announces Third Global Debt Conversion in Barbados," 2022, <https://www.nature.org/en-us/newsroom/tnc-announces-barbados-blue-bonds-debt-conversion/>; Commonwealth Secretariat, "Case Study: Innovative Financing — Debt for Conservation Swap, Seychelles," 2020, <https://thecommonwealth.org/case-study/case-study-innovative-financing-debt-conservation-swap-seychelles-conservation-and>.

<sup>111</sup>MAR Fund, *Update 2024: MAR+Invest* (MAR Fund, 2024), <https://update.marfund.org/2024/>.

<sup>112</sup>Christoph Nedopil, Mengdi Yue, and Alice C. Hughes, "Are Debt-for-Nature Swaps Scalable: Which Nature, How Much Debt, and Who Pays?" *Ambio* 53, no. 1 (2024): 63–78, <https://pmc.ncbi.nlm.nih.gov/articles/PMC10692041/>.

the community-based conservation model and the revenue-capture mechanisms such as the PACT conservation fee structure, which demonstrate that reef-linked revenue streams can be formalized and scaled incrementally before more complex financial instruments are pursued.<sup>113</sup>

## **b. Applicability to the Wider Mesoamerican Region**

*The more realistic regional application is a demonstration effect*



Source: Nautilus Live. "Background: Exploring the Mesoamerican Reef." August 8, 2014. <https://nautiluslive.org/blog/2014/08/08/background-exploring-mesoamerican-reef>.

Within the Mesoamerican region, the ecological rationale for extending these solutions is particularly compelling, given that the Mesoamerican Barrier Reef (MBR) is a shared asset spanning Mexico, Belize, Guatemala, and Honduras across more than 1,000 kilometers.<sup>114</sup> The economic case for reef protection applies with broadly comparable force across all four jurisdictions, and the proposed solutions carry regional relevance precisely because reef degradation does not observe national boundaries.

The proposed blended finance platform has the most immediate regional applicability. The MAR+Invest program, operating across all four MBR countries, already deploys a comparable model of connecting early-stage reef-positive enterprises to blended finance, with a stated target of USD 33 million in private capital mobilized across the region by 2030.<sup>115</sup> A Belize-anchored platform could interface directly with this regional pipeline, rather than operating in isolation.

<sup>113</sup> John F. Casey and Peter Schuhmann, "PACT or No PACT: Willingness to Pay for Marine Conservation in Belize," *Marine Policy* 90 (2018): 60–68, <https://www.sciencedirect.com/science/article/abs/pii/S0308597X18300617>.

<sup>114</sup> Healthy Reefs for Healthy People, *Report Card for the Mesoamerican Reef* (Healthy Reefs for Healthy People, 2024), <https://www.healthyreefs.org/cms/report-cards/>.

<sup>115</sup> MAR Fund, *Update 2024: MAR+Invest* (MAR Fund, 2024), <https://update.marfund.org/2024/>.

The National Reef Finance and Oversight Entity and the credit enhancement infrastructure are harder to replicate at the regional level in the near term. Guatemala and Honduras face more constrained governance environments and weaker coastal enforcement capacity, as evidenced by the Healthy Reefs Initiative (HRI) 2021 Eco-Audit, in which Belize led the region with 70% implementation of recommended management actions, followed by Honduras at 66%, Mexico at 64%, and Guatemala recording the lowest score at 62%.<sup>116</sup> These governance differentials bear directly on the credibility of conservation covenants that such instruments require. Mexico, by contrast, operates at a sovereign scale and with a credit profile that makes bilateral instruments of this kind less financially necessary. The more realistic regional application is therefore a demonstration effect: a functioning, well-governed reef finance entity in Belize reduces perceived transaction risk for subsequent instruments across the reef system, and provides a proof of concept that regional development institutions and private investors can reference when assessing neighboring jurisdictions.<sup>117</sup>

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<sup>116</sup> Healthy Reefs Initiative and World Resources Institute, 2021 Eco-Audit of the Mesoamerican Reef Countries (Healthy Reefs Initiative, 2021), <https://healthyreefs.org/latest-reports/>.

<sup>117</sup> Xiaoyi Jiang and Hao Cao, "Implementing the Debt-for-Nature Swaps for Marine Protected Areas: Case Studies from Seychelles and Belize," *Humanities and Social Sciences Communications* 11, no. 1 (2024): 331, <https://doi.org/10.1057/s41599-024-02855-3>.

## 10: Lessons for Environmental Conservation

*The main lesson for environmental conservation is not that private finance can replace the state. Private finance becomes possible only after the state has done the slower work of making conservation measurable.*

Belize offers a broader lesson for environmental conservation that a country can depend heavily on natural capital and still fail to protect it at the level its economy requires. The central lesson is that financial innovation and ecological recovery do not move in lockstep. A country may succeed in raising money and still fall short if the underlying governance system cannot reliably convert funding into enforcement.

The first lesson is that private finance follows institutional readiness, not ecological value alone. Coral reefs may be economically important, but that does not by itself make them financeable. What investors require is a credible system for setting priorities and managing projects over time. Belize's own protected area assessments point to uneven readiness on exactly these dimensions. The recent Joint Nature Conservation Committee (JNCC)/IUCN review of 14 marine protected areas found a generally pattern of moderate to sound effectiveness, but also substantial variation across sites, recurring difficulties in long-term management and threat response, and repeated recommendations to strengthen capacity building and financial sustainability.<sup>118</sup> Some sites were also constrained by limited resources for core operations. The implication is straightforward that Belize has not yet assembled a protection and finance system fully commensurate with the reef's economic and ecological importance.

The same conclusion appears from the finance side. The IDB's 2025 Belize monitoring report argues that Belize still lacks the comprehensive tools and institutional systems needed to measure and report progress for results-based finance instruments.<sup>119</sup> It notes that without clearly defined Key Performance Indicators (KPI) and an MRV system, it is difficult to track performance and attract additional investment. That matters because Belize is already moving into a phase where conservation funding is increasingly tied to measurable delivery through the Blue Bond commitments.

This leads to a second lesson that conservation finance must be built as a long-term operating system, not as a sequence of one-time transactions. Belize's debt conversion was important precisely because it created lasting commitments. But that transaction did not remove the need to build the institution after the deal closed. Belize still needs predictable lifecycle financing for management. More broadly, both the World Bank and the Paulson Institute's *Financing Nature* work make the same point in general terms, that governments and regulators are the key actors in mobilizing private finance for nature, and private capital

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<sup>118</sup>Joint Nature Conservation Committee (JNCC), *Report on the Effectiveness of 14 Marine Protected Areas in Belize, Using the IUCN Green List Standard to Benchmark Current Status and Assess Performance: Compiled Green List Self-Assessments with IUCN Review and Recommendations* (2024),

<https://data.jncc.gov.uk/data/6e49de85-3070-4438-8f2f-4b53a15133df/ocpp-belize-recommendations-on-effectiveness-using-green-list.pdf>

<sup>119</sup>Jade Delevaux, Mary Ruckelshaus, Beverly Wade, Carlie Dario, Natasha Batista, Pauline Lola Blanc, Nadia Bood, Leroy Martinez, and Omar Samayoa, *Monitoring Progress Toward a Prosperous, Sustainable Future: Belize Final Report*, ed. Vanessa Callau, Anne Guerrey, Elana Kimbrell, Duval Llaguno, Gregory Watson, and Zoe Wilson (Washington, DC: Inter-American Development Bank, 2025), <https://doi.org/10.18235/0013713>

only scales when the enabling policy and incentive framework is already in place. Belize illustrates that principle clearly. The hard part is building the institutional machinery that makes conservation finance credible year after year.

A third lesson is that Belize is not yet ready to absorb large private finance flows directed at coral reefs themselves. That is not because reefs lack economic value. It is because the supporting framework remains incomplete. The most advanced MPA finance models now being developed internationally are not purely commercial. These are layered structures built on patient capital, not cases of private finance acting alone. They also depend on strong government support and a pipeline of activities that generate revenue, for example, ecotourism and blue carbon. Taken together with Belize's documented gaps in management capacity and financial sustainability, the reasonable conclusion is that Belize remains in a phase of building the market rather than expanding it. Private investment can play a role around the reef, but a broad private finance market for coral reefs across the whole ecosystem would still be premature.



Source: *Journeys With Purpose*. "Unearthing the Rich Biodiversity on Turneffe Atoll." July 31, 2023.  
<https://journeyswithpurpose.org/conservation-on-turneffe-atoll/>.

The broader implication for environmental conservation is that countries should not mistake economic importance for investment readiness. Natural assets may support jobs, but that alone does not make them suitable for investment. What makes them investable is an earlier layer of public and institutional preparation. Belize's experience therefore points to an important lesson for GEF and similar actors. The most catalytic use of concessional finance is not to pursue large private flows before the conditions are in place, but to fund the institutional and financial foundations that can later support credible private participation. Success should be judged less by the headline amount of private capital mobilized in the short-term and more by whether a country is becoming steadily more capable of absorbing private capital on credible terms over time.

Seen this way, Belize is best understood as a transition case. It shows both how much is possible when conservation is elevated to the level of sovereign finance and how much still depends on slower institution building afterward. The main lesson for environmental conservation is not that private finance can replace the state. Private finance becomes possible only after the state has done the slower work of making conservation measurable.

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## Annex A: Sovereign Blue Bonds

In November 2021, TNC and the Government of Belize completed a \$364 million USD debt conversion for marine conservation—the largest ocean-focused debt refinancing to date. Belize repurchased its \$553 million USD Superbond (representing ~25% of total public debt and ~30% of GDP) at a 45% discount, generating a principal reduction of \$189 million USD and an estimated total debt stock reduction of approximately \$250 million USD (TNC Case Study, 2021; Government of Belize, 2022).

The transaction was structured around a \$364 million USD Blue Loan, arranged by Credit Suisse and issued through TNC's subsidiary. Political risk insurance of \$610 million USD was provided by the U.S. International Development Finance Corporation (DFC), enabling the bond to achieve a Moody's Aa2 investment-grade rating. Additional reinsurance was provided by a private syndicate, and a parametric catastrophe insurance policy covers debt service payments in the event of hurricanes. The loan carries an all-in internal rate of return of approximately 6.1% (TNC Case Study, 2021; DFC, 2021).

### Belize Blue Bond: Key Transaction Details

| Component                              | Detail                                                                                   |
|----------------------------------------|------------------------------------------------------------------------------------------|
| Superbond face value / trading price   | USD 553 million; trading at 38–47 cents on the dollar                                    |
| Repurchase price / principal reduction | 55 cents on dollar (45% discount); USD 189M principal reduction                          |
| Blue Loan / total debt stock reduction | USD 364 million; ~USD 250M total debt reduction                                          |
| Debt-to-GDP reduction                  | 12% of GDP                                                                               |
| Conservation funding — annual average  | USD 4.2 million/year (USD 84M govt. cash flows over 20 years)                            |
| Conservation funding — total estimate  | USD 180M: = USD 84M (govt.) + USD 23.45M (endowment) + USD 71M (est. returns at 7% p.a.) |
| Endowment (prefunded via Blue Loan)    | USD 23.45 million; est. to grow to USD 92M by 2041                                       |
| DFC political risk insurance           | USD 610 million (principal + interest coverage)                                          |
| Blue Bond credit rating                | Moody's Aa2 (investment-grade)                                                           |
| Loan IRR (all-in)                      | 6.1% inclusive of insurance premiums, fees, and reserves                                 |

|                                       |                                                    |
|---------------------------------------|----------------------------------------------------|
| Belize economy / debt at time of deal | Contracted 16.7% in 2020; debt reached 133% of GDP |
|---------------------------------------|----------------------------------------------------|

*Sources: TNC Case Study 2021; DFC Press Release 2021; Government of Belize Press Office 2022.*

The conservation component is operationalized through the BFSF, an independent conservation trust fund established in 2022. Between 2022 and 2024, BFSF committed approximately \$12.9 million USD across its programs, including \$3.6 million USD in grants to marine protected area co-managers and \$4.05 million USD to government programs—of which \$1.52 million USD was allocated to the Belize Fisheries Department. The remaining funding supported community grants, thematic programs, and operational capacity. BFSF-funded activities have supported over 200 conservation jobs, more than 5,700 marine patrols, and engagement with over 4,000 stakeholders in the national marine spatial planning process (Belize Fund, 2024–2025; TNC Case Study, 2021). Additionally, as part of the transaction, Belize committed to placing 30% of its ocean under protection by 2026, through a transparent Marine Spatial Planning process, and to establishing an independent Conservation Fund to allocate resources to in-country partners. Complementary mechanisms, including reef insurance through the Mesoamerican Reef Fund (MAR Fund) and emerging blue carbon initiatives, further demonstrate Belize's role as a laboratory for blended finance approaches in a marine context.

While the transaction represents a major innovation in conservation finance, it also has limitations. Estimated transaction costs of approximately \$85 million USD suggest significant friction relative to conservation funding delivered (LSE International Development, 2023). Despite these challenges, the model has scaled rapidly across multiple countries—including Seychelles, Barbados, Ecuador, Gabon, the Bahamas, and El Salvador—mobilizing nearly \$6 billion USD in restructured debt and generating approximately \$2 billion USD in conservation financing globally (New America, 2025).