Project Proposal

Project name:

Long-term financing of the Barbados MPAs: potential and strategy with the private sector

For:

Organisation of American States (OAS)

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1. CONTEXT

Barbados has a strong history of Integrated Coastal Zone Management, however the tool of Marine Protected Areas (MPAs) has not been effectively utilized in the past. At this time, there is one MPA in Barbados, the Folkestone Marine Park, which for a variety of reasons has not fulfilled its conservation mandate. This MPA is primarily financed by the Government of Barbados (GOB). A second MPA is being considered for the south coast by the Coastal Zone Management Unit (CZMU). Both Management Areas formed part of a Feasibility Study, carried out by AXYS Consultants for the GOB in 2000 and again in 2006. A quasi management plan was developed under these projects, but never implemented.

The CZMU requires updated/new business plans and financial gap analyses for these management areas. The GOB will require these areas to utilize as far as possible, non-public financing instruments, in order to ensure long term financing and thus management for these protected areas.

The results of this study will be integrated also in the Bluefinance project seeking to be implemented in 2015 in Barbados. The Bluefinance project is a special division of Forest Trends' Marine Ecosystem Services (MARES) Program, representing a portfolio of projects that aim for rapid uptake of coral reef ecosystem services information to develop financing mechanisms for conservation and management. Six pilot sites have been identified in the Caribbean region for initial demonstration, including one site in Barbados, two sites in Mexico and three in Colombia. Blue Finance catalyses work in marine ecosystem services assessment and Payments for Ecosystem Services (The Katoomba Group and Marketplace, 2010) (Forest Trends and The Katoomba Group, 2010) in these countries, and makes available useful methodologies for rapid valuation and financing to support best practices in coral reef conservation, in the Caribbean and worldwide.

2. OBJECTIVES, OUTPUTS

The main objective of the study is to evaluate the potential of long-term financing of the Barbados MPAs with the private sector. Marine Protected Areas are promoted to increase the sustainability of fishing and tourism and the stability of coastal and marine habitats of the Barbados.

The following outputs will be produced:

1. Summary report on financing gap, investment and resources needs. The financing gaps for Folkestone Marine Park and the future Carlisle MPA are evaluated on the base of existing management plan, business plans as well as new assessments of investments and resources needs for each MPA.

2. Report on rapid economic valuation of coastal ecosystem services and beneficiary identification. The main beneficiaries of the ecosystem services produced in the case study area are identified and the underlying economic cash flows are estimated.

3. Report of pre-feasibility of financing instruments. A selection of instruments to cover the financing gap is analysed with local stakeholders (especially with the private sector) implicated with the MPA sites. A pre-feasibility study of the instruments will be produced.
   Specifically, the following instruments will be assessed:
   - the development of impact investment funds with associated fund raising activities,
   - setup of bio-banking mechanisms for coastal ecosystems offsets with associated investor screening activities,
   - income generation from ecosystem service of coastal protection and sediment trap,
   - income generation from tourism and fisheries through public-private partnerships

3. DETAILS OF EXPECTED OUTPUTS

The proposal follows a logical framework to fulfil its objectives. In a first step, the financing gaps for MPAs are evaluated on the base of investment and resources needs assessed for each case study (following the BIOFIN method approach as a reference). In parallel the beneficiaries of the ecosystem services are identified and the underlying economic cash flows are estimated. These two components are preliminary to the feasibility study of the financial instruments that represents the main effort of the project. On the base of the design of potential investment funds as well as the feasibility studies, the strategy of implementation will be developed with local stakeholders through the Bluefinance project that should start in 2015. The operationalization of these instruments is the core component of Bluefinance project as well as the support to the fundraising activities with investors.

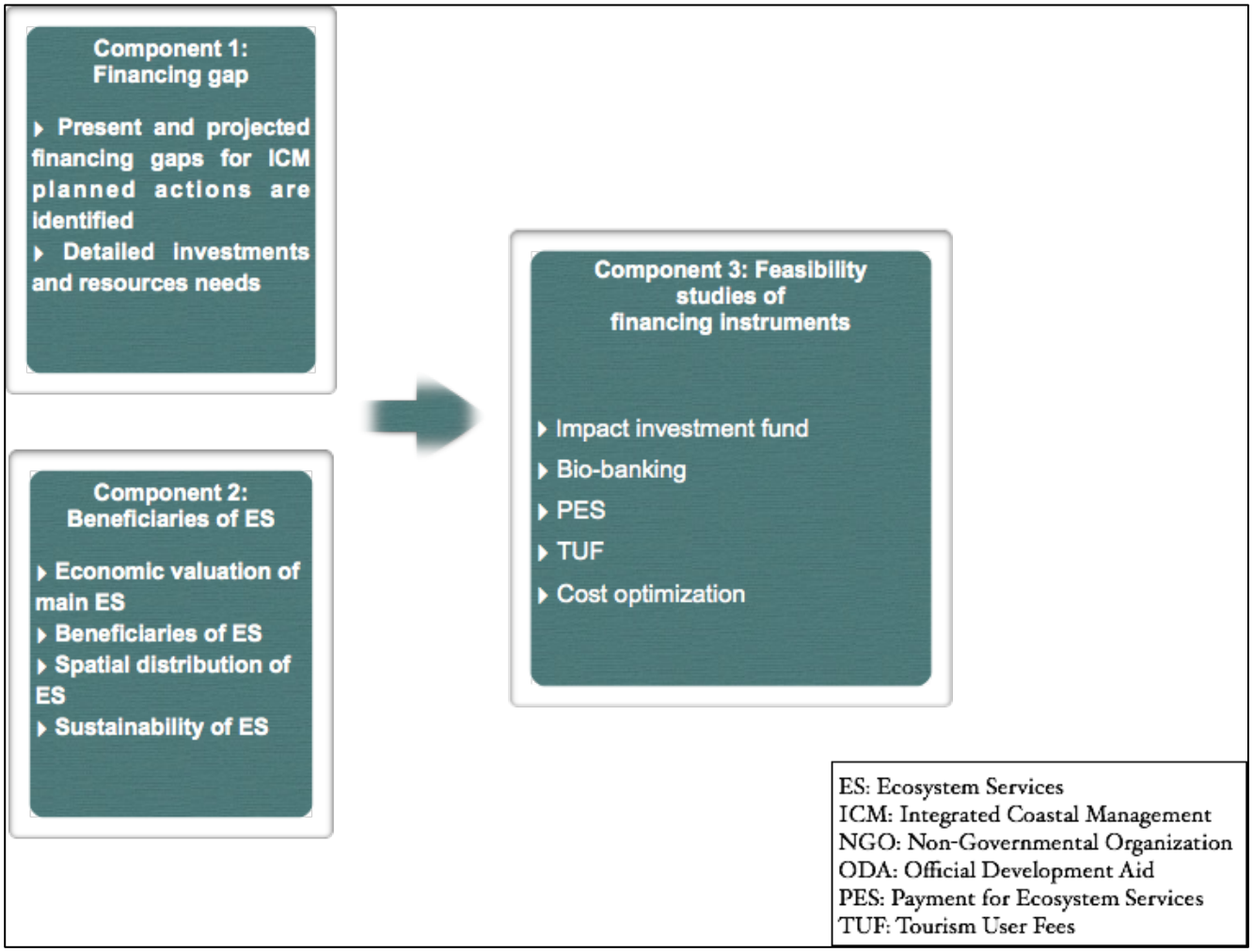

FIGURE 1: COMPONENT DESCRIPTION OF THE PROPOSAL

COMPONENT 1: FINANCING GAP, INVESTMENT AND RESOURCES NEEDS

This component is divided in 3 aspects. A first component identifies the type of investments required to meet MPA targets for the next 10 years. The second one quantifies the financial and resources needs of these investments. The last sub-component estimates the financing gap comparing needs with current available sources of funding.

SUB-COMPONENT 1: INVESTMENT NEEDS

This task identifies the types of investments that will need to be made to meet the MPA targets for the next 10 years. Targets at different scales (such as MPA management plans, networks of MPA management plans, sub-national and national conservation strategies (e.g. National Biodiversity Strategy and Action Plan (NBSAP) are described.

Focus is set on the actions that need to be implemented to identify the associated costs of these actions and levels of expenditure required.

Both one-off capital investments and ongoing annual operational and management expenditures will be quantified. Following the BIOFIN method framework developed for financing gap analysis, the project will identify the types of ongoing expenditures needed in order to inform the assessment of resource requirements.

The research will examine also synergies between biodiversity and development agendas, and opportunities for investments to deliver co-benefits. It will also consider potential trade-offs, both in the short term and long term, and highlight possible solutions. The beneficiaries of investments, and potential distributional impacts, will be examined. Synergies between the conservation targets and development objectives will reduce the extra resources required to deliver them, and facilitate funding strategies. Conversely, managing potential conflicts between biodiversity and development goals could make the conservation targets more difficult and costly to deliver. The component will assess the implications for resource needs of synergies and/or conflicts with the national Sustainable Development Goals identified (CBD, 2011).

Sub-component 2: resource needs

This sub-component focuses on the level of financial resources required to deliver the conservation targets, by funding the investments and on-going expenditures identified in the previous sub-component. It will be based mainly on "Bottom-up" estimates with implicated stakeholders at the different levels of the MPAs. It will include also a review of evidence available at different geographic scales and from different organizations and initiatives (including, for example, the business plans of MPAs, the CBD evaluation of the costs of the NBSAP and the Biodiversity Finance Initiative (BIOFIN) costing approach.

Sub-component 3: Financing gap

The objective is to quantify current allocations of resources for the delivery of the MPA targets and to compare them with the estimated resource requirements. The research to address this question examines what resources are currently allocated within different sectors or policy areas (e.g., environment, fishery, agriculture, infrastructure development, tourism, transport and communications). Responsibilities for MPA and financing are often shared across various institutions and roles need to be clarified and harmonized to address the exact financial planning and budgeting potential.

The Financial Sustainability Scorecard developed by the UNDP will be applied as a reference for analysis. A specific effort will be done on optimization of costs and revenues through revision/completion of management plans of the protected areas. The standardization of cost accounting, the creation of system-wide budgets, the portfolio management of MPA budgets and the improvement of cost-effectiveness form parts of this activity.

COMPONENT 2: ECONOMIC VALUATION OF ES

The first step focuses on a clear understanding of the beneficiaries of the MPA and the associated marine ecosystem services. A reduced selection of ecosystem services (ES) have been made based on the payment capacity of their beneficiaries (Laurans et al., 2013; Pascal and Seidl, 2013). The selected ES are the commercial coastal and pelagic fishery (ES1), the recreative fishery (ES2), aquaculture (ES3), the nature tourism and associated sectors (ES4), the protection against coastal floods and beach erosion (ES5) and the carbon sequestration from mangroves and seagrass (ES6). Selected beneficiaries include tourism sector (through underwater attributes and water quality services), commercial fishery sector (through biomass and habitat services), real estate developers and owners (through coastal protection) and carbon brokerage industry (through carbon sequestration).

Specific studies will inform the following topics: (a) identify and quantify the underlying ecosystem processes, (b) define the spatial distribution of the ecological processes and economic cash flows, (c) determine the observed and potential economic value of the ecosystem services and, (d) analyse the structure of the property rights and the socio-cultural context of the communities implicated in the conservation and the business stakeholders. Results will be based on expert opinions and current scientific knowledge.

METHODOLOGICAL APPROACHES

As described by various authors (Farber et al., 2002; Groot et al., 2010) three main methods are used to value the absolute or marginal economic benefits of ecosystem services: the production functions based on added values, replacement or avoided damage costs; the revealed preference method with travel costs and hedonic valuation approaches and the stated preferences through surveys with users.

The objective of the valuations exercises is to provide concrete arguments (e.g. economic value, number of visitors, spatial distribution) for negotiation in the setup of a payment for ecosystem services, user fee or environmental taxes. Therefore, priority will be given to methodological approaches focusing on tangible values that will produce concrete arguments (TEEB, 2010).

Valuations will address the sustainability of uses and the meaning of the calculated values. The estimate of a single monetary value to characterize an ecosystem service must then be "contextualized" with information about environmental sustainability and the potential of ecosystem service evaluated.

SPATIAL IDENTIFICATION OF BENEFITS AND BENEFICIARIES

Many challenges remain in defining the spatial dimension of the valuation of the ecosystem services. The first question addresses the choice of what is being assessed: the place of the ecosystem processes, the place where the human activity takes place, or the place where benefits will be transformed into money. Other challenges concern

important knowledge gaps in the marine ecological processes (e.g. larval dispersion and trophic migrations) and their spatial distribution ((Kendall and Picquelle, 2003; Leis, 2002; Sale et al., 2005).

The practical identification of the study perimeter for each service being valued is not necessarily straightforward and can impact substantially the outcome of the analysis (Mumby, 2001).It seems to be also a key variable for the next component when evaluating instrument choices usually influenced by the identification of the spatial extension of beneficiaries or losers.

Considering the complexity of these processes (variability and importance) and the technical challenge to identify the flows of dispersion of some services, especially marine species, this aspect of coral reef valuations appears to be one the main challenge to take in account.

Relationships between ES, local stakeholders and beneficiaries will be assessed. In particular, clear identification of stakeholders negatively impacted by costal management regulations will give important insights about equity distribution and who is bearing the costs and benefits. Compensation or payment schemes to local communities have been described in several cases (Pascal et al., 2012; The Katoomba Group and Marketplace, 2010). They identify several threats to be taken in account such as the possible creation of annuities (when payments exceed the costs of opportunities) and equity issues amongst the local stakeholders. Other situation that may create complexity in the instruments implementation concern ES with beneficiaries or users relatively diffuse or widespread (e.g. carbon sequestration).

Benefits Of Marine Protected Areas (MPA) on ecosystem services

MPA is main conservation action in this project and require a specific approach to identify as precisely as possible the benefits and beneficiaries from the protected area. The valuation will therefore focused on the impacts of MPA on the 6 ecosystem services of the case study. Following methodologies developed by the team in several studies (Pascal, 2011, 2012, 2013; Pascal and De Maziere, 2008; Pascal et al., 2013; Pascal and Seidl, 2013; Pascal et al., (in review)). The MPAs' contribution to fishery (ES 1 and 2) may be calculated through identifying the effect of MPAs on CPUEs of main fishing gears. The effect of MPAs on tourism (ES 4) is reflected in the roles of the reserve in the visitor motivations and added values of expenditures. The determination of the contribution of the MPA on the production of the ES5 and ES6 will take into account the MPA influence on the biophysical factors driving the production of the ES. The control-impact approach is proposed by several authors (Underwood, 1994) as a best way to isolate the MPAs effects from context.

Component 3: Financial instruments

The project will realize the feasibility studies of a selection of financial instruments with local stakeholders. The choice of instruments is based on the potential of the instruments in terms of cash generation and revenue distribution.

Simplified Business Plans of the instruments

For each instrument, a simplified and draft business plan (BP) is realised with the assistance of the Local Technical Advisory Committee (TAC) and other experts. The BP covers the financial, the legal, the administrative, the social and the political aspects[1].

The financial aspect covers the determination of the potential of how much revenue is likely to be generated each year by the new instrument and what will be the cost of setting it up. It determines if the revenues can vary substantially from year to year depending on global and national economic, political, and natural conditions. Legally, the establishment of the proposed financing mechanisms will be pre-analysed under the country's current legal system. Specifically the concepts of easements or concessions as well as the earmarking of tax revenues or fees for specific purposes will be checked. If new legislation has to be passed, the difficulties and resources necessary will be estimated. On the administrative side, for each case study, the difficulty to administer, enforce, collect, or implement a particular type of instrument will be assessed. Socially, the social impacts of implementing a particular instrument must be anticipated. In particular the aspects of equity and legitimacy both for the payers and sellers should be assessed. Politically, the government support for introducing the new financing mechanism as well as the reliance on the government or management structure to spend the new revenues only for the purposes intended will be evaluated in the context of each case study.

Each of the instruments category described below will request a specific approach. The TUF and PES categories, the most classic instruments, will require short feasibility studies covering the economic, legal, administrative, social and political aspects. For investment and bio-banking category, the lack of track record of experiences of impact investment or for-profit investment in marine conservation as well as marine offset banking makes it difficult to apply consolidated methods. In that case, the due diligence[2]

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[1] The following approach is adapted from Conservation Finance Alliance conservation finance guide Conservation Finance Alliance, 2003. Conservation Finance Guide: Tourism User Fees Chapter: Tourism User Fees: June 2003 , 33 pages.

[2] Defined both as an investigation of a business or project prior to signing a contract, or an act with a certain standard of care. (source: wikipedia)

approach (possibly conducted with the potential investor and/or industrial developer) will be the rule.

It is already acknowledged that some instruments will request a long process of preliminary meetings with the private sector, due diligence processes, changes in national regulations and negotiations. In particular this applies to the instruments within the category of impact investment and bio-banking.

Conservation trust funds and other fiduciary instruments are contemplated as a receptor for one or several of these instruments (Gutman and Davidson, 2007).

We will describe the details for each instruments selected.

3-1 Impact investment fund

The project analyses the investor perspective to propose concrete funding opportunities to the supply side (i.e., the availability of an investment fund with conservation impact).

Impact investment market

Impact investments are investments made into companies, organizations, and funds with the intention to generate social and environmental impact alongside a financial return[3]. Impact investments can be made in both emerging and developed markets, and

[3] The practice of impact investing can be defined by the following four core characteristics (extracted from the the global impact investing network online site (http://www.thegiin.org):

- Intentionality – The intent of the investor to generate social and/or environmental impact through investments is an essential component of impact investing. These investments are made into enterprises and funds that expand access to critical goods and services, and/or generate positive impact through their operations.
- Investment with return expectations – Impact investments are expected to generate a financial return on capital and, at a minimum, a return of capital.
- Range of return expectations and asset classes – Impact investments generate returns that range from below market (sometimes called concessionary) to risk-adjusted market rate. Impact investments can be made across asset classes, including but not limited to cash equivalents, fixed income, venture capital and private equity. Impact investors may also earn fees through the provision of catalytic instruments such as guarantees.
- Impact measurement – A hallmark of impact investing is the commitment of the investor to measure and report the social and environmental performance and progress of underlying investments. Impact measurement helps ensure transparency and accountability, and is essential to informing the practice of impact investing and building the field.

There are many terms for this type of investing. This includes sustainable investing (incl. sustainable fixed income), mission-related investing , economically-targeted investing, and community investing.

target a range of returns from below market-to-market rate, depending upon the circumstances. It is a growing industry and recent reports found that the impact investors may plan to invest almost USD 4 billion over the next year, and most expect that 5-10 percent of overall portfolios will be allocated to impact investments in the next ten years (Huwyler et al., 2014) .

Impact Investors can be classified in three main categories[4]:

- Impact First (primarily seeking to maximize impact while secondarily expecting financial returns if any, i.e., the grant),
- Investment First (fiduciaries primarily seeking market-rate or premium returns and secondarily (if at all) seeking a positive social or environmental impact); and
- Catalyst First (seeking to give or invest to collaborate to build the impact investing industry and infrastructure).

PROJECTS

The sector of impact investment in marine biodiversity and ecosystem services is in its early stage of development. Concrete projects on marine ecosystems are few and generally without any studied track records and no analysis of returns on investment (RoI). It is the role of the project to structure and consolidate pilot projects and prove the potential of the concept.

In Barbados, several types of projects may be identified as potential ones for impact investing. The most straightforward is project about sustainable tourism [5] with investment in the infrastructure and sustainable management of ecosystem services.

Other sectors analysed include renewable energy (e.g. from waves, tides or wind) and aquaculture (e.g. sea ranching).

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[4] Early white papers on impact investing written by teams from the Rockefeller Foundation, J. P. Morgan Social Finance, Goldman Sachs, Global Impact Investing Network (GIIN), SRI research by Lloyd Kurtz and Meir Stat- man, Pacific Community Ventures' Insight and Harvard's Hauser Institute for Responsible Investment, and others provide a basic background for understanding impact investing.

[5] The Chumbe Island (CHICOP) experience has proven that private MPA establishment and management can be a solution in a specific tourism context, and can provide self-financing of MPAs. The MPA is 100% financed by ecotourism revenue since 2000. It operates on business principles with a concession framework Pascal, N., Agardi, T., Carter, E., Dujmovic, S., Quétier, F., Pioch, S., 2014. "Private financing" for mpas: concrete experiences. Proceedings of the 3rd International Marine Protected Areas Congress..

Other kind of potential investments include the ecosystem market mechanisms and regulatory arbitrage, i.e., investments in business models associated with voluntary or mandatory offset markets (e.g., carbon and biodiversity), subsidized renewable power production, or permit and rights issuance and trading.

In the literature, little attention has been given to the supply side of conservation finance, namely the perspective of investors and their investment approaches (Achleitner et al., 2011; Drumm et al., 2012; Forest Trends et al., 2008; Littlefield, 2011; O'Donohoe et al., 2010; The World Bank, 2014). In that sense, benefits associated with conservation, usually difficult to define have to be translated in investment language and standardized. Many benefits come from externalities where market mechanisms will be difficult to implement.

The main objective is therefore to design successful mechanisms in a way that generates enough revenues to make a conservation investment attractive. The projects must have commercially viable business model that can attract investors at scale[6].

Following recent analysis of impact investor's expectations, critical steps should include:

(i) make conservation project investable (through good transparency, information on expected returns and risks, and conservation effectiveness),

(ii) put conservation finance on the agenda of asset manager and professionalization and,

(iii) define measurable conservation impacts.

INVESTOR TARGETS

Given the early stage of development of the investment opportunities in marine conservation, investor profile will vary from catalytic first loss to venture capital. Investors target will include high-net-worth and ultra-high-net-worth (HNW/UHNW) individuals[7] as well as venture philanthropists. Each of these groups has its own risk-return expectations, liquidity exigencies, investment horizons, ticket sizes and investment product preferences. Each of them will require also the existence or not of a regulatory framework.

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[6] HNW and UHNW investors will typically look for investments with ticket sizes of USD 1 million and upward across a variety of conventional financial vehicles and asset classes. (Huwyler et al. , 2014)

[7] HNW/ UHNW individuals have historically been the investor group most attracted to conservation finance, spearheaded by passionate individuals who have made large donations or investments in conservation assets out of their personal conviction.

Risk assessment is a critical component of any impact investment operation, which can discourage potential investors. As recognized in a recent work undertaken by the Conservation Finance Alliance (Conservation Finance Alliance, 2014), no standard assessment for impact investing risk exists. The same report identifies that risk can be broken down into 6 key components, including 1) liquidity risk, 2) impact risk, 3) measurement and reporting risk, 4) fund manager and mission-drift risk, 5) subordinate risk, and 6) legal, regulatory, and political risk. Each of this risk will have to be taken into account in our strategy and relationship with the impact investor.

3-2 Biodiversity offset

Description

The main impacts requiring compensation come from permitted or non-permitted (accidental) actions [8]. Permitted impacts are generally associated with beach nourishment, channel dredging, tourism infrastructure (hotels), private docks and piers, private and commercial ports or marinas, laying energy and communication cables, pipelines, and coast protection projects (François and Pascal, 2012). Compensation for these damages is referred to as ex-ante.

Many countries have developed a legal framework based on the mitigation hierarchy to ensure that impacts of a project have been, as far as possible avoided and reduced following environmental impacts assessments (Quétier and Lavorel, 2011). The remaining impacts must be compensated in the form of restoration, rehabilitation, replacement, and/or acquisition of the equivalent of habitat.

The aim of the mitigation hierarchy is to achieve no net loss (NNL) of biodiversity[9], and preferably a net gain for currently threatened biodiversity and ecosystems.

Both legal systems strongly favour on-site compensation using the same type of ecosystem as was impacted, recommend similar techniques for the scaling of the compensatory actions[10], and cover all ecosystem services. The compensatory measures should offset exactly or in excess the residual impacts of the project, so that the project has a global neutral to positive ecological impact. In both countries, resources trustees

[8] Non-permitted impacts result from economic activity in and around coral reefs, and include oil and chemical spills, trash dumping and vessel groundings. Compensation for these damages is referred to as ex-post. By definition accidental impacts can not be part of this project and we therefore focus on compensation of ex-ante impacts

[9] The standard created by BBOP (Business and Biodiversity Offset Program) can be downloaded at : http://www.forest-trends.org/documents/files/doc_3078.pdf

[10] Three categories of methods can be used for calculating how much compensation should be implemented to return the ecosystem to its baseline state and compensate for interim losses; service-to-service, value-to-value, and value-to-cost. Service-to-service methods are the most preferred ones. Among those, simplified methods are the most often used, to respond to the many small impacts. Habitat Equivalency Analysis is the reference method overall, despite relatively strong methodological limitations. To respond to the limitations of HEA the Uniform Mitigation Assessment Methodology (UMAM) was developed recently, but has yet to be adopted more widely.

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are clearly identified that are in charge of seeking compensation for impacts on the environment for projects as part of the permitting process[11].

Although simple in principle, compensation policies for coral reefs are difficult to implement due in particular to the complexity of the ecosystems, potential large number and heterogeneity of impacts, and costs and delays in assessing damages. In both countries, the quality of the implementation of these policies has been poor. Methods have been inadequately applied, monitoring of the restoration actions has been lacking, and most small projects have been exempted. Impacts are generally further divided into two categories(François and Pascal, 2012), large and small, although the exact definition of each category varies according to the legislations and is not always clearly defined[12].

The regulatory framework gives preference for compensation using the same type of ecosystem as impacted and on-site (immediate proximity of the impacted site). Using other types and/or off-site mitigation such as mitigation banking should remain as close as possible to the impacted ecosystem. To be eligible, compensatory measures should prove additionality, feasibility and sustainability.

Mitigation banking is defined as the restoration, creation, enhancement or preservation of a habitat as intact ecosystems, which can offset impacts to similar nearby ecosystems, due to development project. The goal is to replace the functions and values of the habitats that are lost with equal or better habitat that is located within a larger ecosystem

IMPLEMENTATION

This proposed project relies on the experience of the BBOP initiative on the development of national policies on compensation and experiences of offset projects conducted by companies in different regions of the world.

One must keep in mind that going to the no net loss is necessarily a long and iterative process. Experience shows that it takes at least a year, and sometimes much more, from an introductory meeting to explore the principle of compensation, and the decision to work on a specific pilot project (biotope, pers. comm.)

It is important to remind that the project funds will not be used to implement the offsets of these projects developers. Each company has to provide the necessary funding to

[11] Losses of market services affecting private businesses or individuals are handled directly through private tort law. Compensation for this type of damages is typically monetary. There is no general method to calculate these compensations, which are handled on a case-by-case basis in court.

[12] In the US legislation, small impacts are generally understood to represent impacts for which a full impact assessment would cost more than the damages from the impact.

ensure the long-term implementation of their offsets. The Bluefinance project will finance the guidance documents on methods and metric equivalence, and undertake a mapping analysis in order to identify priority conservation areas that could accommodate offsets projects.

To do this, this proposal propose to identify major development projects that may be eligible, on the basis of their impact (marine/coral), the legal and governance framework and by their willingness to participate in a project of maritime compensatory bank: mining, coastal tourism, port and, etc. . If possible, a dialogue will be initiated between governments, businesses, and conservation stakeholders.

3-3 PES

DESCRIPTION

According to several authors (Laurans et al., 2011(Pascal et al., 2014; The Katoomba Group and Marketplace, 2010)), very few innovative financial instruments have been tested on the marine environment and even less on the reef ecosystem, despite the existence of suitable conditions for their establishment. According to these same authors, the reasons for this absence are to put on the account of the youth of these tools (which are still in a consolidation phase for example for the PES for the ecosystems on which they were born (wetlands and watersheds).

Main instruments to be tested concern (i) the ecosystem service of protection against coastal flooding and beach erosion provided by coral reef, seagrass and mangrove ecosystems; (ii) the service of carbon sequestration in mangrove and seagrass soils and biomass; (iii) the bio-depuration service provided by mangroves and (iii) the nursery and biomass production from coastal ecosystems to pelagic ecosystems.

The coastal protection seems to have an interesting potential in Barbados regarding the development of the tourism sector and the presence of important urban centres. The coral reefs, seagrass and mangroves are natural barriers to coastal protection. They limit the phenomenon of coastal erosion by absorbing 70-90% of the energy waves (Kench and Brander, 2009) and lessen the damage in case of severe weather events (hurricanes, tropical storms, ...) (UNEP-WCMC, 2006). Similarly, lagoon areas protected by barrier reefs are generally quiet areas that promote the multiple uses described in the site table.

Nonetheless, to offer this service to potential buyers (see graph) there are still many knowledge gaps that have to be dealed with. There is a high variability depending on the type of reef, the depth and the waves (Kench and Brander, 2009). In addition, the role of coral reefs and mangroves in coastal protection is difficult to isolate from other variables. In fact, a combination of factors comes into the process. The main ones (Burke, 2004) are: (i) bathymetry (ii) geomorphology (iii) topography and (iv) the biological cover . Few studies have focused on isolating the contributory role of the reef in this combination of factors (Barbier et al., 2008). In the same way, an analysis by Barbier et al. (2008) found that the relationship between reef area and this absorption process is nonlinear. This adds an additional complexity in the “marketing” of this ecosystem service.

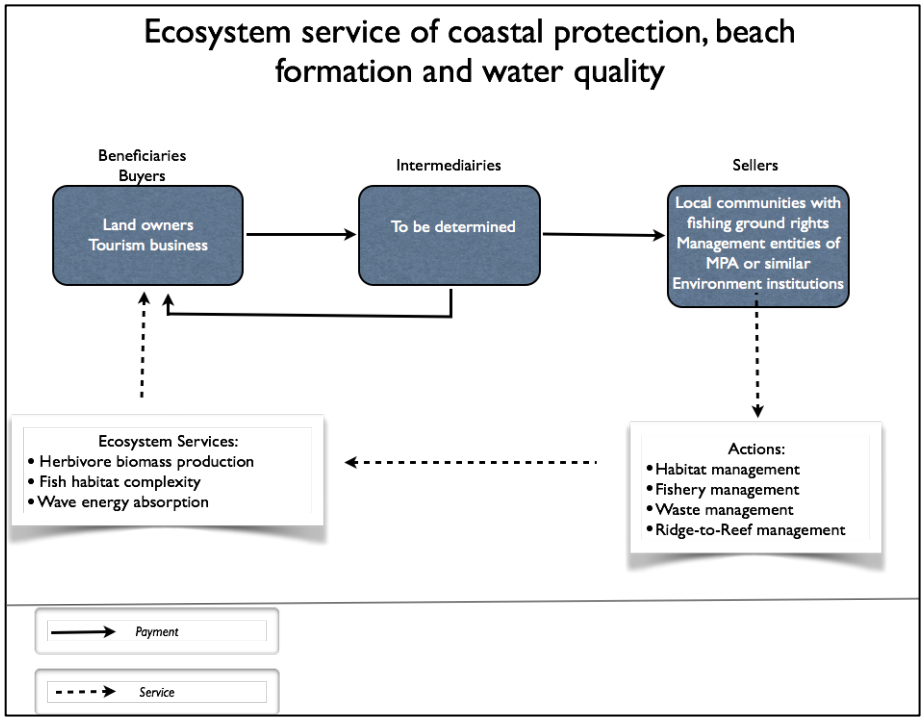

Figure 2: Scheme of the PES of coastal protection and beach formation (Pascal, 2013)

Other challenges with PES:

Recent studies on the experiences of PES (Engel et al., 2008; Fisher et al., 2009; Kemkes et al., 2009; Vatn et al., 2011; Wunder, 2007) have highlighted other important challenges such as the importance of transaction costs, the larger than expected dependence of government support (which can be a hindrance in some countries), the possible creation of annuities (when payments exceed the costs of opportunities) and equity issues amongst the local stakeholders. It is time to dispel the illusions that exist on the potential of these instruments as a tool for marine conservation finance.

The PES montage will require the following competences (either from local stakeholders or externally) (adapted from several sources (Engel et al., 2008; Forest Trends et al., 2008; Kissinger G et al., 2013; OECD, 2010) and the project will assess their potential.

1.Scientific and technical knowledge:

- for measuring and documenting the existence of ecosystem services that may be provided (component 2);
- for documenting the current status or the baseline against which service delivery will be compared (component 2); and

- for developing comprehensive resource management plans (component 1).

2. Negotiation skills and contractual experience (including financial planning):

- to facilitate communication among stakeholders to understand the differential incentives and impacts to each stakeholder and identify secondary incentives to catalyse agreement;
- to ensure that buyer and seller can, with full knowledge, agree on all terms of the contract;
- to negotiate and agree to a flow of payments, both in amount and frequency and with proper transparency to both buyer and seller; and
- to factor in potential unmanageable risks, such as natural disasters, and provide options for resolution into the agreement.

3. Implementation, monitoring and verification expertise:

- provide technical capacity and/or training for carrying out the management activities as spelled out in PES agreement and for continued monitoring of ecosystem indicators to satisfy PES agreement; and
- involve third-party verifiers to provide proof to the buyer of the service delivery.

3-4 TOURISM USER FEES

DESCRIPTION

Several guides and reports (Arin and Kramer, 2002; Brander et al., 2007; Brown, 2001; Lindberg and Enriquez., 1993; Polak and Shashar, 2013; Wielgus et al., 2002) highlight that, under specific conditions, a high proportion of reef users (scuba divers, snorkelers, daytours, etc) will or are paying a fee for their activities which can then be directed toward supporting conservation efforts. Other studies (Bovarnick et al., 2010; Brown, 2001; Depondt and Green, 2006; Peters and Hawkins, 2009; Uyarra et al., 2010) show that a number of relatively simple, market-based mechanisms, known as tourism user fees (TUFs), can gather significant revenues from tourism-based activities. Entrance or user fees and concession fees are the main categories. The following definitions are extracted from the CFA guide on tourism user fees (Conservation Finance Alliance, 2003)

- Entrance or user fees.

"This is a fee charged to visitors in order to enter a protected natural area. Visitors can be charged to enter PAs. There are a number of ways entrance fees can be collected. They can be charged directly to the visitor or, alternatively, tour operator companies may purchase pre-paid tickets (or bracelets) in advance so that visitors on organized tours have the fee included in the total cost of their tour package".

Other type of fees include:

- cruise ship passenger fees (when cruise company are open to negotiation)
- hotel room taxes (in the form of surcharges on room prices or as a small voluntary "nature conservation surcharge[13]"
- taxes and/or royalties on consumer items sold within the PA,
- airport departure tax (an arrival conservation and infrastructure tax is in place in San Andres Site but no part of it is earmarked to island biodiversity conservation budget)
- taxes on hunting and fishing equipment

Most of the experts (Bovarnick et al., 2010; Conservation Finance Alliance, 2003; The Katoomba Group and Marketplace, 2010; Uyarra et al., 2010) acknowledged that user fees have the potential to cover a large part of the operating costs of a MPA in locations where tourism volume is high (e.g. PNN Rosario, Cozumel

[13] Usually of one or two dollars added to all visitors' hotel bills, with an explanation on the bill stating that the hotel will delete the conservation surcharge, if a guest so requests (which very few guests will do).

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Is.). Scuba diving usually involves high-spending tourists and has the potential to generate significant income (Conservation Finance Alliance, 2003).

• Concession fees, licenses and permits

"These fees are typically collected from companies ("concessionaires") that are granted "concessions" for providing a service to visitors within a site". Companies providing services within MPAs, such as diving, whale watching and day tours, can be charged fees to operate such business concessions. Depending on the legal framework of the country, any function – including the management of the entire MPA (e.g. the CHICOP MPA in Tanzania) or operation of specific facilities – can potentially be contracted to a concessionaire[14]. The following pricing schemes can be used to determine the concession fee:

- fees based on auction/bidding from companies
- fees based on the number of people a concession serves during a given year;
- fess based on a percentage of the gross or net income of the concessionaire;
- an annual fixed fee, or a combination of the above.

IMPLEMENTATION

TUF montages usually include the following steps. Depending on the local context, data availability and project resources, some of these steps will be addressed.

A. Market survey:

- Census of attractions (assets) and related recreational activities; current visitation volume and recent visitor flow trends; analysis of tourism profile, market segmentation and business market survey; tourism projections;
- Identify major obstacles to expanding visitation, and recommend measures for addressing such obstacles as appropriate (e.g. more trained guides, expansion of accommodations).
- Describe any existing TUF mechanisms, and summarize the success of such mechanisms.
- Describe support for TUFs from current tourism operators

B. TUF feasibility study

- Fee level determination (based on the costs of management of the MPA or the recreational activities, similar sites nationally and internationally and existing "willingness-to-pay" (WTP) studies).
- Concession fee program comparing the pricing schemes to determine best option.

[14] The same guides identify that special attention must be given to find a balance between company bottom line and MPA needs.

- Design of the TUF (e.g. optimal number and location of entrance-fee collection points, staffing resources and equipment required)
- Feasibility study of instrument (legal, administrative, implementation cost, political support from ministries, market potential, organizational capacity, required staff training, business expertise to operate concessions, marketing expertise of MPA.

C. Implementation

- User fee and concession fee collection action plans based on consultations with local stakeholders. Plan should define how and where the fee will be collected, the needs in physical, capital and human resources as well as trainings and accounting/auditing system). A pilot implementation (e.g. 3-6 months) of the entrance fee to test the market might be conducted.
- Recent experiences have shown that good partnership between MPA and private sector (e.g. a marketing campaign for the MPA, moorings for scuba diving companies and communication of results) is a key success factor for the implementation of the fees (example of Coral.org in Roatan, Honduras).

4. DURATION AND COST

DURATION

The total duration of the proposal is 12 months distributed on the following way:

	1	2	3	4	5	6	7	8	9	10	11	12
Component 1: financing gap analysis	x	x	x	x			R					
Component 2: economic valuation and beneficiaries			x	x	x		R					
Component 3: pre-feasibility studies of financial instruments					x	x	x	x	x	x	R	R

Reports = R

The final report on financial instrument will be validated with local stakeholders and technical committee through a workshop or meeting.

COST

The requested co-financing of OAS to this proposal is US$ 13 000. The total cost of the proposal is US$ 21 200 corresponding to the following items:

	Number of days.man	Cost (US$)	Details
Component 1: financing gap analysis	6	3600	cost per day: US$ 600
Component 2: economic valuation and beneficiaries	6	3600	cost per day: US$ 600
Component 3: pre-feasibility studies of financial instruments	15	9000	cost per day: US$ 600
Overheads and travels		5000	*Overheads (10%), travels (2 trips to Barbados (1000 each) * 10 days @ 100 US$)*
Total	27	21200	

Payments will be ordered according to the following schedule:

a. 50% upon signature of the present contract

b. 50% upon satisfactory completion of the assignment.

5. IMPLICATED TEAM

Nicolas Pascal, project director

Nicolas Pascal, PhD, environmental economist and conservation finance professional, is specialized in marine ecosystems and his past projects have concerned the economic valuation of ecosystem services and the development of financial instruments for conservation of coastal ecosystems. His professional experience is split between (i) the private sector (as investment banker and new business developer) and (ii) the conservation sector (environmental economy and conservation finance projects). In the conservation sector, through experiences as project coordinator and consultant, he has developed skills in economic valuation of marine ecosystems and Marine Protected Areas, setup of marine PES (Payment for Ecosystem Services) and other financial instruments, conservation trust fund business plan and communication to policy makers. Projects were undertaken with several kinds of organizations (multilateral, bilateral, NGOs, research institutes and private financial sector) in South Pacific countries, South and Central America, the Caribbean and Indian Ocean.

Presently he is the Project director of BLUEFINANCE, private financing for marine conservation. The project is hosted by MARES (Marine Ecosystem Services) program, an initiative from Forest Trends (www.forest-trends.org/mares). The project represents a portfolio of projects that aim for rapid uptake of coral reef ecosystem services information to develop financing mechanisms for conservation and management. Six pilot sites have been identified in the Caribbean region for initial demonstration, including two sites in Mexico, three in Colombia and one in Barbados.

He is also the coordinator of the project "Economic of coral reef ecosystems" with IFRECOR (French Initiative for Coral Reef) (2011-2015). The project has a double objective: (i) to achieve the monetary valuation of coral reef ecosystems (and associated ecosystems such as mangroves and seagrass) in all the 8 French overseas territories (in the South Pacific, the Caribbean and the Indian Ocean) and (ii) develop concrete experiences about biodiversity offset compensation approaches.

In parallel he is the pilot of the ad-hoc committee on economy and finance of the ICRI (International Coral Reef Initiatives, www.icriforum.org) representing more than 60 institutions and countries.

He recently participated in the coordination of a project on “cost-benefit analysis of community Marine Managed Areas” led by the IUCN and funded by the AFD (French Development Agency). From a selection of fifteen sites in Fiji and Vanuatu, the goal was to present consolidated results about the importance of MPAs as a development tool and strengthen their institutional support. The study identified appropriate means of

financing the network. In a similar way, he was the project manager for the economic component of the project "MANGLARES" "Integrated management of coastal zones and sustainable management of Mangroves of Guatemala, Honduras y Nicaragua" from UNEP (United Nations Environment Program), Regional office for Central America and the Caribbean. The objectives were the valuation of ecosystem services in the coastal natural parks in Honduras and the proposal of financial instruments for conservation financing.

Tundi Spring Agardy, project associate

Tundi is an internationally renowned expert in marine conservation, with extensive field and policy experience in Africa, Asia, the Caribbean, the Mediterranean, North America, and the Pacific. Tundi specializes in coastal planning and assessment, marine protected areas, fisheries management and ocean zoning, and has published widely in these fields. She founded Sound Seas in 2001 as an independent group working at the nexus of policy and science to promote marine conservation. At Forest Trends, she is heading up the MARES initiative – a program looking to protect Marine Ecosystem Services through Payments for Ecosystem Services (PES) markets. Tundi works with international think tanks, foundations, multilaterals, museums and academic institutions, environmental groups, and consortia with interest in solving local and regional coastal and marine conservation problems. She completed her undergraduate work at Wellesley and Dartmouth Colleges and then received her Ph.D. in biological sciences and Masters in Marine Affairs from the University of Rhode Island and was postdoctoral fellow at the Woods Hole Oceanographic Institution. She has served as Senior Scientist for the World Wildlife Fund and began Conservation International's Global Marine Program, which she oversaw as Senior Director. She also led the coastal portion of the Millennium Ecosystem Assessment – a 3-year global analysis released in 2005 that represents the consensus of over a thousand scientists on the state of the world's ecosystems

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