



Finance Tools for Coral Reef Conservation: A Guide

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December 2018

Cover photo contributed by Jayne Jenkins



Acknowledgements

This guide is prepared for 50 Reefs by the Wildlife Conservation Society with the assistance of the Conservation Finance Alliance.

All information contained in this report is prepared from data and sources believed to be correct and reliable as of December 2018. The findings and conclusions expressed in this report are entirely those of the authors and do not necessarily represent the views of the Wildlife Conservation Society or the Conservation Finance Alliance.

The authors wish to thank the Conservation Finance Alliance (CFA) task force on the update of the Conservation Finance Guide, led by The Biodiversity Finance Initiative (BIOFIN). This white paper builds on the work of Vertigo Lab in their 2018 paper, "Innovations for Coral Finance," authored by Thomas Binet and Guillaume Le Port for the International Coral Reef Initiative. The authors also wish to thank Kate Mastro at WCS for her careful attention to detail.



The *50 Reefs* initiative was established to identify and prioritize protection efforts on coral reefs that are least vulnerable to climate change and have the greatest capacity to repopulate other reefs over time. With the goal to catalyze the global action and investment necessary to save these critical ecosystems, the initiative released several white papers, a scientific study and a blueprint strategy for global reef conservation (Beyer, Kennedy et al., 2018, Hoegh-Guldberg et al., 2018).



WCS's goal is to conserve the world's largest wild places in 16 priority regions, home to more than 50% of the world's biodiversity. Over the past century, WCS has established long-term conservation presence in the last wild places across the Americas, Africa, Asia, and Oceania, built strong and trusting partnerships, and acquired a depth of knowledge that ensures effective conservation action. We protect these last wild places because they are intact, biodiverse, most resilient to climate change, and bastions for large, iconic wildlife species.



The Conservation Finance Alliance (CFA) is the leading global professional association for conservation finance experts. The network's mission is to promote awareness, expertise, and innovation in conservation finance globally. Our collaborative network of volunteer members participate in CFA's Working Groups (WG), Task Forces (TF), Executive Committee (ExCo) and Secretariat and promote knowledge and the effective use of conservation finance tools in their activities across the planet.

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List of Acronyms

BES	Biodiversity and Ecosystem Services	NGO	Non-governmental organization
BFP	Blue Finance Project	PACT	Protected Areas Conservation Trust (Belize)
BIOFIN	The Biodiversity Finance Initiative	PES	Payment for ecosystem services
CFA	Conservation Finance Alliance	PFP	Project Finance for Permanence
CPIC	Coalition for Private Investment in Conservation	PPP	Public private partnership
CPUE	Catch per unit effort	SeyCCAT	Seychelles Conservation and Climate Adaptation Trust
CSO	Civil Society Organization	SIBs	Social Impact Bonds
CTF	Conservation Trust Fund	SIDS	Small Island Developing States
CZMT	Coastal Zone Management Trust	SMEs	Small and Medium Enterprises
EEZ	Exclusive Economic Zone	TNC	The Nature Conservancy
FAO	Food and Agricultural Organization	UfW	United for Wildlife
GERF	Global Ecosystem Resilience Facility	UNDP	United Nations Development Programme
IBRD	International Bank for Reconstruction and Development	UNEP	United Nations Environment Programme
ICRI	International Coral Reef Initiative	VAT	Value Added Tax
IFC	International Finance Corporation	WCS	Wildlife Conservation Society
IUCN	International Union for Conservation of Nature	WWF	World Wildlife Fund
MPA	Marine protected area	ZSL	Zoological Society of London
MPFAC	Marine Protected Areas Federal Advisory Committee		

Executive Summary



Photo contributed by Cinzia Osele Bismarck

Coral reefs are critical ecosystems that are home to more than 25% of all known marine species, while occupying less than one quarter of 1% of the Earth's marine environment (IUCN, 2013). In June 2018, the 50 Reefs initiative culminated with the publication of a scientific study on coral reefs that are least vulnerable to climate change and have the greatest capacity to repopulate other reefs over time.

To contribute to *50 Reefs*, the Wildlife Conservation Society (WCS) worked in conjunction with the Conservation Finance Alliance (CFA) to create a working guide on the financial tools available for coral reef conservation. Financial tools are a means of securing reliable funding for conservation activities such as creating new protected areas, restoring ecosystems, and promoting sustainable tourism or aligning incentives of actors to improve conservation outcomes. This guide is intended to serve as a reference and resource for protected area managers and other professionals charged with achieving conservation and protection of coral reefs, and ensuring adequate financial means to do so.

This guide highlights that public and private capital - both philanthropic and return-seeking - must be

leveraged to develop diversified and sustainable self-generated revenue flows that can drive conservation impact. Government funding for coral reef conservation will always be essential but may never be sufficient. Donor funding can only partially fill in the conservation finance gap yet plays an important role in leveraging public capital and policy. Increasingly, private investment capital and new finance tools are needed to efficiently scale-up coral reef conservation. Ultimately, a blend of finance tools and sources is essential to achieve financially sound conservation of coral reefs at both the site and system levels.

The process of creating a business plan provides an opportunity to identify revenue opportunities available to meet the costs of reef conservation. The business plan is a document that serves as a planning, decision-making, and communications tool. It includes an assessment of the internal and external situation (strengths and weaknesses, opportunities and threats, known as SWOT) and lays out options to meet the conservation financing needs. The business plan will help managers determine how likely, and over what time period, financial sustainability can be achieved.

The report highlights a mix of thirteen of the most

compelling finance mechanisms for reef conservation. Finding the appropriate mix of funding to meet conservation objectives is essential and this guide presents some tried-and-true financing tools as well as those that are in early stages of implementation and testing, and even those that are still conceptual but show promise. In any conservation finance strategy, a diversified portfolio of both short and longer-term options needs to be considered and promoted to meet conservation objectives, along with some balance between government, donor, and private investor actions.

Successful use and application of financial tools will depend on a diversity of strategies and will need to consider the time frame and the amount of financing required. For instance, some financing mechanisms can be put in place relatively easily, with relatively quick results, while others will require significant time and resource investments, with larger return on investment and/or the financial rewards accruing further in the future.

The guide does not emphasize any one mechanism, but calls attention to the suite of options that can be implemented to generate the funding needed to secure reef management and conservation. The themes highlighted reflect this overarching goal.

The scope of this study was limited to five main themes for finance tools:

- **Charge, fee and taxation systems** - Fees and levies can generate resources for protected areas by charging users of a public good (in this case, nature) for the benefit they receive (e.g. recreation) or charging actors that damage or destroy nature. The proceeds can be used to fund conservation activities. Taxation and levy systems are the means of charging users of natural resources for the management costs of those resources; they can also act as an economic incentive that influences individual and collective behaviour that can have positive, negative, or mixed impacts on coral reef health (e.g., taxes paid by extractive industries). Fee, levy, and taxation systems can be relatively easy to set up and can generate important sources of revenue.
- **Payment for ecosystem services (PES)** - PES is a term used to describe a range of schemes through which the beneficiaries, or users, of ecosystem services provide payment to the stewards, or providers of those services. The beneficiaries may be individuals, communities, businesses or public bodies¹. The beneficiary of the ecosystem service pays the service provider while enjoying cost savings and benefits compared to the status quo or alternative options. Many coral ecosystem services, such as carbon storage, flood prevention, sediment capture, prevention of saltwater intrusion, and marine life habitat are not exchanged or traded on any kind of market, but new market opportunities are evolving and may offer significant opportunities in the future.
- **Biodiversity offsets** - Marine biodiversity offsets allow governments to recover costs of damage to biodiversity and ecosystem services before a planned and permitted development activity begins and the impacts to those services occur. The financing provided to offset impacts should be sufficient to at least achieve no net loss (the development did not cause any new damage) or ideally, a net gain of benefits to the ecosystem in question. Well-designed and managed biodiversity offset programs can secure long-term sustainable financing for marine conservation. Government can play an important role by developing regulations and requiring adequate compensation on the impacts on coral and marine ecosystems to ensure maintenance of ecosystem services.
- **Investment and other financing facilities** - At the global level, use of the international capital markets, including collaboration among the private, nonprofit and public sectors, can generate needed funds. At the local level, conservation enterprises in tourism, fishing, and other coastal industries can result in positive conservation and livelihood outcomes. Public private partnerships and financing facilities can support these efforts. This guide provides an analysis of different bond financing options, insurance schemes, debt for nature swaps, impact investing, development and investment as ways to generate sustainable positive outcomes for marine conservation.

1. <https://ecosystemsknowledge.net/resources/tools-guidelines/pes/>

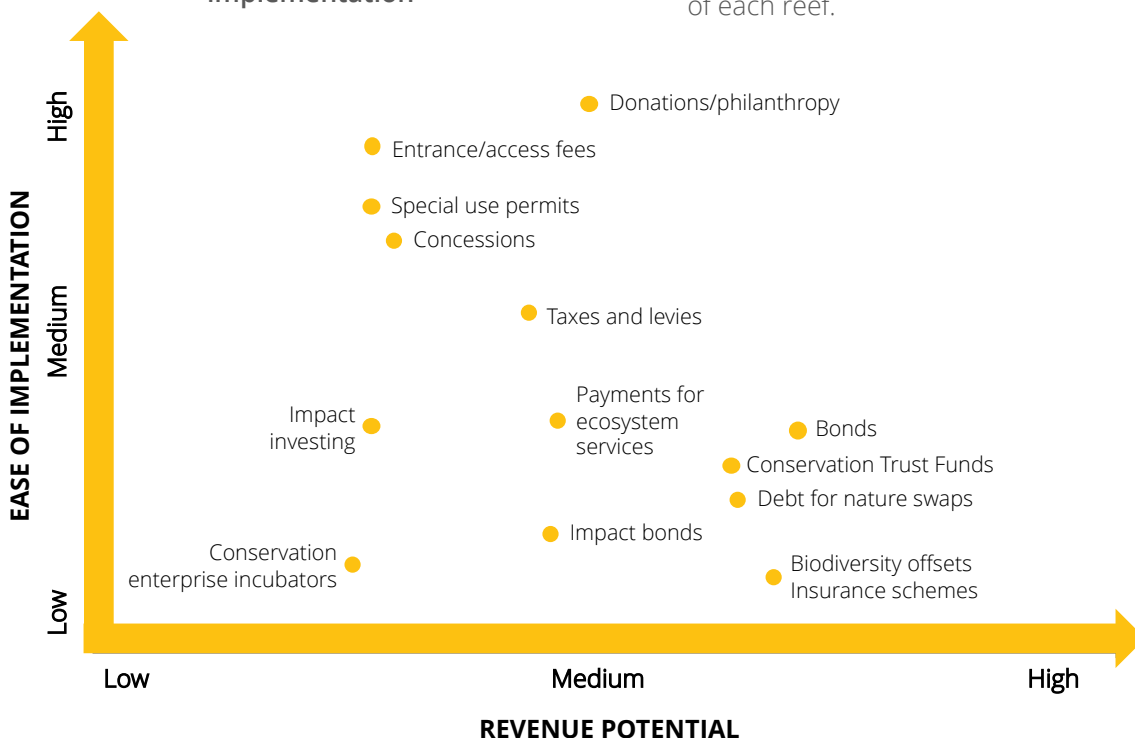
■ **Conservation Trust Funds (CTFs)** - these are private, legally independent institutions that catalyze funding and resources for biodiversity conservation. They may finance the long-term management costs of protected areas, fund conservation and sustainable development initiatives outside PAs, or do a combination of both. They can also manage biodiversity offset funds, support incubation of new finance tools, and generally play a diverse role in catalyzing finance toward conservation initiatives. CTFs can play a significant role in reef and marine conservation and many of the finance solutions described in this guide either require or benefit from CTFs.

Once all the financial tools were assessed, a matrix was developed (Figure 1) to allow for a visual comparison between ease of implementation (this metric included the design and costs of any particular tool) and revenue potential. Interpreting the matrix depends on the entity's business plan and organizational capacity – for some, low-cost, low-complexity tools will be the most important considerations. For others, revenue potential will be the driving factor. For several entities, seeking middle ground will be key. Because for most

sites and PA systems, a mix of financing is needed, the matrix can also be used to visualize the chosen landscape. Some mechanisms, for example, may take longer but have greater potential – these should be complemented with simpler faster tools. The tools that are harder to implement, such as biodiversity offsets or insurance schemes, require more technical expertise and capacity and will take more time and upfront resources to put in place. On the opposite end of the spectrum, entrance fees and concessions offer relative ease of implementation but usually have lower revenue potential when compared to the more complex options, as demonstrated in Figure 1 below.

Deciding on the mix of finance tools will be a function of multiple factors unique to the protected area or entity, and informed by the business planning process. Ease of implementation and revenue potential are two factors to consider, in the context of the entity's organizational capacity and financial need. Figure 1 illustrates those relative factors in a general sense, and helps to give a starting point for further investigation. Context is critical - a small protected area with limited staff, for example, is probably not going to start with insurance schemes before exploring some of the less complex tools available. Key design considerations will influence whether a finance tool is feasible for a specific entity. The exploration and evaluation process must be iterative, and must reflect the unique factors of each reef.

Figure 1: Financial tools depicted with revenue potential vs. ease of implementation



1.0 Introduction & Background



Photo contributed by Fabrice Dudenhofer

1.1 Current Problem and Financing Issues

Coral reefs are critical ecosystems that are home to more than 25% of all known marine species, while occupying less than one quarter of 1% of the Earth's marine environment (IUCN, 2013). Corals are highly sensitive to climate change, with 16% of the world's reefs suffering serious damage in the global bleaching event of 1998. For example, average live coral cover on Caribbean reefs has "declined to just 8% of the reef today, compared with more than 50% in the 1970s" (IUCN 2013, The Coral Reef Economy' UNEP/WCMC finance paper).

Sustaining healthy reefs is important not only for marine biodiversity, but for livelihoods. According to the International Union for Conservation of Nature (IUCN, 2013), more than 450 million people live within 60 kilometers of reefs, with the majority either directly or indirectly relying on these reefs for sustenance and income. Significant reef loss is occurring around the globe due to climate change, pollution, and other factors, including inappropriate policies. Unfortunately, in many countries there are significant gaps between the costs of identified solutions for reef conservation

and maintenance, and adequacy of funding. Due to limited financial resources of governments, many reefs in developing countries rely on external, donor-funded approaches to improve reef conditions and boost local livelihoods, and this trend is likely to continue.

As climate change and resource exploitation continue to degrade sites, governments, site managers and conservationists face challenges in a) generating enough financial resources to manage these areas over time and b) promoting sustainable (and averting destructive) use amongst reef-adjacent communities, and aligning incentives of diverse actors. Creating financial tools that allow for consistent flows of money and promote sustainable use for coral reef sites is critical for maintaining healthy reefs for the future.

A recent report by the International Coral Reef Initiative (ICRI) highlighted five key reef conservation activities that need financing:

- **Creation, development and management of marine protected areas (MPAs):** MPAs can allow for long-term management and protection of a site with delineated zones, such as preservation-only areas or designated fisheries harvest areas.

- **Sustainable fisheries:** Fisheries that do not overexploit current fish populations and employ ecosystem-friendly fishing practices are crucial to maintaining healthy reefs.
- **Restoration of coral ecosystems:** Reefs that have been damaged by storms or bleaching can be repaired through innovative scientific techniques.
- **Suppression of external pressure factors:** Marine pollution and other land/aquatic activities that cause reef degradation must be minimized.
- **Sustainable tourism:** Managing tourist visitation to coral reef destinations so that resources that attract the tourists are not damaged or degraded. This will mean investing in tourism approaches to allow for both strong financial flows to reef sites while promoting conservation and conservation-friendly practices that balance economic and ecological outcomes.

The potential benefits to investing in coral reefs are significant. A recent study (UNEP et al., 2018) found that the economic benefit of the coral reef economy can be significant – healthy coral reefs in the Mesoamerican Reef and the Coral Triangle could deliver additional financial benefits of \$34.6 billion and \$36.7 billion, respectively, between 2017 and 2030. The study modeled outcomes with strategic interventions using currently available tools and methods.

Capitalizing on this opportunity and building on the ICRI and 50 Reefs (Beyer, Kennedy et al., 2018) studies, this guide to financing reef conservation identifies, explains, and illustrates a selection of finance tools available for coral reef conservation. It is intended to serve as a guide for protected area managers and other professionals charged with achieving conservation and protection of coral reefs, and ensuring adequate financial means to do so. Each of the conservation finance mechanisms described has potential viability to fund one or more of the conservation approaches highlighted by the ICRI report, as summarized in Table 1 below.

In Section 2 of this guide, we provide a framework for business planning, a critical process of evaluating, articulating and communicating an entity's plan to achieve their identified objectives through sound management and financing. The descriptions of the financing mechanisms in Sections 3 and 4 provide more detail on each tool's merits and limitations. In Section 5, we propose a framework for evaluating the relevance of each tool from Section 4 for different reef contexts. In Section 6, we give a framework for conceptualizing issues in ocean finance, and a case study that highlights some of the potential pitfalls in developing approaches to finance conservation. And lastly in Section 7, we offer some conclusions and potential opportunities for further analysis.

Table 1: Finance mechanisms' capacity to fund Conservation Activities

	Creation, development and management of marine protected areas (MPAs)	Sustainable fisheries	Restoration of coral ecosystems	Suppression of external pressure factors	Sustainable tourism
■ Entrance / Access Fees	✓	✓			✓
■ Special Use Permits	✓	✓			✓
■ Concessions	✓	✓			✓
■ Taxes & Levies	✓	✓	✓	✓	✓
■ Payments for Ecosystem Services (PES)	✓	✓	✓	✓	✓
■ Biodiversity Offsets	✓	✓	✓	✓	
■ Bonds	✓	✓	✓	✓	✓
■ Impact Bonds	✓	✓	✓	✓	✓
■ Debt for Nature Swaps	✓	✓	✓	✓	
■ Insurance Schemes	✓		✓	✓	✓
■ Conservation Enterprise Incubators		✓	✓	✓	✓
■ Markets and Impact Investing		✓	✓	✓	✓
■ Conservation Trust Funds	✓	✓	✓	✓	✓

2.0 Considering and Assessing Options: Developing a Business Plan



Photo contributed by Yen-Yi Lee, Taiwan

The financial tools described in this white paper provide means of driving funding to conservation activities; the menu of potential options can be overwhelming and the list provided in this guidance is not exhaustive. In deciding which tools to pursue, it is critical to evaluate the financial tools based on the goals, objectives, context, and needs of the reef system and/or protected area under consideration. An essential tool to facilitate that evaluation process in assessing and considering options is a business plan.

A business plan is a document developed through consultation and analysis, that summarizes an entity's plan to achieve their identified objectives through sound management and financing. A business plan can be written for a PA, for an organization like an NGO, CSO, CTF, or a for-profit or cooperative business. The key benefits of business plans include:

- Support for revenue generation and/or fundraising: A business plan can identify detailed funding needs, potential donors and investors, and appropriate finance mechanisms. The plan can highlight potential financial returns on

investment or economic benefits of conservation strategies in a language and style that potential investors and donors respect. Part of its role is to generate excitement about the proposed initiative by highlighting a compelling approach.

- Improved organizational effectiveness and planning: A business plan helps managers think through the steps required to achieve stated outcomes, thus creating a realistic and budgeted execution plan to achieve results. The process of plan development encourages managers to develop scenarios, feasibility assessments, and cost effectiveness of management options.
- Assessment of strengths and weaknesses: The business plan forces managers to think through a range of different actions' strengths and weaknesses and explore ways to enhance or take advantage of those strengths while minimizing, to the extent possible, the weaknesses.

The business plan is a living reference that documents key analysis and planning and provides the entity

with a powerful path towards operational success and financial strength. It serves as a communication tool to potential partners and donors, and also as a resource and reference for the governing body and management of the entity. The business planning process is as important as the outcome – bringing together the key stakeholders to agree on critical

decisions helps to create commitment and buy-in. A business plan without stakeholder buy-in is typically doomed to sit on a shelf; a business plan that is developed with robust stakeholder engagement is much more likely to become a living document and its contents are more likely to be embodied in the organization itself.

Business Plans: Elements and Structure

The structure of business plans can be adapted to the specific entity but the following structure is recommended and the subsections are useful.

- Executive Summary
- Background
- Operations and Management
- Strategic Priorities
- Marketing Plan
- Financial Plan

The detailed subsections include the following elements:

Executive Summary – a comprehensive summary of the main elements of the entire business plan covering all of the sections listed below.

Background

- Vision and Mission - why does the organization exist; what is its history; what are its vision and mission; what are its key strategies and objectives or goals?
- Physical and Biological Description – maps, basic statistics, etc. describing the natural environment being protected and conserved, as well as its ecological, social, cultural and economic significance

Operations and Management

- Organizational Structure and Governance – what human resources exist and what are needed to achieve the goals and objectives? What governance systems are in place to ensure accountability and transparency? What skills and capabilities are needed, and what is the plan to fill any existing gaps through staffing and/or training?
- Program Plan – What conservation approaches will the entity use to achieve conservation impacts? How will the product or service be delivered and by whom? What are the start-up costs and how much will it cost in time and resources to design and deliver the outcomes? How will cost effectiveness be assessed and achieved?
- Risk Analysis - what are the key risks facing the entity? What is the risk mitigation plan, and what contingencies are in place?
- Measurement and Evaluation – what is the system for measuring and evaluating the impact of the programs? Who are the key actors in the measurement and evaluation plan, and how does the entity ensure independence in the evaluation process?

Strategic Priorities

- Value Proposition/Competitive Analysis - what problem does the entity seek to solve? What is its theory of change? What critical success factors must be in place for the entity to achieve its goals? What positive conservation impacts does the entity generate? How is the entity positioned relative to other entities, both in terms of organizational capability and ability to generate funding? One common tool is called a SWOT analysis, which summarizes the entity's key Strengths and Weaknesses (internal factors) and Opportunities and Threats (external factors). What are the unique advantages/benefits of the proposed actions relative to other options?
- Gap Analysis -- What is the organization's current state, and what is its desired future state? This can be measured in terms of organizational readiness, financial resources, and a variety of other dimensions, both qualitative and quantitative.
- Implementation Plan--What is the specific plan to fill the "gap" and be able to move from the current state and the desired future state? What is the timeline for achieving the plan?
- Cost / Benefit Analysis – What are the capital requirements for development, implementation, and monitoring the conservation strategy? How much will costs vary if key assumptions change? What are the expected ecological, social, and economic benefits, articulated as returns on investment? How do the costs and benefits of the proposed approach compare to alternatives, including the option of doing nothing?

Marketing Plan

- Stakeholder Analysis – who are the key influencers and decision makers for achieving programmatic and financing success? Which stakeholders play the strongest role, and what is the strategy for engaging them?
- Messaging – What are the key points about the entity that need to be communicated? How does the entity describe itself and its purpose?
- Communications –What approaches and tools will be used to publicize and market the programs, generate support, and communicate their outcomes to partners, customers and stakeholders?
- Fundraising -- Who are potential partners for financing and programs, and which sectors do they come from (e.g. public, private, nonprofit). What modalities of engagement will be used? Government and local communities should always be considered; other stakeholders will be specific to the entity.

Financial Plan

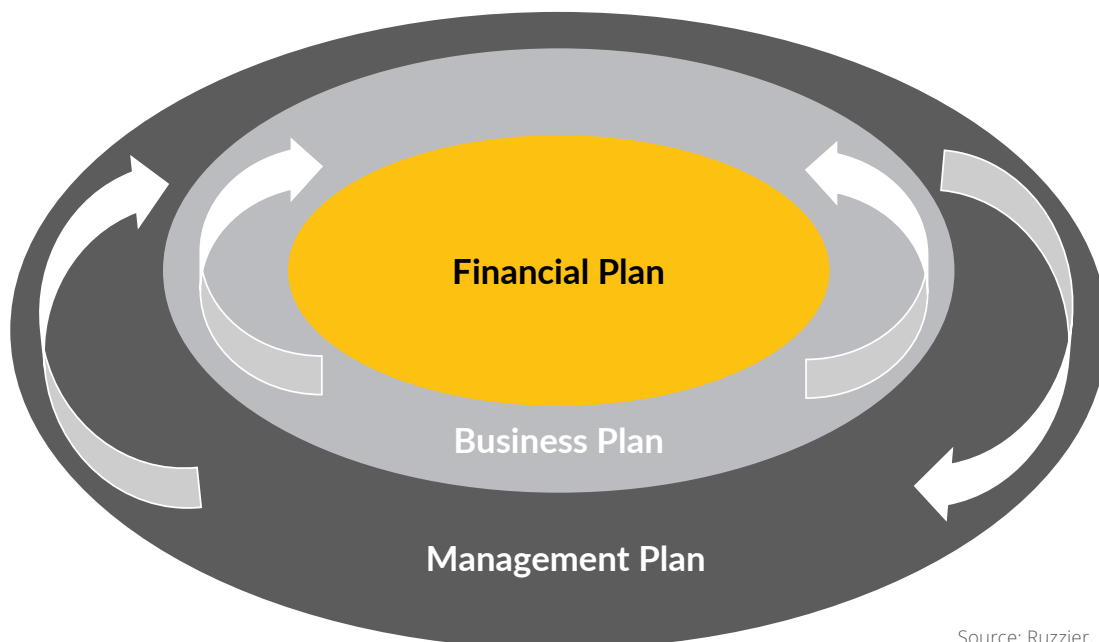
- Historical Financial Statements
- Sustainable Financing -- Which finance mechanisms are most appropriate and feasible given the ecological, social, cultural, political, and economic context in which the entity operates? Which finance mechanisms will the entity use to generate revenue? What is the proposed composition of public and private capital? What are the financial risks faced by the entity, and how will these risks be avoided or minimized? In considering a mix of financial mechanisms, how do they interact with one another?
- Financial Projections and Needs – What are the expected in-flows and out-flows of financial resources over the time-period of the plan?

Business plans are separate but complementary to strategic plans and to protected area management plans. A strategic plan is a comprehensive document that describes how the entity will achieve its mission and vision and it can be very long-term. The business plan is more time bound and financially focuses on how the entity will achieve its objectives and long-term sustainability while minimizing financial risks, developing diversified revenue streams, and, where appropriate, delivering efficient returns on investment. In many cases, parts of the business plan are a high level summary of other more detailed documents and policies that the organization has in place. For example, the business plan may only dedicate a page to summarizing the entity's approach to measurement and evaluation, whereas a full measurement and evaluation policy and plan will be a substantial document. A Finance Plan can be considered part of the Business Plan and is specifically targeting how to generate or leverage finances or financial tools to achieve the entity's desired outcomes as stated in the management or business plan.

This graphic places the Business plan and Financial Plan within the overall management plan which should work well for most protected areas.

Through the business planning process, conservation practitioners can evaluate which financial tools, and in which combinations, are most appropriate for generating revenue to help meet management plan objectives and priorities in a specific context. The business plans will also be helpful in determining expected levels of revenue generation and what level of financial sustainability is likely to be achieved over a given time period. In addition, the business plan helps the entity focus on aligning the right financial tools to the intended programs and conservation activities, specifically in the context of a given reef. For example, it would not make sense to select a financial tool that relies heavily on tourism revenue, if the reef in question is remote with little tourism activity. Similarly, it would not make sense to choose a financial tool that focuses on artisanal fisheries, if the biggest threat to the reef comes from oil exploration or agricultural runoff. The business planning process helps to refine and clarify opportunities, identify the most effective and efficient management approaches, and distill which approaches and tools are in optimal alignment. The tables provided as part of each financial tool in Section 4, below, provide some information on the necessary conditions to make them relevant; selecting financial tools requires the evaluating and marrying of scientific, conservation, political, social, and economic conditions in a given reef to the attributes of the available tools.

Figure 2: Business planning in context



Source: Ruzzier, M., et al. 2010

Financing a conservation management plan

A business plan represents the business and financial side of a conservation management plan. Reef conservation or protected area plans provide important information regarding what conservation and management actions are needed and how they should be achieved. They outline the specific activities that must occur to meet the conservation objectives.

The business plan builds in the financial analysis, looking at the human and financial resources required to meet the objectives; how those resources can be most efficiently deployed; and what programs and innovations can be developed to generate additional resources – all in the name of achieving conservation results. Moreover the plan clearly identifies the financial gaps and permits the managers to develop the strategies to try to fill them. Developing a good business plan is important for planning and understanding what is needed to achieve results.



Photo contributed by Jayne Jenkins

3.0 Traditional Sources: Government and Donors



Photo contributed by Raja Ampat, Indonesia, Fabrice Dudenhofer

Historically, conservation has primarily relied on two key sources: government and donor financing. National and local governments allocate funding through a budgeting process, and this can vary significantly due to economic capacity and political will. Donors can be foundations, other governments, multilateral agencies, corporations (private sector) or individuals. Governments (through budgets, grants and subsidies) finance up to 75% of biodiversity conservation actions globally (Little Biodiversity Finance Book, GCP, 2012). Indeed, both governments and donors will continue to play a critical role not just as funders, but also as partners in conservation activity at the same time that other sources of funding are needed to complement such funding. Ideally, ways can be found to bring in more sources that are non-traditional and scale them. However first, it is important to understand the continuing role of donors and governments.

3.1 Donations and Philanthropic Funding

In considering a mix of financing mechanisms to support reef conservation, donor support and philanthropic funding will continue to play an important role as demonstrated in Figure 3. Donor support is currently a significant source of funding for reef conservation, especially in developing countries. Protected areas can often leverage donor funding to attract additional funding, to incubate new financing mechanisms, test new conservation approaches that cannot yet attract public capital, or to build internal capacity.

3.1.1 The Current Funder Landscape

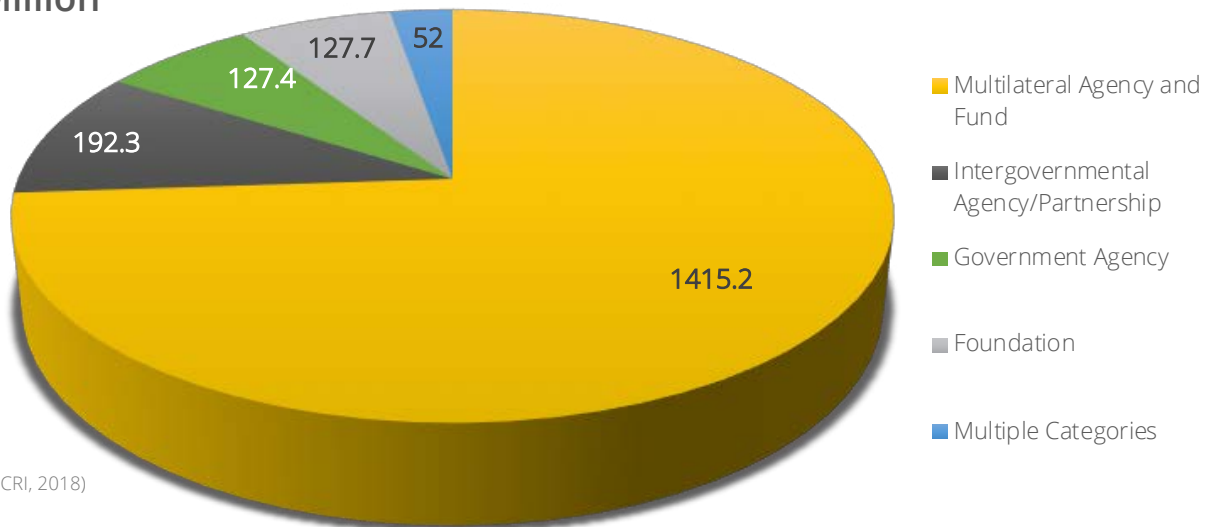
Between 2010 and 2016, donors committed more than \$1.9 billion for reef conservation and management, including the improvement of associated mangroves and seagrass beds (UN/ICRI, 2018). Multilateral

agencies and funds, intergovernmental agencies, and foundations are the main source of three resources. Out of the 314 projects identified from a database of 60 donors in the 2010-2016 UN/ICRI (2018) review, a significant amount were relatively small. - 120 projects received up to \$100,000, and an additional 92 projects received up to \$1 million.

The reef funding landscape is driven by only a few funders providing large-scale funds, as shown by the UN/ICRI (2018) report where only 33 projects out of the 314 projects (10%) had a budget in excess of \$10 million each; these few larger scale projects accounted for roughly 90% of all donor-related funding (\$1.7 billion) for reef conservation between 2010-2016. Traditional philanthropy from foundations accounts for \$127 million, or 7% of total funds.

Figure 3: Breakdown of coral reef funding allocations by funder type

USD Million



Source: (UN/ICRI, 2018)

A large portion of funds over the period from 2010-2016 comes from the Global Environment Facility (GEF), Green Climate Fund, Oak Foundation, European Union, and the European Commission Framework Programme 7. Together, these five organizations have contributed around \$300 million in the given six-year period (UN, 2018). The top five funded countries in terms of total project receipts have been Indonesia, Mexico, Sri Lanka, United States, and Tuvalu which have collectively received more than a quarter of all project funding, around \$488 million (UN/ICRI, 2018).

The majority of the funding (\$1.8 billion, 95% of total funds) has been focused on four main areas: conservation and sustainability, marine protected area management, promoting sustainable living and alternative livelihoods, and fisheries management. There is potential for further growth in the donor sector for coral reefs, but reducing the reliance on donor funding for reefs and transitioning to a more diversified financing portfolio will reduce the risk of reefs being under-funded in the future.

3.1.2 Fundraising Techniques and Modalities

In developing an overall sustainable funding strategy for any given reef system, it is important to consider what role donor funding will play. In some situations, donor support can provide upfront capital to incubate the implementation of other long-term financing mechanisms; over time, the other mechanisms can

generate sustainable financing and donor support becomes a smaller component of the funding portfolio. In other situations, upfront donor funding can be invested in endowments or sinking funds that generate returns for long-term support of the reef conservation needs, and may support the short-term funding of conservation while the national government grows its capacity to fully fund the costs of protected area management. Project Finance for Permanence (PFP) is one such example. A tool used by a number of funders including the Linden Trust for Conservation,

the Gordon and Betty Moore Foundation and the World Wildlife Fund (WWF), among others, PFP involves the creation of a significant sinking fund by multiple donors, paired with a commitment by government to increase protected area management budgets over the same time period as the sinking fund's life. Currently used for terrestrial conservation at the landscape scale, the approach has potential for marine and reef conservation as well. It is worth recognizing, too, that some reef systems may remain reliant on a combination of donor and government support indefinitely, as they are not viable candidates for other types of financial tools. In a global context, the goal is to create as many self-reliant protected areas or ocean governance systems as possible, so that limited government and donor support can be directed to those systems that are not candidates for self-financing through other means.

From the standpoint of a reef conservation or management entity, it is important to diversify donor approaches and types of donors, as over-reliance on

a single donor can create a high degree of risk. Each type of donor requires a customized approach based on giving criteria, giving modalities, and alignment with organizational strategies.

In addition to direct funding for protected areas or projects that contribute to reef conservation, donors may consider contributions to a conservation trust fund (see Section 6.7) or for policy support, capacity building or engagement with stakeholders. For many donors, conservation trust funds represent a long-term conservation funding strategy and funds are provided to either endowments or sinking funds that are paid out over a long time period. However, not all donors are interested in capitalizing endowments or making long-term contributions to sinking funds, rather they are concerned about the opportunity cost of tying up large sums of money in fund accounts. Nevertheless, they see the benefits of working with Conservation Trust Funds (CTFs) as established institutions and will channel short and medium term funds through the CTFs to support marine conservation.

CASE STUDY

The Blue Action Fund

The Blue Action Fund is an innovative example of a new approach to donor funding. The Blue Action Fund was established in December 2016 by the German Ministry for Economic Cooperation and Development (BMZ), through the KfW Development Bank (KfW). Additional funding was contributed by the Swedish Ministry for Foreign Affairs in June 2017.

The Blue Action Fund “supports national and international non-governmental organizations in their efforts to conserve the oceans and coastlines in the developing world.” The Blue Action Fund is a financing mechanism rather than an implementing institution, and serves as a grant-making organization. Its 2017 Call for Proposals focused on Small Island Developing States (SIDS); its 2018 Call for Proposals focused on the Western Indian Ocean. Blue Action Fund concentrates on marine protected areas and their buffer zones; its grant-making guidelines emphasize the integration of marine protection and poverty reduction, the importance of areas with significant biodiversity, and the achievement of quick impact as well as sustainability.

As a global fund for conservation, the Blue Action Fund has the potential to make a significant impact on marine and coastal biodiversity conservation throughout the developing world.

Donor contributions from the private sector can be pure philanthropy or part of corporate social responsibility (CSR)/sustainability funds. A CSR model directly relevant to coral reefs is illustrated by the airline sector case study below.

In general, donor support is often not a long-term solution at the site level. Donors may shift strategies or priorities that can lead to reduced funding for certain conservation programs. Such a shift can have significant repercussions for conservation organizations and protected area managers. Consequently, donor funding should be viewed as a mechanism that attracts additional funding, incubates new financing mechanisms or untested conservation approaches that cannot yet attract public monies, or builds internal capacity.



Photo contributed by Akajima-Okinawa, Japan, The Ocean Agency

CrowdFunding

Some NGOs and CTFs are expanding their individual donor base through the use of crowdfunding to raise money from individuals. “Crowdfunding” refers to a campaign or modality of motivating people to make direct contributions, usually through a dedicated technology platform. Crowdfunding is often most successful if targeted at a highly marketable concept (e.g., charismatic megafauna protection) and can be more difficult for concepts that are harder to articulate to non-specialists. Crowdfunding tools include text-to-donate features, QR codes that link to donor pages, as well as specific web-based platforms such as “Causes”. Typically, a crowdfunding scheme revolves around a specific campaign, and a specific revenue target. More broadly, NGOs, CTFs and PAs can seek to raise contributions from visitors, over and above any required entry fee or tax, as well as from any individual (nationally or internationally) who may be concerned about the health of a reef. While individual donations, in aggregate, rarely amount to a significant source of financing compared to multilateral or foundation donors, these fundraising campaigns aimed at individuals are an effective means of educating the public on conservation and protection issues, influencing public opinion, and building support for conservation. For example, in 2014, The Ocean Cleanup raised over \$2 million in 100 days – over 38,000 funders participated. Also in 2017, the island nation of Palau successfully crowdfunded over \$100,000 to support the implementation costs of its newly-created National Marine Sanctuary. Recent research found that since 2009, 577 conservation-oriented projects have raised \$4.9 million (Gallo-Cajiao et al., 2018). The project-leaders were in 38 countries but the projects took place across 80 countries. The researchers also noted that a third of the projects were delivered in different countries than those where their donors were based.

CASE STUDY

Corporate Social Responsibility and Sustainability (Private Sector Philanthropy)

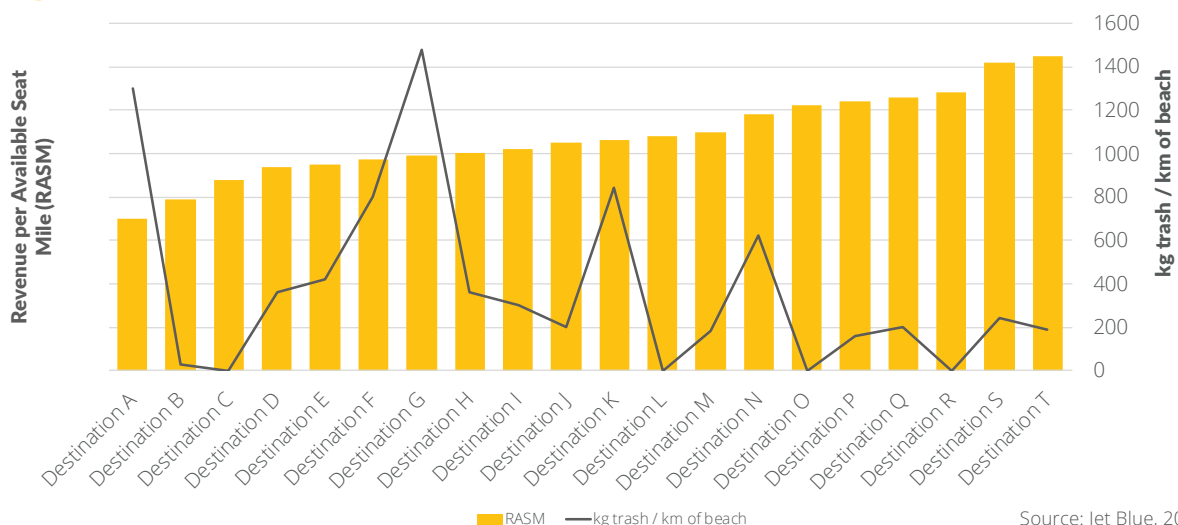
“Corporate Social Responsibility” society and can include direct actions by corporations as well. Private industry often has numerous incentives to participate in conserving biodiversity, and specifically in reef conservation. Unlike individuals who often give altruistically, corporate contributions are typically tied to business goals, which might include protecting a supply chain, improving brand image with target customers, or promoting a positive reputation among investors.

The airline industry presents an interesting example of a potential source of private sector philanthropy. Coral reefs are attractive tourist destinations, providing ample recreation opportunities such as diving, snorkeling, and pristine beaches. The airline sector provides a vital role in taking tourists to these destinations. Improved ecological integrity and biodiversity promotes further tourism, thus creating an incentive for airlines to ensure the health of coral reef sites.

A study conducted by JetBlue, The Ocean Foundation, and AT Kearney aimed at identifying the correlation between reef health and airline revenue. In particular, clean and intact beaches in the Caribbean were compared to JetBlue’s profitability in the region via the key industry metric of revenue per seat mile (RASM). Destinations in Latin America and the Caribbean are one-third of JetBlue’s route network, and the airline flies 1.8 million tourists a year to 23 Caribbean destinations (Jet Blue, 2015). While these tourists benefit local businesses, they also contribute to more than 100 million tons of trash that end up unprocessed or in local waterways every year in Latin America and the Caribbean (UNEP, 2014); this is a deterrent to tourist satisfaction. Keeping these areas clean and trash-free will allow for more tourists to continue coming to this attractive destination rather than choosing another location.

RASM is the airline industry’s main economic measure, and is calculated by taking an airline’s operating revenue and dividing that number by the number of available seat miles. The higher the RASM, the higher the profitability of an airline. The following graph shows a negative correlation between beach trash across selected JetBlue Caribbean destinations and RASM. In other words, as beach trash decreases, RASM seems to increase:

Figure 4: RASM compared to kg trash in selected JetBlue Caribbean locations.



Source: Jet Blue, 2015

The study did find positive correlations with mangrove health and limited waste on shorelines on RASM, but the model was not strongly statistically significant and requires further research for validation. This case is a direct example of how a large private sector enterprise reliant on the health of a natural ecosystem has an incentive to work with public entities to create a cost-efficient scenario. The research could be part of a compelling case statement for why airlines should put more dollars into marine and reef conservation; framing the pitch in terms and metrics typically used by the industry could make for a more persuasive argument. JetBlue's CSR initiatives do show potential - currently including climate leadership, sustainable operations, and sustainable tourism with the company being compliant to Environmental Social Governance Reporting since 2006. This includes being part of the Carbon Fund and offsetting more than 1.5 billion pounds of CO₂e since 2008.

3.2 Government Finance and Policy

Governments have a large role to play in financing coral reef conservation and creating a climate for investment. Achieving increased government financial support for conservation is an important objective that needs to figure as part of any sustainable financing strategy. From increased budget allocations to taxation, licensing and levying authority to the issuance of bonds in support of conservation actions to the setting of policy, the role of governments in financing conservation is broad and essential. In addition to increased government revenue, there is the potential for governments to meet conservation objectives encouraging an increase in revenue flow from the private sector. This can be achieved through policy initiatives aimed at reducing development impacts on reef and marine systems and creating market mechanisms.

3.2.1 Direct Government Expenditures

As per reporting by the Convention on Biological Diversity (CBD), "for some 40 countries, the average environmental expenditure of central governments as a percentage of gross domestic product has been stuck around 0.2 per cent over the period between 2002 and 2010". Natural resource expenditures have strong potential to grow in each country, as understanding of the economic importance of conserving ecosystems has grown globally. With improved results-oriented budgeting and better communication of the economic value of coral reefs, it is very likely that environmental

ministries and protected area agencies can increase their annual budget allocations. However, governments are constantly working in limited fiscal space where they feel politically constrained to raise taxes on the private sector while facing significant competing finance needs such as education, health, and infrastructure.

In addition to increases in revolving (or operational) budgets, national or state governments can also allocate investment capital – often an easier sell with parliament. A conservation example that could provide a pathway in the future is land acquisition by governments. For example, the state of Florida in the United States has an annual land acquisition budget of \$300 million. Preserving Florida's natural environment is essential given its contribution to its tourism industry, estimated at \$57 billion per year (Farr and Brock, 2006). In the case of coral reefs, targeting land buybacks adjacent to reefs could prove beneficial from a conservation and economic perspective in the long run. These purchases could be undertaken by Government or through donors. Many countries have established private conservation organizations that can purchase land for conservation as part of their mandates. This is certainly true for conservation trust funds (see Section 3.7). Other NGOs have been set up as "land trusts" with a mandate to purchase lands specifically for conservation. These lands are purchased for conservation purposes and are then held and managed in perpetuity.

Where regulation is favorable, some private sector entities and NGOs are considering land purchases for conservation purposes and exploring the potential to then sell credits to developers in need of meeting

mitigation/offset requirements. In this way, the land purchased for conservation is paid for by developers in need of offsets to meet licensing requirements.

3.2.2 Regulated Markets

Development of government regulations can stimulate the development of market mechanisms that support conservation. These mechanisms result from what is called regulated (or “cap and trade”) markets – markets over which government bodies exert a level of oversight and control. In the conservation arena, regulations over pollution and impacts on natural resources have created various market opportunities and drivers (or incentives for private investment).

In Section 3.5 the discussion on biodiversity offsets points to the potential of developing regulations that require companies to mitigate their impacts and where mitigation measures were inadequate, offset residual impacts. Such regulatory systems in the United States, Australia, and other countries have led to programs such as wetland, species, and habitat banking – generating billions of dollars annually for restoration and management. Under these programs, private sector entities purchase land for conservation and restoration purposes, ensure that the land or resource is secured and certified, and then sell credits (conservation units) to a developer who has been required to offset their impacts prior to issuing a construction permit or license. In some cases, private landowners place “conservation easements” on their land in perpetuity and then sell those credits to businesses needing an appropriate offset or tax credit. The legislation, or regulations, requiring that offsets must be secured prior to licensing, creates certainty in the market, allows the private sector to invest in conservation actions, and creates a market for conservation. Working with governments to require effective mitigation and offset policy can greatly increase the flow of funding to conservation from the private sector.

The mitigation banking sector in the United States is a case in point. The number of mitigation banks in the US has grown exponentially from an estimated 46 authorized mitigation banks in 1992 after the passage of the Clean Water Act to over 2,000 approved mitigation banks in 2015. Many more mitigation banks

are undergoing review before final approval. Although precise figures are difficult to ascertain, private estimates indicate a total yearly credit sales volume in the US of over \$2 billion.

3.2.3 Pollution credits

Pollution credits are a technique for limiting or reducing pollution using a market mechanism. In a “cap and trade” credit system, for example, a government sets a cap on the total amount of emissions of a particular pollutant. If a business reduces its pollution or maximizes efficiency and does not use all of its allocated credits, it can sell the credits to another entity which is exceeding its allocated pollution limits credits. In this way, a total cap on emissions can be maintained, with heavily polluting companies essentially being fined while efficient ones are rewarded. Trading of credits can become a secondary market. The most successful market known is the US cap and trade market for NOx and SOx that greatly reduced emissions in an extremely economical manner.

One emerging form of controlling water pollution from run-off and discharges is based on “nutrient trading”. Nutrient credits and banking in the Potomac River watershed and Chesapeake Bay was initially established as a response to rising levels of nutrient pollution in the Chesapeake Bay by a task force of key stakeholders including the US EPA, the Governors of Maryland, Virginia and Pennsylvania, the Mayor of Washington, DC and the chair of a tri-state legislative body known as the Chesapeake Bay Commission; West Virginia became involved later. The jurisdictions began exploring the idea of nutrient credits in the late 1990s and viewed the process as key to reducing both point and non-point sources of pollution, including reduction of agricultural run-off. In 2005, Virginia introduced its nutrient trading program which is administered by the Department of Environmental Quality and was the first of the group of states to do so. Pennsylvania developed its nutrient trading program in 2006, Maryland in 2008, while West Virginia launched its program in 2011. All States now operate some version of a nutrient trading scheme and have established geographic trading basins based on major tributaries into the Bay.

The Virginia program enables farmers to receive offset payments from transportation construction projects

such as roads being built by the Virginia Department of Transportation (NRCS, 2015). Nutrient banks – private entities that aggregate credits from farmers – allow permanent nutrient reductions such as converting sub-prime farmland to forest or agroforestry (NRCS, 2015). Nutrient trading in Virginia is expected to reach \$2 million worth of phosphorous credits in 2015, providing a strong impact in reducing agricultural pollutants in watersheds. Government programs and policies are key towards pushing this initiative to be successful, as the Natural Resources Conservation Service part of the United States Department of Agriculture has supported the development of Virginia’s nutrient trading efforts, recently with a \$600,000 Conservation Innovation Grant in 2012.

Development of markets do represent a challenge, not only in terms of developing the systems of supply and demand but also in terms of ensuring that the markets are working. In the case of nutrient credits, this requires coordination across different jurisdictions as well as the establishment of effective monitoring mechanisms that can demonstrate whether reductions in pollution levels have been achieved. This is an example of a financial mechanism that has the potential to generate significant revenue but is complex to put in place. Development of an effective regulatory environment along with the appropriate financial mechanisms will also require a substantial investment in building capacity.

In the case of coral reefs, nutrient banks that promote sustainable land use, improved agricultural and/or aquaculture around a reef can reduce point and non-point pollution as well as provide financial inflows to local stakeholders along with boosting conservation priorities in the site. Such efforts would need to be coordinated with activities aimed at improving wastewater treatment. Establishing effective pricing to inhibit pollution and other market-based approaches can lead to more efficient investment that reduces levels of contamination and contributes to the health of reef systems at a very low cost to the government.

3.2.4 Taxes, Subsidies, and other Fiscal Policies

Through its tax and fiscal policy, a government has the ability to promote certain industries and behaviors and to deter others. Subsidies are tools that a government uses to help support an industry that would otherwise have trouble competing, encourage new industries to take root, or drive social or environmental behaviors. Examples of subsidies include tax incentives, price supports, government grants and assistance, and low interest government loans. From a conservation perspective, subsidies can be beneficial, harmful, or neutral. Beneficial subsidies are those that provide incentives for conservation activities, promote conservation and environmental enterprises, and create disincentives for destructive practices. Harmful subsidies are those with unintended consequences that increase environmental destruction and, as a result, increase the cost of conservation. Indeed, one approach to conservation finance is to identify and eliminate harmful subsidies that drive up conservation costs. This saves the government twice: first they avoid the original subsidy and second, they reduce future costs for conservation and restoration.

For example, subsidies in the fishing sector can create incentives for increased fishing effort. Globally, fisheries subsidies are estimated to be at least \$35 billion, including \$20 billion of subsidies that are labeled as “harmful” (Sumaila et al., 2016). Only 16% of fisheries subsidies reach small-scale fishers, increasing the economic vulnerability of this sector and harming food security and resilience for communities (Schuhbauer et al. 2017; Bell et al. 2018). Most fisheries subsidies create perverse incentives that “reinforce the poverty trap” (Rangeley and Davies, 2012). In the Pacific Ocean, over half of fisheries subsidies come from externally developed nations, and subsidized foreign fishing fleets can negatively impact both the ecology and the economy of the region (Sumaila et al., 2014) through overfishing and destructive fishing gear. As a result, the cost of conservation and economic development can be driven up; rather than finding funds to cover these increased costs, an alternative approach is to seek to drive costs down by eliminating the harmful subsidy.

4.0 Finance Tools



Photo contributed by Cristina Mittermier, Blenny, Jardines De La Reina

4.1 Overview

Finance tools, also called, finance solutions or financial mechanisms, in the context of conservation, are a means of securing adequate and reliable streams of funding and aligning incentives to meet conservation objectives. A finance tool usually has several elements, for which there are multiple considerations:

- Finance Source – Who provides the funding? What is the source’s motivation? What benefit does the source receive in exchange for the funding? Does the source expect a financial return, a product or service, a policy outcome such as conservation or economic development, or some mix? Does the source engage in a long-term relationship or a one-time transaction? Some examples of sources are donors, tourists, tax-payers, corporations, private investors, institutional investors, and the government.
- Intermediary – Who receives and manages the funding? Does the intermediary use the funding directly, or pass it on to a beneficiary? What fees or transaction costs are involved, and how are they allocated? By what processes is the funding distributed, and what mechanisms ensure fairness, transparency and accountability? Intermediaries typically need to have clear programs in place to measure financial outcomes. Some examples of intermediaries are tax authorities, local, regional or national governments, Conservation Trust Funds (CTFs), and businesses.
- Recipient / Beneficiary – Who uses the funding to achieve conservation outcomes? Typically, this is a protected area, a civil society organization (CSO), a government agency, or a community organization. Beneficiaries typically need to have clear programs in place to measure conservation outcomes.
- Structure and Terms – How is the mechanism designed? What ensures that funding moves from Source to Recipient to Beneficiary, and that benefits return to the Source? The structure and terms might rely on a policy framework, legal structure, legal contract, negotiated agreement, or reliance on or creation of a market through regulation.
- Measurement and Verification – How are outcomes measured? What actors are responsible for

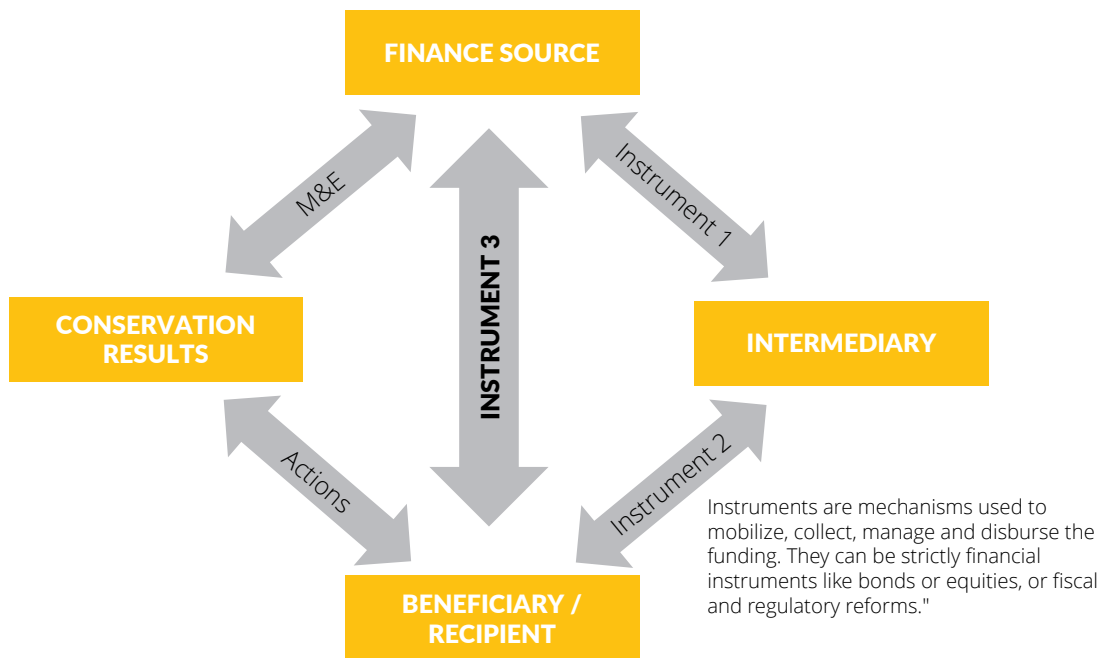
measurement and reporting? What approaches are in place to ensure objectivity and independence in the measurement and verification process? What systems are in place to review and evaluate the effectiveness of the tool or mechanism in achieving its intended goals, and which stakeholders take part in that review process? What are the time periods for measurement and verification?

debt-for-nature swaps, bonds, and reef insurance.

- Conservation Trust Funds (CTFs) - private, legally independent institutions that catalyze funding and resources for biodiversity conservation.

The finance tools are described in the following sections, with specific cases used where possible to illustrate how each mechanism has worked in the field. These tools are broad, in the sense that they vary greatly in the technical requirements to create them

Figure 5: Standard graphical representation of a finance tool



Finance tools for reef conservation are wide ranging, and are broadly categorized in this section into the following five themes:

- Charges, fees, taxation systems and other public financing, including special use permits, entrance fees, concessions, and taxes and levies.
- Payments for ecosystem services (PES) -- mechanisms such as blue carbon
- Biodiversity offsets -- ways in which the private sector can follow the 'no net loss' principle to offset their environmental damages.
- Investment and other financing facilities that support conservation enterprises, including commercial incubators, impact investments,

4.2 Charges, Fees and Taxation Systems

Charges and fee systems can generate resources for protected areas by charging users of a public good (in this case, nature) for the benefit they receive (e.g., recreation) or charging actors that damage or destroy nature. The proceeds can be used to fund conservation activities. These approaches can be especially valuable in funding reef conservation due to the high volume of tourists that visit discrete coral reef areas (e.g., marine protected areas). Requiring visitors and site operators to pay a certain amount to utilize or enjoy the natural resources of a site allows for ongoing financing. There are many different types of charge and fee systems, such as special use permits, entrance/access fees, and concessions (MPAFAC, 2017).

Taxation and levy systems are another means of charging users of natural resources for the management costs of those resources. For example, the government of the Republic of Palau charges a tax to all tourists that enter the country; in turn, this tax is used for the management of Palau's natural resources. This is in addition to the user fees charged to access particular marine protected areas such as the Rock Islands. In addition to generating revenue, taxes can also act as an economic incentive that influences individual and collective behavior that can have positive, negative, or mixed impacts on coral reef health (e.g., taxes paid by extractive industries).

It is essential to highlight the importance of ensuring that any taxes (or at least a portion) or fees collected are directed to meet conservation needs. When the proceeds are paid into a central government account or the national treasury (as most "taxes" are), concerns arise that the funds may not be allocated to the conservation purposes for which they were raised. In some circumstances, providing MPAs or conservation entities the ability to collect and manage fees directly should enhance the flow of funds to conservation. In other circumstances, a government or independent trust fund or a third-party governance body may deliver the best conservation impact. In some cases, policy changes will be required; in others, specific administrative actions could be agreed to ensure the effective flow of funds. The various charges, fees, and taxation systems are described below.

4.2.1 Entrance/Access Fees

Entrance or visitor fees are charged directly to users of a protected area. They are very direct sources of income and thus important tools that allow a protected area to raise and retain more consistent revenue for operating costs. These fees vary in their levels across the world, and are typically charged when a visitor wants to enter a particular area. Fees are either collected by the park service itself, or by third parties such as tour operators who can collect the fees from their visitors and pay them to the PA. In countries such as the United States, there are options such as obtaining annual or lifetime passes to protected areas rather than a one-time fee for a day. Countries can apply a variety of options to collect funds from users.

Single user entry fees are not the only revenue generating option in this financial tool category as other fees for accessing or using protected areas can also be considered. For example, there can be boat fees (as demonstrated by the Tanzania marine park case study below), fisheries licensing fees, or additional fees for visitors/tourists to visit certain facilities within the PA. In fact, development of facilities to attract tourists could create multiple opportunities for generating revenue from entrance fee charges, special activity fees, and concession sales. Charges vary in different areas and depend on several different factors which can include the amount of visitor interest in the site, the special nature of a particular area or species that might create higher willingness to pay, the amount of private sector involvement, the level of government oversight, and desired level of costs recovery. In some cases, user fees and charges can meet or exceed costs, leading to a surplus, while in others they will only cover some percentage of what is required.

The biggest advantage of entrance/access fees is that they can be a steady stream of revenue, as long as tourist numbers remain stable or are growing. If a protected area can maintain its facilities and is a strong attraction for visitors, then access fees are one of the most effective financial tools to support conservation. Furthermore, with fees there is also the added advantage of flexibility. Fees can be raised at any given time on a local level if demand for site visitation is consistent or increasing, allowing for increased revenue.

There are several disadvantages of fees. Tourism can be a fickle industry that is easily affected by disease, political instability, international terrorism, among others. One event can easily disrupt visitation and lead to decreases in revenue. Other challenges are that in certain remote areas, fee programs can be costly to operate, requiring constant monitoring, personnel, and other mechanisms in place to ensure effective collection processes. This is especially true for the marine protected areas and reef ecosystems that are only accessible by boat and are located significantly offshore. Where single user fees prove to be too expensive to collect, the option of charging other fees should be considered such as activity fees that are collected by tour operators or attaching the fee to airline tickets or hotel charges. Given that collecting

Table 2: Entrance fee summary

Conservation Activity Relevance		<ul style="list-style-type: none"> Creation, development and management of MPAs Sustainable tourism
Ease of Implementation (set-up from design through rollout, costs included)	High	<ul style="list-style-type: none"> Charging entrance fees for visitors can potentially be challenging given the site location but in general this financial tool requires less technical complexity than others. Costs would be required to create, establish, and monitor the incoming entrance fees but unlikely to be extensive.
Revenue potential	Medium	<ul style="list-style-type: none"> This would depend on the number of visitors to a certain site and would be analyzed as part of the business plan. Efforts may be needed to work with partners to increase visitor demand.
Key Considerations		<ul style="list-style-type: none"> Requires site-level visitation to generate revenue. Requires transparent and effective collection and monitoring mechanisms to generate the most possible revenue. Need to get the price right – important that fees are not too low so that rents are lost, but also should not exceed willingness to pay. Essential that the funds are directed at managing the resource and not diverted to alternate government needs. External factors, including weather events and natural disasters, public health crises, the political climate, and the global economy, can affect tourist behavior and therefore cause revenue fluctuations. Use of a trust fund can stabilize fluctuations.

individual fees is to always practical, fee revenue generation could come from different entities or businesses located around the site that people are visiting. For example, part of a guest stay at a hotel near the reef site could include a conservation fee allowing hotel visitors to visit the site. Hotel owners can be monitored periodically and a fine system could be set up for hotels who don't have their visitors pay to enter reef areas. Alternatively, another model could have designated sites where all tourists could travel to, pay the fee, and collect a receipt to show when entering the protected area. While challenges exist towards fee revenue collection, creatively thinking of ways to allow for a more streamlined fee collection process will allow for improved revenue generation potential in the long-term.

The local benefit of entry and access fee systems depends on the overall national PA structure. If the national structure allows for local PAs to retain all or most of the fees they generate, then fee systems can be a source of financial sustainability for the local parks. However, some countries' systems require that fees collected locally be remitted to the national PA system and then reallocated across the national system. In developing an entry/access fee system, it is important to be cognizant of the country's policy, to understand what percentage of collected fees can be retained and used by the park that collected them.

4.2.2 Special Use Permits

Special use permits in marine protected areas are defined as “permits or fees for activities that provide a benefit to an individual, group, or organization seeking access to and use of MPA resources, in contrast to activities that benefit visitors or the public at large” (MPAFAC, 2017). These permits almost always have a strong component of conditionality attached, such as an allowance for one-time use or for activities restricted to a particular zone. Examples include site permits for particular research, filming, diving, or other activities that provide access for specific access to targeted areas.



Photo contributed by Erik Lukas, Alor Indonesia

CASE STUDY

Tanzania Marine Park Pricing

Tanzania Marine Park and Marine Reserves total more than 100,000 hectares, and the following national fee structure is followed (Ruitenbeek et al., 2005). This is a successful case of the National Marine Parks and Reserves Unit making local committees honorary wardens of the sites, and “entry and user fees [being] adequate to finance weekly patrols as staff on the islands” (Ruitenbeek et al., 2005). The following table highlights the fee structure of the sites, resulting in about \$500,000 in revenue every single year:

Table 3: Tanzania marine park and reserve fee structure

Entrance fee per person per day (Marine Parks)	Citizen	Non-citizen
>16 years of age	Tshs. 2,360.00	US\$ 23.60
5 to 16 years of age	Tshs. 1,180.00	US\$ 11.80
<5 years of age	Free	Free
Entrance fee per person per day (Marine Reserves)	Citizen	Non-citizen
>16 years of age	Tshs. 2,360.00	US\$ 11.80
5 to 16 years of age	Tshs. 1,180.00	US\$ 5.90
<5 years of age	Free	Free
Boat and sport fishing licenses (Marine Parks only)		
Boats powered by ≤ 40hp engine trading in marine resources	US\$ 59 per month	
Boats powered by > 40hp engine trading in marine resources	US\$ 118 per month	
Visiting leisure boats privately owned and non-commercial	US\$ 118 per entry for maximum 5 days	
Visiting commercial leisure boats, including charters	US \$236 per entry for maximum 5 days	
Game fishing boat	US \$236 per entry up to 5 days	
Cruise ship/tourist passenger boat	US\$ 1180 per entry up to 5 days	
Visitors staying in lodges and fishing in boats owned by a registered business in the Marine Parks or a visiting game fishing boat	US\$ 59 per entry up to 5 days	
Fisherman on game fishing boat	US\$ 59 per person for period up to 5 days	
Licensed Boat Operating within Marine Reserves Only		
Passenger boats with carrying capacity of seven passengers	US\$ 354 per month	
Local registered leisure boat	US\$ 354 per month	
Foreign registered leisure boat	US\$ 59 per entry	
Concession		
Permission to operate public services in the Marine Reserves	US\$ 1,416 per month	
Permission to operate public services in the Marine Park	US\$ 1,770 per month	
Night camping fee (Marine Parks and Marine Reserves)	US\$ 23.60 per night	
Commercial Filming Fees		
Image capture of any type for commercial purposes	US\$ 1,180 per period of up to seven days	

Source: (Ruitenbeek et al., 2005) and Tanzania National Parks (2019). All fees include VAT.

These permits are advantageous in that they can prove especially lucrative depending on specific site characteristics, purpose of the use, and demand. Secondly, given that these are localized fees, the revenue raised often can go directly towards the site rather than into a national account, depending on the legal conditions in the country. Maintenance of these fees at the site is essential for meeting financial sustainability goals. One of the main disadvantages,

however, is that these fees are not a consistent source of finance. One-off permits issued to users may only prove to be short-term boosts to a protected area’s budget. The ability to market these permits to specific users, for a particular special event for example, could help to normalize cash flow to some extent, but it is challenging to develop an entire business plan around what is effectively a one-off opportunity.

Table 4: Special use permit summary

Conservation Activity Relevance		<ul style="list-style-type: none"> Creation, development and management of MPAs Sustainable fisheries Sustainable tourism
Ease of Implementation (set-up from design through rollout, costs included)	Medium-High	<ul style="list-style-type: none"> Dependent on the ability to develop a particular offering and to market it appropriately. May require special agreements with specific agencies of government and/or private sector. Low costs (chiefly monitoring and enforcement) once a permit is granted that generates revenue for the site.
Revenue potential	Medium	<ul style="list-style-type: none"> Depending on which private entity the permit is granted towards, the type of use/demand, and how regularly the use permits can be granted.
Key Considerations		<ul style="list-style-type: none"> Requires private sector engagement through established industries. Requires oversight to ensure that the site is not being damaged in any way through the use of the permit. Often very site dependent which will determine demand. Essential to retain at least part of the fees locally or for conservation purposes.

4.2.3 Concessions

Concessions can be defined as “a lease, license, easement or permit for an operation undertaken by any party other than the protected area agency” (Thompson et al., 2014). Typical examples of tourist concessions include visitor services and site accommodation.



Photo contributed by Grant Thomas

Table 5: Concessions summary

Conservation Activity Relevance		<ul style="list-style-type: none"> Creation, development and management of MPAs Sustainable fisheries Sustainable tourism
Ease of Implementation (set-up from design through rollout, costs included)	Medium-High	<ul style="list-style-type: none"> Countries, or PA authorities will need to develop a concession policy and a process for concession offerings, selection, and monitoring. Technical capacity is required by site authorities to identify concessionaires and negotiate contracts with them. Capacity need to monitor and audit the concessions to ensure compliance with concession contracts. The majority of costs are regarding implementation and monitoring of the concessions scheme.
Revenue potential	Medium	<ul style="list-style-type: none"> Revenue is dependent on visitor/user numbers. Opportunities for collaboration between government and private sector to increase opportunities for revenue through investments and marketing.
Key Considerations		<ul style="list-style-type: none"> Requires private sector engagement through established industries to have a successful concessions agreement. Requires existing consumer demand. Requires expertise to establish appropriate concession fees to ensure adequate revenue flow for conservation as well as incentives for investment

Concessions awarded to an operator within a protected area are given for a certain activity and normally for a specified time-period with a potential for renewal based on performance. In most cases, concession contracts are signed with private individuals or companies creating an effective public private partnership for financing conservation. Concession fees are usually structured in several ways. They can be based on the total number of customers a concession serves during a yearly time period, a percentage of gross income earned annually by the operator, an annual fixed fee (ex. a bed-night fee for accommodations), or a combination of the above (MPAFAC, 2017). The following two short cases for the United States are given as examples by the U.S Fisheries Advisory Committee (MPAFAC, 2017):

- Hawaii Beach Concessions: Concession stands on the beach such as food services and boat rentals pay fees (approximately \$10,000 per month) plus 10% of income to the park service. This revenue helps maintain the beach and allows for other city expenses as well, such as lifeguard salaries and conservation activities.
- Florida's Dry Tortugas National Park: This park has a concession contract for ferry and seaplane services to Garden Key, one of the main islands inside the park. These concessions are a strong source of revenue for the site. This park also generates money through a fixed authorization fee for operators providing travel services to the park, charging about \$250 - \$2,000 per authorization.

Like entrance fees, one of the main advantages of concessions are that they can be reliable and sustainable. Assuming strong and steady tourism demand, concessions can provide a significant reliable revenue stream over the medium to long term, and even reduce on-site costs for a site manager's management responsibilities. Once again, the MPA or management authority must have the ability to access these revenues for strong conservation outcomes. This can include the reduction of facilities costs that a concessionaire is operating and marketing costs to get more visitors to the site. For example, concessionaires will often take on responsibility for marketing in order to attract more tourists to their facilities and/or tours. This will result in increased revenue for the MPA without additional costs. Another advantage is that all building and facilities developed by the

concessionaire generally will revert to the property of the protected area at the end of the lease. As a result, the MPA acquires assets that can be leased for future concessions. Finally, concessions contracts can serve in the joint goal of helping to manage park access and improve the chances that visitors will not engage in destructive practices (e.g. standing on coral when snorkeling) because the operators have a strong interest in reef health and can help to police visitor behavior. This is especially true when concessionaires are held accountable for specific areas of reef, beach, or mooring sites.

One challenge in implementing concessions is the inequality in skill and knowledge for negotiating fees. Experience indicates that protected area managers, as a result of inexperience or political pressure, often set very low concession fees and deny themselves and the protected area the benefits from the business operations, allowing the concessionaire to capture more of the profits. Moreover, it can be difficult to monitor the income earned from the concessions. Some countries have addressed this by charging a fee per person, assuming that it would be easier to track tourist numbers than revenue. However, in each case operators can under-report (MPAFAC, 2017). Some funding is also required to maintain and monitor concession schemes to ensure conservation objectives but this should be included in concession revenues.

4.2.4 Green Taxes

Those specifically targeting environmental or conservation-related activities – are another means of securing income from marine resource users including tourists, businesses, fisherfolk, and coastal residents. Taxes are imposed by government, at the local, state/province or national level. In the context of conservation, green taxes act as an economic incentive to influence individual and collective behavior that can have positive, negative, or mixed impacts on coral reef health. For example, taxes on pollution can be intended to decrease pollution that harms the reef. In the best case scenarios, all or a significant portion of the revenue is earmarked to fund that conservation effort, which might be the costs of managing a protected area, or programs to reduce or mitigate the impact on the protected area.

Table 6: Green taxes summary

Conservation Activity Relevance		<ul style="list-style-type: none"> Creation, development and management of MPAs Sustainable fisheries Restoration of coral ecosystems Suppression of external pressure factors Sustainable tourism
Ease of Implementation (set-up from design through roll-out, costs included)	Medium	<ul style="list-style-type: none"> If existing tax collection infrastructure is not already in place, then there will be upfront costs to create that system. On an ongoing basis, costs will depend on the complexity of the tax and number of taxpayers. Cost-Benefit analysis is required to evaluate financial and economic aspects of any tax or levy system.
Revenue potential	Medium-High	<ul style="list-style-type: none"> Highly variable depending on the number of potential taxpayers. System will need to be in place to direct the tax payments to meet the specific conservation objectives.
Key Considerations		<ul style="list-style-type: none"> Taxes are a powerful tool to drive policy, but require a robust policy framework. This is not an effective tool if the government has not established reef conservation goals and targets, or lacks the political will to tax bad actors who contribute to reef degradation. Taxes usually enter general treasury accounts and are often difficult to earmark for conservation. Unless the tax has been specifically designed for earmarking, it is better to use polluter pays principles so the tax itself has positive impact and the revenue generated is a co-benefit. It is challenging to produce well-designed tax schemes that promote sustainable behavior and/or reduce destructive behavior, and avoid unintended consequences behavior. Significant government involvement is required, as well as lobbying to influence public policy.

In 2009, the Maldives introduced a Green Tax, a tax payable by tourists who stay in resorts, hotels, and guesthouses and on tourist vessels, in an effort to recoup some funding to mitigate the impact of climate change and rising sea levels (Sirilal, 2009). At the time, roughly a quarter of the Maldives' gross domestic product came from tourism. Currently, the Green Tax rate is \$6 per day (\$3/day for guesthouses). However, some local criticism is that the tax is not tied tightly enough to environmental programs, and that there are not clear guidelines on how the taxes are to be spent. For tax programs to be fully effective as a conservation tool, it is important that the use of the funds is clearly specified and that the tax proceeds are not fungible.

One way to ensure that the tax proceeds are directed to conservation efforts is to require that the funding go directly to an independent institution like a Conservation Trust Fund (CTF). This may relieve some pressure for the tax proceeds to be used by the general Treasury. For example, PACT Belize serves as a grant-making body to redistribute tax revenue to conservation programs. PACT receives proceeds directly from a Conservation Fee of \$3.75 paid by overnight visitors to Belize and a 15% commission from a cruise ship passenger head tax – PACT then makes grants to fund conservation efforts in Belize's protected areas. Through this approach, all parties can be sure that the funds are used for their intended conservation purpose.

4.3 Payments for Ecosystem Services (PES)

Payments for ecosystem services, also known as payment for environmental services, (PES) is a term used to describe a range of schemes through which the beneficiaries, or users, of ecosystem services provide payment to the stewards, or providers of those services. The beneficiaries may be individuals, communities, businesses or public bodies. In economic terms, ecosystem services are generally treated as a positive externality – people, communities and businesses benefit from them without having to pay or account for them. Many coral ecosystem services, such as carbon storage, flood prevention, sediment capture, prevention of saltwater intrusion, and marine life habitat are not exchanged or traded on any kind of market. As well, these services are not easily quantifiable; there is no market price for these services, and thus there is no obvious financial (or business) incentive for people to provide and maintain them. To address this issue, PES programs can be designed and implemented to promote conservation outcomes and provide cost savings and/or income to stakeholders involved.

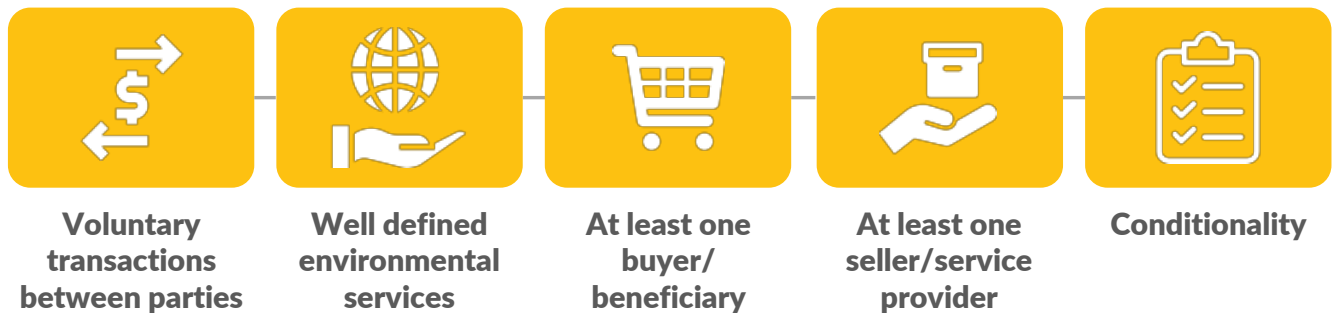
Table 7: Payments for Ecosystem Services (PES) summary

Conservation Activity Relevance		<ul style="list-style-type: none"> Creation, development and management of MPAs Sustainable fisheries Restoration of coral ecosystems Suppression of external pressure factors Sustainable tourism
Ease of Implementation (set-up from design through roll-out, costs included)	Low-Medium	<ul style="list-style-type: none"> PES systems are often complex and require substantial initial investment. They should only be used where substantial economic value is uncaptured and can be captured through a simple mechanism by a concentrated group of beneficiaries. PES schemes require a strong degree of technical capacity and time to engage with stakeholders, create the scheme, have the necessary oversight etc. PES also requires the ability to develop markets and establish transactions – both of which are challenging.
Revenue potential	Medium-High	<ul style="list-style-type: none"> Potentially large donors/stakeholders/private sector could be involved. Already the potential market value for carbon sequestration is known to be significant but at this time revenue options are still limited due to market constraints.
Key Considerations		<ul style="list-style-type: none"> Requires high degree of government, nonprofit, private sector, and/or local organization involvement to maintain a PES scheme. Requires local community buy-in and engagement. Requires strong oversight and government policy to keep the scheme sustainable over time.

Typically, PES involves financial payments offered to stakeholders for improved environmental management, in exchange for the provision of some particular services. The beneficiary of the ecosystem service pays the service provider while enjoying cost savings and benefits compared to the status quo or alternative options. As an example – private sector operators who directly benefit from the existence of a well-managed reef might pay service providers – local government or communities – for better shoreline protection; the payments are worthwhile to the operator because a degraded reef would cut into

revenue or increase future costs. In order to make such a scheme successful, either the scheme must be created and enforced by the government through regulation (as typically happens in countries like Australia with strong environmental legislation), or the scheme must be transactional, and viewed as clearly beneficial or a “win-win” to all participants. There must be a valued service provided and someone willing to pay for the service, entering into some kind of contract or transaction to obtain the service for an agreed upon price.

Figure 6: Five components of a PES scheme.



One concrete example of a PES system involves payments for 'blue carbon,' defined as the economic service of carbon sequestration via mangroves, salt marshes, and seagrass meadows. Mangroves, critical for erosion control and buffering of waves, are potentially the highest revenue generators from a blue carbon standpoint. Mangroves provide conservation benefits to coral ecosystems. Mangroves provide corals with shade during hot weather events and can limit bleaching, thereby contributing to the productivity of reef systems. (Yates, et al., 2014). Protecting mangroves through blue carbon payments can thus provide a direct benefit to coral reef conservation.

As is the case for forests, emissions reductions pertaining to marine ecosystems are not currently covered by the UNFCCC, meaning that 'blue carbon' credits cannot be traded in regulated carbon markets (Maldonado, 2015). However, economic valuation studies are currently underway to understand the carbon sequestration capacity of mangroves. Studies point to the high productivity of mangrove forests, with carbon production rates equivalent to tropical humid forests, and with a higher percentage of carbon stored underground. Alongi (2014) estimated that mangroves account for only approximately 1% of carbon sequestration by the world's forests, but as coastal habitats they account for 14% of carbon sequestration by the global ocean. The loss of mangroves can result in significant emissions and reducing deforestation of mangrove forests can contribute to lower emission levels.

Studies vary in actual mangrove sequestration value per hectare, but the figure is between 1 – 100 metric tons/hectare per year (Alongi, 2014). This number is currently being researched further given that many different variables such as changes in climate and differing mangrove sedimentation trapping capabilities can vary the results of blue carbon models.

Murray et al. (2011) created a carbon model to approximate a 'blue carbon' price for mangroves in the "carbon market" that can include marine ecosystem service functions. Their research concluded that in Asia, avoiding the conversion of mangrove forests would be economically attractive if the global price of carbon was between \$8/tCO₂ and \$13.00/tCO₂. Hence, blue carbon can be valuable and an incentive against the conversion of mangrove forests. However,

given the current situation with regulations and the lack of a functioning market, the economic benefits are still theoretical or take place as part of boutique arrangements, i.e. – smaller market transactions as part of corporate social responsibility or targeted donor programs. The lack of a current market makes it difficult to gain traction on field schemes at this time, but the climate benefits of protecting mangrove-coral habitats are real and the potential to market these services does need to be explored. In other words, potential does exist in the future for blue carbon as a financing opportunity but it is difficult to utilize as an immediate option.

Other forms of PES such as price premiums for the services required to maintain sustainable fish populations, and insurance schemes that support disaster protection, are included in the *Markets and Impact Investing* section of this report.

4.4 Biodiversity Offsets

Biodiversity offsets are a widely-used regulatory instrument for assigning financial liability for environmental damage to developers, and have significant potential to generate revenue for marine conservation (Bos et al., 2014; Walsh, 2017). Increasingly, governments are developing regulatory frameworks to require the mitigation of impacts on biodiversity and ecosystem services (BES). However, many of these frameworks are still in their nascent stages while development pressures continue to increase.



Photo Contributed By Fabrice Dudenhofer, Maldives

Table 8: Biodiversity offsets summary

Conservation Activity Relevance		<ul style="list-style-type: none"> Creation, development and management of MPAs Sustainable fisheries Restoration of coral ecosystems Suppression of external pressure factors
Ease of Implementation (set-up from design through rollout, costs included)	Low	<ul style="list-style-type: none"> Development of an effective offset system requires very strong governance, including the development, implementation, and enforcement of policies and EIA regulations. Offsets schemes require a strong degree of technical capacity to accurately cost biodiversity losses and define effective investments that can mitigate for losses. Offsets require strong engagement with the private sector, making it difficult for small communities that are impacted by large multinational firms, unless very strong governance is in place. Coral restoration is generally quite expensive and the cost to the company could be quite high. Coral restoration often fails due to diffuse pollution and exogenous factors outside of the control of the offset implementation party.
Revenue potential	High	<ul style="list-style-type: none"> The potential funding for coral reef restoration could be significant if the offset costs paid by the developer truly reflects the cost of restoration, including contingency funds to minimize risks of failure, or the economic cost of coral degradation.
Key Considerations		<ul style="list-style-type: none"> Biodiversity offsets should only be used as part of an effective mitigation strategy, not to maximize the amount of revenue. The amount paid to offset must reflect the true cost to deliver and maintain the conservation outcomes – including long term financing. Government regulation is desirable, including requirements to follow best practice (e.g. Equator Principles). Otherwise it will be necessary to rely on a company's good will or lender oversight. Regulation creates a level playing field. Upfront payments are urged to avoid potential non-payment in the future, with funds put into independent management (e.g. Trust Fund).

A well-developed biodiversity offset program has the potential to contribute significantly to coral reef conservation. Biodiversity offsets represent only one step in a mitigation hierarchy that focuses on both prevention and remediation. The first steps in the mitigation hierarchy aim to avoid impacts through effective planning and assessment. Planning to avoid impacts can in some cases deter projects or result in significant project modifications that can substantially reduce impacts on reef systems. All projects need to adopt careful planning and design approaches early in the project development process to determine how impacts can be avoided and minimized (prevention). Biodiversity offsets (remediation) only kick in after those preventative measures have been taken to specifically address residual impacts. Effective planning can limit the extent of offsets and can lower the overall cost of compliance.

Biodiversity offsets need to be designed and implemented to ensure the delivery of conservation outcomes. This requires adequate management, sufficient financing, and effective monitoring to determine achievement of conservation targets. It also means that all payments should be targeted to achieve those outcomes. For that reason, programs whereby a public agency or third-party collect a fee from developers to address impacts without targeted

conservation outcomes (in lieu of fee programs) have not proven effective in ensuring no net loss.

Coastal development is one of many threats to the health and existence of coral reef systems. Construction undertaken to support the development of facilities for tourism, mining, oil and gas, and ports, among others, leads to both direct and indirect impacts on marine ecosystems and can contribute to loss and degradation of coral reef systems. These impacts must be effectively mitigated with potential impacts anticipated early in the design phase. Where impacts cannot be avoided, reduced, or mitigated, appropriate offsets need to be developed.

One impetus for effective mitigation arises from lenders who apply performance standards. Private sector financial institutions (i.e. Equator Banks) as well as public sector development lenders (International Finance Corporation, IFC, World Bank, regional development banks) have established performance standards that require no net loss or a net gain for BES under certain circumstances. Some companies have adopted BES standards that mimic those of the IFC to improve their BES performance (see Performance Standard 6). However, the greatest driver of private sector action must come from governments, who establish effective regulations

requiring adherence to the mitigation hierarchy, with a focus on avoiding impacts to important reef areas. In some cases avoidance will mean that projects are not approved. In others, mitigation efforts will reduce impacts significantly and developers will be allowed to compensate for, or offset, any residual impacts.

In theory, marine biodiversity offsets allow governments to recover costs of damage to biodiversity and ecosystem services before a planned and permitted development activity begins and the impacts to those services occur. The financing provided to offset impacts should be sufficient to at least achieve no net loss (the development did not cause any new damage) or at best, a net gain of benefits to the ecosystem in question (Figure 7). Key issues around biodiversity offset financing involve both the adequacy of the financing and its duration; offset financing should last at least as long as the impact lasts and, in many cases, will need to be permanent to ensure that offsets are achieved and the conservation outcomes secured.

Despite the growing interest in biodiversity offsets, the appropriateness and efficacy of biodiversity offsets

remain the subject of debate. There are concerns that businesses should not be allowed to purchase the right to harm the environment and even for those who believe that businesses should pay for compensatory actions, there is the complicating issue of equity: impacts to and benefits from the environment are shared by many, so requiring some but not all stakeholders to pay can be controversial (Bos et al., 2014). In most cases, offsets have not been managed well enough to prevent net environmental losses, which occur when the financial requirement is too small to compensate for environmental damage and/or compensation for damage is not scientifically or practically possible (Bos, Pressey, & Stoeckl, 2014). Offsets have been criticized for not meeting ecological targets due to a variety of factors including inadequate planning, finance, compliance, and monitoring.

There have been several major initiatives to improve marine biodiversity offsets in recent years. Bos et al. (2014) recommended nine principles to improve the efficacy of marine biodiversity offsets in the case study context of the Great Barrier Reef, Australia (see Table 8). Principle 8, financial liability, was later expanded to create the first of its kind “calculator” for transparently calculating the financial cost for marine biodiversity offsets (Walsh, 2016; see Table 9):

Figure 7: Conceptualization of marine biodiversity offsets

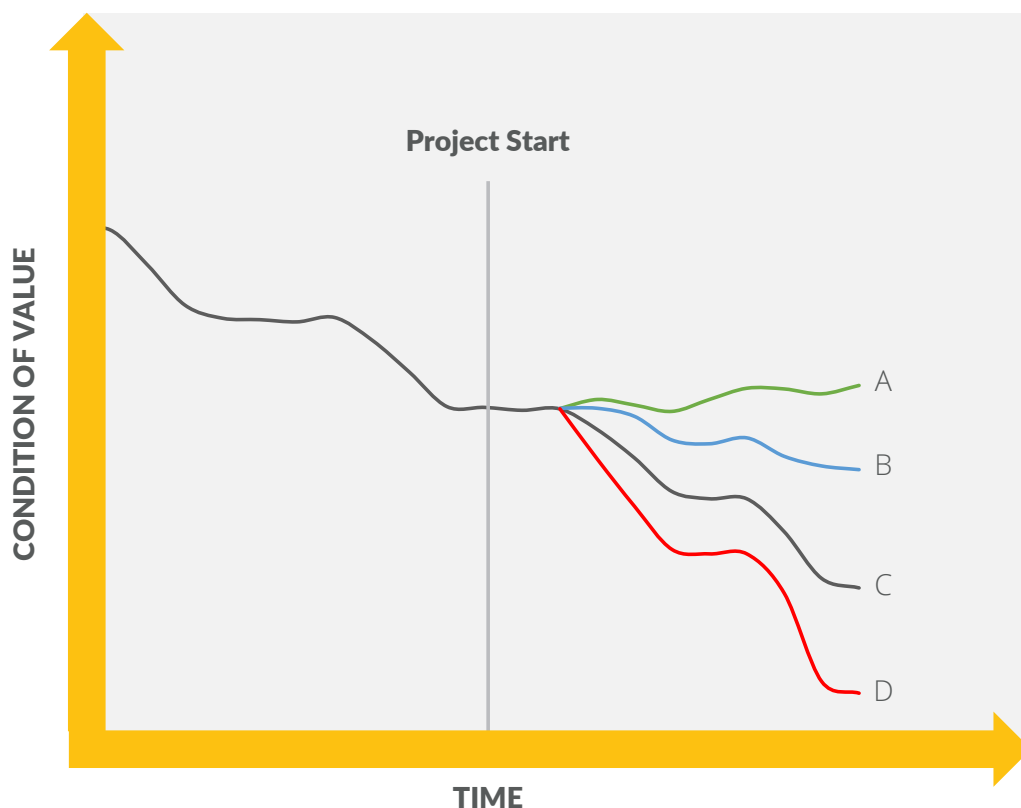


Table 9: Principles for effective marine biodiversity offsets

Number	Concept	Principle
1	Mitigation hierarchy	Offsets should be considered only after impacts are avoided and mitigated
2	Offsetability	The offsetability risk profile should be considered before offset design
3	Net benefits	Offsets should aim to achieve net benefits to all affected values measured against the counterfactual baseline
4	Third-party implementation	Offsets should be designed and implemented by specialist third-party entities
5	Direct and specific action	Offsets should be direct and specific to the impacted values
6	Strategic sites	Offsets should be consolidated into regionally strategic implementation sites with long-term legal protection
7	Temporal strategy	Offsets strategies should minimize the time to achieve net benefits and maintain net benefits in perpetuity
8	Financial liability	Financial liability for offsets should be determined by the costs to achieve and maintain net benefits in perpetuity
9	Monitoring and adaptation	Offsets should be subject to monitoring and adaptive implementation over appropriate durations

Source: Bos et al., 2014

The offset calculator for the Great Barrier Reef has been developed to specifically address offset costs for that ecosystem (it is not intended for use in other marine environments). The calculator identifies twenty-two surrogates as proxies for the biodiversity-related key values and attributes and key environmental processes of the Reef. The calculator uses sedimentation and

nutrient cycling (dissolved inorganic nitrogen) as surrogates for key environmental processes (water quality) and mangrove forests, seagrass meadows, shallow coral reefs (<30m), and salt marshes for biodiversity (habitats). These six surrogates have adequate cost data and can be used with the calculator to determine the risk-adjusted cost per unit to deliver an offset (See Table 10).

Table 10: Reef offset financial calculators

Surrogate	NRM Region	Unit	Restoration cost per unit (2016 AUD)	Success rate multiplier	Cost data confidence multiplier	Surrogate condition multiplier	Time delay factor	Risk-adjusted cost (2016 AUD)
Suspended Fine sediment	Cape York	tonnes	\$297	1	1	1	1.55	\$460
	Wet Tropics	tonnes	\$375	1	1	1	1.55	\$581
	Burdekin	tonnes	\$106	1	1	1	1.55	\$164
	Mackay- Whitsundays	tonnes	\$987	1	1	1	1.55	\$1,530
	Fitzroy	tonnes	\$513	1	1	1	1.55	\$795
	Burnett- Mary	tonnes	\$1,343	1	1	1	1.55	\$2,082
DIN	Cape York	kg	\$150	1	1	1	1.55	\$233
	Wet Tropics	kg	\$142	1	1	1	1.55	\$220
	Burdekin	kg	\$124	1	1	1	1.55	\$192
	Mackay- Whitsundays	kg	\$157	1	1	1	1.55	\$243
	Fitzroy	kg	\$150	1	1	1	1.55	\$233
	Burnett- Mary	kg	\$150	1	1	1	1.55	\$233
Mangrove	All Regions	ha	\$58,546	1.9	2	1	1	\$222,475
Seagrass	All Regions	ha	\$160,373	2.6	2	1	1	\$833,940
Shallow Reef	All Regions	ha	\$2,742,928	1.6	2	1	1	\$8,777,370
Saltmarsh	All Regions	ha	\$100,818	1.6	2	1	1	\$322,618

Source: Walsh 2016

Biodiversity offsets have been employed in the terrestrial environment more than in the marine. However, as the above example demonstrates, efforts are now underway in different marine environments to develop approaches to measure losses and gains and to identify conservation actions and their costs to deliver no net loss, or a net gain in biodiversity. Approaches such as the calculator help business understand ahead of time the cost of mitigating their impacts before the projects create the impacts and are generally in effect in countries where regulations require that mitigation, including offsetting, take place.

Not all countries have operating regulatory systems that require offsets. As outlined earlier, companies will follow mitigation procedure including implementation of offsets as a result of lending requirements. This occurs only when companies borrow from financial institutions that have enforceable standards in place. Those standards generally require offsets but do not stipulate when and how those offsets should be funded. The other case where mitigation and offsetting take place is when companies have in place voluntary commitments to best practices. Such companies normally adopt practices that are similar to those developed by the IFC, the World Bank, and are consistent with the Equator Principles. The need to develop appropriate policies and processes for biodiversity offsets is one of the reasons that they are complicated and more expensive to put into effect. However, donor funds can be used to finance efforts to develop government policy and establish the mechanisms needed to put in place effective mitigation procedures and offsets.

Barnard et al. (2017) explored options for offset financing and argued for early, upfront financing to ensure that conservation outcomes are sufficiently funded over the long-term. Upfront financing by the project developer is consistent with the approach whereby the developer purchases credits from a habitat bank or other entity charged with delivering the conservation outcomes. Normally those credits need to be purchased ahead of time where the price of the credit represents the costs of delivering conservation in perpetuity. These credits must be purchased prior to the developer receiving a license to move forward with the project, assuring effective mitigation prior to incurring the impacts.

In the case of the Great Barrier Reef, the units can be purchased and paid to the ReefTrust who is responsible for directing the finance to meet conservation objectives. The Reef Trust has been established by the Government of Australia for the purpose of providing innovative, targeted investment focused on improving water quality, restoring coastal ecosystem health, and enhancing species protection in the Great Barrier Reef region. Other regulatory systems may allow for a greater role of the private sector in restoring and protecting reef systems. In such cases governments may require that companies purchase credits from established and approved habitat banks. In the US and Australia, for instance, credits are purchased for a variety of terrestrial habitats, wetlands, and species as part of what has developed as a significant regulatory market.

Receiving upfront payments to implement marine offsets even where they arise as a result of loans or voluntary measures by companies is still highly desirable. Payments to cover long-term conservation financing can be made into a trust to ensure that the money is transparently and effectively managed and to ensure that the conservation outcomes can be realized over time. In many countries, independent conservation trust funds could play this role by receiving payments from companies and then managing the payments to project implementing organizations and monitoring the outcomes. These early, lump-sum payments, could be made to ensure adequate resource availability in perpetuity (endowment) or else could finance specific actions for a fixed period of time (sinking fund) consistent with the duration of the impacts. The payment amount needs to be sufficient to cover the cost of delivering the conservation outcomes.

Where companies decide to undertake offsets but prefer to pay over time – either through annual payments or through smaller lump-sum payments over a set period of years (e.g. five-year tranches)– some system should be considered to guarantee that those payments will be forthcoming over time. Payments promised over time could expose conservation efforts to risk of non-payment, especially in cases where annual revenues are affected by commodity prices and overall market uncertainty. In such cases, biodiversity financing may be viewed as less a priority and as a result, the creation of financial guarantees

such as performance bonds or insurance may be appropriate as a safeguard. As Barnard et al. (2017) indicate, to date very little attention has been paid to the design and development of adequate financing and associated mechanisms to support offset funding needs. However, development of adequate mechanisms is relevant to countries around the world that are facing growing development pressures. This is certainly true of the marine environment.

Development of effective mitigation of impacts to the marine environment has the potential to ensure the protection of valuable ecosystems. As part of this mitigation, marine biodiversity offsets have the potential to generate millions of dollars of revenue for use in conservation, restoration, and management of threatened and sensitive marine species. In the case of the Great Barrier Reef, it is estimated that over AU\$585 million will be generated (Bos et al., 2014) to meet conservation needs. The greatest success is likely to come where governments establish effective regulation and rules to ensure that companies work to avoid and minimize impacts first, and then are required to compensate for their residual impacts through upfront payments. These payments would reflect the cost to restore and preserve the specific type of habitat or biodiversity/ecosystem service affected in perpetuity and would be prior to the issuance of a license for the proposed development.

4.5 Investment and Other Financing Facilities

Markets – global, regional and local – can play a significant role in financing protected areas and other conservation efforts. At the global level, use of the international capital markets, including collaboration among the private, nonprofit and public sectors, can generate needed funds. At the local level, conservation enterprises in tourism, fishing, and other industries can be valuable conservation finance tools, and they, too, often provide an opportunity for collaboration between multiple sectors of the economy including local livelihoods. Investment, financing, and markets-based tools are described in the sections below.

4.5.1 Nature Bonds

Nature bonds are financial instruments issued by corporations, government agencies, or international organizations to borrow money from investors for projects that conserve and sustainably use nature. Bonds can be issued by governments (sovereign bonds), by private corporations, or by any entity able to make a compelling case to potential lenders. The proceeds of the bond are then invested in projects that align with criteria set by the bond issuer. In the case of environmental bonds (historically called “green” or “blue” bonds), the investments are targeted to generate measurable environmental benefits alongside financial returns.

Environmental bonds include “green bonds,” “blue bonds,” and/or “climate bonds.” These terms are not well-defined or mutually exclusive. Green bonds usually target terrestrial environmental benefits, and can include climate change benefits. Climate bonds usually target renewable energy but can include projects that address climate impacts to biodiversity. Blue bonds are similar to green bonds, yet may have more of a focus on coastal and ocean environmental benefits.

The terms of the bond are set by the bond issuer. The interest rate, i.e. the price the bond issuer must pay to borrow the money, reflects the market’s perceived risk of the bond, i.e., how likely is it that the issuer will default and the lender will not be repaid. The higher the perceived risk, the higher the required interest rate. In some cases, development banks or multilateral agencies may provide credit enhancements (such as first loss guarantees) to lower the risk. Private financial institutions may offer concessional terms (i.e. less than market rate) to meet their corporate sustainability or corporate social responsibility goals.

Standards and certification are important tools to ensure that environmental bonds result in measurable environmental benefits, rather than green washing (making an unsubstantiated or misleading claim about the environmental benefits of a product). To mitigate the risks of environmental bonds funding projects that do not generate environmental benefits, there are international standards for green bonds² and climate bonds³. Certification by a third-party is a requirement of both the green and climate bond standards.

2. <https://www.icmagroup.org/green-social-and-sustainability-bonds/greenbond-principles-gbp/>

3. <https://www.climatebonds.net/standards>

Table 11: Nature bonds summary

Conservation Activity Relevance		<ul style="list-style-type: none"> Creation, development and management of MPAs Sustainable fisheries Restoration of coral ecosystems Suppression of external pressure factors Sustainable tourism
Ease of Implementation (set-up from design through rollout, costs included)	Low-Medium	<ul style="list-style-type: none"> Bond issues are complex, requiring multiple technical experts as well as multiple parties. There will be substantial upfront costs to design and issue the bond. The actual cost of borrowing depends on market conditions, the issuing body, and whether concessional (public) guarantees are incorporated to reduce the borrowing rate.
Revenue potential	High	<ul style="list-style-type: none"> Bond issues are large in size due to the costs of establishment. They are generally used to fund investment in a specific project (or related projects) which will, in turn, generate sufficient revenue (or cost savings) to pay back both principal and interest. If the project is well-designed, after the bond is repaid, the entity should benefit directly from the increased revenue or cost savings, on a long-term sustainable basis.
Key Considerations		<ul style="list-style-type: none"> Significant government involvement is required for sovereign bonds. Private green/blue bonds are often supported by development banks. The funded project must generate sufficient revenue (or cost savings) to pay back principal and interest. Achieving an acceptable interest rate for private investment may require credit enhancements, such as a loan guarantee. Requires identification of a sufficient number of private investors or the creation of a retail product.

One of the most recent examples of a bond issue for marine conservation is the “Seychelles Blue Bond,” issued in 2018 by the Republic of the Seychelles specifically for the purpose of financing activities related to marine conservation and sustainable fisheries in the Seychelles. The Seychelles Blue Bond is a \$15 million debt issue, with a loan guarantee from the International Bank for Reconstruction and Development (IBRD, World Bank). The bond issue is coupled with an additional \$10 million of funding, consisting of a \$5 million grant from the Global Environment Facility and \$5 million in low interest loans from the IBRD. The full \$25 million will go to two implementing entities – the Seychelles Conservation and Climate Adaptation Trust (SeyCCAT) and the Development Bank of the Seychelles. The funds will be used to finance the implementation of the National Fisheries Program for the Seychelles. The economic development programs are designed to promote a healthy and sustainable fishing industry, thus generating increased tax revenue, which will enable the Seychelles to repay the bond.

Sovereign bond issues can be a compelling approach to financing conservation, if the government is

committed to a robust conservation policy and the effort being funded through the debt-issue is well-defined. In many cases, it will be necessary to secure credit enhancements such as loan guarantees. An additional challenge is that the project being financed by the bond must have a clear economic benefit, and be able to generate sufficient cash to pay back both the interest and the principal of the loan in the relevant time frame. This makes a bond useful for financing the development of a new project or program that will increase revenue or lower costs, but is not a viable approach to finance “business as usual” management costs of a protected area. If the bond is marketed as a Nature Bond, it will be important to investors that clear, measurable outcomes are achieved and reported.

Resilience bonds⁴ offer a different but compelling model for financing reef conservation, although they are, at this point, still in the conceptual or pilot stage (Willis Towers Watson, personal communication). The concept of a resilience bond lies in the recognition that upfront investments in programs that foster resilience, will help to reduce larger expenses in the event of a catastrophic event. In specific terms – reefs and mangroves have demonstrable protection capabilities to reduce the impact of major storm events. Investing

4. A sovereign bond is any debt security issued by a national government.

in reef protection and health, therefore, can help to reduce the risk of physical and economic damage in the event of major storms, in ways that are quantifiable by analysts.

Resilience bonds are a variation on a catastrophe bond, which is a financial tool for spreading risk to investors. In a basic catastrophe bond, investors provide funds, which will be used to pay for the impact of a natural disaster, should one occur within the term of the bond. It is comparable to the parametric catastrophe insurance described below in the Quintana Roo example, but adds the dimension of spreading risk to the capital markets. A catastrophe bond works in the following way: if the disaster does not occur, the investors receive both principal and interest; if the disaster does occur, the principal is used to pay for the cost of recovery, and the investors receive only the interest. A resilience bond would go a step further – in the case of the resilience bond for reef conservation, for example, proceeds from the bond issue might also be used to strengthen or restore the reef, with the expectation that a stronger reef will lessen the impact (and therefore cost) of the disaster, should one occur. In addition to helping to manage the risk, the inclusion of conservation and resilience in the bond’s purpose also helps in the marketing of the bond issue, by appealing to conservation or impact investors.

Resilience bonds, however, rely on scale. A resilience bond would not be practicable for a single reef or individual marine protected area – there is a necessity for spreading and diversifying risk, as well as achieving a large enough project size to be appealing to the global capital markets. For this reason, resilience bonds are likely to work only for many reef systems together. A further challenge is that resilience bonds for reefs are still so conceptual that even defining the specific risk events is still being explored. Is the relevant threat damage to the reef itself? Or damage to adjacent communities, who would be better protected if the reef were in better health and better able to mitigate impact? Who are the potential actors in the transaction? And who are the beneficiaries? Resilience bonds represent a compelling opportunity, assuming several innovative actors can be identified to participate in developing a pilot program.

4.5.2 Impact or Pay for Performance Bonds

A third type of conservation bond approach can be modeled on Social Impact Bonds (SIBs), or Pay for Success/Performance Bonds, which rely on third-party investors to take on the risk of program innovation to drive public policy outcomes while minimizing government risk.

Table 12: Impact bonds summary

Conservation Activity Relevance		<ul style="list-style-type: none"> Creation, development and management of MPAs Sustainable fisheries Restoration of coral ecosystems Suppression of external pressure factors Sustainable tourism
Ease of Implementation (set-up from design through rollout, costs included)	Low	<ul style="list-style-type: none"> Outcomes must be clearly articulated and carefully modeled to ensure a fair balance of payments under multiple outcome scenarios; this modeling is complex. There will be upfront costs to design and market the instrument. The actual cost of borrowing depends on market conditions, the issuing body, and whether guarantees are incorporated to reduce the rate.
Revenue potential	High	<ul style="list-style-type: none"> Bond issues tend to be significant in size; however, they are used to fund investment in a specific project which will, in turn, generate sufficient revenue (or cost savings) to pay back both principal and interest. If the project is well-designed, after the bond is repaid, the entity should benefit directly from the increased revenue or cost savings, on a long-term sustainable basis.
Key Considerations		<ul style="list-style-type: none"> Multiple parties must be involved: government, project partners, issuer, lenders, banks, outcome payers. The funded project must generate sufficient increased revenue (or cost savings) to pay back principal and interest. The metrics to be used, and desired outcomes, must be very clearly articulated. Achieving a fair balance of payments for outcomes requires significant modeling.

In a SIB, a third-party investor provides upfront capital for the implementation of a new program to deliver a social good, such as reducing poverty or improving health outcomes. When the program achieves predetermined milestones, the government then pays the program for the services. These approaches typically do not generate new funds for programs, since funds need to be budgeted by government, but they can produce enormous efficiency gains and they encourage governments to adopt new programs because there is little failure risk. Governments only end up paying for successful programs that achieve intended outcomes, so they have an incentive to support innovation. The third-party investors take on the risk of failed programs, and are compensated in interest payments made possible through the financial returns of the program (typically generated through cost savings).

In the environmental realm, a pay-for-success environmental impact bond was launched by DC Water, Quantified Ventures, Goldman Sachs and the Calvert Foundation in 2016. The \$25 million bond was launched to enable the water utility (DC Water) to pay for improvements in the infrastructure of the Washington, DC sewer system. The infrastructure improvements were intended to reduce the environmental impact of increasingly frequent storm water overflows linked to climate change, which caused more frequent and more severe weather events leading to higher volume of storm water. DC Water (the borrower) will pay the investors 3.43% interest on the bond. In addition, the pay-for-success scheme, focusing on measuring reduction in storm water runoff, sets up the possibility of additional payments. If storm water reduction occurs according to expectations, there are no additional payments and investors receive their expected interest payments. If the runoff reduction exceeds the expected range, DC Water will make an Outcome Payment to the investors of \$3.3 million, to compensate the investors for sharing the project risk. In that case, the investors would receive both their expected interest, and an additional return. If the runoff reduction falls below the expected range, the investors will still receive expected interest payments but will make a Risk Share Payment to DC Water of \$3.3 million; this effectively amounts to a partial loss for the investors. There is an equal probability of a contingent payment (i.e. the performance falling either above or below the expected range).

Infrastructure projects like these provide an interesting opportunity for impact or Pay for Success bonds because infrastructure is frequently funded through debt issuance, and coastal/shoreline infrastructure influences reef health. Infrastructure projects, either through intended impact (e.g. improved sewage or storm water management systems that reduce pollution on the reef) or revised design (an existing infrastructure project is modified to better incorporate reef health issues), can improve the health and resilience of a reef. In those cases, including a pay-for-success component to a bond issue may improve availability of public finance vehicles, create local partners, and make local governments more receptive to considering reef health. Improvements in PA management can also offer potential for impact bonds – as an example, using bond proceeds to invest in new monitoring technology may yield cost savings and improved conservation outcomes.

Impact bonds are designed to appeal to the market of impact investors who wish to invest in conservation-focused products and projects. Generally speaking, there is a perceived shortage of investable projects in the conservation impact investing space; programs like the Coalition for Private Investment in Conservation (CPIC) are working to increase the size and viability of the market. One challenge is that impact investors may not be willing to accept lower than market rates of return on their investments; this may ultimately be a hindrance to the viability of any potential conservation impact bonds. A conservation impact bond must also have a well-designed monitoring system with clearly articulated and measurable goals, so that both investors and the party paying for outcomes have a visibility into the progress of the programs.



Photo contributed by Alex Mustard, Ras Mohammed National Park, Egypt

CASE STUDY

Impact Bonds

One conservation impact bond under exploration is the Rhino Impact Bond, conceived by United for Wildlife (UfW), a collaboration of seven wildlife charities including the Zoological Society of London (ZSL), which leads the implementation of UfW's Rhino Impact Investment Project. The Rhino Bond is modeled on a social impact bond, with a goal of providing upfront capital to improve site-based conservation of endangered rhinos. The original goal was a \$40-50 million impact bond, to support rhino conservation globally. Investors would provide the capital, which would be used to support rhino conservation efforts in protected areas over an 8-10 year period. If the rhino conservation goals are achieved, donors (or "outcome buyers") would pay back the principal plus a modest interest rate. If the goals are not achieved, the investors may not achieve profits or, in the worst case, may lose their capital. As with a social impact bond, a conservation impact bond such as the Rhino Bond requires very clearly articulated metrics for measuring impact, and well-defined and agreed-upon milestones. The project is currently in the process of securing both investors and outcome buyers.

4.5.3 Debt-for-Nature or Debt-for-Adaptation Swaps

One method of generating funding for biodiversity conservation or reef protection can come from a debt-for-nature swap. A debt-for-nature swap is a multiple party transaction in which the sovereign debt of a

country is forgiven or partially forgiven by its creditors, in exchange for certain commitments to biodiversity conservation by the indebted country. They are "a method by which debt owed by a developing country can be renegotiated with creditors to fund nature conservation activities" (Quintela et al, 2003).

Table 13: Debt swap summary

Conservation Activity Relevance		<ul style="list-style-type: none"> Creation, development and management of MPAs Sustainable fisheries Restoration of coral ecosystems Suppression of external pressure factors
Ease of Implementation (set-up from design through rollout, costs included)	Low-Medium	<ul style="list-style-type: none"> Debt swaps are complicated deals involving multiple parties and typically negotiated over the span of 2-3 years. Normally large amount of upfront capital must be raised to purchase the debt and implement the swap. Significant technical expertise (legal, financial, political) is required to negotiate a debt swap; if this expertise isn't available in-house and can't be secured on a pro bono basis, it will be necessary to hire these services.
Revenue potential	High	<ul style="list-style-type: none"> Debt swaps can result in large financial commitments of resources dedicated to conservation.
Key Considerations		<ul style="list-style-type: none"> Use of debt swaps may be limited as they depend on the available debt that can be exchanged on favorable terms.

Debt-for-nature swaps are arranged in a context where a debtor (borrower) country, often a developing economy, has a large sum of expensive debt on which it is likely to default. The creditors (or lenders) are typically mature economies, and usually the debt is owed in a hard currency. The creditors are frequently countries, although debt swaps can work with private issuers as well. In the debt-for-nature swap, a third party, typically a biodiversity conservation NGO, agrees to raise funds to help the debtor country buy back its debt at a discount. The NGO is motivated by a recognition that the debtor country's coastal and marine territory is rich in biodiversity and a desire to see a large section of reef established as a marine protected area (MPA). At the same time, the creditor nations must agree to accept partial repayment of the loans, and to write off the remainder. In exchange for the debt reduction, the debtor country agrees to create an MPA in a critical biodiversity region, and puts local currency (typically equal to the face value of the debt) into a conservation trust fund to ensure that the MPA is adequately managed. The investment returns on the trust fund provide long-term sustainable funding for the costs of management, monitoring, and conservation programs. In this approach, the creditor countries avoid complete loss of the loaned principal; the NGO and its donors and stakeholders achieve critical conservation objectives, and the debtor country effectively pays off its hard currency debt in local currency. The use of local currency, while significantly easier for the debtor country, may nonetheless create a long-term investment challenge for the trust fund unless steps are taken to ensure the trust fund assets can be converted to hard currency and invested in whole or part off-shore, to avoid long term losses from currency devaluation.

Debt-for-nature swaps have been used for decades to protect critical ecosystems, with the first one completed in 1988. While debt swaps primarily have been used to create protected areas and secure sustainable funding for management of the PAs, there may be additional priorities around sustainable economic development or reef restoration that are funded with the debt swap proceeds.

A newer example is a debt-for-adaptation swap, a debt restructuring arrangement finalized in early 2018, which will help to fund the Seychelles Marine Spatial Plan and fulfill its commitment to put nearly a third of its marine Exclusive Economic Zone (EEZ) under protection. Simply explained⁵, the debt restructure involved the Republic of Seychelles, its Paris Club creditors, NatureVest⁶, and SeyCCAT as well as multiple private donors and lenders who contributed to the debt conversion (naturevesttnc.org). As a small island developing state, the Seychelles is particularly threatened by climate change, both physically and economically. The debt-for-adaptation swap helps to provide funding so that the Seychelles can adapt to the impact of climate change, by increasing the resilience of its economy and physically protecting its marine resources.

Notably, an advantage of a debt-for-nature or debt-for-adaptation swap is that they can generate very targeted funding for conservation. Often, creation of new protected areas is a condition of the deal structure, and reduction of debt frees up funding that can be repurposed to conservation. A drawback, however, is that debt-for-nature swaps require multiple parties, and can be complicated to negotiate. Because the national government is a critical participant, debt-for-nature swaps only work in situations where government's conservation policy is robust, and government is on board with the process.

4.5.4 Reef Insurance

Insurance, in which a company or organization provides guaranteed compensation for specified loss or damage in return for consistent payment of a premium, can be used as a financial tool to minimize risks to coral reefs and generate revenue for reef preservation and/or restoration. Reefs are valuable buffers for storm damage, and regions with heavy weather events can have the financial incentive for conserving these reefs to reduce future costs.

5. The Seychelles Debt-for-Adaptation swap involved multiple actors and agreements; a more thorough explanation of the approach is explained in the Appendix.

6. NatureVest is the conservation investing unit of The Nature Conservancy

Table 14: Reef Insurance Summary

Conservation Activity Relevance		<ul style="list-style-type: none"> Creation, development and management of MPAs Restoration of coral ecosystems Suppression of external pressure factors Sustainable tourism
Ease of Implementation (set-up from design through rollout, costs included)	Low	<ul style="list-style-type: none"> Insurance schemes require significant technical complexity to create regarding negotiations, monitoring, site-based research etc. Several different entities need to be involved such as nonprofits, government, local stakeholders, and insurance agencies.
Revenue potential	High	<ul style="list-style-type: none"> Constant financial contribution every year towards reef conservation and the payback offered towards restoration efforts in the event of storm damage.
Key Considerations		<ul style="list-style-type: none"> Requires high degree of stakeholder engagement. Requires long-term buy in of site-level stakeholders. Requires consistent demand for reduction of storm damage near a reef. In other words, there must be strong willingness-to-pay at the site level for long-term reef conservation.

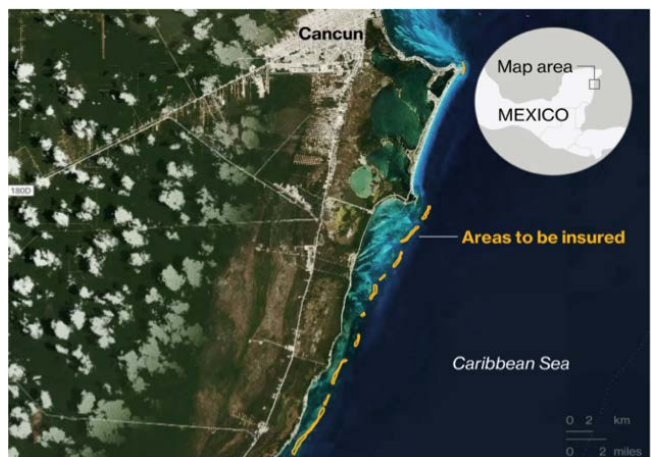
Reef insurance is a relatively new product and one case is now under development in Mexico. The scheme is based on the recognition that coral reefs provide a valuable buffer against storm damage from waves. According to The Nature Conservancy (TNC), 97% of a wave’s energy is reduced by a coral reef before it hits a shoreline. This shoreline protection is equivalent, or more effective, than manmade infrastructure such as breakwaters or shore walls, and thus provides a natural ecosystem service for coastal property owners.

A case study of reef insurance in Mexico is illustrative. Arguably the first of its kind, a coral insurance scheme in Mexico is attempting to finance ongoing maintenance of reefs as well as provide assured financing to restore reefs in the event of extreme storm damage. The damage from heavy storms is excessive, with Hurricanes Wilma and Emily causing a combined damage of over \$17 billion to Mexican infrastructure in 2005 (TNC, 2018).

In order to deal with damaged reefs and the resulting financial loss, hotel owners in Mexico’s state of Quintana Roo have partnered with state government, TNC, the local science community, and Swiss Re (a global reinsurance company). This partnership has created a Coastal Zone Management Trust (CZMT), which will be funded by payments from the tourism

industry and will have support from The Rockefeller Foundation (TNC, 2018). These payments will not only be used to fund ongoing coral and beach maintenance schemes, but also to purchase insurance policies from Swiss Re, guaranteeing a payout to restore the reefs in the case of an extreme weather event. The insurance scheme is a form of parametric catastrophe insurance, with payouts tied to certain pre-determined metrics or indicators.

Figure 8: 40-mile stretch of insured reefs



Source: (Flavelle, 2017)

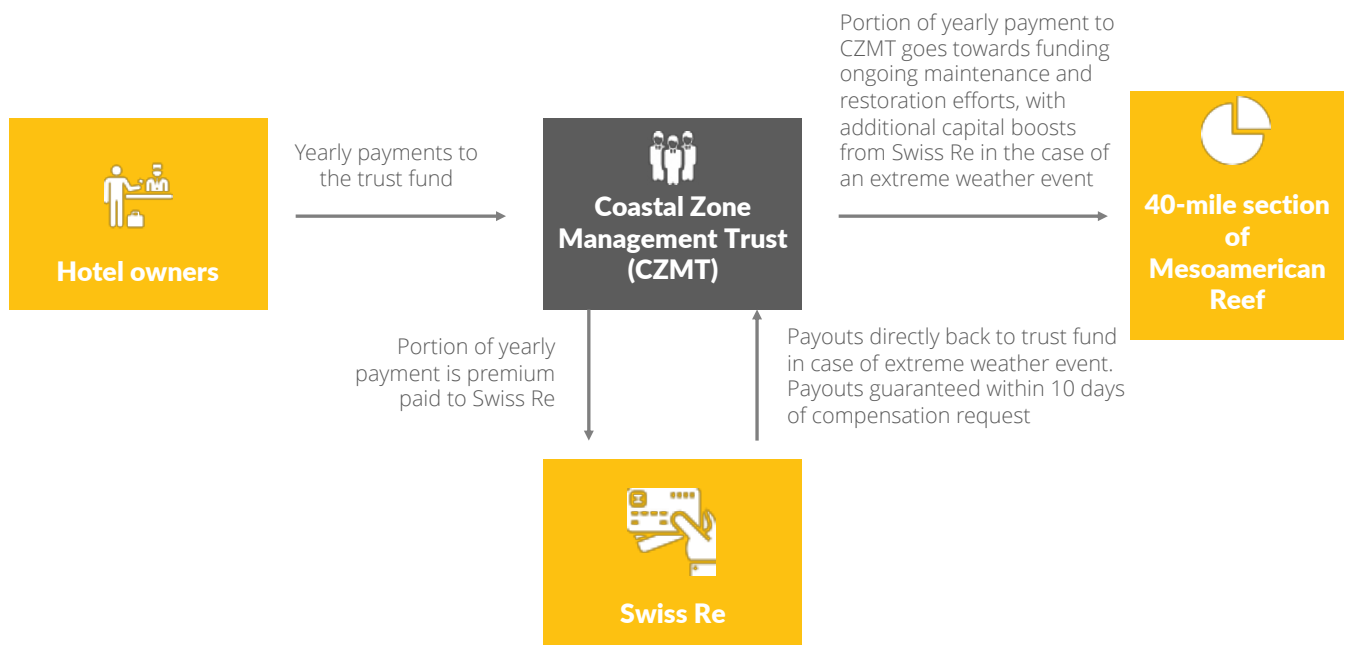
The trust and the insurance policy will help protect the multi-billion dollar tourism industry around the beaches of Cancun and Tulum (see Figure 8). The policy targets a 40-mile stretch of the Mesoamerican Reef, the largest reef in the Western Hemisphere that runs south for 700 miles from the tip of the Yucatan Peninsula (Flavelle, 2017). The level of payments to be collected by the trust and insurance premiums to be paid to Swiss Re are under negotiation with no concrete numbers currently. For an estimate, just to give some perspective, Kirkpatrick (2018) thinks premiums paid by the hotel owners should be between \$1 million and \$7.5 million in 2017, with around \$25 million to \$70 million in payouts a year in the event of an extreme storm. Again, the policy is still in the final stages of negotiation and will go into full effect by the end of 2018.

There is a distinct advantage of the reef insurance policy and the trust fund. As stated earlier, the extra taxes paid to the CZMT not only go towards reef restoration but a portion is also allocated for the insurance policy. This assures fast action for coral reef restoration from the Swiss Re insurance claims in the case of an extreme weather event. The trust channels the reef restoration money every year either towards

local nonprofits working on the reefs, or towards a National Park Association overseeing reef monitoring and reduction of pollution.

Private insurance is more appealing to the hotel owners, than a strictly government-financed scheme that could potentially take longer for payments to occur given the various agency channels that money would have to flow through if an emergency arises. When there is storm damage, the payout from Swiss Re goes directly to the CZMT for reef restoration. If hotel damage is incurred, insurance payments would come from a separate insurance policy not associated with the reef insurance scheme. Thus, the reef insurance policy provides incentives to hotel owners to maintain a healthy reef to continue reducing the force of storms (Flavelle, 2017). If reefs are poorly maintained, then storm damage costs would rise, and in turn increase the premiums that the owners have to pay. Thus, hotel owners have a strong incentive to continue in the Swiss Re scheme because this leads to lower amounts of damage insurance being paid on a regular basis (given they have actively reduced their risk of severe storm damage). Premiums have a chance to be lowered in the future as the risk of heavy storm damage is lowered as well.

Figure 9: Generalized framework of Quintana Roo reef insurance scheme



Scaling insurance schemes to other sites is an opportunity worth exploring for reefs with high visitation rates and private sector entities located near the coastline. In 2018, Willis Towers Watson, a global brokering and advisory company, created the Global Ecosystem Resilience Facility (GERF) to provide innovative finance and risk management solutions to build the resilience of ecosystems. GERF focuses on risk transfer, such as risk pooling amongst investors, and project finance that examines the feasibility of a variety of instruments such as resilience bonds, grants, and loans (WTW, 2018). Utilizing emerging new technical facilities like GERF can assist managers in charge of well-managed reefs in creating innovative financing mechanisms such as reef insurance.

4.5.5 Conservation Enterprise Incubators

One approach to financing for profit conservation activities is to establish a conservation enterprise incubator. This can encourage conservation actors to flourish within a specific ecosystem by providing economic and technical support that enables conservation enterprises to become successful and

competitive. An incubator, or accelerator, is a program that provides technical assistance, development grants, and/or debt or equity financing to assist small fledgling commercial ventures to grow to the point of viability or follow-on funding.

Conservation enterprises are commercial ventures that produce both financial benefits and conservation or ecological benefits. The conservation benefits accrue from the venture that includes conservation or sustainable use of nature in its business model. Examples include fishing businesses that commit to honor appropriate limits on quantity, species, and by-catch; ecotourism ventures that rely on and contribute to a healthy ecosystem to attract customers, and artisanal products that use sustainably sourced materials. Often, conservation enterprises can charge higher prices than more destructive or “business-as-usual” competitors, due to consumer’s willingness to pay a premium for biodiversity-friendly products or services. In many cases, the conservation enterprise is promoting conservation-friendly activities while also averting destructive behavior – a community that can generate adequate and sustainable livelihoods from a healthy ecosystem has an incentive to conserve that ecosystem.

Table 15: Conservation enterprise incubators summary

Conservation Activity Relevance		<ul style="list-style-type: none"> ▪ Sustainable fisheries ▪ Restoration of coral ecosystems ▪ Suppression of external pressure factors ▪ Sustainable tourism
Ease of Implementation (set-up from design through rollout, costs included)	Low	<ul style="list-style-type: none"> ▪ Creating an incubator requires a high level of business expertise. ▪ Creating an incubator requires significant upfront capital.
Revenue potential	High	<ul style="list-style-type: none"> ▪ Incubators help to generate sustainable livelihoods for local communities, but rarely generate direct revenue for PAs. Some incubators may generate returns on invested funds.
Key Considerations		<ul style="list-style-type: none"> ▪ High degree of technical expertise is required. ▪ Incubators can be a good method of improving local incomes, averting destructive behaviors and improving conservation outcomes; however, they typically will not generate significant funds for PA management. ▪ There will be a challenge to find opportunities to build and finance successful businesses.

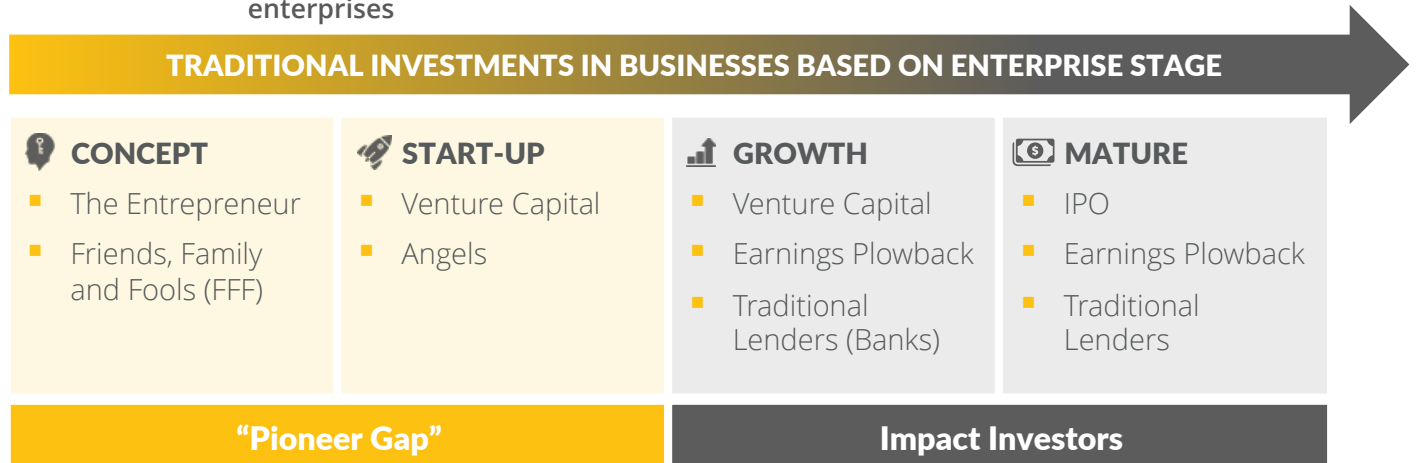
In the typical lifecycle of a new business, early funding comes from an entrepreneur, from his/her friends and family, and from small business loans or development grants. If the business grows and matures, it may then access the broader capital market – venture capital, private equity, better debt terms – often, in the case of conservation and environmental enterprises, from impact investors. However, a phenomenon known as the “pioneer gap” hinders small businesses in some developing countries, as they face multiple challenges:

- Start-up capital is limited as entrepreneurs do not have their own accumulated wealth.
- Commercial interest rates are high.
- Businesses struggle to secure funding to grow a new venture to the point that larger investors may be interested, or even to obtain enough working capital to keep the business afloat through several economic cycles.
- Technical knowledge about impact investors’ business management expectations may be a hurdle to small conservation enterprises.
- Many small businesses in developing countries do not have robust accounting systems, or even live in a place where accounting services are available.
- Conservation enterprises are often located far from established markets and face high transportation costs.

Incubators (also known as accelerators) help to overcome the pioneer gap by mobilizing resources to help conservation enterprises succeed at the early stage. Incubators may provide, or secure, technical assistance like business planning, staff capacity building in management skills, economic development grants, loan guarantees, direct loans, or equity investments. Incubators typically raise funds from donors and/or investors who want to promote conservation outcomes while stimulating economic activity and growing the pool of available investment opportunities.

Several conservation enterprise incubators, some started by NGOs, are in different stages of development. Conservation International operated an investment fund called Verde Ventures, to provide financial support to SMEs that “deliver environmental, socioeconomic and financial benefits” (Conservation.org). Verde Ventures used both debt and equity financing, but focused primarily on debt. The effort has evolved into the Eco Business Fund being run by Finance in Motion. WCS operated the Conservation Enterprise Development Program (CEDP) for many years to provide technical assistance and development grants to conservation enterprises. Its portfolio of projects ranged from a rice company in Cambodia, a manufacturing company in Africa, to ecotourism ventures in the Caribbean. NatureVest at TNC is working to drive private sector investment to conservation enterprises through a variety of approaches including an Accelerator for conservation investments. And the Incubator for Nature Conservation at IUCN will take a slightly different approach, looking at protected areas as businesses that need to generate adequate income to cover costs. IUCN’s Incubator provides technical

Figure 10: The pioneer gap for new enterprises



Source: WCS Markets Team

expertise, guidance, advice and resources to “green list” protected areas “seeking to improve their business model and achieve financial sustainability” (IUCN.org).

The Seychelles Conservation and Climate Adaptation Trust (SeyCCAT) is planning an enterprise fund to help diversify the economy in the Seychelles by promoting positive conservation actors and ensuring food security/sustainable livelihoods to help deter over-fishing. The fund’s initial plan is to use blended finance tools, incorporating development finance and philanthropy, to provide better financing rates to small and medium enterprises. Reefs constitute a relatively small percentage of the Seychelles’ total marine protected areas, so SeyCCAT’s programs are not reef-specific, but its broader programs are likely to have positive benefits for its reefs.

A collaborative partnership of the Mesoamerican Reef (MAR) Fund, the Caribbean Biodiversity Fund, and Pacifico (Environmental Funds Platform of the Tropical Eastern Central Pacific <http://redpacifico.net/en/home/>) has plans underway to launch Blue Challenge, an incubator that will focus on fisheries, ecotourism and waste management businesses, three industries that have significant impact on marine ecosystems and in which promoting good conservation actors can have beneficial impact on system health. Initially focused on technical assistance, Blue Challenge may expand to other forms of assistance over time, including financial support or investment. Blue Challenge will partner with impact investors, recognizing the apparent glut of potential impact investment capital in search of conservation investments. While still in the formative stages, Blue Challenge represents the best example of an incubator that will include, because of MAR Fund’s involvement, a specific focus on reef ecosystems.

The hobby fisheries industry could present an interesting opportunity for conservation enterprise incubation. One of the threats to reef health, especially in the Coral Triangle, is the largely unregulated hobby aquarium live fish industry (Rhyne, Tlusty et al., 2012; Rhyne, Tlusty et al., 2017; Dowd interview), one that has both good and bad actors, but limited data. The hobby aquarium industry presents an opportunity for reef-adjacent communities to engage in beneficial economic and conservation activity, through ventures that tie their economic well-being to a healthy reef, generate sustainable livelihoods, and provide

protection for the reefs themselves. In some cases, the threat of over-extraction and dangerous fishing practices that damage the reefs can actually be converted to opportunities to improve reef health.

For context on a similar venture in a freshwater environment, it is helpful to look at an example from the Amazon. The Rio Negro Aquarium Fishery, a conservation enterprise in the Amazon Basin, fostered by the Project Piaba, generates sustainable livelihoods and diverts ecosystem-destructive behavior by cultivating and exporting cardinal tetras (*Paracheirodon axelrodi*) for the hobby aquarium market. This sustainable business model may have the potential to be replicated in some reef environments.

Based in the Barcelos municipality, in the State of Amazonas, the artisanal cooperative fishery provides subsistence livelihoods for the community, who would otherwise be employed in slash-and-burn agriculture, illegal logging, or migrate to urban centers. According to Project Piaba, the fishery meets all 17 of the UN Sustainability Goals and contributes to avoided deforestation. The fishery has obtained a geographic indication (similar to “champagne”) to ensure that consumers can recognize cardinal tetras sourced from the Barcelos region through this conservation-promoting venture. The economic opportunity is significant – cardinal tetras sell for \$20,000 per kilo, about half the price of gold and orders of magnitude more than, for example, seabass or tilapia. Project Piaba supports the fishery with “Best Handling Practices” to ensure the well-being of the fish and sustainability of the fishery, and conducts week-long workshops for the fisherfolk on these best practices, covering topics including basic fish anatomy, underlying causes of stress, fish nutrition, water quality, fish health, and identifying parasites (www.projectpiaba.org).

The marine aquarium export market is sizeable, with the potential to be destructive to reefs while at the same time producing needed income for local populations. Demand for reef species includes both abundant and rare species, as well as those with critical ecosystem functions. Currently, demand has grown to include not only live fish but also live coral species (Rhyne et al., 2012). A significant challenge is that data on the marine aquarium fish trade remains limited, and the market is poorly regulated (Rhyne et al., 2012).

The question is whether, despite these challenges, the opportunity exists to establish sustainable marine aquarium conservation enterprises that achieve measurable conservation benefits (e.g. avoided loss, restored reef health, generating income to pay for restoration or other protection) while generating adequate income to local communities. While the marine fisheries trade is roughly 10% of the size of the freshwater trade (Dowd interview), it nonetheless provides some economic potential.

The Indonesian Nature Foundation (LINI), an Indonesian nonprofit organization, has one such program underway. LINI has worked with aquarium fishers in North Bali, with a goal to create a vibrant, healthy, productive reef that is viewed as a positive by reef-adjacent residents. As the natural reef had become degraded due to destructive fishing practices, LINI provided technical and financial support to build artificial reefs providing alternative collection sites and reducing the impact on the natural reef. In addition, LINI created an education center, and helped to build incentives for reef management and conservation so that the reef remains a sustainable and viable source of income for these local communities.

There are three main opportunities for reef-adjacent communities to benefit reefs through engagement in the aquarium fish trade.

- Converting an existing destructive export business into a beneficial one by changing behavior (catch limits, handling practices, species limits, etc.), thus helping reef health to recover.
- Marketing and branding an existing business as sustainable to allow an enterprise to compete effectively, possibly charging premium prices and potentially reducing the volume of biomass that is extracted. Research by the New England Aquarium and Project Piaba indicates that aquarium hobbyists may avoid purchases altogether for fear of participating in a trade that damages reef ecosystem (Dowd interview). These consumers are more likely to purchase fish if they can be sure that the fish they are buying helps to maintain and even improve the health of the reef. However, industry actors have not yet agreed on industry standards, making it hard for consumers to differentiate good actors from bad in making

their purchasing decisions. Partnering with an NGO may help to improve handling processes while also providing external validation for consumers.

- Create a new business in a reef ecosystem not previously engaged in marine fish export (new entrant to market), employing sustainable practices from the start such that the reef health is maintained or improved, or offering alternative livelihoods, (avoiding destructive practices) and/or generating income through tariffs or taxation to support reef protection or restoration.

4.5.6 Markets and Impact Investing

Another tool for promoting conservation enterprises is impact investing, which is defined by the Global Impact Investing Network as investments that have the intention of generating both financial and social or environmental returns. These investment tools include both equity (ownership) and debt. Ideally, impact investors will accept lower than market rates of return for a given level of risk (concessional returns) because they also receive a desired conservation outcome.

While impact investors are typically private sector actors, the creation of impact investing opportunities often involves collaboration among the public, private and nonprofit sectors to create adequate markets and create viable investment projects. As noted above, the conservation enterprise sector relies on early support, often in the form of incubators, to create enterprises that are ready for funding from the capital markets. At the same time, industries and local markets may also require support to achieve sustainability.



Photo contributed by Erik Lukas, Alor-Indonesia

Table 16: Impact investing summary

Conservation Activity Relevance		<ul style="list-style-type: none"> ▪ Sustainable fisheries ▪ Restoration of coral ecosystems ▪ Suppression of external pressure factors ▪ Sustainable tourism
Ease of Implementation (set-up from design through rollout, costs included)	Low-Medium	<ul style="list-style-type: none"> ▪ Investing in fisheries and tourism to generate a return in a national/international market will require significant technical complexity. ▪ Value chains and companies must be established to ensure the profitability of sustainable fishing schemes or tourism enterprises.
Revenue potential	Medium	<ul style="list-style-type: none"> ▪ If fishermen (for impact fisheries investments) are engaged in sustainable schemes with larger profit margins then reef managers can treat this as a source of 'revenue' given that reefs/biodiversity would be restored without management dollars being spent. For tourism and PPPs, there is also moderate revenue potential given the amount of visitation a site receives.
Key Considerations		<ul style="list-style-type: none"> ▪ Requires high degree of fishermen buy-in and a strong economic incentive. ▪ Requires constant regulation of the industry to conform to sustainable practices. ▪ Requires significant upfront investment to change behavior and build the necessary business structures for a successful enterprise.

Conservation enterprises offer some unique investment challenges related to scale, risk, and payback period. Many enterprises begin at a very small scale and because of a lack of ready markets can only grow slowly. In addition to time, scale to profitability may be long. Without doses of patient capital many small businesses cannot get a foot-hold and become profitable. Some combination of grant-funding along with later investment based on a business plan can help alleviate that problem. There is also the issue of risk. Many small enterprises are not successful and as a result investment funds look for larger, more secure opportunities. Creating incubators or sources of funding willing to tolerate risk can alleviate some of these challenges.

A comprehensive global review of impact investments for marine conservation identified only a handful of examples (notably entrepreneurial marine protected areas and sustainable fishing debt and equity finance), but indicated large opportunities exist if intermediation capacity is improved (Walsh, 2016). This section offers several case studies to illustrate approaches to building and sustaining conservation enterprises. The first example, of a no-take octopus fishing program, illustrates a means of building sustainability within a local fishery. It shows how combining an understanding of natural resource economics with market analysis,

at the field level, can achieve strong economic and conservation outcomes. While not strictly a financial mechanism in itself, the approach shows how market awareness and fixing a 'free rider' problem of resource exploitation can lead to positive economic outcomes. Community-based conservation was one of the solutions created to address the problem of overfishing in Velondriake. A scheme created by UK-based NGO, Blue Ventures, along with site support from the WCS, has worked to develop a sustainable fishing approach to not only benefit the environment but boost the livelihoods of fishermen.

Blue Finance (BF), has developed a program designed to implement non-public conservation financing schemes in the Eastern Caribbean, and is supported by the United Nations Environment Programme (UNEP) and other organizations which provide grant funding, which BF uses to leverage private sector investment to support conservation of marine protected areas. The financing model is based on generating income from the potential for growth in marine tourism and through the development of public-private partnerships (PPP).

BF's underlying objective states that the major advantages of a tourism-based PPP scheme include the ability for the private partner to have the ability to:

- More flexibly set fees and charges.
- Establish funding mechanisms such as concessions.
- Respond to customer needs.
- Allow for the ability to retain money earned, thereby creating an incentive to generate funds through greater entrepreneurship.
- More freely implement staffing policies based on efficiency and market salaries

To illustrate how PPPs can work in the coral reef sector, a case study using the current BF framework is illustrated for the Dominican Republic. A conservation area (the SE Coral Reef Sanctuary) has been designated to encompass approximately 8000km² on the west and south coasts of the island. BF's technical team valued the financing needs for the site: an upfront investment cost of US\$3 million required to achieve sustainable reef management and develop visitor attractions, along with an annual operational cost of US\$800,000.

BF has partnered with and attracted financing from a variety of impact investors, including the Mirova-Althelia Sustainable Ocean Fund and Deloitte Social Finance. Impact investors target areas where there is a significant environmental or social benefit, potentially expecting much lower financial returns than standard business investments in the general market. In this context, impact investing can work given the site conditions.

BF's PPP model typically operates in sites with viable tourism options and moderate to high visitation, generating the consistent financial revenues required to pay back investors. In sites with extremely limited visitation, this PPP model will likely not create the desired returns from the inflows of capital. Thus, it is important to carry out an effective feasibility assessment to determine where this model can be applied successfully.

The PPP model is designed such that the private sector will provide the majority of funding, through a loan mechanism to a private conservation manager (normally an NGO with an MoU signed with the

Figure 11: The Dominican Republic Marine Management Area



Source: (Blue Finance, 2016)

Government,) to manage a marine conservation area while government continues with monitoring and enforcement. An annual fee from private sector tourism operators is paid to the conservation manager based on tourism numbers. These fees, as well as other entry and use fees, are held by the conservation manager to cover all management costs. In addition, the financing covers investment in facilities, including visitor centers that attract tourists and allow them to enjoy certain experiences. These centers also become revenue generators that contribute to the overall revenue of the venture. Normally in the process the NGO established as the conservation manager signs a contract with the Government clarifying roles and responsibilities, with government ceding the responsibility for both technical and fiscal management to the NGO. The following table illustrates co-management responsibilities in this PPP model:



Photo contributed by Simon J. Pierce, Tubbataha Reefs Natural Park, Philippines

Table 17: PPP model for the Dominican Republic Marine Management Area

MPA Co-Management Model in Dominican Republic		
Activities	Site/Tourism Operator	Government
Enforcement	✓ (partial)	✓
Regulations		✓
Environmental activities	✓	
Monitoring		✓
Education	✓	
Marketing and tourism products	✓	
Maintenance	✓	

Source: (Blue Finance, 2016)

There are several advantages to this PPP model. Firstly, all financial risks are borne by the organization that signs the MoU with the Government (either the private sector operator or the third-party entity like a nonprofit), and in turn this reduces the amount of public funds required for the site. The partnership agreement between the site operator and the government allows for strict audits of performance

and results-oriented management. Finally, there is a steady stream of income to the government from this protected area. These increased funds allow for conservation priorities to be achieved by further on-site patrolling and rules enforcement. From a challenges perspective, BF is currently working to clearly identify public sector responsibilities and buffering risks in the business model.

CASE STUDY

Small-Scale Fisheries Management Improvement in Reefs

The Blue Ventures team has worked with local fisherman to create a new management approach for the octopus fishery. Octopus is one of the primary cash crops for Madagascar, with southern Madagascar’s reef octopus fishery accounting for 70% of the value of marine resources purchased regionally by collection and export companies (Benbow and Harris, 2011). The idea behind the scheme is putting temporary bans on catching octopus. Octopus is one of the fastest growing marine species, so short-term fishing bans in degraded reef areas allow populations to recover, ultimately resulting in bigger catches and more money for fishers in as little as two months’ (Helmsley, 2016). In turn, reef health improves with less reef degradation and improved fish biodiversity. With the temporary ban approach, fishermen in Velondriake catch almost twice as many octopus in the month that follows a closure. From an economic perspective, this actually allows for more revenue generation.

According to Dr. Alisdair Harris, executive director of Blue Ventures, the rapid support from the Malagasy fishers led to significant outcomes: “This is the world’s first community-based fisheries management system whereby the costs are covered by the increased profits flowing from temporary closures. We’ve pioneered a tremendously exciting approach with enormous potential for scaling up to include many additional fisheries.” (Helmsley, 2016). Since inception in the early 2000s, hundreds of other temporary bans on fishing have been implemented across the region trying to emulate the success of Velondriake. Octopus closures range from a 2-7 month ban on fishing, usually on one-fifth of a village’s harvest area (Oliver et al., 2015).

From a fishing output and catch per unit effort (CPUE), the following findings from Benbow and Harris (2011) show significantly positive results of the scheme:

- Five years of landings data from six weeks before and after the regional bans on octopus fishing (15 December – 31 January, from 2006 – 2010) show increased landings by an average of 174% and fishing yield by approximately one third.
- 28 temporary closures from seven years of landings data (2004 - 2010) show a 461% increase in median recorded landings (per closure) following reopening, and a 120% increase in CPUE. This led to an increase in mean catch per fisher from 2.3kg per day to 5.9 kg per day.

Economically, the village fishermen are also better off. \$1 worth of octopus left in closure sites would grow on average to \$1.81 by the end of a closure period, and village-level fishing income doubled in the month following each closure (Blue Ventures, 2015). A closure site’s net economic benefit also rises, as evidenced by Table 18 below:

Table 18: Closure site net economic benefits for 36 tracked closures in the Velondriake LMMA

Closure Site Net Economic Benefits					
	Foregone Catch (\$ PPP)	Benefit (\$ PPP)	NE (\$ PPP)	Monthly IRR (%)	ROI (%)
Total	-\$18,294	\$29,270	\$10,976	-	-
Mean	-\$508	\$813	\$305	57.7%	80.9%
95% CI	\$105	\$193	\$156	30.3%	42.0%

Source: Oliver et al., 2015

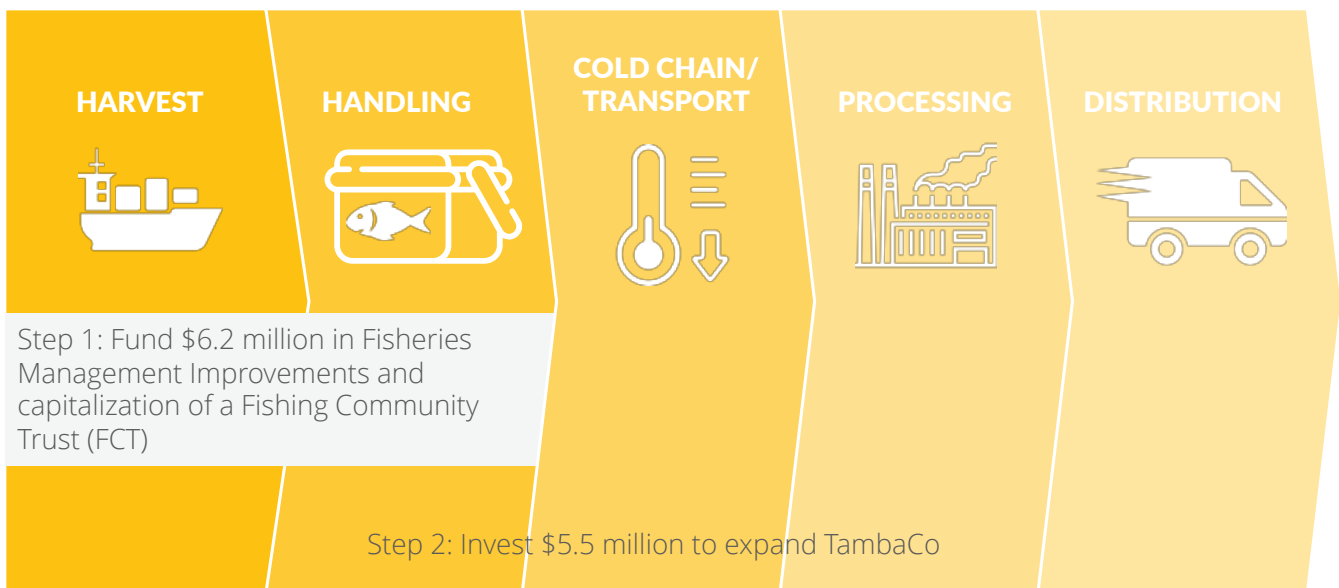
Next steps for the octopus ‘no take’ model in the reefs of Southwest Madagascar is to potentially undergo a Marine Stewardship Council (MSC) certification, an eco-certification granted to potentially increase the value of the octopus. Certified eco-label products can potentially bring in a higher return on octopus, particularly when selling in international markets around the world. This is in discussion with the fishermen in Velondriake, with potential pitfalls of consistent monitoring, surveys, and field management that are difficult to complete without sufficient technical capacity.

In addition to tourism and small-scale management improvements to reefs, investments in small scale fisheries are under development to create incentives to improve reef management while increasing livelihood benefits. In 2016, Encourage Capital created a blueprint known as the 'Isda Strategy' for small-scale fisheries in the Philippines for species that include mackerel, octopus, sea urchin, and crab. For a general understanding of how this scheme can work, a \$11.7 million investment over 10 years in fishing management strategies and seafood companies can help increase fishing biomass by 20% by reducing overexploitation (Bloomberg, 2016). The program targets forty fishing communities with 19,000 fishermen involved. The concept is based on the assumption that consumers

are willing to pay a 15% premium on fish that is sustainably sourced, while investors can gain up to a 20.7% targeted internal rate of return (IRR) on their investment after the decade-long time period (Bloomberg, 2016). There are two steps to the Isda Strategy:

- **Step 1:** Invest \$6.2 million for fishery management improvements and the capitalization of a Community Fishing Trust.
- **Step 2:** Invest \$5.5 million for the creation of TambaCo, a premium seafood processing and distribution business.

Figure 12: The Isda Strategy investments

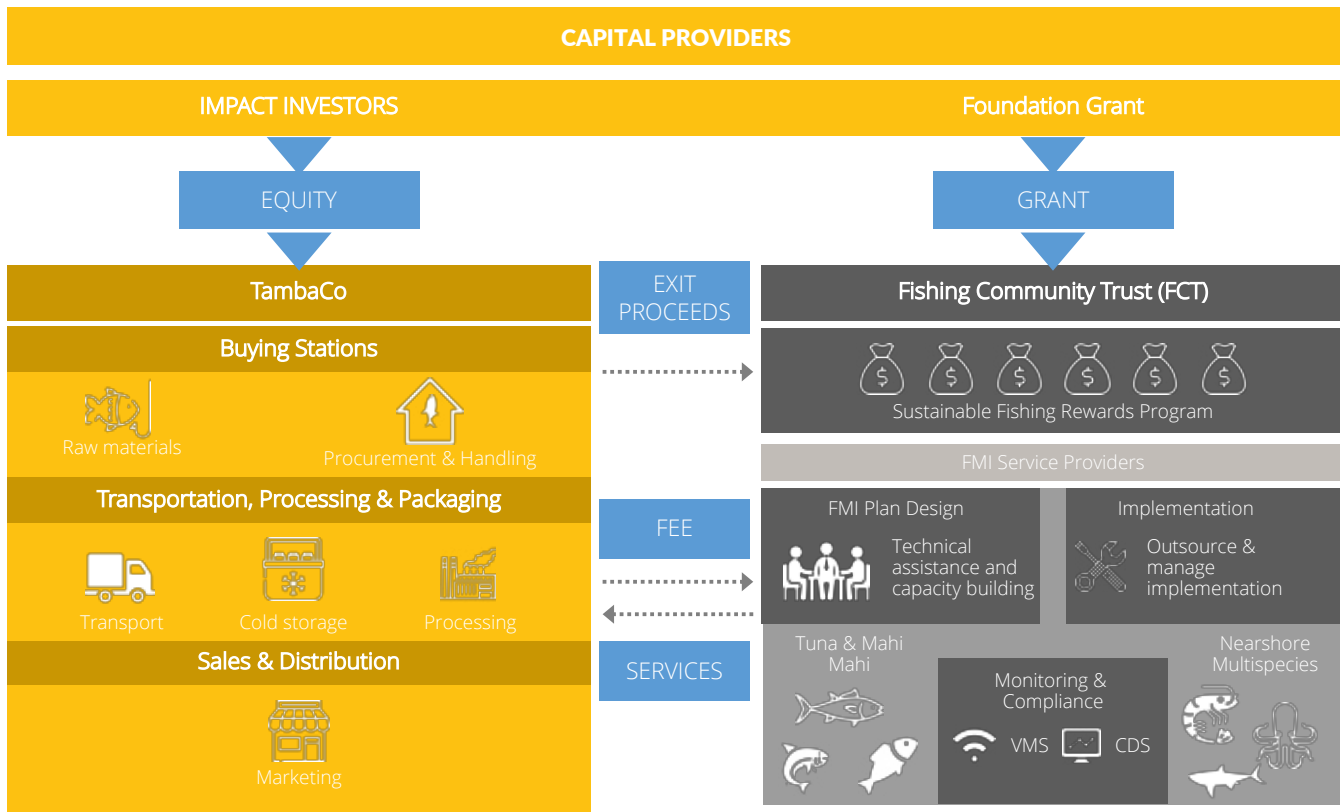


Source. (Bloomberg, 2016)

The investment of \$11.7 million in equity and grant capital is targeted towards this improved management, with a core component to have strong fishery data-collection systems, such as vessel monitoring and catch documentation. There will also be a processing/distribution company called TambaCo that will be created through this investment. Some of the goals of the strategy include:

1. Safeguarding stock levels of at least 20 species, including pelagic and nearshore, potentially increasing biomass by 20%.
2. Increasing fisher revenue through a 15% premium paid per unit of raw material sourced by TambaCo.
3. Increasing community-designated “no-take zones” in targeted local community fishing reserves, totaling over 1,000 hectares.

Figure 13: The Isda Strategy capital providers and flows



Source: (Bloomberg, 2016)

The Isda Strategy is currently in early phases and it is too early to know the results and expected returns. While the Isda Strategy could well be an effective solution for sustainable fisheries in the Philippines, there are caveats regarding its applicability elsewhere. The Isda Strategy requires more than the \$11.7 million equity and grant capital, with a further \$8 million needed for operating and capital costs for fisheries management over the ten-year period (Bloomberg, 2016). Finding investors and governments to provide a capital boost on this financial scale to local fisheries can potentially be difficult. However, if the project proves successful and the returns on investment are positive, projects of this type could be attractive to impact investors, especially if grant funding can be brought in at an early stage to help create the conditions for success.

Another factor to keep in mind is that many reef fisheries are artisanal in nature and do not take place at a scale that could support larger scale investment; they generally provide for local markets where returns may be limited. Investments in reefs for artisanal

fisheries providing for local markets are unlikely to require millions of dollars, and may not provide the returns required to attract most normal investors.

Furthermore, for sustainable fisheries schemes with price premiums to be successful there must be robust data collection and monitoring to ensure that conservation goals are being achieved. In local reef systems, this is a difficult challenge to overcome. Potential solutions include governments, grant-making institutions such as conservation trust funds, local fishermen, and donors providing sufficient ground-level support required to make reef fishing more sustainable and/or profitable. The community fishing nature of several reefs and the low fishing yield provided will make generating consistent returns from reef fishing a challenge for investors. In the cases where reef fishermen have access to larger markets on a national and international scale, then schemes like the Isda Strategy could potentially work.

4.6 Conservation Trust Funds

Conservation Trust Funds (CTFs) are private, legally independent institutions that catalyze funding and resources for biodiversity conservation. They may finance the long-term management costs of protected areas, fund conservation and sustainable development initiatives outside PAs, or do a combination of both. CTFs are financing institutions rather than institutions that implement biodiversity conservation programs.

There are over 80 Conservation Trust Funds (CTFs) around the world, either in operation or in some stage of development. CTFs play a unique role in the conservation space because they are well-positioned to work with government to influence policy and drive

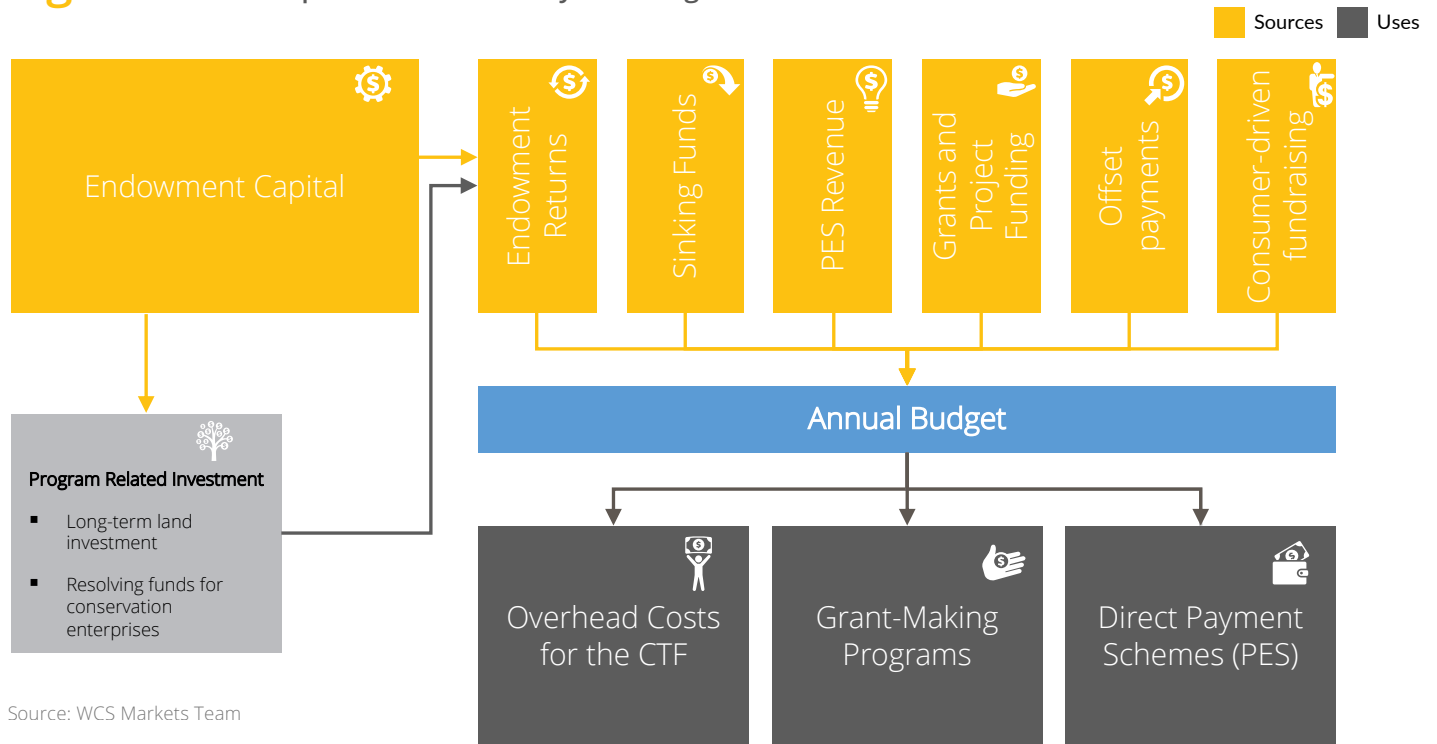
national level financing, to influence and educate individuals within their operating sphere, and to partner with other Civil Society Organizations (CSOs), on a local, national and global scale. In addition to marshaling financial resources to drive conservation outcomes, they also play a role in bringing together key actors to achieve conservation goals.

CTFs are unique in that they are both a financing mechanism in and of themselves, and also a catalyst for creating other financing mechanisms. A CTF may rely on a single financing mechanism, particularly at the outset, but more typically they bring together a diversified suite of financing mechanisms to address a variety of needs and opportunities, and to avoid over-reliance on any one source of funding. The graphic below illustrates an example of a CTF's mix of financing mechanisms.

Table 19: Conservation Trust Funds summary

Conservation Activity Relevance	<ul style="list-style-type: none"> Creation, development and management of MPAs Sustainable fisheries Restoration of coral ecosystems Suppression of external pressure factors Sustainable tourism
Ease of Implementation (set-up from design through rollout, costs included)	<div style="display: flex; align-items: center;"> <div style="background-color: #333; color: white; padding: 5px; margin-right: 10px;">Low-Medium</div> <ul style="list-style-type: none"> Setting up a CTF requires broad stakeholder engagement and a carefully designed governance and organizational structure. Setting up a CTF requires specialized technical expertise that usually must be outsourced; typically the process requires 2-3 years and often longer; in addition to the set-up costs, it is necessary to secure the funding for the conservation activities. </div>
Revenue potential	<div style="display: flex; align-items: center;"> <div style="background-color: #333; color: white; padding: 5px; margin-right: 10px;">High</div> <ul style="list-style-type: none"> Many CTFs manage significant sums of money in endowments and sinking funds, and catalyze other sources of revenue for conservation. CTFs can play a significant role in managing payments for PES schemes, biodiversity offsets, and can even stimulate development of enterprises. Endowment funds manage large amounts yet provide grants only from investment returns. </div>
Key Considerations	<ul style="list-style-type: none"> Important to establish a collaborative relationship with government while maintaining legal and governance independence. Critical to evaluate the legal framework in the country where the CTF will operate; it may be necessary to register the CTF off-shore. The <i>Practice Standards for Conservation Trust Funds</i>, produced by the CFA, provides guidance on key elements that should be part of establishing a CTF. CTFs can bring together multiple financing tools through one independent entity.

Figure 14: Sample CTF sustainability financing framework



Source: WCS Markets Team

Most CTFs include some long-term funding mechanism (such as an endowment or sinking fund) as a backbone of their business plan, and provide grants to specific beneficiaries to achieve conservation outcomes. They also work to secure project funding from bilateral, multilateral and foundation donors. More broadly, though, CTFs are innovators in deploying a variety of finance tools. Examples of the breadth of financing mechanisms used by CTFs include: revolving funds for tourism fees; proceeds from sovereign bond issues; debt-for-nature or debt-for-adaptation swaps; PES schemes; mobile-phone (text based) fundraising schemes; incubating conservation enterprises; managing compensation funds or offset payments; product certification ventures; and a stock exchange index that identifies the best conservation actors within a country's economy.

There are at least six CTFs that focus primarily on marine and coastal conservation, with one, the Mesoamerican Reef (MAR) Fund, focusing entirely on a reef ecosystem: one that spans four countries' coastlines. MAR Fund and SeyCCAT are both examples of CTFs, financing mechanisms in their own right, that are deploying a suite of financing mechanisms to support conservation.



Photo contributed by Raquel C. Bagnol, Saipan

CASE STUDY

MAR Fund

The Mesoamerican Reef (MAR) Fund was created in 2004 to address the need for a regional funding and coordination institution in support of the Mesoamerican Reef, a system of interconnected and interacting marine ecosystems arching through the territorial waters of Belize, Guatemala, Honduras, and Mexico. It is the second largest reef system in the world, and a critical ecosystem both for the adjacent region, and globally. MAR Fund is a privately managed fund, and one of a few CTFs to span multiple countries in its service and governance region. Its Board includes, among others, representatives from CTFs in each of the four Mesoamerican Reef countries, specifically, Protected Areas Conservation Trust (Belize), Fundación para la Conservación de los Recursos Naturales y Ambiente en Guatemala (FCG, Guatemala), Fundación Biósfera (Honduras), and Fondo Mexicano para la Conservación de la Naturaleza (Mexico).

Historically, the MAR Fund has used traditional donor support to finance reef conservation. The MAR Fund has an endowment to ensure a steady flow of income, and pursues additional project funding for specific initiatives, usually from bilateral donors and foundations. Recently, the MAR Fund has begun exploring other financing mechanisms. The Mexican reef insurance example described above is part of the Mesoamerican reef region, and benefits the northern part of the Reef. MAR Fund is currently partnering with the Global Ecosystem Resiliency Facility (GERF) at Willis Towers Watson to explore ways to expand the insurance model south of Quintana Roo, Mexico to benefit other parts of the MAR region.

As described above, the MAR Fund has also entered into a collaborative alliance with the Caribbean Biodiversity Fund and PACIFICO to address issues of shared concern and impact. This alliance is exploring multiple approaches. One of the first is called Blue Challenge, an incubator that will target two key industries, tourism and fisheries, with the potential to address waste management in the future. The incubator will begin by providing technical assistance grants to help beneficial businesses grow and become sustainable. Eventually, the program may expand to offer loans. Blue Challenge intends to partner with impact investors, those that have expressed a strong interest in investing in conservation enterprises but find a shortage of available projects; by incubating these small businesses, Blue Challenge will help to increase the supply of available investments and grow the sector overall.



Photo contributed by Phillip Hamilton

CASE STUDY

SeyCCAT

SeyCCAT was formed in 2015 as an independent, nationally based, public-private trust fund. The fund was created by the Conservation and Climate Adaptation Trust of Seychelles Act of 2015. It focuses on marine and coastal protected areas, the fisheries sector, healthy marine and coastal habitats, adapting to the effects of climate change through risk reduction and social resilience, and sustainable development of the Seychelles' blue economy. Given the scale of the Seychelles' EEZ, reefs constitute a comparatively small percentage relative to open water, but the reefs will be at least a secondary beneficiary, if not the primary beneficiary, of the Seychelles' policies.

SeyCCAT combines a number of financing mechanisms in its overall portfolio of tools. The initial financing came through a debt restructure of the Republic of Seychelles' sovereign debt. This debt-for adaptation swap was described above in Section 4.5.3 and in more detail in the Appendix. The swap created long-term funding focused on implementation of the Seychelles' Marine Spatial Plan, and is tightly tied to the Seychelles' national planning and policies. Part of the funding is committed to an endowment, which must be invested for the long-term. Indeed, SeyCCAT is proscribed from using the principal or interest of the endowment for a 20-year period, so that the capital base can grow over time.

SeyCCAT will also utilize proceeds from the Blue Bond described above in Section 4.5.1. Specifically, as one of the two managers of the Blue Bond proceeds, SeyCCAT will implement programs to test out business models that can create new and additional value from the fisheries sector. SeyCCAT will focus on technical assistance and development grants; as some of these approaches are tested and mature, they may later be ready for loans from the Seychelles Development Bank, the other manager of the Bond proceeds.

SeyCCAT will also use a portion of its funding to create an enterprise fund (i.e. Conservation Enterprise Incubator) to foster and promote small and medium size enterprises that support the Seychelles' Blue Economy goals and improve economic diversification in the Seychelles'. The enterprise fund is still in the development stages but is likely to be a means of providing loans to SMEs at affordable interest rates. CTFs are in a unique position to run an incubator because unlike private sector impact investors, CTFs are often willing to accept less than market rates of return on their investments or lending, as long as a clear mission-relative objective can be achieved.

In using its resources – and catalyzing others – to support conservation, adaptation and economic resilience, SeyCCAT plays a unique role in the Seychelles' marine economy. SeyCCAT, for example, is likely to fund no-take programs among artisanal fishers – such a program involves an upfront investment to, among other things, ensure that the local fishers have an income stream during the no-take period. As a local actor, SeyCCAT can engage with artisanal fisheries in a way that larger or more remote actors would not be able to do. And, with a suite of diversified funding mechanisms, SeyCCAT avoids over-reliance on any one source of funding.

5.0 Comparing Financial Tools



Photo contributed by Cinzia Osele Bismarck

The process of choosing from among the array of options includes looking at intended conservation activities, considering organizational capacity and needs, and narrowing down the options to those mechanisms that will have the greatest impact within that context.

The first step, as described in Section 2, is developing a business plan that will provide a framework for conducting that analysis and making these key decisions. A robust business plan will require the use of multiple finance tools, selected to work symbiotically to achieve both scale and sustainability over time.

The second step is to understand which finance tools can most effectively and efficiently achieve the

intended conservation activities. This information is captured in Table 1 above, and in the summary tables before the description of each financing mechanism. This helps to clarify the field of options, within the context of the business plan.

The third step is to decide, given the organization's capacity and needs, which finance tools have the best potential to meet the financing needs. Two key considerations are the tool's ease of implementation and revenue potential.

The description of each mechanism throughout Section 3.0 includes a relative assessment of each tool on these three dimensions, and these assessments are summarized below in Table 20:

Table 20: Financial tools categorized by costs, revenue potential, and ease of implementation

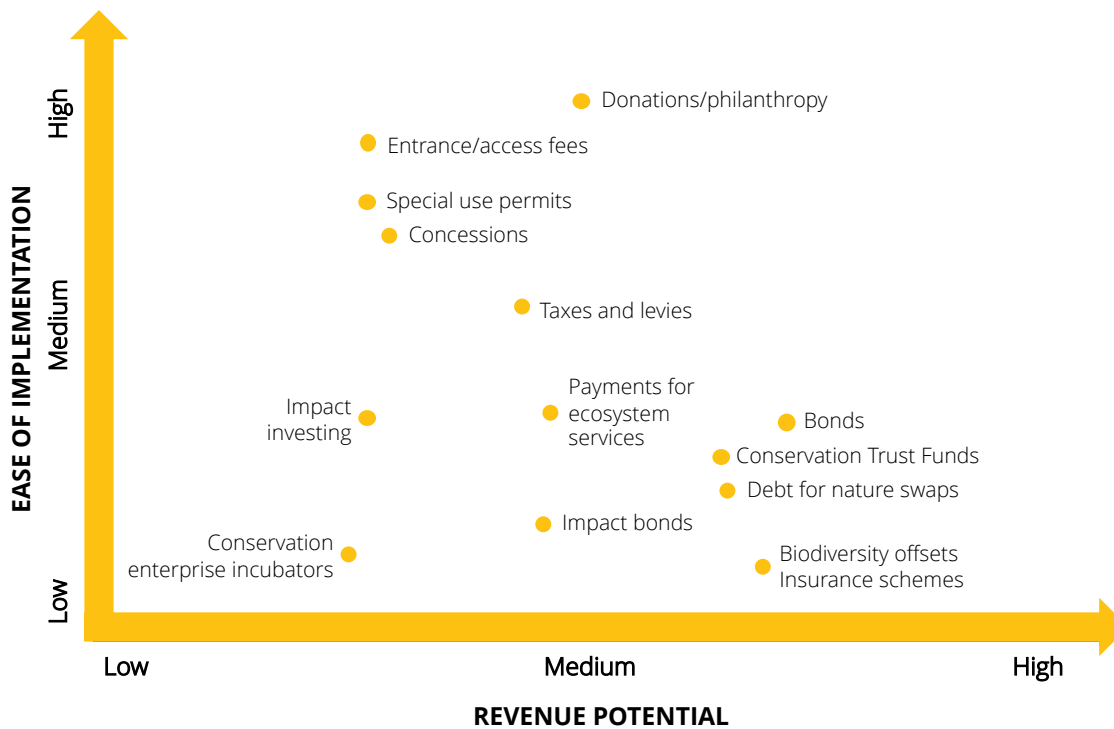
Financial Tool	Ease of Implementation	Revenue Potential
Entrance / Access Fees	High	Medium
Special Use Permits	Medium-High	Medium
Concessions	Medium-High	Medium
Taxes & Levies	Medium	Medium-High
Payments for Ecosystem Services (PES)	Low-Medium	Medium-High
Biodiversity Offsets	Low	High
Bonds	Low-Medium	High
Impact Bonds	Low	Medium-High
Debt for Nature Swaps	Low-Medium	High
Insurance Schemes	Low	High
Conservation Enterprise Incubators	Low	Medium
Impact Investing	Low-Medium	Medium
Conservation Trust Funds	Low-Medium	High

To facilitate analysis, a matrix was developed to allow for a visual comparison between ease of implementation (this metric included the design and costs of any particular tool) and revenue potential. Interpreting the matrix depends on the entity's business plan and organizational capacity – for some, low-cost, low-complexity tools will be the most important considerations. For others, revenue potential will be the driving factor. For others, seeking middle ground will be key. The tools that are harder to implement, such as biodiversity offsets or insurance schemes, require more technical expertise and capacity and initial upfront costs. On the opposite end of the spectrum, entrance fees and concessions offer relative ease of implementation but usually have lower revenue potential when compared to the more complex options.

The matrix can help to give quick visual cues on which financial tools should be further investigated, but it is important to explore the “Key Considerations” to

identify any “red flags,” as well as critical elements to consider in design and implementation. An important point to keep in mind is that there is no correct choice of mechanism. Feasible options will depend on conditions “on the ground” and opportunities. The business plan will provide useful options. If there is significant tourism potential, there may be many types of investment options, or fee programs that could be put in place. If a country is facing significant infrastructure investment, the development of an offset program may be appropriate. Figuring out how to use donor funds to help develop new opportunities and long-term financing mechanisms is also a key step in the process.

Figure 15: Financial tools depicted with revenue potential vs. ease of implementation



Why Revenue Potential and Not ROI?

Return on Investment (ROI) would seem to be an obvious choice for one axis of the matrix, so why wasn't it used? In the broadest sense, the ROI of a financial mechanism (or any project) is the total benefits – conservation, economic, social and financial – divided by the total costs. It is a way of measuring whether the benefits outweigh the costs, over time, and whether the mechanism is worthwhile. In purely financial terms, ROI is the measure of net profit, divided by the investment costs or outlay over time. For conservation professionals, the ROI will necessarily include a broad definition including the conservation benefits. In fact, a financing mechanism that produces an outstanding conservation return may be viewed as a success, even if it does not produce positive financial return; it is not, however, a sustainable financing mechanism on its own if it continually loses money which must be supplemented by other sources. It might, however, fit into an overall portfolio of finance mechanisms that, together, produce positive conservation benefits and are adequately funded over time.

There is another way of looking at ROI that may be appropriate. Many organizations have begun to look at a conservation return on investment to prioritize their conservation investment portfolios. A conservation return on investment looks at the level of investment required in return for the biodiversity, environmental and social benefit that result from that investment. Looking at the potential conservation and social returns as compared to investment is an important way to distinguish between investment options. However, it is important to recognize the challenge in quantifying environmental and social returns, which can limit the conservation ROI's effectiveness. That is another reason that for purposes of this guide we have looked at revenue.

6.0 Opportunities and potential pitfalls



Photo contributed by Jayne Jenkins, Great Barrier

6.1 New Framework for Ocean Finance⁸

In context, the identification of new funding tools for coral reef conservation - the purpose of this guide - is one essential action that is part of a holistic approach to using financial capital to improve the health of the oceans. A new framework for ocean finance has been published by the Pacific Ocean Finance Program that highlights how funding tools fit into a bigger program of work. “Ocean Finance” can be defined as generating, investing, aligning, and accounting for financial capital to produce sustained ocean health and governance (see Figure 16).

The reason that it is important to contextualize the identification of new funding tools within a larger framework is that generating more money is not the end goal for coral reef conservation finance. In isolation, the focus on generating more money can create perverse incentives, inefficient investments, and long-term economic drivers that create risks for ocean

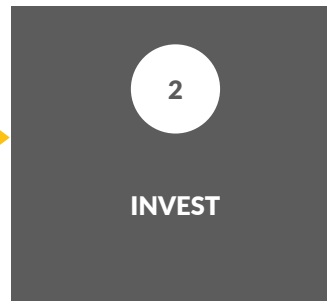
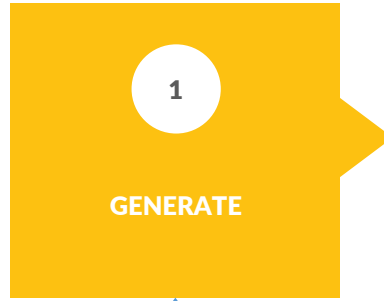
health. Another goal that is often put forward is to create sustainable funding, yet this is also a misguided and likely impossible goal; marine conservation requires ongoing strategic financial planning to create diverse and sustained portfolios of multiple funding tools, aggregating and leveraging financial capital from private and public investors (Bos et al., 2014).

This new framework unites multiple streams of work to articulate the many ways in which financial capital intersects with ocean outcomes. The **first action** is to generate public and private financial capital through traditional and innovative finance mechanisms to create a diversified portfolio of revenue that supports ocean health. This action includes the identification of both investors and finance mechanisms, and packaging these together into diversified portfolios. The **second action** is to invest this financial capital strategically, effectively, and efficiently to achieve measurable ocean outcomes. Regardless of the investor or the finance mechanism, monies for ocean finance should be invested against regional and national frameworks for ocean governance in order to achieve strategic and effective change.

8. From Walsh (2018)

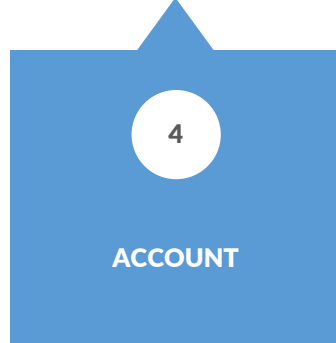
Figure 16: Ocean Finance Actions (Walsh 2018)

Generate public and private financial capital through traditional and innovative finance mechanisms to create a diversified portfolio of revenue that supports ocean health.



Invest financial capital strategically, effectively, efficiently to achieve measurable ocean outcomes.

Account for how financial capital is deployed against performance benchmarks, and account for values of marine ecosystem services through time.



Align public and private economic incentives with long-term ocean health.

Source :Walsh 2018

The **third action** is to align public and private economic incentives with long-term ocean health. Generating and investing new monies will always be necessary, but unless incentives are aligned with ocean health, ocean finance will never be sufficient. This action includes addressing economic incentives and government subsidies, regardless of whether they generate revenue, to understand how they influence economic drivers that intersect with ocean outcomes. The **fourth, and last**, action is to account for how financial capital is deployed against performance benchmarks, and account for values of marine ecosystem services through time. Equally important to generating, investing, and aligning financial capital, it is essential to account for how effective ocean investments are at achieving ocean governance objectives. Frequent and ongoing accounting will enable rapid maneuvering if required. Accounting needs to be conducted at multiple scales: individual investments, national and multilateral budgets, and corporate activities and investments. In addition, estimating and monitoring changes to the economic valuation of marine ecosystem services can serve as a check on ocean investments.

This new framework is currently being trialed as a tool to assess the status and opportunities for ocean

finance at the Pacific Islands regional scale and for eleven individual Pacific Island countries, and could be trialed for a coral reef conservation program, managed area, or non-profit organization.



Photo contributed by Katerina Katopis Greece

CASE STUDY

Could the world's largest government grant for coral reefs backfire?

This is a case study that highlights that more money is not necessarily better; proper process and transparent governance systems are just as important for long-term coral reef conservation funding.

In mid-2018, the Australian Government announced what they termed as the “world’s largest government grant” to support coral reef conservation: a AU\$444 million (US\$315 million) grant to the Great Barrier Reef Foundation to be spent over 6 years. What could have been a celebratory victory for the imperilled Great Barrier Reef has turned into a hotly-debated controversy.

Before this recent large grant, approximately AU\$485 million per year was invested into Great Barrier Reef management (Australian Government 2015; see Table 20). Over 90% of this investment came from government but it also included AU\$12 million per year in user fees (Environmental Management Charge or EMC; GBRMPA 2016) as well as grants from non-profit organizations and high net-worth individuals. Marine biodiversity offsets also contribute funding for Great Barrier Reef restoration and conservation, and while the amount is highly variable from year to year, a total of AU\$185 million in Great Barrier Reef offsets has been approved and is in process of moving forward. The largest foundation that supports the Great Barrier Reef is the Great Barrier Reef Foundation, which up until this grant was announced, employed 6 staff and had an annual operating budget of approximately AU\$7 million.

Table 21: Estimated annual investments in Great Barrier Reef management in 2015 (Australian Government 2015)

Source	Million AUD
Australian Government	137.4
Queensland Government	78
Local Government	228.9
Other Non-Government	41.3
Total	485.6

Despite these large investments, the management and conservation of the Great Barrier Reef is significantly underfunded. The Reef 2050 Investment Framework estimates that an additional AU\$143 million - AU\$408 million is required over five years (Australian Government 2016; see Table 21). The World Wildlife Fund (WWF) Australia and the Australian Conservation Foundation have estimated that AU\$475 million per year is needed to address the reef’s water quality alone (note this is significantly higher than the government’s estimate).

Deloitte Access Economics (2017) estimated that the Great Barrier Reef provides AU\$6.4 billion per year to the Queensland and Australian economies and 64,000 jobs. With the World Heritage listing, indicating the area is under extreme threats from climate change and other human activities, the Great Barrier Reef was desperately in need of a funding boost.

Table 22: Estimated funding needs for the Reef 2050 Plan for 2016-2021 (GBRMPA 2016)

	Reef Water Quality Protection Plan	Field Management Program	Reef 2050 Integrated Monitoring and Reporting	Crown-of-Rhorns Starfish Control	Traditional Owner	Fisheries
Estimated funding needs (AUD)	\$33 - 123 Million	\$41 - 92 Million	\$48 - 157 Million	\$10 - 20 Million	\$6 - ? Million	\$5 - 10 Million

The need for the funding seems to be clearly supported, so why was this funding so controversial?

Just days after the public announcement, the full amount was transferred to the Foundation’s bank account before any financial due diligence or plan for investing the money had begun. The Foundation had been in discussion with the government regarding a AU\$5 million grant, and without requesting more money, on short notice, the government informed them that they would be receiving one hundred times the requested amount. Critics say that the government rushed through the investment due to political reasons - to balance the budget before the end of the financial year and ahead of elections - with no effort to complete a transparent and fiscally-responsible decision. There was no competitive tender process, no requirement for the Foundation to tell the public what the funds would be used for before the transfer of money, and no financial due diligence prior to the transfer of funds. The use of the funds will be determined by the Foundation’s Board and staff, not by the numerous stakeholder advisory bodies existing in the region. Individuals from GBRMPA, AIMS, and CSIRO have complained that government agencies will have to ask a small private foundation for the funding that they need. The grant is now the subject of a Senate Inquiry and is making daily headlines in the major news outlets in Australia. The political opposition party has vowed to take back the funds if they come into power during the next election.

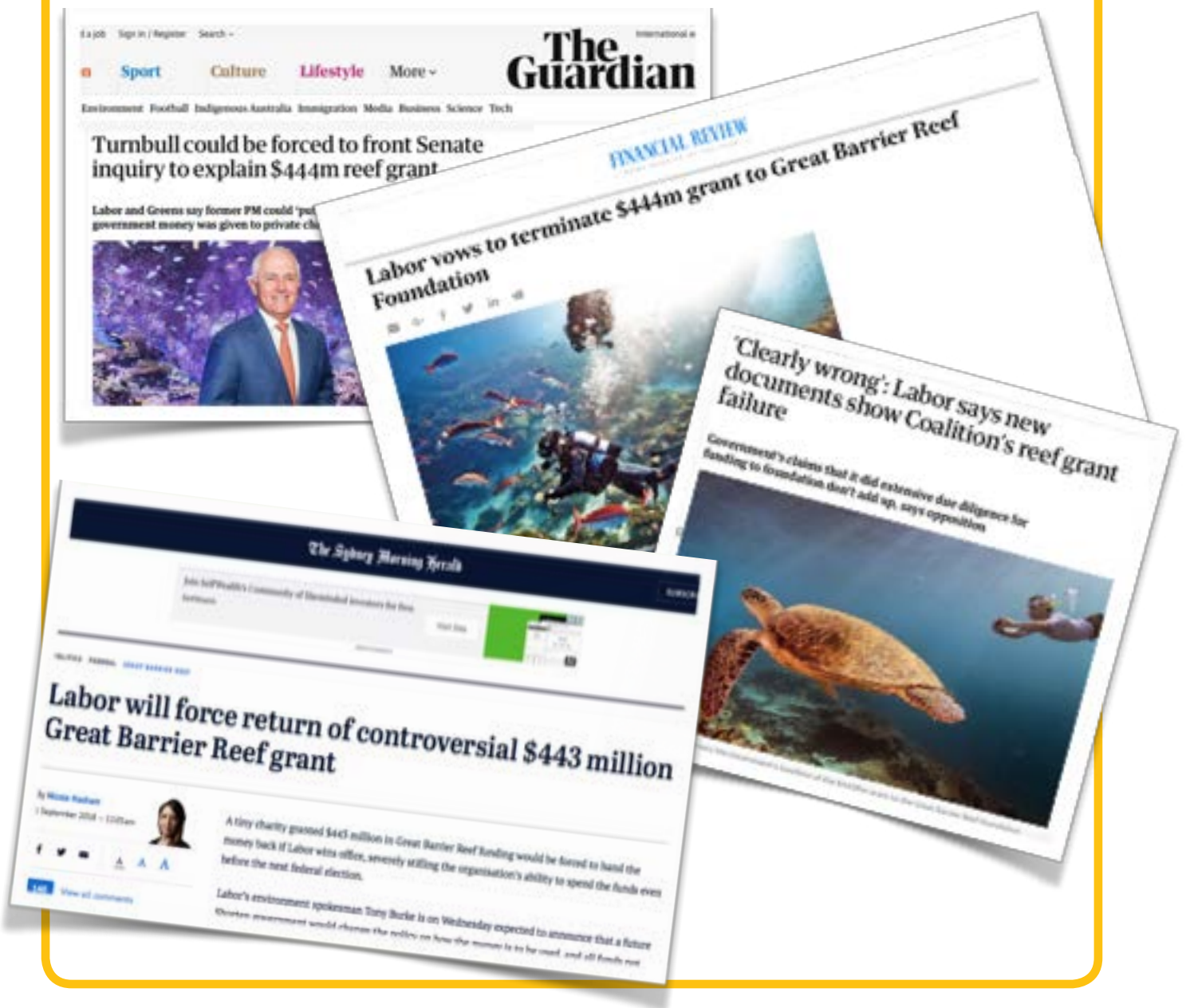
Since the grant was finalized, the Foundation has announced that the funds will be invested for:

- improving the quality of freshwater reaching the reef (AU\$201 million)
- reducing the impact of crown-of-thorns starfish (AU\$58 million)
- engaging traditional owners and the broader community in reef conservation (AU\$22.3 million)
- improving monitoring of reef health (AU\$40 million)
- supporting scientific research into reef restoration, with a specific focus on tackling challenges created by climate change (AU\$100 million).

The Foundation has also defended its reputation as being a science-driven organization that has the ability to leverage public funds with large private donations (the Managing Director told the Senate that she was confident the Foundation could raise “hundreds of millions” using a co-investment strategy). The Foundation says that it can support projects that are cutting edge and too risky for normal public expenditures, filling a critical gap. Supporters have also noted with interest that the same government has offered twice the amount (AU\$1 billion) to subsidize a new private coal mine, making this investment both even more necessary and not enough to mitigate the damage. The Great Barrier Reef covers an area of 348,700 km² so the grant is less than AU\$1500 per square kilometer over 5 years.

The real risk here is that because government did not follow proper transparent processes, the grant may indeed be redacted and future funding for the Great Barrier Reef will be even more difficult given the messy public debate. Even if the Foundation is allowed to keep the grant, despite their quality performance and capacity, they may find it very difficult to attract the much-needed private co-investment due to the bad publicity.

This case study demonstrates that protecting coral reefs depends on the participation of many actors, with government playing a significant role, both in terms of direct funding as well as through regulation, which requires companies to compensate for their impacts. It also demonstrates that lack of transparency and accountability can put at risk the ability to attract diverse and longer-term funding from other stakeholders, especially the private sector, upon which reef conservation will depend.



7.0 Conclusions and Next Steps



Photo contributed by Fabrice Dudenhofer, Egypt

The financial tools outlined in this report aim to provide reef managers, governments, donors, interested stakeholders, and the 50 Reefs initiative with a broad set of instruments that can be used to fill financial gaps in coral reef conservation.

The mechanisms discussed in this report are not all-encompassing, and instead should be treated as an overview of current ‘front line’ ways to bridge financial gaps for coral reef finance. When designing such tools at the national and local level, special emphasis must always be placed on what the money is needed for – such as reef restoration or the creation of MPAs. Having a clear strategy in place for meeting the identified need is paramount for the design and implementation success of the selected financial tool. There is no single financial mechanism that can be applied to achieve results. Success will depend on a diversity of strategies and will need to take into account time, scale, and the amount of financing required. For instance, some financing mechanisms can be put in place relatively easily while others will require significant time and resource investments, with the financial rewards accruing further in the future. All will need to respond to existing opportunities and threats to the conservation of the particular reef system as well as to the funding opportunities that may be available. In any strategy for achieving sustainable financing flows, both

short and longer-term options need to be considered and promoted to meet conservation objectives and some balance achieved between government and private sector actions.

The application of these financial tools will provide opportunities for generating revenue to support the conservation of reef ecosystems. However, as the case study about recent financing for the Great Barrier Reef demonstrates, money cannot be the only object. Financial success also depends on institutional capacity, as well as the development of best practices of accountability and transparency. Without such capacity and institutional commitment, conservation results are less likely to be delivered and opportunities for success could be squandered.

Financial tools based on the feasibility graph (above in Figure 13) show that certain options are extremely difficult given the circumstances of reef management. There is never a ‘one size fits all’ solution to conservation finance, and each individual reef or reef system must consider options relevant and practical to the relevant conditions.

Understanding the feasibility of options will also require that conservation groups and managers carry out the necessary studies to understand the

options available. Development of reef conservation or MPA business plans will be an essential first step in understanding the opportunities available to generate funds and to improve management efficiencies. These business plans can explore whether and how the various financial mechanisms can be deployed to generate conservation resources.

Many financing mechanisms are well-proven, and serve in a variety of settings. Specifically, for reefs, tools like the parametric insurance scheme have emerged as new and successful approaches for reef conservation. Other innovations like the Blue Bond have been in development for several years and are now coming to fruition.

What will be the next key innovation? There are several mechanisms that show potential, but require further research in terms of profitability, investment horizons, and potential implementation feasibility given that there is strong scope for large amounts of revenue to be generated. These are, in no particular order:

- **Resilience Bonds:** Resilience bonds are, at this stage, purely conceptual. However, with the achievement of the necessary scale and engagement by a multilateral or private actor working in concert with governments, there is potential for resilience bonds to provide both a source of reef finance and an investment vehicle for conservation-minded impact investors.
- **Impact Bonds:** There are some limited types of projects – infrastructure improvement in coastal communities to reduce runoff and pollutants; improvement of monitoring technology for PA management – where an impact bond could be a viable financing tool. While it's important not to attempt a complicated financial tool purely for the sake of cutting-edge innovation, if a less complicated approach would work just as well, impact bonds are a tool worth considering if conditions are right.
- **Hobby fisheries:** In environments where the hobby fishing industry is a threat to a reef, and/or an opportunity for livelihoods, the sustainable development of an artisanal hobby fishery may provide reef financing or avert destructive practices by creating an alternative income stream. Development of this approach has not

been widely attempted outside the freshwater realm, but warrants further investigation.

- **Global CTFs:** Until recently, Conservation Trust Funds have been mostly created at the national level, and to a lesser extent at the regional level. The creation of the Blue Action Fund gives an interesting example of a global CTF, and should stimulate discussion about the possibility of a global CTF focused on coral reef conservation. A global CTF would provide the opportunity to look at scaled solutions – replicating successful approaches at multiple sites, or growing an approach to support a larger area. A global CTF, through economies of scale, could also enable financing mechanisms that would not be economically viable for an individual reef protected area.
- **Incubators and Impact Investing:** Globally, the examples of conservation impact investing in developing economies are limited. However, there remains a significant interest in finding ways to channel private investment to conservation enterprises. Incubators provide a key way to develop these markets and businesses. Creating a regional or global incubator would be one way to diversify risk, achieve economies of scale, and leverage technical expertise.
- **Marine Biodiversity Offsets:** On a global level infrastructure spending is expected to reach almost \$78 trillion by 2025, mainly in the Asia-Pacific region. This level of investment will result in potential impacts on coastal resources and reef systems. Anticipating this increased level of investment, the development of policies aimed at reducing and offsetting impacts becomes a priority. Different models are under development to establish local policy frameworks to require companies to mitigate their impacts and to compensate impacts through financing biodiversity offsets. By reducing impacts and through long-term financing of offsets, positive conservation outcomes can be achieved in coastal and reef systems. Offsets represent one example of larger revenue generation options through regulated markets. By passing laws requiring certain actions, governments can open opportunities for business opportunities to deliver desired conservation outcomes.

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Photo contributed by Yen-Yi Lee, Taiwan

9.0 Appendix

a. List of Consulted Stakeholders

Robbie Bovino, The Nature Conservancy
Martin Callow, SeyCCAT
Scott Dowd, Project Piaba
Dan Fairweather, Sophie Evans and Jacqueline Wharton, Willis Towers Watson
Mariá José Gonzalez, MAR Fund
Carter Ingram, Ernst and Young
Caleb McClennan, WCS
Fernando Secaira, The Nature Conservancy
Tania Taranovski, formerly International Pole and Line Foundation
Mark Way, The Nature Conservancy

b. Available Resources

The Conservation Finance Alliance (CFA) offers the Conservation Finance Guide, an encyclopedia of finance tools. The original guide is available online at <http://www.conservationfinance.info>. Through a project led by UNDP's Biodiversity Finance Initiative (BIOFIN), the CFA is in the process of updating and adding to the Guide.

Pacific Ocean Finance provides a catalogue of ocean finance solutions, a register of examples, and a list of subsidies. All are specifically related to the Pacific Ocean but many could be replicated in other contexts. <https://www.pacificoceanfinance.org/finance-solutions>.

c. The Seychelles Debt-for-Adaptation Swap

The Seychelles Debt Conversion provides an interesting case of a multi-party debt swap:

Context: The Seychelles, like most SIDS, faces significant environmental and economic impact from climate change. The government of the Seychelles had expressed interest and willingness to support the creation of new MPAs, recognizing the role of marine conservation both for adaptation, and economic resilience. As a result of the global economic crises of 2008, the Seychelles also held a significant amount of external public debt, amounting to, in 2008, 95% of GDP. While the debt was restructured in 2009 through an IMF program, the Seychelles welcomed the opportunity to renegotiate the debt into even better terms.

Key Players:

- Grant providers: Donors, including private foundations and individuals, provided \$5 million in philanthropic support.
- NGO: The Nature Conservancy provided a \$15.2 million loan, and, through its NatureVest arm, acted as the intermediary of the deal
- Government of the Seychelles: Participated in debt restructure, and committed to significant environmental protections

- Creditors: Belgium, France, Italy, the United Kingdom (under the Paris Club) agreed to a debt buyback designed to benefit the environment
- SeyCCAT: the newly created conservation trust fund will make grants to support environmental protection and economic development

Table 23: Seychelles Debt-for-Adaptation Swap deal flow

Step	Description	Grant providers	Gov't of Seychelles	Creditors	The Nature Conservancy	SEYCCAT
(1)	Grant providers donate \$5M USD to SEYCCAT	- \$5M USD + Achieving conservation outcomes				+ \$5M USD
(2)	TNC lends \$15.2M to SEYCCAT, at 3% over 10 years				- \$15.2M USD	+ \$15.2M USD
(3)	SEYCCAT loans Gov't of Seychelles \$20.2M USD		+ \$20.2M USD			- \$20.2M USD
(4) (5)	Creditors allow Seychelles to buy back \$21.6M in debit for \$20.2M, at 93.5 cents on the dollar; Seychelles makes multiple environmental commitments (see below)		- \$20.2M USD + \$21.6M USD	+ \$20.2M USD - \$21.6M USD + Achieving conservation outcomes		
(6)	Gov't of Seychelles issues two notes to repay SEYCCAT: \$15.2M at 3% over 10 years; \$6.4M at 3% over 20 years; the latter may be paid up to 68.5% in local currency at the spot rate on the day payment is due		- \$21.6M USD			+ \$15.2M USD + \$6.4M USD
(7)	SEYCCAT repays The Nature Conservancy over 10 years				+ \$15.2M USD	- \$15.2M USD
(8), (9)	With the proceeds of the second note from the Gov't Seychelles, SEYCCAT disburses \$280K per year for 20 years in conservation grants and capitalizes an endowment at the rate of \$150K per year for 20 years					

Conservation Benefit: The Seychelles committed to increase its MPAs from 1% to 30% of its territorial waters. Grants from SeyCCAT will support the creation and management of the MPAs, as well as build economic resilience and diversification to help the country adapt to the impacts of climate change, and to ensure health and sustainability of the local fish stocks.

While the debt conversion appears, on the surface, to be a series of complicated transactions resulting in \$6.4 million of net value, the overall benefit to multiple stakeholders is actually greater: The grant providers leveraged their \$5 million grant by 28% -- SeyCCAT will realize an additional \$1.4 million by facilitating the debt conversion – to achieve broader conservation outcomes.

The Government of the Seychelles was able to refinance its debt to more favorable terms, extending the average length to 13 years, from the original 8 years, and allowing partial payments in local currency. While the Seychelles will accept the currency risk on paying its loans to SeyCCAT in local currency (while payments are denominated in USD), this is arguably preferable to having its entire liability in hard currency.

All parties realize significant conservation benefits through the creation of SeyCCAT, a permanent trust committed to marine conservation, and through the creation of new MPAs. SeyCCAT will have the capacity to further catalyze funding for marine conservation (see case study above).

Sources: Convergence, natureVest, The Nature Conservancy, “Case Study: Seychelles Debt Conversion for Marine Conservation and Climate Adaptation,” March 2017; Interview with Martin Callow.

d. Current Region-Based Resiliency Tools – Summary Table

The following table lists some current financing tools used for marine and reef conservation across the Coral Triangle, Indian Ocean, Oceania, Caribbean, Africa, and the Americas. This summary is not a complete list of all the financial tools being used in the region, and instead is meant for illustrative purposes to get a general sense of the sector and the solutions currently being used:

Table 24: Financial mechanisms used in six different regions

Region	Country	Financing Facility	Type of Mechanism
Oceania	Fiji	Reef Explore Fiji Ltd.	Impact investing/ecotourism
	Marshall Islands	Fishing violation fines	Fisheries licensing fee
	Palau	Palau green fee	Taxes and fees
	Vanuatu	Naiwe Beach Turtle and Shark Tour	Ecotourism enterprise
Indian Ocean	Maldives	Green Tax	Taxes and fees
	Seychelles	SeyCCATT	Debt-for-nature swap Blue Bond
Caribbean	Bahamas (and other countries)	Caribbean Biodiversity Fund Blue Challenge	Conservation enterprise incubator
	Barbados	Blue Finance Public-Private Partnership	Impact investing
	Belize	The Protected Areas Conservation Trust	Trust fund
Coral Triangle	Indonesia	Raja Ampata Marine Park	Entrance fees
	Philippines	Meloy Fund	Impact investing
Africa	Tanzania	Tanzania National Parks	Entrance fees
	Madagascar	Madagascar Biodiversity Fund	Trust fund
Americas	Mexico	Solidariad Eco Tax	Taxes and fees
	Mexico (and few other countries)	MAR Fund	Trust fund
	Mexico	Quintana Roo Reef Insurance Scheme	Risk insurance
	United States	Compensatory mitigation – USACE wetland rule	Biodiversity offsets

Source: (Pacific Ocean Finance, 2018)



Photo contributed by Jett Britnell, Sombrero Island Reef, Philippines