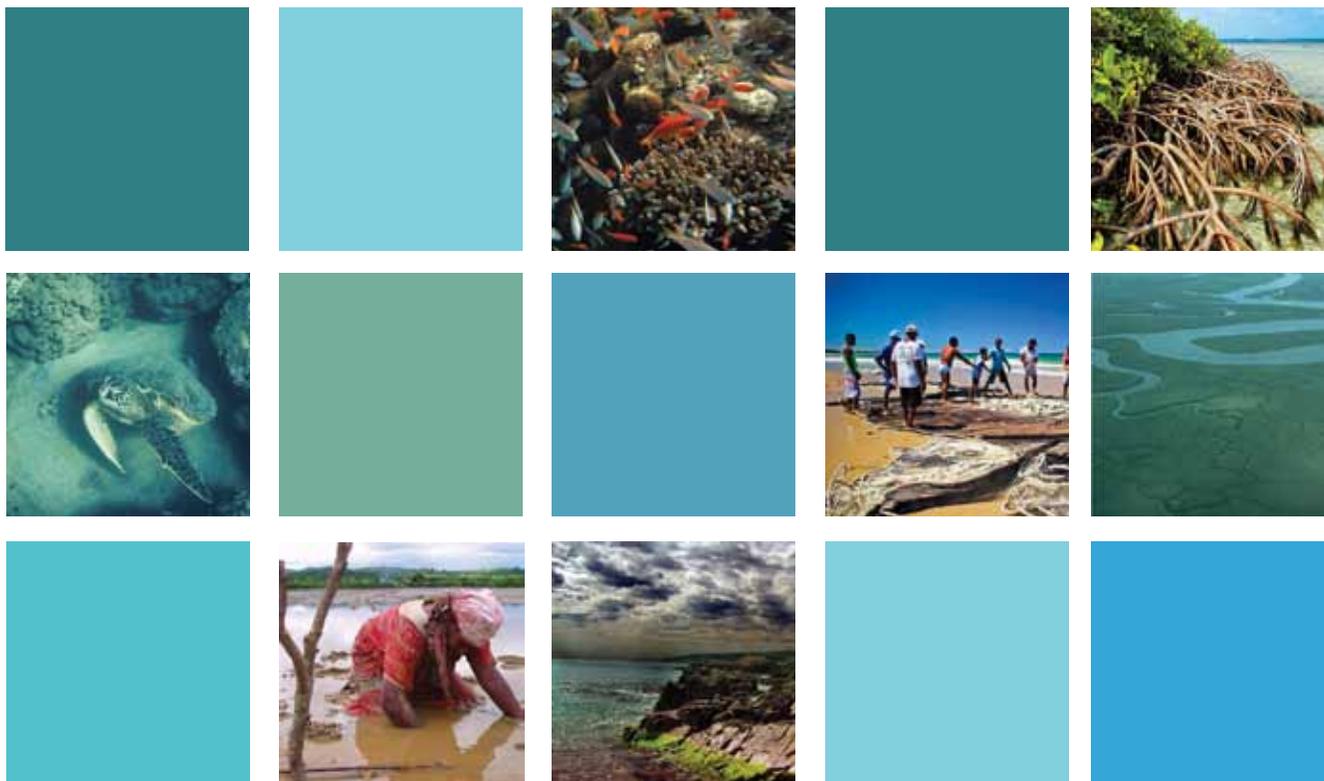




# Payments for Ecosystem Services: Getting Started in Marine and Coastal Ecosystems

## *A Primer*



***Payments for Ecosystem Services:  
Getting Started in Marine and Coastal Ecosystems: A Primer***

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# Payments for Ecosystem Services: Getting Started in Marine and Coastal Ecosystems

*A Primer*



## About Forest Trends

[www.forest-trends.org](http://www.forest-trends.org)

Forest Trends is an international, non-profit organization that focuses on market-based mechanisms because of their powerful and lasting means of: ensuring the maintenance of ecological functions and services provided by forests and other ecosystem services; generating economic benefits; and promoting the equitable distribution of benefits among diverse stakeholders. Our approach integrates the fundamental dimensions of ecology, economy, and equity because our goal is for impact of a scale that is meaningful globally.

Forest Trends, originally focused on forest ecosystems, now covers a broad range of ecosystem services, from forest carbon to biodiversity to watershed and most recently to marine environments. The Forest Trends family of initiatives all share in the vision to harness the power of markets as innovative financing mechanisms for conservation.



## About the Marine Ecosystem Services

[www.forest-trends.org/mares](http://www.forest-trends.org/mares)

The Marine Ecosystem Services (MARES) Program builds on the core work Forest Trends has done in terrestrial ecosystems and conventional markets, aiming to facilitate the development of innovative coastal and marine market mechanisms for marine conservation around the world. MARES has developed the conceptual underpinnings for doing Payments for Ecosystem Services (PES) markets and biodiversity offsets in the marine realm and is beginning to field testing these ideas with on-the-ground pilot projects, sharing the resources and tools developed with the wider conservation community. The four ecosystem services on which we focus are marine biodiversity, water quality, shoreline stabilization and beach production and maintenance, and fisheries production/nursery habitats.

The work of the MARES Program cuts across the different program areas at Forest Trends. We are working with the Business and Biodiversity Offset Program to develop guidelines for marine biodiversity offsets, with the Ecosystem Marketplace to explore biodiversity banking for marine species and PES in general, with the Chesapeake Fund to look at watershed approaches to water and marine conservation, and with the different regional programs of Forest Trends and the Katoomba Group to explore and develop market-based mechanisms for coastal and marine conservation, especially mangroves conservation and restoration, worldwide.



## About the Katoomba Group

[www.katoombagroup.org](http://www.katoombagroup.org)

The Katoomba Group seeks to address key challenges for developing markets for ecosystem services, from enabling legislation to establishment of new market institutions, to strategies of pricing and marketing, and performance monitoring. It seeks to achieve the goal through strategic partnerships for analysis, information sharing, investment, market services and policy advocacy. The Katoomba Group includes over 180 experts and practitioners from around the world representing a unique range of experience in business finance, policy, research and advocacy.

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# Preface

Healthy and robust marine ecosystems provide the underpinnings for profitable industries and support coastal communities throughout the world. In addition, oceans play crucial roles in regulating the atmosphere and modulating weather, storing carbon, cycling nutrients, and providing other ecosystem services. Coastal areas provide essential resources, buffer land from storms, and provide living space for almost half of the global population. Yet today many of these ecosystems and the services they provide are under threat. Indeed, the Millennium Ecosystem Assessment — the most comprehensive study assessing the value of the world's systems to date — concluded that more than 60% of the world's ecosystems are being used in ways that cannot be sustained.

Given these trends, what if there were a way to determine the economic value of the services that ecosystems provide? What if it were possible to encourage beneficiaries to contribute their fair share to restoring and maintaining the flows of these services? Could such an approach create an incentive for restoration and sustainable use? Could this be a way to appreciate and protect the natural world's non-market values and get them into the marketplace?

There are many avenues for utilizing markets to drive marine and coastal resource use towards greater sustainability, informed by the progress made in non-marine markets such as carbon and water quality trading, or wetlands, mitigation, and species banking. Indeed, all of the diverse schemes highlighted in this primer are built upon two simple premises: that ecosystem services have quantifiable economic value, and that this value can be used to entice investment in restoration and maintenance.

So-called Payment for Ecosystem Service (PES) deals are emerging wherever businesses, public-sector agencies, and nonprofit organizations have taken an active interest in addressing particular environmental issues. These schemes provide a new source of income for land management, restoration, conservation, and sustainable-use activities.

The expansion of markets and market-like mechanisms to the marine and coastal realm has generated excitement among conservationists, government authorities, and the private sector alike. Immense opportunities exist to sustainably finance the very conservation that is needed to increase the profitability of business and secure the well-being of humankind everywhere.

This primer offers guidance on how to assess the potential for marine and coastal PES and provides pointers for designing and planning PES transactions. Specifically, it describes:

- the opportunities and risks of PES schemes, to enable accurate feasibility assessments for applying these new market-based mechanisms;
- steps to developing PES projects;
- considerations of PES for poverty reduction; and
- resources for additional reference and reading.

We at the Marine Ecosystem Services Program of Forest Trends, working with our affiliated initiatives Katoomba Group and Ecosystem Marketplace, seek to increase the number of organizations and communities exploring PES and, where appropriate, applying PES to further their goals for conservation, restoration, and sustainable resource management. We hope that this piece will catalyze such efforts and, thereby, provide sustainable financing for effective management of our marine and coastal environments around the world.

Mr. Michael Jenkins  
President  
Forest Trends and The Katoomba Group

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Director  
MARES Program, Forest Trends



# Executive Summary

This primer is designed to provide you with a solid understanding of what payments for ecosystem services (PES) are and how PES deals work in the marine environment. It is intended for an audience interested in exploring the potential of PES — either as prospective PES sellers themselves or as staff of organizations that work directly with coastal communities or coastal and marine resource owners who may be interested in PES. The primer should be read *before* you set out to design a PES deal, as it provides guidance on conditions under which PES is most relevant and likely to succeed, as well as any associated risks to consider. It should also be read sequentially, as concepts defined in the early pages are built upon later.

In the first section, **Marine Ecosystem Services & Emerging Markets**, you will find a detailed review of basic PES concepts, including:

- What is an ‘ecosystem service’?
- What are the basic types of payments for marine ecosystem services?

The second section, **A Step-by-Step Approach to Developing Marine Payment for Ecosystem Service Deals**, is the core of primer. Here, you will learn the four key steps to developing PES deals:

- Identifying Ecosystem Service Prospects and Potential Buyers
- Assessing Institutional and Technical Capacity as well as Access
- Structuring Agreements
- Implementing PES Agreements

Each of these steps is broken down in an effort to introduce potential sellers of ecosystem services to the details of PES deals. Throughout the document, there are numerous examples to illustrate components of the process. At the end of this section, you will find a few PES design tools to help you get started.

In the third section, **Opportunities, Risks, and Ideal Conditions for Poverty Reduction**, you will learn how PES deals can offer impoverished coastal communities an opportunity to augment their income as stewards of the coasts and oceans by implementing practices to restore and maintain ecosystem services. You will also learn the pitfalls of such schemes — the danger of trying to implement PES where it is not appropriate, for example, or the potential of liability concentrated on those who can least afford it. You will also learn how to evaluate outside advisors, and when to consult them. This section ends with a few words on the importance of honest brokers in making it possible for poverty reduction through PES to reach those who most need it — low income residents of coastal areas around the world.

As a complement to this primer, the Ecosystem Marketplace ([www.ecosystemmarketplace.com](http://www.ecosystemmarketplace.com)) has issued an introductory overview of markets and payments for ecosystem services as well as an extensive glossary. We urge readers interested in further information to review the website. We hope that these materials will enable the potential of coastal and marine PES to be realized at a scale that is meaningful for both people and seascapes around the world.



# Section 1: Marine Ecosystem Services & Emerging Markets



*With well over one third of the world population living near the coast, and a larger percentage relying on it in some way,<sup>1</sup> many of the world’s inhabitants benefit from the services of the marine environment — from providing resources to supporting multi-billion dollar seafood and coastal tourism industries to the natural sequestration of carbon, to name a few. People, companies, and societies rely on these services — for raw material inputs, production processes, and climate stability, for example. (See Table 1-1 and Box 1-1 for illustrative ecosystem services as well as a full breakdown of ecosystem service types for coastal and open ocean marine environments.)*

Marine ecosystem services are often grouped into four types — provisioning, regulating, supporting, and cultural.<sup>2</sup> Provisioning marine services produce tangible goods such as seafood, mangrove lumber, or pharmaceuticals. Regulating services help maintain a stable environment by controlling Earth’s climate, protecting shorelines from storms and erosion, or filtering excess nutrients like nitrogen and phosphorus. Supporting marine services sustain the goods and services used by humans such as photosynthesis to support fisheries, soil and sand formation to aid terrestrial development, or a conduit for marine shipping. Cultural services are the intangible benefits humans gain from marine environments, including recreation, tourism, education, and aesthetics. Marine ecosystem services are a significant resource for coastal communities, as well as national economies, and international trade.<sup>3</sup>

**TABLE 1-1**  
Types of Ecosystem Services

	Coastal Ocean	Open Ocean
<b>Provisioning Services</b>	<ul style="list-style-type: none"> <li>• Fisheries and aquaculture</li> <li>• Fuel wood</li> <li>• Alternative energy</li> <li>• Natural products</li> <li>• Genetic and pharmaceutical</li> <li>• Space for ports/transportation</li> </ul>	<ul style="list-style-type: none"> <li>• Fisheries and aquaculture</li> <li>• Alternative energy</li> <li>• Strategic and other minerals</li> <li>• Natural products</li> <li>• Genetic and pharmaceutical</li> <li>• Space for transportation</li> </ul>
<b>Regulating Services</b>	<ul style="list-style-type: none"> <li>• Weather regulation</li> <li>• Carbon sequestration</li> <li>• Shoreline stabilization</li> <li>• Natural hazard protection</li> <li>• Nutrient regulation</li> <li>• Waste disposal</li> </ul>	<ul style="list-style-type: none"> <li>• Weather regulation</li> <li>• Carbon sequestration</li> <li>• Nutrient regulation</li> <li>• Waste disposal</li> </ul>
<b>Supporting Services</b>	<ul style="list-style-type: none"> <li>• Soil formation</li> <li>• Photosynthesis</li> <li>• Nutrient cycling</li> </ul>	<ul style="list-style-type: none"> <li>• Nutrient cycling</li> <li>• Primary production</li> </ul>
<b>Cultural Services</b>	<ul style="list-style-type: none"> <li>• Tourism</li> <li>• Recreation</li> <li>• Spiritual values</li> <li>• Education</li> <li>• Aesthetics</li> </ul>	<ul style="list-style-type: none"> <li>• Tourism</li> <li>• Recreation</li> <li>• Spiritual values</li> <li>• Education</li> <li>• Aesthetics</li> </ul>

Source: Adapted from Millennium Ecosystem Assessment *Ecosystems and Human Well Being* (2003)

<sup>1</sup> UNEP. 2006. Marine and coastal ecosystems and human wellbeing: A synthesis report based on the findings of the Millennium Ecosystem Assessment. UNEP. 76 pp.

<sup>2</sup> Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-Being: Synthesis*. Island Press, Washington, D.C.

<sup>3</sup> Agardy, T. 2008. Casting off the chains that bind us to ineffective marine management: the way forward. *Ocean Yearbook* 22:1-24

Global ecosystem services have been valued at approximately \$33 trillion USD per year, with nearly two-thirds of the services (~ \$20 trillion) coming from the marine environment.<sup>4</sup> However, many of these marine ecosystems are severely threatened, reducing the quality and effectiveness of the services they provide, and are either undervalued or have no financial value at all.<sup>5</sup> As day-to-day decisions often focus on immediate financial returns, many marine ecosystem structures and functions are being ignored.

In response to growing environmental concerns, markets are emerging for marine ecosystem services in countries around the world. Formal markets now exist to regulate commercial fisheries and potential markets are being proposed for marine biodiversity offsets and carbon sequestration.<sup>6, 7, 8</sup> Moreover, focused business deals and payments for ecosystem services (PES) are being forged to invest in restoration and conservation of specific marine ecological systems and the services that they provide.

The key characteristic of these PES deals is that the focus is on maintaining a flow of a specified ecological “service” — such as shoreline protection, biodiversity habitat conservation, or carbon sequestration capabilities — in exchange for something of economic value.

The critical, defining factor of what constitutes a PES transaction, however, is not just that money changes hands and an environmental service is either delivered or maintained. Rather, the key is that *the payment causes the benefit to occur where it would not have otherwise*. That is, the service is “additional” to “business as usual,” or at the very least, the service can be quantified and tied to the payment.

In order to ensure that the ecological service is indeed maintained — as buyers expect for their money — the transactions require regular and sometimes independent verification of sellers’ actions and their impact on the resources. Therefore, sellers must:

- maintain or enhance specific ecological structures and functions beyond what would have happened in the absence of payment, and
- remain accountable to independent verifiers (if a buyer requires) to ensure that the “service” being paid for is indeed being delivered.

### BOX 1–1 Illustrative Marine Ecosystem Services

- Commercial fishing and aquaculture<sup>1</sup>
- Ecotourism and recreation<sup>1, 2</sup>
- Mangroves providing storm protection service, fisheries habitat, fuel wood and timber<sup>3, 4, 5</sup>
- Harvesting of pharmaceuticals, natural products (salt), carrageenan (from algae), or mineral resources<sup>3, 5</sup>
- Filtration of pollutants and wastewater<sup>5</sup>
- Nutrient cycling<sup>1, 5</sup>
- Shoreline stabilization and erosion protection<sup>5</sup>
- Marine-based renewable energy (wave and tidal)<sup>6</sup>
- Carbon sequestration opportunities<sup>6</sup>

<sup>1</sup> Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-Being: Synthesis*. Island Press, Washington, D.C.

<sup>2</sup> Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-Being: Wetlands and Water Synthesis*. World Resources Institute, Washington, D.C.

<sup>3</sup> The World Bank Group. 2009. *Environment Matters: Valuing Coastal and Marine Ecosystem Services*.

<sup>4</sup> Sanford M. 2009. Valuing Mangrove Ecosystems as Coastal Protection in Post-Tsunami South Asia. *Natural Areas Journal*. 29(1): 91-95.

<sup>5</sup> UNEP-WCMC. 2006. *In the front line: shoreline protection and other ecosystem services from mangroves and coral reefs*. UNEP-WCMC, Cambridge, UK.

<sup>6</sup> Herr D and Galland G.R. 2009. *The Ocean and Climate Change. Tools and Guidelines for Action*. IUCN, Gland, Switzerland.

<sup>4</sup> Costanza R, d’Arge R, de Groot R, Farber S, Grasso M, Hannon B, Limburg K, Naeem S, O’Neill R, Paruelo J, Raskin R, Sutton P, and van den Belt M. 1997. The value of the world’s ecosystem services and natural capital. *Nature* 387: 253 – 260.

<sup>5</sup> Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-Being: Wetlands and Water Synthesis*. Island Press, Washington, D.C.

<sup>6</sup> Newell R, Sanchirico J, and Kerr S. 2002. *Fishing Quota Markets - Resources for the Future Discussion Paper*. Resources for the Future. Washington, D.C. (available at [www.rff.org](http://www.rff.org)).

<sup>7</sup> ten Kate, K, Bishop, J, and Bayon, R. 2004. *Biodiversity offsets: Views, experience, and the business case*. IUCN, Gland, Switzerland and Cambridge, UK and Insight Investment, London, UK.

<sup>8</sup> Nellemann, C, Corcoran, E, Duarte, C M, Valdés, L, De Young, C, Fonseca, L, and Grimsditch, G. (Eds). 2009. *Blue Carbon. A Rapid Response Assessment*. United Nations Environment Programme, GRID-Arendal.

A definition for PES that has become fairly well-accepted has been put forward by Sven Wunder, in which a payment for environmental services scheme is:

- “1. a **voluntary** transaction in which
2. a **well-defined** environmental service (ES), or a form of land use likely to secure that service
3. is bought by at least one ES **buyer**
4. from a minimum of one ES **provider**
5. if and only if the provider continues to supply that service (**conditionality**).”<sup>9</sup>

Marine PES and PES-like deals can fall into four different domains, which are outlined in Table 1-2.

Tables 1-3 and 1-4 provide a few examples of different marine PES types, some already implemented, others not. Note that each of these markets and payments are case specific and vary depending on the services provided, the legal or political context, and the unique social environments.

### BOX 1–2

#### Example of Public Payments

##### Marine Legacy Fund of Tanzania

The Marine Legacy Fund (MLF) is a revolving fund established by the Republic of Tanzania that derives revenues from commercial fishing licenses within Tanzania’s Exclusive Economic Zone, revenue sharing from coastal/marine ecotourism, and taxation of the oil and gas industry. In turn, the MLF pays coastal communities to protect key habitats, as well as manage their own use of the coastal/ marine environment and finance operational expenses of key marine sectors.

Source: Blueprint 2050: sustaining the marine environment in mainland Tanzania and Zanzibar. Edited by Jack Ruitenbeek, Indumathie V. Hewawasam, Magnus Ngoile. The World Bank. Washington D.C. 2005.

##### Philippines Mangrove Harvest

In response to the detrimental effects associated with the loss of mangrove habitats, the Philippine Department of Environment and Natural Resources established 25-year land tenures for Community-Based Mangrove Forest Management Agreements (CBMFMA). The CBMFMA assesses a 10% fee on foresters’ profits from mangrove harvests. The revenue generated from this fee is then used for mangrove reforestation costs within the community. Mangrove harvests are managed by quotas to prevent over-logging.

Source: IUCN. 2008. Designing Payments for Ecosystem Services: Report from the East Asian Regional Workshop (Hanoi, April 2008).

### BOX 1–3

#### Example of Regulation-Driven Open Trading

##### New Zealand Fisheries Catch Quota Marketplace

Individual Transferable Quota (ITQ) are a marketplace mechanism where fisherman or a fishing firm legally holds a defensible right to catch, land a certain quantity of fish, and this right is freely tradable in an asset market. The quota is determined from the total allowable catch (TAC), which is determined based on the biology of the fishery. By using ITQ marketplace, a sustainable fisheries industry and ecosystem service market can be achieved.

Source: Newell R, Sanchirico J, and Kerr S. 2003. An Empirical Analysis of New Zealand’s ITQ Markets. Wellington, New Zealand. IIFET 2002 Conference, August 19-22, Wellington, New Zealand.

<sup>9</sup> Wunder, S. 2005. “Payments for environmental services: Some nuts and bolts.” CIFOR Occasional Paper No.42. Center for International Forestry Research.

TABLE 1-2

## Types of Markets and Payments for Ecosystem Services

<p><b>Public payment schemes for private resource and coastal landowners</b> to maintain or enhance ecosystem services (see Box 1-2)</p>	<p>These types of PES agreements are country-specific, where governments have established focused programs. While specifics vary by program focus and country, they commonly involve direct payments from a government agency, or another public institution, to resource owners, rights holders, and/or managers.</p>
<p><b>Formal markets with open trading between buyers and sellers, either:</b></p> <p><b>(1) under a regulatory cap or floor</b> on the level of ecosystem services to be provided, <b>or</b></p> <p><b>(2) voluntarily</b> (see Box 1-3)</p>	<p><b>Regulatory ecosystem service markets</b> are established through legislation that creates demand for a particular ecosystem service by setting a 'cap' on the damage to, or investment focused on, an ecosystem service. The users of the service, or at least the people who are responsible for diminishing that service, respond either by complying directly or by trading with others who are able to meet the regulation at lower cost. Buyers are defined by the legislation, but are usually private-sector companies or other institutions. Sellers may also be companies or other entities that the legislation allows to be sellers and who are going beyond regulatory requirements.</p> <p><b>Voluntary markets</b> also exist, as in the case of most carbon emission trading in the United States. For example, companies or organizations seeking to reduce their carbon footprints are motivated to engage in the voluntary market to enhance their brands, to anticipate emerging regulation, in response to stakeholder and/or shareholder pressure, or other motivations. Voluntary exchanges are also a category of private payments (see below).</p>
<p><b>Self-organized private deals</b> in which individual beneficiaries of ecosystem services contract directly with providers of those services (see Box 1-4)</p>	<p><b>Voluntary markets</b>, as outlined above, are a category of private payments for ecosystem services.</p> <p>Other <b>private PES deals</b> also exist in contexts where there are no formal regulatory markets (or none are anticipated in the near term) and where there is little (if any) government involvement. In these instances, buyers of ecosystem services may be private companies or conservationists who pay landowners to change management practices in order to improve the quality of the services on which the buyer wishes to maintain or is dependant. The motivations for engaging in these transactions can be as diverse as the buyers, as is explored further in the step-by-step section that follows on finding buyers.</p>
<p><b>Marine Protected Areas (MPA)</b> established publicly through government or privately using financially self-sustaining means (see Box 1-5)</p>	<p>Within an MPA, access and use of a marine environment is limited allowing the environment to prosper and become a product for ecotourism, education, or research. Such MPAs can be designated by national or local authorities (including local communities), by multinational institutions (such as those established through Regional Seas Agreements), or by private landowners.</p>

**BOX 1–4**

## Examples of Self-Organized Deals

**Papua Pearl Cultivation, Indonesia**

The Indigenous Kawe people of Raja Ampat entered into a 30-year lease with PT Cendana Indopearls (CIP), a subsidiary of Atlas South Sea Pearl Ltd. (Australia), to cultivate pearls within their waters in exchange for community development (new schools, medical assistance, etc), local employment, and greater awareness of their marine resources. CIP dealt directly with the Kawe landowner families. An anthropological study of the Kawe people was conducted to help CIP learn the best way to do business within the community. This self-organized deal between CIP and the local Kawe community has provided new economic and educational opportunities within Raja Ampat and promoted sustainable oyster pearl cultivation within its waters.

**Fiji Reef Leases**

Local Fijian communities have formed Community Locally Managed Marine Areas (LMMAs) and have offered short leases (2 to 5 years) on use of reef area and marine resources, specifically for marine bioprospecting for new pharmaceuticals and cultivation and harvesting of live rock for aquaria. LMMAs are entirely locally operated, placing the responsibility of marine area location, monitoring, and management with the community – thus ensuring sustainable practices by outside buyers. The University of South Pacific (USP) has played a critical role brokering contractual agreements between LMMAs and private companies that benefit local economies and promote sustainable reef management.

Source: IUCN. 2008. Designing Payments for Ecosystem Services: Report from the East Asian Regional Workshop (Hanoi, April 2008).

**BOX 1–5**

## Example of Financially Sustainable Marine Protected Areas (MPA)

**Chumbe Island Coral Park, Tanzania**

The Zanzibar Ministry of Agriculture, Livestock, and Natural Resources established an MPA around Chumbe Island, Tanzania in 1995. Care taking responsibilities were awarded to the privately-owned Chumbe Island Coral Park Ltd (CHICOP) through a 10-year renewable lease. The MPA management activities are funded by CHICOP revenue generated through ecotourism, research, and education opportunities.

Source: IUCN. 2008. Designing Payments for Ecosystem Services: Report from the East Asian Regional Workshop (Hanoi, April 2008).

**Bonaire Marine Park, Netherlands Antilles**

The Bonaire Marine Park (BMP) in the Netherlands Antilles was established in 1979 to conserve the marine and coastal habitat that ranks among the most popular dive locations in the world. Through dive entrance fees, the BMP is able to self-finance all operations since 1992, including a full time staff to monitor and police destructive practices such as poaching and anchoring on the reefs, and to conduct long-term research and monitoring. In addition, an emphasis has been placed on educating visitors, workers, and island inhabitants on marine conservation, which has increased international awareness of the BMP. In recent years, additional revenue sources have been implemented, including mooring fees, boat entrance fees into the BMP, and suggested donations.

Source: The Bonaire Marine Park Website (<http://www.bmp.org>)

TABLE 1-3

## Types of Payments for Biodiversity Protection

### Purchase of High-Value Habitat

- Private land/underwater habitat acquisition (purchases by private buyers or NGOs explicitly for biodiversity conservation)<sup>1,3,4</sup>
- Public land/underwater habitat acquisition (purchases by government agency explicitly for biodiversity conservation)<sup>4</sup>

### Payment for Access to Species or Habitat

- Bioprospecting rights (rights to collect, test, and use genetic material from designated areas and specimens)<sup>4</sup>
- Research permits (rights to collect specimens and take measurements in designated areas)<sup>1,3</sup>
- Hunting, fishing or gathering permits for wild species<sup>4</sup>
- Ecotourism use (rights to enter the area, observe wildlife, anchor/moor, or dive/snorkel)<sup>4</sup>

### Payment for Biodiversity-Conserving Management Practices

- Conservation easements (owner is paid to use and manage defined piece of land only for conservation purposes; restrictions are usually in perpetuity and transferable upon sale of the land)<sup>1,3</sup>
- Conservation land lease (owner is paid to use and manage a defined piece of land for conservation purposes, for a defined period of time)<sup>1,3</sup>
- Conservation concession (public forest agency is paid to maintain a defined area under conservation uses only; comparable to a forest logging concession)<sup>1,3</sup>
- Community concession in public protected areas (individuals or communities are allocated use rights to a defined area of in return for a commitment to protect the area from practices that harm biodiversity)<sup>1,4</sup>
- Management contracts for habitat or species conservation in private marine habitats (contract that details biodiversity management activities, and payments linked to the achievement of specified objectives)\*

### Tradable Rights under Cap & Trade Regulations

- Individual Transferable Quota (ITQ) – legal defensible right to catch and land a certain quantity of fish, and this right is freely tradable in an asset market, which is capped based on the total allowable catch (TAC) that is dictated by the fishery ecosystem<sup>6</sup>
- Tradable biodiversity offset credits (credits representing areas of biodiversity protection or enhancement, which can be purchased by developers to ensure they meet a minimum standard of biodiversity protection)\*

### Support Biodiversity-Conserving Businesses

- Business shares in enterprises that manage for biodiversity conservation\*
- Biodiversity-friendly products (eco-labeling)<sup>2</sup>

\* Indicates theoretical marine biodiversity payment type

Sources:

- <sup>1</sup> The Nature Conservancy Marine Conservation [www.nature.org/initiatives/marine](http://www.nature.org/initiatives/marine)
- <sup>2</sup> FAO. 2005. Guidelines for the ecolabelling of fish and fishing products from marine capture fisheries. Food and Agriculture Organization of the United Nations. Rome, Italy.
- <sup>3</sup> The Nature Conservancy Marine Conservation Agreement Toolkit: <http://www.mcatoolkit.org/>
- <sup>4</sup> The Nature Conservancy, Conservation International, and Conservation and Community Investment Forum. 2008. Workshop Proceedings for – A Private Sector Approach – Conservation Agreements in Support of Marine Protection. Seattle, WA.
- <sup>5</sup> Spergel B, and Moye M. 2004. Financing marine conservation- a menu of options. World Wildlife Fund Center for Conservation Finance. Washington D.C.
- <sup>6</sup> Xinshan L. 2000. Implementation of individual transferable quota system in fisheries management: the case of the Icelandic fisheries. Dalian Fisheries University. China.

**TABLE 1-4**  
Examples of Fisheries Payments

	Service Provided	Supplier	Buyer	Instrument	Impact on Fisheries	Payment
<b>Self-Organized Deals</b>	<b>Reverse-fishing License — Phoenix Islands Protected Area (PIPA), Phoenix Islands, Kiribati<sup>1</sup></b>					
	Purchasing national fishing licenses in the Phoenix Islands Protected Area (PIPA) to achieve sustainable fisheries	Republic of Kiribati	The PIPA Trust – Partnership between New England Aquarium and Conservation International	Privately subsidized purchase of national fishing licenses to conduct no-fishing with goal to reduce number of fisherman within PIPA	Improving fishing populations, diversity, and overall marine ecosystem health	Reimbursement of total value of fishing licenses that could potentially be sold
	<b>Fisheries Cooperatives — Japan and USA (Alaska)<sup>2</sup></b>					
	Decrease in dangers and costs associated with modern fishing, including unsustainable harvesting and bycatch	Local fishing industries and communities	Two or more fisherman or fishing firms	Pooling of resources to maximize yield with minimal cost while staying within Total Allowable Catch (TAC) quotas	Decreased participation on seas and observance of TAC quotas promote sustainable fishing practices	Typically non-contractual or verbal agreements that vary with catch
	<b>Compensation for Access — Multilateral agreements between USA and Pacific Counties<sup>3</sup></b>					
	Access and harvest rights of USA or into the territorial waters of Pacific Countries	Pacific Forum Fisheries Agency (FFA): Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Papua New Guinea, Palau, Solomon Islands, Tuvalu and Western Samoa	USA or US fishing companies	Through payment of access fee and other fees, USA gains access to host country's waters. Fees or negotiations in turn can be used for conservation, research, and development of fisheries	Represents a significant percentage of small Pacific Island nations' government revenues	Upward of \$60 million USD per year to FFA
<b>Trading Schemes</b>	<b>Individual Transferable Quota (ITQ) — National markets specified by species<sup>3</sup></b>					
	Sustainable fisheries in various countries	Country / government with sovereign ownership of fishing grounds and/or species	Fishermen and fishing firms	Legal right to land a quantity of fish, which is freely tradable in a market that is capped based on the total allowable catch (TAC) dictated by the fishery ecosystem	Worked with reasonable success to sustain fish populations and fishing activity	Typically annual fees for commercial fishing licenses, quota permits, etc.

Sources:

<sup>1</sup> The Nature Conservancy, Conservation International, and Conservation and Community Investment Forum. 2008. *Workshop Proceedings for A Private Sector Approach – Conservation Agreements in Support of Marine Protection*. Seattle, WA.

<sup>2</sup> Xinshan L. 2000. Implementation of individual transferable quota system in fisheries management: the case of the Icelandic fisheries. Dalian Fisheries University. China.

<sup>3</sup> Spergel B and Moye M. 2004. *Financing marine conservation – a menu of options*. World Wildlife Fund Center for Conservation Finance. Washington, D.C.





# **Section 2:** A Step-by-Step Approach to Developing Marine Payment for Ecosystem Service Deals

*The development of PES deals in the coastal and marine realm entails four core steps, outlined below and explained in more detail in the pages that follow.*

### **Step 1: Identifying Marine Ecosystem Service Prospects & Potential Buyers**

- ✓ Defining, measuring, and assessing the ecosystem services in a particular area
- ✓ Identifying potential buyers who benefit from the service
- ✓ Assessing marketable payment value
- ✓ Considering whether to sell as individuals or as a group

### **Step 2: Assessing Institutional & Technical Capacity**

- ✓ Assessing legal, policy, land ownership, and marine used rights and management responsibility context
- ✓ Examining existing rules and regulations for PES markets and deals
- ✓ Surveying available PES support services and organizations
- ✓ Site selection criteria

### **Step 3: Structuring Agreements**

- ✓ Designing management and business plans to provide the ecosystem service that is the focus of the PES deal
- ✓ Reducing transaction costs
- ✓ Reviewing options for payment types
- ✓ Establishing the equity and fairness criteria for evaluating payment options
- ✓ Selecting contract type

### **Step 4: Implementing PES Agreements**

- ✓ Finalizing the PES management plan
- ✓ Implementing activities
- ✓ Verifying PES service delivery and benefits
- ✓ Monitoring and evaluating the deal, and the status of ecosystem services

### **Tools for PES Design**

- ✓ Opportunities in Payments for Marine Ecosystem Services
- ✓ Marine PES Site Selection Criteria
- ✓ Framework for PES Design

*Read on for a more detailed explanation of each step.*

## Step 1: Identify Ecosystem Service Prospects & Potential Buyers



### Checklist

- ✓ Define, measure, and assess the ecosystem service being provided in a particular area
- ✓ Identify potential buyers who benefit from the service
- ✓ Assess marketable payment value
- ✓ Consider whether to sell as individuals or as a group

### How do you identify an ecosystem service for a PES deal?

Imagine a Fijian community interested in protecting a coral reef for ecotourism and natural beach maintenance for the coastal tourism operators and hoteliers. First, they would need to develop plans to reduce pressure on the coral reef and improve coral health. The community could consider establishing a “no-take” zone (i.e., no fishing activity) or restore adjacent “linked” ecosystems, such as a seagrass meadow or mangrove forest, to decrease sedimentation in the water column.

While this community is looking to sell reef conservation, potential buyers, such as local hotels and tourism operators, might ask, “What service are you offering me?” In this case, the answer is relatively straightforward: the product is higher value tourism/ecotourism through increased reef fish population for SCUBA diving or decreased beach erosion.

The first step in preparing any PES deal is to identify:

- **What ecosystem service is for sale**

*What ecosystem services exist where a potential seller has clear resource use or access rights, management authority, and/or ownership?*

- **How the ecosystem service can be restored and maintained**

*Which resource management practices will yield the desired ecological outcomes, ideally within the highest degree of scientific certainty possible?*

In the marine environment, the types of ecosystem services with the potential for a PES deal include:

- beach maintenance and production
- shoreline stabilization
- marine and coastal carbon storage and sequestration
- fish nursery habitats
- marine species, habitat, and biodiversity conservation
- marine species bioprospecting
- coastal water quality and pollution filtration

Any or all of these services (as well as others) could be the focus of PES deals. It may also be advantageous to bundle several types of ecosystem services together in one project to maximize income and diversify risk, particularly in the marine environment.

With the Fijian community example above, in order to make the sale, the community would need to document how the adoption of specific resource management practices would increase value to the tourism and hotel sectors. Questions like these are highly technical (see Box 2-1), and you will often need scientists to assist with this step. Firms can help design initiatives, prepare documentation, and gather scientific data; but contracting such firms can be very expensive (see Box 2-2).

You also need to identify the management actions needed to “deliver” the ecosystem service that is the focus of the PES deal. Saleable ecosystem services can be identified by focusing on:

- **Specific ecosystem services that can be enhanced through particular changes in natural resource management actions.** For example, sequestering carbon through mangrove protection, reducing coastal erosion by replanting mangroves or protection barrier reefs, etc.
- **New natural resource management activities that are of interest to a community or coastal landowner, and would produce ecosystem service benefits, but are too costly to adopt without external assistance.** For example, a coastal community with access rights over an area formerly having coral reefs could invest in reef restoration to provide shoreline stabilization and/or carbon benefits.

Either starting point may be valid, depending on the project context. *The key is clearly matching management activities and ecosystem services outcomes.* Plenty of well-intentioned natural resource management activities, conservation projects, and development actions yield no saleable ecosystem services.

### BOX 2-1 Key Technical Questions for Ecosystem Service Sellers

Before initiating conversations with potential private sector buyers, ecosystem service sellers must be able to clearly answer questions such as:

- What is the quality, and current status, of the ecosystem services that might be the focus of a PES deal?
- How do you verify this? (Ecological studies? Community reports? Other sources?)
- What are the odds of an ecosystem’s resilience being enhanced and maintained over time, in order to enable/support flow of ecosystem services? With what practices? Over what time span? What data supports these assertions?

### BOX 2-2 Identifying Potential Resources and/or Partners for Quantifying Ecosystem Services

Many organizations may be able to help identify resources and/or partners capable of demonstrating that a seller is able to deliver an ecosystem service that buyers can quantify. These may include:

- Forest Trends ([www.forest-trends.org](http://www.forest-trends.org))
- Ecosystem Marketplace ([www.ecosystemmarketplace.com](http://www.ecosystemmarketplace.com))
- World Resources Institute’s Reefs-at-Risk – regional quantitative threat assessment of coral reefs ([www.wri.org/project/reefs-at-risk](http://www.wri.org/project/reefs-at-risk))
- Invest/The Natural Capital Project – a consortium of Stanford University, World Wildlife Fund, and The Nature Conservancy ([www.naturalcapitalproject.org](http://www.naturalcapitalproject.org))
- Business and Biodiversity Offsets Program – a joint program by Forest Trends and Conservation International ([www.forest-trends.org/biodiversityoffsetprogram](http://www.forest-trends.org/biodiversityoffsetprogram))
- Business for Social Responsibility – consortium of 250 global corporations focusing on sustainable business solutions through consulting, research, and cross-sector collaboration ([www.bsr.org](http://www.bsr.org))
- The Marine Mammal Consulting Group – an independent consulting firm focused on environmental mitigation requirements for offshore projects ([www.mmcg.net](http://www.mmcg.net))
- Conservation Strategy Fund – a conservation organization offering marine economic valuation services ([www.conservation-strategy.org](http://www.conservation-strategy.org))
- ARIES: ARTificial Intelligence for Ecosystem Services – web application for making environmental decisions (<http://esd.uvm.edu/>)

## Establishing Baselines

As with any business relationship, payment is contingent on the reliable delivery of the services being bought. A seller of a PES project will therefore need to provide documentation about both the ‘baseline’ — which is the initial status of the ecosystem services around which a deal is crafted — as well as the ongoing status of the services over time in order to show that the services being paid for are either continuing or improving. Sellers may also need to provide regular and/or independent verification of their actions and how these actions provide specific ecosystem services. The specifics of these requirements will vary depending on what the buyer requests and what is negotiated in the final agreement.

To document the current status of ecosystem services and how current natural resource management practices affect these services, potential ecosystem service sellers and their partners will need to:

- map ecotypes, coastal habitats, or marine processes and the services they provide;
- map resource uses as well as jurisdictions, tenurial arrangements, etc.;
- identify and quantify the ecosystem services provided;
- analyze how different marine or coastal activities affect the provision of ecosystem services; and
- quantify and/or conduct analyses to value the ecosystem services, ideally based on comparable deals in the area or ecosystems.

There are a variety of methods for quantifying ecosystem services that are distinct for carbon sequestration, shoreline protection, or biodiversity. Many of these methods are highly technical and may require the engagement of scientists and other experts to undertake measurements, if only on a short-term contractual basis. When quantifying ecosystem services, potential sellers can also explore working with an aggregator — an entity that assembles groups of sellers and then goes on to negotiate for a deal related to all of these sellers together — with the explicit request that the aggregator takes this scientific assessment on as part of their work in crafting a PES deal. Be aware that for-profit aggregators will probably factor these costs into the deal and negotiate for a greater share of the profits from the ultimate sale.

Sellers should generally decide how they want to document ecosystem services before they begin looking for buyers or formulating a PES deal. If they don't want to spend money on scientific expertise, they can explore other avenues for getting this covered — such as forming a partnership with a science-focused nonprofit organization or working with certain aggregators. Either way, sellers need to carefully consider the financial impact their decision will have on the deal's bottom line.

## Assess Scientific Certainty/Uncertainty

Despite the vast interest in marine PES, there are very few deals that have been implemented using the definition of PES defined in this primer. This presents two important challenges for potential parties. First, determining feasible ecological services may include dealing with issues that are currently not covered by any government regulations or laws. Second, monitoring the delivery of ecological services may require having a baseline scientific assessment completed from which to compare future delivery. It may be in the best interest of all parties to engage scientists and other experts, if only on a short-term contractual basis, to undertake measurements to establish this benchmark.

The level of certainty (or uncertainty) that buyers are willing to accept is the key, and it should be assessed so that prospective sellers know the level of detail to seek out in assessments and to have a sense of the potential price that will be paid. The questions and concerns related to certainty/uncertainty will vary from buyer to buyer, but could include issues such as:

- **How certain are ecologists/experts that a particular set of natural resource management practices will result in a specific set of ecosystem service-related outcomes**, e.g., reforesting mangroves for shoreline protection or carbon sequestration, or improving water quality?
- **How certain is it that the desired ecosystem service outcomes will be achieved, given the potential for other unanticipated dynamics**, e.g., natural or otherwise, such as climate change factors — including ocean acidification, sea level rise, harmful algal blooms, and pressure from coastal development?

- **What level of certainty does a buyer — particularly a private-sector buyer — need to have documented to show a comprehensive review of the issues** (“due diligence”), specifically as a component of a buyer’s own risk management strategy for reputational issues, building the “business case” within their own company, or for other reasons?
- **How certain is the buyer that the sellers will fully implement the deal agreement?** What level of monitoring and verification should a buyer require?

By considering these questions and looking at other PES deals — ideally in your province or at least your own region or country — you will gain a sense of the level of detail buyers of ecosystem services may expect. While there is no single, universally-applicable approach for all coastal areas, various tools and software programs related to connections between habitat quality and shoreline stability exist, and these offer a starting point from which to adapt or derive inspiration for work in a particular area (for example, the ARIES program developed by Eco-Informatics at the University of Vermont, Box 2-3). In addition, it may be wise to peruse the cannon of terrestrial PES resources available on the Ecosystem Marketplace website ([www.ecosystemmarketplace.com](http://www.ecosystemmarketplace.com)) and elsewhere on the Internet (Box 2-4).

### BOX 2-3

#### Tool to Support Policy Decisions: Using Artificial Intelligence to Identify and Value Marine PES Deals

Artificial Intelligence for Ecosystem Services (ARIES) uses computer models to identify, observe, and measure environmental assets by geographical area based on user input. ARIES has been utilized for land-based ESAV since 2008 and is currently expanding its model to include linkages to the coastal and marine environment.

The model relies on ever-growing global environmental databases, including:

- University of Vermont Ecosystem Services Database (<http://ecoinformatics.uvm.edu/projects/ecosystem-services-database.html>)
- National Ocean Economic Program (<http://www.oceaneconomics.org/>)
- Science Environment for Ecological Knowledge (SEEK) Eco-Grid (<http://seek.ecoinformatics.org>)

ARIES promises to be a powerful tool to aid in environmental decisions at multiple geographic regions. For example, users can utilize the spatial features of ARIES to identify environmental services being offered in a specific area or where it is most cost effective for a PES buyer to invest.

### BOX 2-4

#### Tool for Government Involvement in PES

The National Institute of Ecology in Mexico developed a Handbook for Municipal Governments to Design and Engage in Payment for Hydrological Services, which lays out:

- Methods for undertaking a regional hydrological services diagnostic including key information that a municipality should have in order to identify which opportunities exist;
- Design guidelines for a payment for hydrological services program, attending to the special needs and characteristics of the municipality;
- Implementation steps; and
- Monitoring mechanisms, including criteria for evaluating the program and implementing a process of permanent improvement.

Forms included facilitate the compilation and ordering of the information needed, along with checklists to help the user to identify whether they have the necessary information to go on with each step of the policy.

## How do you identify prospective buyers?

Every potential buyer of an ecosystem service has their own distinct interest and set of motivations for engaging in PES deals; some are laid out in Table 2-1.

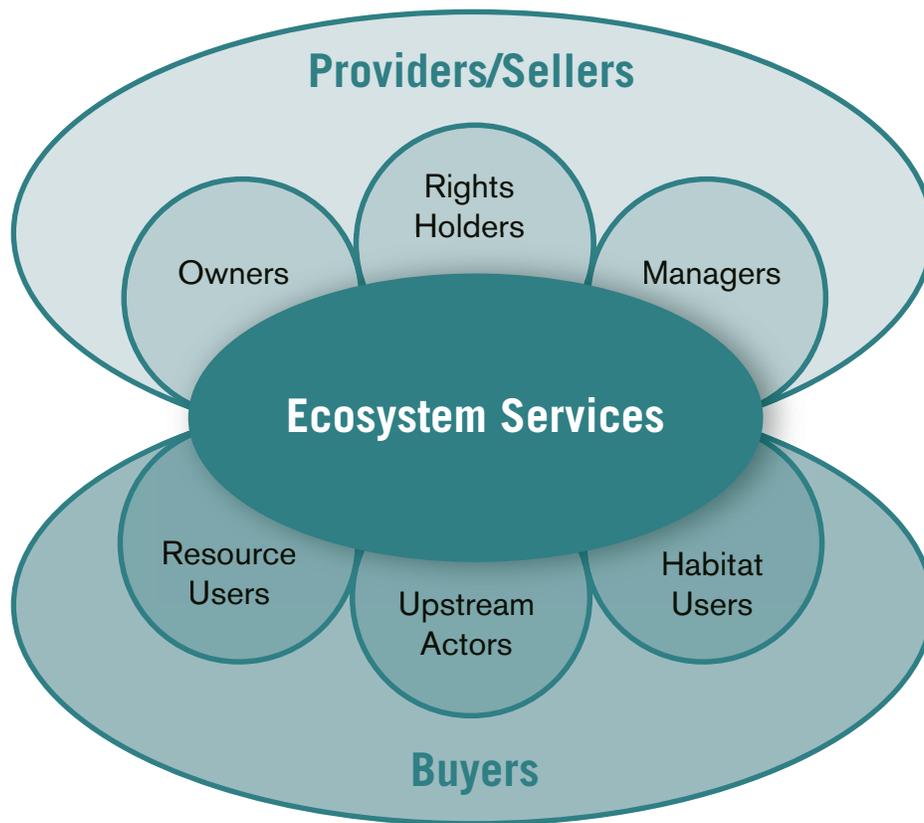
**TABLE 2-1**  
**Buyers & Motivations**

Buyer	Motivation
<b>Private Company</b>	<p><b>Regulatory Markets:</b></p> <ul style="list-style-type: none"> <li>• <b>Regulatory compliance</b> (e.g., fisheries quota)</li> </ul> <p><b>Voluntary Markets:</b></p> <ul style="list-style-type: none"> <li>• <b>Reduction of operating and maintenance costs</b> by investing in ecosystem services (e.g., beach maintenance)</li> <li>• <b>Hedging of risks</b> (e.g., related to supply of key natural resource inputs, potential future regulation)</li> <li>• <b>Increasing investor confidence</b> by proactively addressing environmental issues</li> <li>• <b>Enhancing brand</b> and improving public image (e.g., eco-labeling)</li> <li>• <b>Maintaining license to operate</b> by investing in good relationships with communities, non-governmental organizations and regulators</li> </ul>
<b>Private Intermediary</b>	<ul style="list-style-type: none"> <li>• Simplifying the supply chain for buyers</li> <li>• Turning a profit</li> <li>• Value-added through service or product certification services</li> </ul>
<b>Government</b>	<ul style="list-style-type: none"> <li>• Implementing international policy (e.g., United Nations Framework Convention on Climate Change, Convention on Biological Diversity)</li> <li>• Adhering to national regulations to protect environment</li> <li>• Investing in long-term natural resource supply</li> <li>• Responding to public pressure</li> <li>• Averting environmental cataclysmic events (e.g., hurricane and tsunami damage)</li> <li>• Reducing costs (e.g., investing in natural filtration systems rather than building a water treatment plant)</li> </ul>
<b>Donor Agency</b>	<ul style="list-style-type: none"> <li>• Act on environmental and/or development mission</li> <li>• Increase sources of revenue for conservation</li> </ul>
<b>Non-Governmental Organization (NGO)</b>	<ul style="list-style-type: none"> <li>• Acting on environmental and/or development mission (e.g., The Nature Conservancy currently purchases easements from landowners; payments could become another mechanism to explore achievement of conservation goals.)</li> <li>• Reducing organization's environmental footprint (e.g., move towards carbon neutrality, water neutrality, or biodiversity impact neutrality – though the latter two terms remain open to discussion in how they are defined)</li> </ul>
<b>Private Individuals</b>	<ul style="list-style-type: none"> <li>• Acting on environmental and social concerns (e.g., purchasing offsets to reduce individual carbon, water, and/or biodiversity footprints)</li> <li>• Investing in new business ventures</li> </ul>

As a seller, determining the most promising type of buyer is the first issue. A preliminary assessment should be based on the level of activities and engagement of the various players listed in Table 2-1 — including private companies, private intermediaries, government agencies, donor agencies, NGOs, and individuals — in a particular area.

The distinction between a buyer and a seller is not always straightforward. In some cases, by considering the ecosystem and its service you can start to brainstorm a list of potential actors that may impact the service in some way. From this list, potential buyers and sellers with whom to aggregate the sale of the service may become more apparent. For example, a government authority can be either a seller or buyer – a seller because they have management rights and a buyer because they may need to meet regulatory requirements. Often, sellers have ownership, use rights, and/or management rights over the resource and buyers are often resource and habitats users. Ultimately, a successful PES deal will require the successful matching of buyers’ and sellers’ needs, which may involve multiple parties on both sides of the deal (see Figure 2-1).

**FIGURE 2-1**  
Potential Actors on Ecosystem Service



At this point, potential sellers of ecosystem services should begin to ‘brainstorm’ or generate lists of prospective buyers. To begin the process, you can ask questions such as:

- Who are the largest employers in the province, country, or even the region?
- Who relies on ecosystem services from a prospective PES deal site in a significant way through:
  - Using significant resources (e.g., recreational dive operators and commercial fishermen)?
  - Owning large landholdings and affecting habitat/biodiversity in the coastal areas (e.g., large hotels and resorts)?
  - Emitting greenhouse gases and carbon dioxide (e.g., those needing to buy carbon credits)? (see Box 2-5)

If you are not sure, you can turn to locally-operating NGOs or government agencies. Both entities can often provide data on employers, resource users and coastal landowners, and so on.

Beneficiaries of ecosystem services are often far “upstream” or along the coast, well away from the source of the service. Sellers need to keep this in mind when trying to figure out which potential buyers are most likely to find it worthwhile to pay for their services, as the case study in Box 2-6, taken from the terrestrial context, illustrates.

### BOX 2-5 Illustrative List of Business Sectors with Potential Ecosystem Service Buyers

- Fishing Industry
- Coastal Tourism Industry
- Coastal Recreation Operators
- Municipalities and Governments
- Offshore Oil & Gas
- Marine Renewable Industry
- Retailers

### BOX 2-6

#### Developing a Clear Offer: Selling the Value of Forested Hillsides to Retailers Using the Panama Canal

As deforestation in the hills surrounding the Panama Canal has increased, it has caused erosion and siltation of the canal – as well as increased uncertainty about freshwater supplies. The result is an annual cost of about \$60 million in canal dredging fees, as well as seasonal water shortages. ForestRe, a forestry insurance company, saw an opportunity to protect the watershed by paying farmers and local communities to reforest the watershed by planting trees and changing practices to avoid further deforestation. ForestRe also knew that insurance companies were charging high premiums to offset the risk that shipping would be interrupted if the canal were closed or blocked.

The company proposed the creation of a bond, the revenues from which would flow to local farmers willing to change their practices. The buyers of the bond would be canal users willing to support the bond in exchange for reduced insurance premiums.

The plan hinged on persuading insurance companies that offering reduced premiums in exchange for support of the bond would reduce the risk more than it would reduce premiums. The idea was to get major users of the canal – including giant retailers like Wal-Mart and Sony – to support the bond, which in turn would help ensure ongoing access to the canal and ideally also enhance freshwater supplies. The key question, of course, is ensuring that these actions are indeed tied to decreased siltation and dredging costs as well as reliable water flow in the Panama Canal, which should be an ongoing source of scrutiny and examination over the “lifespan” of any payment for ecosystem service.

To develop a list of potential private-sector buyers, a few additional brainstorming questions include:

- Has a particular industry or company been receiving negative press about their environmental practices lately? (If yes, they may be more receptive to a PES deal offering environmental and/or social benefits.)
- Has a company been losing ground to competition — either on social issues or more generally in the marketplace? (If so, new initiatives — such as a PES deal with significant public relations / media potential — can boost a company’s marketing position.)

- Has a company or industry been a leader on other social or environmental issues? (If so, a PES deal may offer the opportunity to continue holding that leadership position.)
- Is a company’s management innovative? (If so, a PES deal may offer the opportunity to continue to innovate.)
- Is a company growing fast? (If yes, this company might not be the best to approach as new initiatives may be too difficult to implement in that context.)

In courting the private sector, keep in mind that each company is unique. What one company sees as a business benefit, another may not — even if the two are in the same industry or region. It is therefore up to the firm’s own internal decision-makers and strategists to define the benefits of making an investment — while it is up to the seller to make the case for the deal (see Box 2-7).

**BOX 2-7**

**Private Sector Ecosystem Service Buyers**

Private sector buyers can be:

- a single company,
- a group of companies (such as tourism operators), or
- a participant within a larger cap-and-trade system of buyers, formed when a regulated system requires purchase of a certain amount of services to offset damages (and therefore streamlines the relationship building process).

The seller can do this by contributing ideas for executives to think about when determining how to value an ecosystem service for which they may be paying. This step is key, for not only will a company be more likely to undertake a PES operation if its executives perceive economic benefits flowing from it, but these same executives are likely to recommend similar deals to their peers — which could lead to the growth of PES deals in a country or region.

Without perceived benefits, however, companies are unlikely to act, except through philanthropy — which can be a minor and typically short-term source of investment compared to their mainstream business.

As sellers brainstorm about potential business benefits, the questions that should be asked include:

- Are there regulatory requirements that a PES deal could help a company meet? (For illustrative regulatory requirements, please see Box 2-8).
- Where regulatory requirements related to ecosystem services do not exist, are there other business benefits that may motivate businesses to invest in ecosystem services voluntarily? For example:
  - Do any ecosystem service trends present risks to companies (e.g., beach erosion, degradation of key SCUBA diving sites, and destruction of mangrove fish nursery habitats)?
  - Could greenhouse gas / carbon dioxide emissions be a public relations issue?
  - Could diminished coastal water quality affect core operations and/or future growth, e.g., shellfish farming?
  - Could impacts on marine habitat and biodiversity affect corporate reputation or even core operations and/or future growth, especially sustainable ecotourism?

***For many businesses, investments in ecosystem services offer concrete management tools for addressing these emergent expectations among key stakeholders.*** The key is to come up with some ideas that executives can then adapt to make the most compelling “business case” for engaging in a PES deal within their firm.

## **BOX 2–8**

### **Examples of Regulatory Incentives for Private Sector Payments for Ecosystem Services**

Legal provisions can provide effective incentives for investing in payments for ecosystem services, such as through policies or laws mandating engagement in markets or payments for ecosystem services. Some examples of current legal (binding and non-binding) requirements pertaining to the coastal and marine environment include:

#### **Domestic Regulatory Incentives**

- Environmental impact / risk analyses required in various planning processes and / or permitting requirements (U.S. and other countries)
- Water quality and pollution filtration - U.S. Clean Water Act
- Biodiversity protection - National Invasive Species Act (US)
- Habitat conservation - U.S. Endangered Species Act, U.S. Marine Protection, Research, and Sanctuaries Act
- Fisheries Management - Magnuson-Stevens Fishery Conservation and Management Act (US)
- Habitat conservation - Marine Life Protection Act (California, US)
- Biodiversity protection - “Biodiversity Law” (Viet Nam)
- Mangrove restoration - Community-Based Mangrove Forest Management Agreement (Philippines)
- Entrepreneurial MPA investment - 1988 Zanzibar Fisheries Act (Tanzania)

#### **Specific Multi-lateral Regulatory Incentives** (International participation unless otherwise stated)

- Migratory Bird Treaty Act (North America)
- Indian Ocean - South-East Asian Marine Turtle Memorandum of Understanding (Indian Ocean / Southeast Asia)
- Inter-American Convention for the Protection and Conservation of Sea Turtles (Americas)
- International Law on Ballast Water
- Global Program of Action for the Protection of the Marine Environment from Land-Based Activities
- Pacific Islands Forum Fishing Agency “US Treaty”
- Convention on the Conservation of Antarctic Marine Living Resources (Antarctic Treaty Member Nations)
- Commission for the Conservation of the Southern Bluefin Tuna
- International Whaling Commission

#### **International Commissions and Conventions**

- Copenhagen Accord to the UN Framework Convention on Climate Change
- Kyoto Protocol to the UN Framework Convention on Climate Change
- United Nations Convention on the Law of the Sea
- International Oceanographic Commission
- Convention on Biological Diversity
- Convention on Migratory Species

## How do you assess marketable payment value?

The price for an ecosystem service is ultimately determined by what the buyer is willing to pay and what the seller is willing to accept and deliver. In regulated markets, this ‘willingness to pay’ is often mandated, while in voluntary PES deals it is negotiated. Depending on PES negotiations, there can be a variety of potential buyers and sellers, each with their own different motivations.

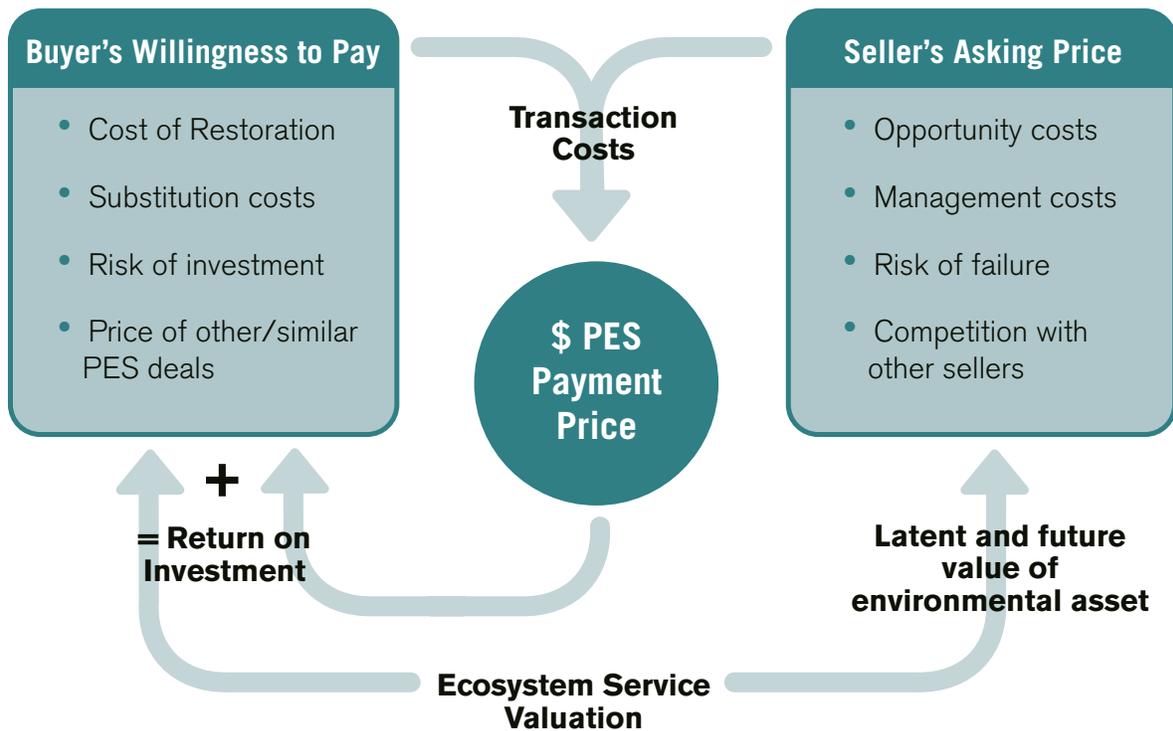
### Potential buyers’ bids may be informed by:

- the damages or losses they might incur if the service were lost;
- the cost of replacing that service with some substitute; and
- the intrinsic value to the constituency they represent of the ecosystem conservation or preservation involved.

### Potential sellers’ offers may be influenced by:

- the loss of revenue or benefits from potential uses of the resource that will be foregone;
- the costs of implementation of measures necessary to protect the services;
- the seller’s own valuation of the conservation or preservation involved;
- tax considerations; and
- the costs of carrying out the transaction.

**FIGURE 2-2**  
Key Factors Influencing Price of PES Deals



In addition, there may or may not be a mutually agreeable range of bids and offers that would allow a successful negotiation and transaction. A major difficulty for buyers is to aggregate the total value of an ecosystem service into a single negotiation when the beneficiaries are numerous or diverse. Negotiations may be influenced by a range of reasons, such as:

- **Economic value** or the quantification of economic benefits of the services from a societal point of view (both direct and indirect),
- **Opportunity costs** to the seller for forgoing the value derived from other uses of the resource,
- **Financial value** which is a combination of:
  - the actual private financial benefits to specific actor(s) that can be estimated based on the costs of replacing an ecosystem service if it were damaged or not available
  - the costs to the landowner of making needed resource management changes, such as costs of planting mangroves
  - the costs of developing the transaction, including creating baseline documentation of current ecosystem services status, developing a plan for changing practices to improve ecosystem service flows over time, etc.
- **Relative costs of alternatives** such as the cost of building a water treatment plant versus investing in natural ecosystem service-based filtration,
- **Market or transaction price** which is partly a reflection of perceived risks and uncertainty as well as bargaining power or the existence of co-benefits, and
- **Pricing of similar deals.**

Many factors determine the price that buyers are willing to pay for an ecosystem service, as well as the price at which a seller is willing to deliver the same service. The degree of competition in both supply and demand is, of course, key.

Buyers will tend to seek the lowest-cost suppliers of services, though there is growing interest in – and a premium placed on — the ‘co-benefits’ from some PES deals, such as conservation of habitat, poverty alleviation, and other factors. That is, there are a growing number of buyers who are looking for deals that have proven benefits to the surrounding community or that have been endorsed by a credible NGO, thereby reducing the risk that the transaction will be labeled ‘greenwashing.’ In these cases, while cost is important, it is secondary to the ‘quality’ of the product or even the ‘story’ associated with the PES deal.

In most current deals and markets for ecosystem services, potential supply is likely to outstrip market demand, suggesting that prices will typically be fairly low. A case in point is carbon: the market value (i.e. the price paid for a CO<sub>2</sub> credit) varies depending on whether one is selling into the US market, where compliance is almost always voluntary, or into the European Union market, which is driven by a need to comply with the Kyoto Protocol. This price is determined by the interaction of supply — and the marginal cost of providing an offset and bringing it to market — and demand, which includes the marginal cost of reducing emissions to meet mandatory caps or the perceived public relations benefit of buying voluntary offsets.

In some cases (and these may be rare), valuation studies can help generate demand for a service.<sup>1</sup> ***However, in no case should valuation studies be confused with the actual price of an ecosystem service.***

Further information and tools on measuring the economic value of ecosystem services are provided in Table 2-2.

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<sup>1</sup>Perhaps the most well-established use of valuation methods to determine “marketable value” is in the area of park entry fees and hunting licenses.

TABLE 2–2

## Tools for Measuring the Value of Marine Ecosystem Services

Name / Organization	Description	Web Site
<b>Ecosystem Marketplace</b>	Information on markets and payment schemes for ecosystem services	<a href="http://www.ecosystemmarketplace.com">www.ecosystemmarketplace.com</a>
<b>Natural Capital Project</b>	Tools for incorporating natural capital into decision-making	<a href="http://www.naturalcapitalproject.org">www.naturalcapitalproject.org</a>
<b>World Resources Institute's Reefs-at-Risk</b>	Map-based indicator of threats to world's coral reefs	<a href="http://www.wri.org/project/reefs-at-risk">www.wri.org/project/reefs-at-risk</a>
<b>Conservation International</b>	Ecosystem service value statistics database and map	<a href="http://www.consvalmap.org">www.consvalmap.org</a>
<b>National Ocean Economics Program</b>	Economic & socio-economic information along the U.S. coasts	<a href="http://www.oceaneconomics.org">www.oceaneconomics.org</a>
<b>Convention on Biological Diversity</b>	Website with materials on valuating biodiversity	<a href="http://www.cbd.int/marine/tools.shtml">www.cbd.int/marine/tools.shtml</a>
<b>Forest Trends Business and Biodiversity Offsets Program</b>	Website providing tools and information for incorporating biodiversity offsets within a company	<a href="http://bbop.forest-trends.org/offsets.php">bbop.forest-trends.org/offsets.php</a>
<b>Coastal Oceans Value Center – Coral Reefs</b>	Tools and resources for valuation of coral reefs	<a href="http://www.communities.coastalvalues.org/coralreef">www.communities.coastalvalues.org/coralreef</a>

In sum, as sellers begins to think about negotiating a price for a PES deal, they must make sure that the following are factored into the offering price:

- **costs for complying with the agreed-upon resource management practices** over time,
- **impact on the seller's earnings**, in present value terms, in terms of changing resource management practices to comply with agreement terms, and
- **administration costs** under the expected PES transaction over time.

*In negotiating, sellers must never forget that payment is contingent on delivery — and delivery is contingent on structuring a realistic deal.* If the market price offered does not cover the costs of the resource management that will be provided, the deal is not realistic. Therefore, it is essential to ensure clarity and agreement on measurable indicators of compliance with the PES deal as well as agreement on how risks of unavoidable non-compliance with the deal — such as through tsunamis and hurricanes, floods, coral bleaching due to rising sea temperature — will be shared between buyers and sellers.

## Should sellers engage in PES deals individually or as a group of multiple sellers?

Sellers of ecosystem services can be either individuals or organized groups, such as a coastal community association or village selling services on either communally-held coastal land, e.g., beaches or mangroves, or with fishing rights, to which community members have individual rights (see Local Managed Marine Areas example in Box 1-4).

Each has its advantages and disadvantages. For example, you will probably find it easy to determine who implements the agreement and other such details for individual sellers, while a group effort can lead to conflicting concerns among other resource users and coastal landowners. You may be able to minimize this by working with an aggregator, who in turn forms one-on-one agreements with multiple parties.

The key is to understand that there are multiple ways to engage and to think through what an individual seller may prefer.

Regardless of whether sellers decide to engage as individuals or a group, it is essential to have clarity on:

- Who will implement or enforce the agreement terms on the ground?
- How will the monitoring, certification, and verification (as required in the agreement) be done and by whom?
- Who receives the revenues and how are they distributed?

If sellers decide to join together, then all of these issues can be addressed for groups in a range of ways. If brokers or aggregators are involved, you should make sure that all sellers have a voice in all aspects of PES negotiation.

Easements, concessions, long-term leases and management contracts may lock resource users and rights holders into particular management commitments for long periods of time, depending on the term of the agreement. If these commitments forbid sellers from engaging in other activities, sellers may find their hands tied when it comes to responding to new economic opportunities and threats that may arise.

For example, as prices change over time, payments for ecosystem services and income from new management systems may no longer cover opportunity costs. Therefore, it is essential to think through all of these issues, and prepare from the very beginning. In addition, it is imperative to negotiate sections of the contract that would enable the sellers to re-negotiate terms in the event of specific circumstances, such as higher than expected rate of increase for costs of implementation costs.

### BOX 2-9

#### Aggregating Multiple Sellers

Multiple buyers can be aggregated in a variety of ways.

**Pre-existing community organizations can serve as the basis for an aggregated group of buyers**, provided that most (or all) people engaged in this community organization wish to participate and that there is interest on behalf of the buyer in having that set of resources for which the group is responsible engaged in the sale.

**Another approach is for an external organization to work with community residents to assess interest in PES deals and to assemble an interested group** of resource users, access rights holders, and coastal landowners.

Many other pathways to aggregation exist – with a range of structures, such as working with pre-existing (or forming new):

- cooperatives,
- legally-registered organizations, and
- government managed aggregation entities.

## Step 2: Assess Institutional & Technical Capacity



### Checklist

- ✓ Assess legal, policy, and resource ownership context
- ✓ Examine existing rules for market trading
- ✓ Ensure presence of support institutions and organizations

### What is the legal, policy, and resource rights/ownership context?

*“Payment for watershed service (PWS) schemes do not operate in a legal, social or political vacuum. A range of laws, policies and institutions will affect them. However, it is important to note that there are no policy, legal and regulatory changes that are always required to establish a PWS scheme. Rather, PWS schemes need to be developed to fit their particular contexts.... In practice, working with existing law is usually the best course – at least initially.”*

— Asquith, Nigel *et al.* 2007; Appleton, Al. 2007

Before designing and implementing a PES scheme, take careful stock of the context in which it will take place. Make sure that laws, practices and institutions in a potential PES deal site support, or at least do not obstruct, the development of these payment schemes. If government policies or even agencies are engaged in ecosystem service issues, these may serve as important sources of information and expertise as you develop a PES deal.

Where legal and policy frameworks are lacking, contract law becomes the framework within which PES develops. Either way, people engaged in developing PES deals must familiarize themselves with the overall legal, policy and ownership/access rights as it relates to the deal. In many countries, there are still significant gaps in government policy and regulation around transactions for ecosystem service payments. Getting feedback from other organizations and entities in your region that have gone through the process themselves and learned the permitting and legal requirements are a good source of guidance.

After assessing the legal and policy context at national, regional, and municipal levels of government, it is time to assess local resource use and access rights and ownership in coastal and marine areas.

In many parts of the world, marine and coastal areas traditionally have public access laws in place, establishing public (government) use of the coastline below the mean low water mark and the marine environment extending out to 200 nautical miles in the Exclusive Economic Zone (EEZ) as outlined by the United Nations Convention on the Law of the Sea (UNCLOS). However, in certain locations coastal and marine ownership and or access rights may be dictated by customary law, indigenous traditions, or other circumstances. It is essential that local customs, culture, and laws are well understood and incorporated into a PES deal.

When scoping potential areas for PES deals, it is important to ask:

- Do prospective ecosystem service sellers have legal rights to engaging in economic activities with the resources in the area that are the focus of the potential PES deal?
- Are there other users of this resource?
- Are there people who would be impacted by a PES deal in terms of their current resource access or use patterns?
- Will the act of managing the resource to provide the marketed ecosystem service detract from the ecosystem’s capacity to provide other services? If so, who depends on these other services, and how will their rights to the service be affected?
- Do local and/or national laws enable (or at least not prohibit) payments for ecosystem services?

If people in rural communities do not have legal and practical access to an ecosystem service, a buyer will likely find the risks of forging a PES deal too great. If clarity on tenure or use rights do exist, however, then so does a critical element of the context in which PES can develop.

All claims to resource use, access, or ownership rights, therefore, must be understood in order to ensure that all parties with a stake in the resources at a particular PES deal site are involved in any prospective PES discussion. This broadening of the discussion to include traditional users can, in some cases, deliver the additional benefit of promoting clarity and legal certainty in resource rights. However, it is essential to be cautious and ensure that the prospect of an ecosystem service deal does not motivate ‘resource grabs’ – efforts to gain control of the resources with the intention of financially benefiting from PES deals, while resulting in less secure tenure and even resource access among the poor. This may become complex, but all of these issues must be considered, particularly by NGOs that are seeking to identify potential PES sites.

## What are the rules of the environmental market or the parameters of similar PES deals?

“Rules” for ecosystem service markets vary depending on the service and regulatory or voluntary market in question. The rules may refer to the regulations of a cap-and-trade market or to the guidelines for public payments. Alternatively, “rules” may refer to the terms set by private buyers or sellers in specific private transactions. These rules depend on what type of payment for ecosystem service is being pursued as the payment for water services example in Box 2-10 illustrates. The bottom line is that specific rules for markets and trading exist, with varying degrees of complexity and formality in their establishment and protocols for making changes. It is essential to understand which rules are defined and which are not before you begin structuring a deal.

### **BOX 2–10**

#### **Rules for Selecting Among Applicants to PWS Program: Targeting Efficiency in the Mexican PES Programs**

To achieve better targeting of funds among program participants and to improve program efficiency, the Mexican Technical Committee for PES programs recommended in 2005 that an explicit grading system for evaluating proposals be incorporated into the rules of operation. The grading system helps to identify those areas that are more valuable for their environmental benefits and where true modification of conduct is achieved. Every year, the properties with higher scores are included in the program until the annual budget is exhausted.

##### **Proposed Grading System**

###### **Overexploited Aquifers:**

- 3 points for extremely overexploited
- 2 points for overexploited
- 1 point for aquifers in equilibrium

###### **Priority Mountains**

- 2 points if the property is on a priority mountain

###### **Natural Protected Areas**

- 2 points if it is within a Natural Protected Area

###### **High Risk of Floods**

- 3 points for highest risk of floods
- 2 points for higher risk of floods
- 1 point for high risk of floods

###### **High Water Scarcity Municipalities (2,1,0)**

- 2 points for higher water scarcity municipalities
- 1 points for high water scarcity municipalities

###### **Deforestation Risk**

- 5 points for highest risk of deforestation
- 4 points for higher risk of deforestation
- 3 points for medium risk of deforestation
- 2 points for lower risk of deforestation
- 1 points for lowest risk of deforestation

###### **Other Criteria Include:**

- poverty level of the municipality;
- if it is an indigenous community; and
- if the community has a watershed “protection plan”.

For more information about the targeting, please consult: [www.ine.gob.mx/dgipea/download/draft\\_ecological\\_economics.pdf](http://www.ine.gob.mx/dgipea/download/draft_ecological_economics.pdf).

For more information about the Operation Rules of Mexican PES programs see: [www.conafor.gob.mx](http://www.conafor.gob.mx).

## What PES-support services and organizations are available?

Due to the amount of specialized information needed to get PES deals off the ground, support institutions may be a cost-effective — and perhaps unavoidable — investment. A range of institutions — established by public, private, or NGO players — now exist to support or reduce transaction costs and connect buyers with sellers.

These services may add transaction costs, but without them, there may be no deal. At their best, these groups not only provide the validation demanded by many buyers, but also move the process along. Some intermediary groups with expertise in community organization, for example, may be selected to take responsibility for local project management, as well as mediation between investors and local people.

Areas where competence will be essential, either from within a community or externally include:

### 1. **Scientific and technical knowledge:**

- for measuring and documenting the existence of ecosystem services that sellers wish to provide;
- for documenting the current status or the baseline against which service delivery will be compared; and
- for developing comprehensive resource management plans.

### 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 catalyze 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:**

- that can 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
- that may involve third-party verifiers to provide proof to the buyer of the service delivery.

Local institutions that have the business skills to negotiate private deals and the capacity to handle complex organizational arrangements can facilitate market development and maximize participation by local groups, including the rural poor and indigenous groups.

Where highly specialized expertise is needed for limited time periods — such as designing ecosystem monitoring methods, or developing service contracts — specialized companies, public agencies or experienced NGOs can provide business and technical support services. Table 2-3 offers an overview of the range of business and technical support services available. However, please note that new institutions and services are evolving all the time — and will continue to do so as marine PES develops. Therefore, this list should not be seen as exhaustive.

TABLE 2-3

## Illustrative Business and Technical Support Services for Project Implementation

Service	Description	Provider Examples
<b>Aggregators</b>	Creation of multi-project portfolio by buying from numerous efforts within one discrete geographic area or across multiple areas	<ul style="list-style-type: none"> <li>• Conservation International (<a href="http://www.conservation.org">www.conservation.org</a>)</li> <li>• Environmental Defense Fund (<a href="http://www.edf.org">www.edf.org</a>)</li> <li>• The Nature Conservancy (<a href="http://www.nature.org">www.nature.org</a>)</li> </ul>
<b>Brokers</b>	Facilitation of linkages between sellers and buyers	<ul style="list-style-type: none"> <li>• Coral Reef Alliance (<a href="http://www.coral.org">www.coral.org</a>)</li> <li>• EcoTrust (<a href="http://www.ecotrust.org">www.ecotrust.org</a>)</li> </ul>
<b>Business / Project Development</b>	Preparation and training in identifying new projects, developing business plans, and advising on implementation	<ul style="list-style-type: none"> <li>• Katoomba Ecosystem Services Incubator (<a href="http://www.katoombagroup.org">www.katoombagroup.org</a>)</li> <li>• Business and Biodiversity Offsets Program (<a href="http://bbop.forest-trends.org/offsets.php">bbop.forest-trends.org/offsets.php</a>)</li> <li>• Conservation Strategy Fund (<a href="http://www.conservation-strategy.org">www.conservation-strategy.org</a>)</li> </ul>
<b>Certification</b>	Examination of service/product according to set of guidelines	<ul style="list-style-type: none"> <li>• Marine Eco-Label Japan (<a href="http://www.fish-jfrca.jp/eng/mel.html">www.fish-jfrca.jp/eng/mel.html</a>)</li> <li>• Marine Stewardship Council (<a href="http://www.msc.org">www.msc.org</a>)</li> <li>• Food and Agricultural Organization (FAO) Fisheries (<a href="http://www.fao.org/fishery">www.fao.org/fishery</a>)</li> </ul>
<b>Financing</b>	Provision of necessary capital/ operating funds to implement activities	<ul style="list-style-type: none"> <li>• World Bank Coastal and Marine Management (<a href="http://www.worldbank.org">www.worldbank.org</a>)</li> <li>• WWF Biodiversity Support Program (<a href="http://www.worldwildlife.org/bsp">www.worldwildlife.org/bsp</a>)</li> <li>• Coral Reef Alliance (<a href="http://www.coral.org">www.coral.org</a>)</li> </ul>
<b>Insurance</b>	Protection from risk and compensation for loss	<ul style="list-style-type: none"> <li>• AIG Insurance (<a href="http://www.aig.com">www.aig.com</a>)</li> <li>• Swiss RE (<a href="http://www.swissre.com">www.swissre.com</a>)</li> <li>• Zurich Financial Services Group (<a href="http://www.zurich.com">www.zurich.com</a>)</li> </ul>
<b>Legal Services</b>	Legal advice	<ul style="list-style-type: none"> <li>• Sociedad Peruana de Derecho Ambiental (<a href="http://www.spda.com">www.spda.com</a>)</li> <li>• Environmental Defense Fund (<a href="http://www.edf.org">www.edf.org</a>)</li> <li>• Earth Justice (<a href="http://www.earthjustice.org">www.earthjustice.org</a>)</li> </ul>
<b>Measurement</b>	Determination of value of ecosystem service	<ul style="list-style-type: none"> <li>• Conservation International Marine Rapid Assessment Program (RAP) (<a href="http://learning.conservation.org/biosurvey/RAP">learning.conservation.org/biosurvey/RAP</a>)</li> <li>• WRI Reefs-at-Risk (<a href="http://www.wri.org/project/reefs-at-risk">www.wri.org/project/reefs-at-risk</a>)</li> <li>• Affiliated Researchers (<a href="http://www.affiliatedresearchers.com">www.affiliatedresearchers.com</a>)</li> </ul>
<b>Monitoring</b>	Regular collection and analysis of ecosystem service data to ensure accountability	<ul style="list-style-type: none"> <li>• Enviro-Marine (<a href="http://www.enviro-marine.com.au/monitor.html">www.enviro-marine.com.au/monitor.html</a>)</li> <li>• Affiliated Researchers (<a href="http://www.affiliatedresearchers.com">www.affiliatedresearchers.com</a>)</li> <li>• CESAR Consultants (<a href="http://cesarconsultants.com.au">cesarconsultants.com.au</a>)</li> </ul>
<b>Technical Assistance and Marketing Strategies</b>	Expertise on the state of the market and points of access	<ul style="list-style-type: none"> <li>• IUCN Business and Biodiversity Programme (<a href="http://www.iucn.org/about/work/programmes/business">www.iucn.org/about/work/programmes/business</a>)</li> <li>• Nation Ocean Economic Program (<a href="http://www.oceaneconomics.org">www.oceaneconomics.org</a>)</li> <li>• Marine Mammal Consulting Group (<a href="http://www.mmcg.net">www.mmcg.net</a>)</li> </ul>
<b>Technical Assistance for Improved Land and Resource Management</b>	Expertise on designing and implementing new and improved marine management regimes	<ul style="list-style-type: none"> <li>• People &amp; Nature Consulting (<a href="http://www.people-nature-consulting.com">www.people-nature-consulting.com</a>)</li> <li>• Coral Conservation Consultants, LLC (<a href="http://coralconservationconsultants.com">coralconservationconsultants.com</a>)</li> <li>• Manta Consulting Inc (<a href="http://www.mantaconsultinginc.com">www.mantaconsultinginc.com</a>)</li> </ul>
<b>Registries</b>	Collection and configuration of information within a database	<ul style="list-style-type: none"> <li>• UNEP Convention of Biological Diversity (<a href="http://www.cbd.int">www.cbd.int</a>)</li> <li>• International Census of Marine Life (<a href="http://www.coml.org">www.coml.org</a>)</li> <li>• MPA Global (<a href="http://www.mpaglobal.org">www.mpaglobal.org</a>)</li> </ul>
<b>Verification</b>	Process of review to ensure accuracy of information	<ul style="list-style-type: none"> <li>• Marine Stewardship Council (<a href="http://www.msc.org">www.msc.org</a>)</li> <li>• The Climate, Community and Biodiversity Alliance (<a href="http://www.climate-standards.org">www.climate-standards.org</a>)</li> </ul>

Note: More expansive directories of support organizations can be found at [www.katoombagroup.org](http://www.katoombagroup.org), [www.ecosystemmarketplace.com](http://www.ecosystemmarketplace.com), [www.econtext.co.uk](http://www.econtext.co.uk), and [www.carbonfinance.org](http://www.carbonfinance.org).

When selecting support institutions, it is essential to compare the costs of “hiring in” expertise with the risks of moving forward alone or without adequate support. It is also wise to check references and the track record of the organization with which a partnership is being explored. Also, keep in mind the variety of arrangements that offer partners a stake in the success of the project. Also note that some organizations work on a pro-bono, or free, basis.

Ultimately, all legal and technical responsibilities will remain with the community or seller of the ecosystem service. Therefore, it is critical that any support institutions with which sellers and communities engage also transfer the required technical expertise to the community members. Typically, it is best to hire in legal services for this step.

Finally, for community-based PES, it is essential to consider key issues related to decision-making, such as:

- Are local organizations experienced with project management and technical support on the project site?
- Have community representatives been selected and authorized to negotiate with outsiders?
- Are investments meeting community goals, determined by a cross-section of the community (including women and lower-income members)?
- Do participatory processes form the basis of decisions, and is there adequate ‘buy-in’?
- Are there ways that local people, including women, can appropriately participate at every level of the project (including design, implementation, and monitoring)?

Even if all of the support services are not in place, PES projects can still be pursued. It is simply important to be aware of what does and does not exist and make necessary decisions.



## Step 3: Structure Agreements



### Checklist

- ✓ Design management and business plans to provide ecosystem services that are the focus of the PES deal
- ✓ Reduce transaction costs
- ✓ Review options for payment type and select an approach
- ✓ Establish the equity, fairness and distribution of net benefits accruing from PES
- ✓ Select a contract type

### What issues should be considered in design of management and business plans to provide the ecosystem service?

The process of structuring agreements can be time-consuming, and external experts and advisors can help both save time and ensure that the agreements are entered into knowledgeably on all sides.

It is advisable to begin with a “Term Sheet” where the basic elements of the project are stated and agreed upon by all parties. This term sheet can then be used as a negotiation and discussion tool to help parties clarify the specifics to be included in a contract.

Before entering into negotiation with a prospective buyer — and even before identifying support institutions and partners — a prospective seller or group of sellers should assess:

- What are the projected costs that may be incurred during implementation of the deal?
- What are the projected revenues?
- Are there intangible benefits (such as training, technical assistance, etc.)?
- Do potential risks exist and what is the appropriate response?

Since some PES agreements can last for decades, business plans must include provisions for how to transfer management over time and to adapt the project to the results of monitoring and periodic verification.

Prospective sellers must be clear on the implications of failure to meet the terms of the agreement, either because of their own inaction or due to unanticipated events beyond their control. All responses to potential risks must be clear and discussed a priori with buyers.

### BOX 2-11 Inclusion of Adaptive Management in PES Agreements

Due to the dynamic nature of ecological systems, it is essential to include adaptive management principles and language in PES deal agreements.

Using adaptive management techniques simply means that projects are assessed throughout and findings about what works and what does not work are incorporated into revisions of the activities and work plans.

An adaptive management starting point underscores that resource management is a complex domain in which assessment and mid-course corrections are the norm, not the exception.

This approach will ensure that both buyers and sellers are focused on improving ecosystem services and making adjustments to improve program effectiveness.

Sources: Jeremy Sokulsky, Environmental Incentives, LLC. ; Salafsky et al. 2001

Private sector buyers engaging for Corporate Social Responsibility (CSR) will likely want to use the transaction for bolstering their reputation. Thus, sellers should be clear on how the company is allowed to transmit its message about the PES deal to the world at large, and what that message will be. Among the issues that need to be addressed ahead of time are: whether the buyer will be permitted to use the seller's name (or organization's name) in descriptive literature, whether or not the seller wishes to engage with the media, and other such factors.

Once a prospective seller begins discussions with a potential buyer, both parties will need a preliminary listing of the management activities required. This list of activities provides the basis for discussing whether environmental objectives can be met throughout the duration of the potential contract period — with the caveat that the PES management plan should be adaptable with new information over the lifetime of the project (See Box 2-11). Sellers should reference the plan on a regular basis to ensure proper implementation.

Developing project management goals, objectives, and monitoring indicators should be **'SMART'**:

- **S**pecific
- **M**easurable
- **A**greed-Upon
- **R**ealistic
- **T**ime-Constrained

## How can transaction costs be reduced?

“Transaction costs” include all of the time and money expended developing and implementing a PES deal. Of these two components, time is easily the one most often overlooked (unless someone is billing for it). These costs include the time required to:

- assess which ecosystem services could be the focus of a PES deal,
- compare them to other deals,
- survey prospective buyers,
- negotiate an agreement,
- implement the agreement,
- conduct a baseline scientific survey (if necessary), and
- monitor and, if needed, verify that the agreement is being met.

At one extreme, and in cases where communities and coastal and marine resource managers have little prior organizational expertise, start-up and transaction costs can absorb a significant portion of the seller's intended profit. This is why it is critical to estimate and review transaction costs throughout the process – a costly activity in its own right, and one made difficult by the fact that all costs will vary not only from project to project, but also throughout the lifecycle of many individual projects.

If the costs are too great, the PES deal developers should explore ways of covering them, or even adjust or halt the process to address expenditures.

Solutions may be quite simple. It's sometimes possible, for example, to add PES implementation to other reliable, pre-existing conservation, or rural development / sustainable land or marine management projects which have already established an infrastructure for handling the detail-oriented and sometimes costly tasks of monitoring and managing. Additional ideas are offered in Table 2-4 on institutional innovations that have helped to facilitate transactions and reduce transaction costs.

**TABLE 2-4**  
**Institutional Innovations to Reduce Transaction Costs**

Institutional Innovation	Activities	Examples
<b>Establish intermediary management institutions</b>	<ul style="list-style-type: none"> <li>• Creation of private MPAs management and tourism</li> <li>• Assesses plans for ecosystem service contributions</li> <li>• Develop ecosystem service agreements between buyers and sellers</li> <li>• Provide technical assistance</li> <li>• Monitor project</li> </ul>	<ul style="list-style-type: none"> <li>• The Misool Ecoresort was established to run and maintain MPA with revenue generated by tourism.</li> </ul>
<b>Establish large-scale, area-wide projects</b>	<ul style="list-style-type: none"> <li>• Develop project over entire jurisdiction, ecosystem, or species life history</li> <li>• Partner with other small providers to share transaction costs of project development</li> </ul>	<ul style="list-style-type: none"> <li>• South Atlantic Fishery Management Council (SAFMC) managing the snapper and grouper fishery habitats from coastal nursery to open ocean.</li> </ul>
<b>Set up a Trust Fund</b>	<ul style="list-style-type: none"> <li>• Serve as central repository of funds, decision making body, multiple stakeholder entity where conflicts can be resolved preemptively</li> </ul>	<ul style="list-style-type: none"> <li>• Marine Legacy Fund of Tanzania</li> </ul>

You may find more resources for reducing these costs by engaging PES-focused international donors, networks and institutions — such as RISAS in Latin America, RUPES in Asia, and the Global Katoomba Group (with regional networks in Tropical America as well as East and Southern Africa). These organizations and networks often seek to increase capacity of individuals and institutions wishing to learn more about PES. (For more information on organizations that can assist in understanding and decreasing transaction costs, please see: [www.katoombagroup.org](http://www.katoombagroup.org))

## What are the options for payment types?

PES deals have a range of potential payment types from which to choose, including:

- Direct financial payments, usually compensation for opportunity costs or loss of livelihood incurred by ecosystem service protection, such as the conversion of logged mangrove forest into a natural one or the expense to provide security of threatened marine species nesting grounds;
- Financial support for specific community goals, such as building of a school or clinic to remunerate for ecosystem services, or providing fishing gear that enable harvesting practices to be sustainable;
- In-kind payments, usually tangible goods, knowledge transfer, or capacity building in exchange for conservation; and
- Recognition of rights, such as increased land rights or sustainable fishery quota allocations, and increased participation in decision-making processes.

In addition, other methods are listed in the Table 2-5.

TABLE 2-5

Examples of Alternative Methods of Compensation for Ecosystem Service Deals

<p><b>‘Pay per tree or per species’</b></p>	<p>Rewarding individual mangrove growers for carbon sequestered and capacity for future carbon sequestration and marine habitat conservation on a per tree basis, or resource managers per endangered species raised to opportunity for maturity.</p>
<p><b>‘Pay for forest / habitat establishment or forest or species protection’</b></p>	<p>Compensating community resource management organizations to protect or regenerate mangrove forests, marine specie nesting areas, or establish new oyster reefs or seagrass meadows. The community organization is then given financial benefits to distribute among members.</p>
<p><b>‘Enable more profitable and sustainable land or marine management’</b></p>	<p>Funding extension services, mangrove fish nurseries, marketing infrastructure, community-based coastal enterprises, sustainable marine resource management, and other such support services for individual producers (or marine and coastal habitat protectors) who will then gain financially by participating in new coastal and marine-use activities or sharing income from habitat protection.</p>
<p><b>‘Pay communities with improved services’</b></p>	<p>Providing services, such as health clinics, education, or enhanced rights to resources (coastal access, marine resource harvesting, or mangrove logging) that improve household or community welfare.</p>

Whatever payment mechanism is selected, all stakeholders must agree to it in the early stages of project design. Choosing the appropriate payment types will ensure more durable transactions between buyers and sellers. Similarly, in the case of community-owned resources, payments for services from communally-managed coastal lands or marine resources have the potential to be more long-lasting if they are managed transparently and in a way that is appropriate to the local circumstances, where local people affected are pleased with the outcomes over time.

What are potential criteria for considering fairness, equity and distribution issues associated with agreements?

We have alluded extensively to the importance of making sure that PES agreements are both fair and flexible, and it needs to be reiterated again, as these are practical concerns (see Boxes 2-12 and 2-13).

**BOX 2-12**

Tips for Designing Fair and Effective Contracts

“Designing clear and effective contracts that avoid the exploitation of the seller by the buyer (and vice versa) is of crucial importance as PES programs are intended to be long-term programs where the buyer will want to maintain existing contracts and sign new contracts over time.

**Fairness** of agreements by sellers may be an important determinant of future outcomes, and buyers will want to make every effort to ensure that contracts are both fair and efficient. Fairness often is in the eyes of the beholder. However, if asymmetries of information or power lead to the acceptance of contracts by sellers that make them worse off (i.e., payments that are less than the sellers’ opportunity costs) then the contract is unfair. Likewise if such asymmetries lead to the buyer paying above the value of the expected hydrological services the contract is unfair. In both these cases the contract is not only unfair but inefficient.

**Property rights** for specific hydrological services produced by land management do not generally exist. Therefore, contracts typically call for the seller to undertake a specific land use should read and/or land management [and/or marine resource management] activity. An alternative is to specify indicators of performance in terms of downstream services. As maintenance of forest cover and land management activities are the cause of the desired effect (hydrological services) these are contracts not for services but for the performance of activities that cause (or produce) the services.”

Excerpted from: Asquith et al 2007; B. Aylward. March 2007.

## BOX 2–13

### Potential Criteria to Consider for Assessing PES for Poverty Reduction

1. **Pareto criterion**, which states that an economic intervention is efficient if it benefits at least one person without leaving any other person worse off even if it may still leave people worse off in relative terms.
2. **Equity Gap Principle:** The income gap between individuals or groups after a PES deal should be no larger than the gap before the intervention. In this way, if one individual has benefited from the economic instrument, then some transfer will need to take place to ensure that the gap between that individual and others will remain the same. In other words, some form of social redistribution mechanisms will need to be institutionalized at the same time the economic instruments are being implemented. This however keeps the status quo of the existing equity gaps within society.
3. **Fairness Principle:** The net benefits accruing from the intervention are distributed according to some ratio whereby the increase in welfare of the worse off individual is larger proportionally than the welfare increase of the better off individual (Duraiappah 2006)

Adapted from Perrings, C. E. Barbier, S. Baumgärtner, W.A. Brock, K. Chopra, M. Conte, C. Costello, A. Duraiappah, A.P. Kinzig, U. Pascual, S. Polasky, J. Tschirhart, A. Xepapadeas (2008) *The economics of Ecosystem Services*, in S. Naeem, D. Bunker, A. Hector, M Loreau and C. Perrings (eds) *Biodiversity and Human Impacts*, Oxford University Press, Oxford. In press.

The unfairness of a deal often emerges after implementation has begun, so sellers should propose clauses that not only allow for re-negotiation under clearly-defined and pre-determined circumstances, but also ensure that sellers have the know-how (or access to technical assistance related to) re-negotiate. Such clauses may, for example, provide for the adjustment of prices paid over time or allow for a reevaluation of service value either as new information arises or at periodic, pre-set intervals. This approach would ensure that communities do not get locked into a single price for decades (see Box 2-14).

If a buyer is not amenable to these terms, the seller must simply consider the offer and decide whether they are willing to enter into the PES agreement or not. This issue is explored in more detail below.

## What contract types exist?

There are many types of contracts from which to choose in formalizing a PES deal, including:

- contracts taking the form of “Memorandum of Understanding (MoU)” or “Memorandum of Agreement (MoA),”
- formal written contracts,
- customary law agreements,
- verbal ‘handshake’ agreements (see Box 2–15), and
- quid-pro-quo arrangements.

It is critical to keep agreements realistic, for they are of no use if they cannot be fulfilled. Frustration and mistrust can destroy even the most well-intentioned project.

This does not mean that one should not strive to be bold, enthusiastic and proactive, but just that potential limitations must be well-understood.

## BOX 2–14

### Amending Contracts & Introducing Performance Clauses

While contracts can be amended if both parties agree, long-term contracts should specify dates when the contract will be reviewed and potentially amended. Contract adjustments can be administratively difficult, so adjustments to existing contract terms are only practical every two to five years. New contracts, however, should incorporate best available knowledge that improves ecosystem services while still attracting willing sellers.

When buyers have specific concerns about project performance, contracts can include verification procedures to assess performance. For example, contracts can include a rating system that is the basis for increasing payments for outstanding performance and decreasing payments for underperformance.

Source: Jeremy Sokulsky, Environmental Incentives, LLC.

## What are the key elements of PES contracts/agreements?

PES agreements should clearly establish:

- Who will pay transaction costs as well as ongoing management and monitoring costs?
- Who is responsible for what actions?
- What ecosystem service results are expected — including whether it requires active or passive use of land or marine resources by sellers and their agents?
- How results will be demonstrated and who will be responsible for monitoring, evaluating, verifying, and certifying them?
- Who will receive what amount of money in what specified time frame?
- Which criteria will be used to evaluate the fairness of the PES deal?
- How risks (particularly around unexpected natural events) will be handled and even shared between buyers and sellers?

Overall, key elements of PES agreements include:

- **Terms and type of payment** specifying when, how much, how often, to whom, and other details, such as: cash to one person, to a community group, to a vendor of a community service (e.g., builders of a school) as well as whether the payment is in the form of cash, in-kind technical assistance, in-kind materials for building a community building);
- **Timing of payments** in terms of when the ecosystem service activities are carried out by the seller, when the buyer ensures that monitoring of the action occurs, or a combination of both;
- **Requirements that need to be met for payment**, such as periodic monitoring, reporting and verification needs;
- **Managing risks**, particularly those beyond a seller's control (such as unexpected natural events) through specific clauses in agreements detailing how certain risks are shared between sellers and buyers, or even insurance (provided it is available, cost-effective and feasible); and
- **Signatories (i.e., parties) to the contract** should be directly affiliated with the buyer (or group of buyers) and the seller, though it may be useful to have provisions for specific roles of support institutions, as well as details on the exact payment that will be made for services rendered by the intermediary.

Resources to draft a contract include Boxes 2–16 and 2–17, as well as an online tool for Clean Development

### BOX 2–15

#### Hak Adat Law of Raja Ampat, Indonesia

In rural areas, PES contract type may be defined by local custom or laws. For example, the indigenous Kawe people of Raja Ampat, Indonesia, operate under Papuan law (or Hak Adat) where contracts are made verbally and must be constantly reminded for reinforcement. When PT Cendana Indopearls wanted to work with Kawe people to establish oyster pearl farm, they hired an anthropologist to assist employees with working among and alongside the community, as well as assist in contract negotiations.

### BOX 2–16

#### Checklist with Common Contract Components

While contracts and agreements for PES vary widely, some elements are typically common to all. These are:

- Key start and end dates
- Key stakeholder details and addresses
- Responsibility of each stakeholder
- Detail of physical area contract will impact
- Description of the legal rights each party has in the PES contract
- Define and clearly state actions needing to be agreed upon from each party
- Acceptance of the rules of the market
- Payment terms
- Monitoring requirements
- Verification requirements
- Allowed role of third parties
- Actions to be taken in unforeseen circumstances
- Rules for modifying or adapting the contract
- Accepted reasons to void contract
- Contract timeframe
- How risks of unavoidable loss (such as related to natural events) are to be handled and how this risk will be shared between buyer and seller(s)
- Signature of each party (legally in a position to do so)

Mechanisms (CDM) contracts. It would require use of analogous provisions to enable this contract to apply to marine-based resource services. The Katoomba Group Legal Initiative has an online PES contract toolkit that can also help you get started ([http://www.katoombagroup.org/regions/international/legal\\_contracts.php](http://www.katoombagroup.org/regions/international/legal_contracts.php)).

It is critical to note that if these agreements are to be realistic and sustainable, they need to meet the needs of both sellers and buyers because sellers need to continue to make use of products derived from the coastal or marine ecosystem, and buyers need to be sure the promised services are being delivered.

### BOX 2-17 Elements of a Contract

A sample contract from the sale of land-based carbon offsets offered by Plan Vivo ([www.planvivo.org](http://www.planvivo.org))

#### Contract of Sales Agreement for Carbon Service Provision

Date:

Plot ID:

Producer ID:

Between ..... 'the producer' of ..... and XX. The conditions specified in this contract apply to all sites registered by the producer with the trust fund for the provision of carbon services.

Your XXXX was assessed by.....on.....and has been approved for registration with the carbon fund with the following details:

Forestry system:

Area (ha):

Proposed date of planting:

Carbon offset potential (tC):

Terms and Conditions:

The producer agrees to make all possible efforts to maintain the agro / forestry system specified in the letter of site registration for a period of \_\_\_\_\_ years.

The producer agrees to place 10% of his / her carbon credits in a carbon risk buffer maintained by the XX.

The producer agrees to sell only the amount of saleable carbon credited to his / her account by XX.

The carbon fund cannot guarantee a fixed price of carbon but agrees to facilitate the sale of carbon as specified in sale agreements made with the producer. The producer will be free to accept or reject any offer made by the XX.

Payments for carbon sold through the XX will be made after the verification of monitoring targets specified below.

Date of Monitoring	Monitoring Target	Payment (\$)
Year 0	33% plot planted as described in plan vivo	20%
Year 1	66% established	20%
Year 3	100% established, survival not less than 85%	20%
Year 5	Average DBH not less than 10cm	20%
Year 10	Average DBH not less than 20cm	20%

The undersigned understand and agree to abide by the conditions of this contract.

.....  
.....

Source: [www.planvivo.org](http://www.planvivo.org)

## Step 4: Implementing Marine PES Agreements



### Checklist

- ✓ Finalize the PES management plan, with clear roles, responsibilities, and timeframes for implementation and evaluation
- ✓ Begin management activities
- ✓ Verify PES delivery and benefits
- ✓ Monitor and evaluate the deal

After an agreement has been made, it is time to implement the PES deal. During this stage, the project must not only be managed effectively, but also monitored consistently and evaluated for service delivery and adequate distribution of benefits in accordance with the parameters laid out in the agreement. Third-party verification (and in some cases certification, depending on the buyers' preferences) may also be required to ensure that the project is meeting its objectives.

Attention now shifts to implementing the agreement, monitoring progress, reporting results, and making changes if the desired results are not being realized.

Remember, marine ecological systems are inherently complex. Because the best-laid plans of buyers, sellers, scientists and lawyers can go awry in the early stages, adaptive management is critically important. By planning from the outset to adapt to the results of monitoring and periodic verification, you will help ensure that a successful agreement can continue to be carried out over the duration of the agreement.

### What issues should be considered in finalizing the PES management plan and prior to beginning activities?

Detailed ecosystem management plans, laid out in the agreement, should be finalized; implementation of the activities described should begin. Key elements needed to ensure on-site project management success include:

- making sure all the actors understand the objectives behind the PES deal and what can be expected from delivery of management activities;
- ensuring appropriate representation of community members — including women and low-income members — in the ongoing reporting and management of community-based PES deals, with clear roles and assurance of clarity and transparency;
- hiring people prepared and willing to take on particular roles and responsibilities;
- preparing accounting, management and tracking systems for the project;
- opening accounts to manage funds; and
- educating community members and the public about the opportunities the PES scheme has created and its progress to date.

## What details should be agreed upon with regard to verification of PES delivery and benefits?

Verification that ecosystem services are being delivered and possible certification of ecosystem services may occur as early as the design and contracting phases or as late as a few years into the implementation, when you verify that the ecosystem service certified to be designed continues to be provided. The contract may also specify a periodic re-verification of the service provision as the project progresses, thus giving the buyer certainty that the service is being obtained.

Sellers must never forget that, no matter how much work goes into the project, payment only comes when verifiable results are delivered (note, however, that sometimes the contract is for resource management, which includes monitoring, and the buyer only verifies that the resource management practice agreed to is being accomplished). This is why third-party, independent verifiers and experienced environmental auditors are so critical to the success of PES projects. (For ideas on service provides, please see Table 2-3 or inquire locally for national entities that carry out verification.)

Prior to inspection, the buyer, seller, and verifier should discuss and agree upon monitoring standards and implementation methodology. Is the focus, for example, on whether an agreed-upon resource management practice is being undertaken, or is it on monitoring the actual delivery of service?

When negotiating the design of monitoring, inspection, and methodology, you should take into account:

- the process and frequency of the internal auditing program,
- the scale and impact of the organization's activities on the environment,
- how much control the organization has over this impact,
- the cost of the verification program, and
- past verification results.

Analysis of the verification report will identify the shortcomings of the monitoring and evaluation scheme and yield insight into the effectiveness of the PES project.

Verification results should be made available to buyers, intermediary institutions, and the public to increase transparency and legitimacy, as well as to facilitate adaptive management processes.

### BOX 2-18

#### Monitor and Evaluate the Project: Select Resource Articles on Indicators and Processes / Protocols

- How is your MPA doing? A Guidebook of Natural and Social Indicators for Evaluating Marine Protected Area Management Effectiveness. 2004. Pomeroy R., Parks J. and Watson L.
- Score Card to Assess Progress in Achieving Management Effectiveness Goals for Marine Protected Areas - Revised version. 2004. Hatzioles M., Staub F. The World Bank.
- Monitoring Coral Reef Marine Protected Areas -- A practical guide on How monitoring can support effective management of MPAs - Version 1. 2003. Wilkinson C., Greene A., Almany J. and Dionne S. Australian Institute of Marine Science and the IUCN Marine Program.
- Applicability of the CBD criteria in determining trends in marine biodiversity. 2005 A Report for the RAC/SPA Unit of UNEP, Tunis, prepared by T. Agardy
- Guidelines for Monitoring and Evaluation of BCN-Funded Projects. Biodiversity Conservation Network (BCN). (<http://www.worldwildlife.org/bsp/bcn/learning/BCN/bcn.htm/>)
- Guidelines for Inventorying and Monitoring Carbon Offsets in Forest-Based Projects. 1999. Brown, S. Arlington, Virginia: Winrock International
- Elements of a State Water Monitoring and Assessment Program. 2003. U.S. Environmental Protection Agency (US EPA). Washington, D.C.: U.S. EPA's Office of Wetlands, Oceans and Watersheds.
- Guide to Monitoring Carbon Storage in Forestry & Agroforestry Projects. 1997. MacDicken, K.G. Arlington, Virginia: Winrock International ([http://v1.winrock.org/reep/pdf\\_pubs/carbon.pdf](http://v1.winrock.org/reep/pdf_pubs/carbon.pdf))
- Measures of Success: Designing, Managing, and Monitoring Conservation and Development Projects. 1998. Margoluis, R. and N. Salafsky. Washington, D.C.: Island Press.

## What issues should be considered in monitoring and evaluating the deal?

Implementation of an accurate monitoring and evaluation (M&E) plan will indicate whether or not the PES deal is meeting its objectives. It will also provide information as to how sellers can improve their management.

It is essential to be clear on who undertakes M&E activities throughout the life of a PES agreement. The role can be undertaken by community members, an external/third party entity, the buyer (or a designated proxy of the buyer), a government agency, or another entity. The key is to be clear on where the responsibility for M&E lies.

The importance of this element means that M&E programs should be well-planned prior to implementation. The M&E plan should be developed with the input of all key stakeholders to ensure all parties are satisfied with the parameters that are being monitored. In addition, the plan should be evaluated and modified over time as the project progresses, ideally with the input of all stakeholders throughout.

Monitoring, evaluation, verification, and certification essentially focus on two features: 1) are the management/protection measures resulting in delivery of the ecosystem service that is the focus of the deal; and 2) are the funds flows occurring as per the contract. The latter is an accounting task, to ensure not only that payments are being made but that the recipients of the payments (sellers) are effectively and efficiently using the funds to provide delivery of the service.

In developing a monitoring, evaluation, and verification program, the following considerations must be taken into account:

- Determination of who selects indicators and who is reporting to whom
- Selection of Indicators, all of which should be:
  - relevant to the PES project
  - measurable
  - respond to changes in the environment
  - fit into the rest of the M&E scheme
  - reliable
- Creation of a “Local Ecosystem Conceptual Process Model” that:
  - outlines the cause-and-effect relationships that occur within the ecosystem
  - identifies which specific characteristics of the ecosystem to monitor
- Selection of Monitoring Sites, both within the target area and outside it. The most commonly-used practice is a “stratified random sampling” technique which can:
  - reflect the overall distribution within the project area
  - ensure that the monitoring sites are sufficiently spread out

Monitoring sites should be consistently used throughout the duration of the PES project so that reliable information on trends can be collected. Sites may be permanent or dynamic, in the case of marine management that is not fixed, such as protected areas that shift in space. A permanent-site approach makes it easier for independent verifiers to locate the appropriate sites.

If possible, a control site should also be selected for monitoring to help gauge the impact of the PES project, often to demonstrate that the project is providing new / “additional” benefits to the current state of affairs. Although few implementing organizations will be willing to finance the monitoring of a control group, research organizations or public agencies with oversight mandates may be good partners for this activity.

Apart from these core elements of a PES monitoring scheme, M&E parameters might include not just the type of ecosystem services — such as sequestering carbon and increasing biodiversity — but also other stakeholder concerns, such as:

- total project costs,
- timeliness of financial disbursements,
- performance of various support services or financial intermediaries,
- protection of local ecosystem values,
- equity in local distribution of PES project benefits, and
- specific household and community-level benefits.

Each PES deal will have to stipulate the level of verification that is ideal for that scheme. Some PES schemes will rest on regular accounting and periodic monitoring and evaluation, with reports sufficing for verification. Other schemes will require certification by an independent third-party certifier. Such third-party certifiers already exist in marine management initiatives, such as the certification of seafood as sustainably harvested under the Marine Stewardship Council, or the certification of aquarium fish under the Marine Aquarium Council.

Finally, the M&E plan made at the outset of the project should also specify who will conduct the monitoring, how frequently and at which times, and using which methods, as well as who will pay for monitoring.

Overall, M&E activities will identify what is being accomplished and how project management can be improved. The M&E results should be made available to buyers, intermediary institutions, and the public to increase transparency and legitimacy.

## Tools for PES Design



### Opportunities for Marine Payment for Ecosystem Services

- Marine Carbon Sequestration and Capture
- Water Quality and Pollution Filtration Services
- Shoreline Protection and Stabilization Services
- Marine Biodiversity Protection
- Fish Nursery Habitat Protection

### Marine Carbon Sequestration and Capture

#### What?

To address key drivers of climate change, sellers might offer to protect habitats that help sequester carbon in the coastal or marine environment.

#### How?

Sellers might offer to provide, for a fee, activities such as:

- conserving high carbon coastal habitats, e.g., salt marshes, seagrass beds, mangroves, coral reefs, and kelp forests;
- establishing Marine Protected Areas;
- conserving coastal areas linked to marine environments, e.g., “upstream” agricultural land, estuaries;
- mitigating changes to hydrology, in order to keep mangrove ecosystems healthy; and
- avoiding actions that increase acidity of the ocean causing carbon to be released to the atmosphere.

**TABLE 2-6**  
Carbon Storage in Select Marine Ecosystems

Marine Habitat	Standing Carbon Stock (gCm <sup>2</sup> )		Global Coverage (x 10 <sup>12</sup> m <sup>2</sup> )	Global Carbon Stock (PgC)		Carbon Accumulation Rate (gC m <sup>-2</sup> yr <sup>-1</sup> )
	Plants	Soil		Plants	Soil	
<b>Salt Marsh</b>			~.22			210
<b>Mangroves</b>	7990		0.175	1.2		139
<b>Seagrass</b>	184	7000	0.3	0.06	2.1	83
<b>Kelp</b>	120-720		0.02-0.4	0.009-0.02		

Laffoley, D.d'A. and Grimsditch. (eds). 2009. The management of natural coastal carbon sinks. IUCN, Gland, Switzerland. 53 pp.

**Why?**

- Marine ecosystems reduce atmospheric levels of carbon dioxide.
- Carbon is a key nutrient in marine ecosystems.
- Carbon sequestration is a natural marine process.
- Careful monitoring and research can help critical ecosystems adapt to ocean acidification.
- Mitigating carbon helps protect marine biodiversity.
- Mangroves have great carbon sequestration potential, in addition to providing other important services, such as buffering land from storms, accreting land, and providing fish nursery habitat.

**Measurement?**

It is well known that the world's oceans are the largest sink of carbon on Earth, but quantifying the amount of carbon stored has proven difficult. Quantifying carbon sequestration in the marine environment requires calculating the storage availability of critical marine environments such as salt marshes, mangroves, seagrass meadows, kelp forests, and coral reefs. It is essential that a monitoring program is established to follow trends of carbon sequestration at the local habitat level and among similar environments. The use of carbon models and remote sensing is a critical tool to accomplish this goal.

This initial groundwork may prove both cost and labor intensive if pre-existing data is not available. However, as the marine carbon sequestration database grows, remote monitoring, modeling and market mechanisms can replace expensive research and bartering, providing available product. The marine carbon market is still in its infancy. However, the body of science investigating the marine carbon cycle is substantial and heavily funded internationally. The potential for marine carbon markets most certainly exists.

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## **Water Quality and Pollution Filtration Services**

**What?**

To protect coastal environments from anthropogenic point and non-point source pollution, sellers might offer to protect coastal habitats that naturally filter and improve water quality, such as seagrass meadows, estuaries, and shellfish reefs (oysters, muscles, etc.). Alternatively, agreements could be made with terrestrial landowners upstream of the coastal habitat to adopt marine-friendly business practices.

**How?**

Sellers might offer to provide, for a fee, activities such as:

- creating Marine Protected Areas;
- replanting/reforesting habitat;
- conserving habitat ;
- constructing artificial reefs or restoration of natural reefs to encourage biologic growth, e.g. corals, oysters, mussels; and
- signing agreements with upstream landowners to implement conservation practices that reduce pollution into the coastal areas.

**Why?**

Like inland wetlands, some coastal habitats are very effective at removing excess levels of nutrients (such as nitrogen and phosphorus) plagued by point and non-point source pollution. While keystone species like seagrasses, mangroves, or oysters are instrumental at removing many of these nutrients, the ecosystems that they support are also a very important tool for improving water quality and overall ecosystem health. Many of these keystone species are also excellent at decreasing turbidity by reducing water flow, allowing suspended material to settle.

**Measurement?**

Improving water quality is a very complex process involving adjacent terrestrial and marine ecosystems and can be very difficult to measure. In addition, interested parties should be aware that the conservation of a marine habitat to improve water quality may take a significant amount of time to become effective at improving water quality. Despite these hurdles, improving water quality in marine ecosystems can lead to profound and positive tertiary effects, such as the formation of secondary ecosystem services (i.e. improved shoreline protection or establishment of new fisheries habitats).

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**Shoreline Protection and Stabilization Services****What?**

To protect shorelines and coastal areas from the severe weather and constant erosion, sellers might offer to protect habitats that naturally stabilize sand and abate wave energy, such as coral reefs, fringing and barrier reefs, seagrass meadows, or mangrove forests.

**How?**

Sellers might offer to provide, for a fee, activities such as:

- creating Marine Protected Areas;
- restoring, creating, or enhancing wetlands for the purpose of compensating for damage or destruction to another wetland area;
- restoring natural reefs and other habitats or constructing artificial reefs;
- promoting marine biological “hot-spots” like coral reefs; and
- conserving or restoring coastal environments like seagrass meadows, mangrove forests, and tidal salt marshes.

**Why?**

Ecosystems that naturally protect coastal environments can prevent the loss of shoreline due to erosion and wave energy and are often less expensive than building seawalls or re-nourishing beaches. Recent experiences in Asia have shown that these marine habitats, sometimes referred to as greenbelts, can protect against natural disasters like hurricanes and tsunamis.<sup>1,2</sup> These naturally occurring coasting environments also provide other ecosystem functions, including improving water quality, fish refuge, spawning grounds, and nurseries, and tourism and recreation destinations.

**Measurement?**

Shoreline stability, quantity of sand on beaches, and other hydrological dynamics related to flow (quantity of water) are somewhat difficult to measure. Aerial photographs and remote sensing images can help track shoreline changes.

You may be tempted to extrapolate data from other coastal areas to your own project, or at least satisfy the certainty demands of some buyers. This may work, but more often does not, and you must exercise extreme caution when doing so because coastal dynamics can vary greatly.

When measuring shoreline protection and stabilization, it is important to be proactive, and plan for future problems rather than try to solve existing problems in an unhealthy marine environment that may already be too stressed for the ecosystem to survive. It may also require characterizing habitats that may be farther upstream or offshore than the site being considered for protection.

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<sup>1</sup> EJF. 2006. Mangroves: Nature's defense against Tsunamis— A report on the impact of mangrove loss and shrimp farm development on coastal defences. Environmental Justice Foundation, London, UK.

<sup>2</sup> Danielsen F, Sørensen MK, Olwig MF, Selvam V, Parish F, Burgess ND, Hiraishi T, Karunakaran VM, Rasmussen MS, Hansen LB, Quarto A, Suryadiputra N. 2005. The Asian tsunami: a protective role for coastal vegetation. *Science*. 310(5748):643

You should also be aware of lurking scientific controversy, as well as challenges to various elements of “conventional wisdom” related to water flow. There is, for example, rigorous debate on the relationships between forests and flood control, between reforestation and water demand, and other such dynamics. Any resource management changes in a PES deal should be scientifically supported or carefully monitored during implementation to assess whether expected ecosystem service outcomes are being realized.

## Marine Biodiversity Protection

### What?

To protect biodiversity, sellers might offer to protect species habitat or prevent a habitat from being degraded or fragmented in a way that undercuts the ability of the species to fully utilize it.

### How?

Sellers might offer to provide, for a fee, activities such as:

- establishing biological corridors between protected areas (i.e. migration paths, internal oceanic currents-submarine rivers);
- creating Marine Protected Areas (MPA), a network of MPAs, or No-Take Zones;
- biodiversity offsets;
- restoring natural reefs and other habitats or construction of artificial reefs;
- restoring coastal environments like seagrass meadows, mangrove forests, and tidal salt marshes;
- controlling coastal pollution inputs, including sediment; and
- launching conservation projects outside of the project area.

### Why?

Maintaining marine biodiversity benefits overall marine ecosystem health, improves ecosystem resilience after impacts from coastal disasters, increases ability to adapt to climate change, and aids in coastal protection, fisheries, recreation, tourism, and water quality.

### Measurement?

Due to the complexity and interconnectivity associated with biodiversity, there is no easy way to quantify it, especially in marine ecosystems. Structural (type and amount of species) and functional (environmental service) ecosystem type classifications are most commonly used. Quantifying species diversity (number of different organisms) and richness (amount of each organism) are also commonly used methods. A third method involves using a bioindicator or “proxy” species within an ecosystem that may be sensitive to habitat change. The disappearance of this species could suggest an unhealthy ecosystem and thus a potential loss in biodiversity. Note that the proxy method may prove inaccurate in some marine ecosystems since individual species can vacate a habitat for reasons other than poor ecosystem health.

### BOX 2-19

#### Selected Existing Marine Biodiversity Databases

- UNEP Convention on Biological Diversity ([www.cbd.int](http://www.cbd.int))
- International Census of Marine Life ([www.coml.org](http://www.coml.org))
- UN Food and Agriculture Organization Global Catch Database ([www.fao.org/fishery](http://www.fao.org/fishery))
- Sea Around Us Project ([www.seaaroundus.org](http://www.seaaroundus.org))
- International Council for the Exploration of the Seas ([www.ices.dk](http://www.ices.dk))
- Northwest Atlantic Fisheries Organization ([www.nafo.int](http://www.nafo.int))
- Fishbase ([www.fishbase.org](http://www.fishbase.org))

Source: Worm B, Barbier EB, Beaumont N, Duffy JE, Folke C, Halpern BS, Jackson JB, Lotze HK, Micheli F, Palumbi SR, Sala E, Selkoe KA, Stachowicz JJ, Watson R. 2006. Impacts of biodiversity loss on ocean ecosystem services. *Science*. 314

## Fish Nursery Habitat Protection

### **What?**

It is well known that many fisheries around the world are facing depleted stocks and tighter fishing restrictions, such as on catch limits, types of gear, and closed seasons. To protect fish nursery habitats as part of an integrated approach to fisheries management, sellers might offer to protect habitats that serve as breeding grounds, nursery, or refuge for commercial fish species. Habitats such as coral reefs, seagrass meadows, mangrove forests, salt marshes, and coastal wetlands are crucial during the developmental stages of many fish species.

### **How?**

Sellers might offer to provide, for a fee, activities such as:

- creation of Marine Protected Areas or No-Take Zones;
- construction of artificial reefs and other habitats; and
- restoring coastal environments like seagrass meadows, mangrove forests, and tidal salt marshes.

### **Why?**

Integrated conservation requires protecting all the habitats a commercially viable species utilizes throughout its lifetime. With an integrated approach, fisheries will become less stressed, increasing fish yields, individual fish's health, and overall ecosystem health.

### **Measurement?**

Catch records are available for most commercial fisheries, making estimation of population sizes possible for many marine species. However, there is a disconnect between where the fishing takes place — in coastal seas and the open ocean — and where the fish spawn and these and other marine creatures grow, i.e. the nursery habitats, such as mangroves and seagrass beds. Protecting these nursery habitats is therefore a critical element of sustainably managing marine resources. Initially there may be a time lag between fish nursery habitat conservation and increased fish yields, depending on the biology of the species. Yet, with the wealth of knowledge on life histories of most commercial fisheries species, nursery area protection and restoration presents an excellent opportunity to conserve marine ecosystems and also increase fisheries yields.

## **BOX 2–20**

### **Fish Nursery Case Study**

The South Atlantic Fishery Management Council (SAFMC) in the USA manages the snapper-grouper fishery, which has been severely overfished due to: (1) the slow growth and late maturation of the species, and (2) their popularity among commercial and recreational fisherman. The SAFMC has been protecting this fishery since 1983, utilizing a multi-species fisheries management plan that focuses on both a habitat and fisheries ecosystems strategy, including the incorporation of new and existing MPAs into management zones.

#### Sources:

Palumbi, SR, Sandifer, PA, Allan, JD, Beck, MW, Fautin, DG, Fogarty, MJ, Halpern, BS, Incze, LS, Leong, JA, Norse, E, Stachowicz, JJ, Wall, DH. 2009. Managing for ocean biodiversity to sustain marine ecosystem services. *Front Ecol Environ.* 7(4) 204 – 211.

South Atlantic Fishery Management Council ([www.safmc.net/Library/SnapperGrouper/tabid/415/Default.aspx](http://www.safmc.net/Library/SnapperGrouper/tabid/415/Default.aspx))

## Marine PES Site Selection Criteria

### Section I. Ecosystem Services

- **Ecological Understanding**
  - Have the important ecosystem services been identified?
  - Have conditions and trends in ecosystem services been assessed?
  - Is there a clear understanding about causes of loss of services?
  - Have thresholds been established?
  - Are ecosystem services being monitored?
- **Mapping of Services**
  - Is there an understanding of the geographical dimensions of services?
  - Have boundaries been articulated?
  - Have concentrations of services been mapped?
- **Valuation**
  - Have economic studies been done on value of services?
  - Are there quantifiable values that can be used to establish price?
  - Are there case studies of the same services that could be used to establish price in the absence of local valuations?
  - Have the costs of ecosystem services loss been established?
- **Perceptions of Value**
  - Do the local communities appreciate the value of ecosystem services?
  - Are there industries that recognize the value of ecosystem services?

### Section II. Regulatory Environment

- **Effective National Regulatory Framework**
  - Does national legislation protect ecosystem services, or the habitats that provide those services?
  - Is legislation and are regulations clearly perceived and understood by users?
- **Local Control, Authorities, and Regulations**
  - Does some management responsibility fall on the shoulders of local authorities?
  - Is there a local planning agency?
  - Are local regulations accepted by higher management authorities (state / provincial, national, regional)?
- **International or Transboundary Agreements**
  - Are there bilateral or regional agreements in place?
  - Is the public aware of these agreements?
  - Is there buy-in with local and regional authorities?
- **Compliance with Regulations**
  - Is there adequate compliance with regulations?
  - Is there a system of monitoring and surveillance in place for monitoring compliance?
  - Does self-enforcement remove the need for strong enforcement to be imposed on users?

### Section III. Sociopolitical Context

- **Community Organization**
  - Are communities organized?
  - Are access rights to coastal / marine resources stipulated by communities?
  - Do cooperatives exist, and are they effective?
- **History of NGO / Community Interaction**
  - Is there a strong NGO presence?

- Are NGOs accepted as partners?
- Is there a history of positive interaction between local communities, decision makers, and NGOs?
- **Strong Public / Private Partnerships**
  - Are there clearly established mechanisms for public / private partnerships?
  - Is there a demonstrated history of public / private partnerships?
- **Co-Management Frameworks**
  - Are the roles and responsibilities of various scales of management authority clearly articulated?
  - Does the national authority “trust” the local management agencies to carry out their roles and responsibilities?
- **Property / Use Rights Clarified**
  - Are jurisdictions clearly established?
  - Are property rights, where they exist, clearly laid out and uncontested?
  - Are use rights clearly articulated?
- **Poverty Reduction**
  - Is poverty minimal?
  - Are mechanisms in place for poverty alleviation?
  - Are poverty alleviation programs sustainable?
- **Political Stability**
  - Is the political environment well understood and does it appear stable?
  - Is governance transparent?
  - Are corruption levels manageable?
- **Organization’s Potential for Catalyzing PES Market Initiative**
  - Does your organization have a personal link to the community, local NGO and/or government authority?
  - Is it well perceived?
  - Are matching fund or additional donor sources available to support partners?

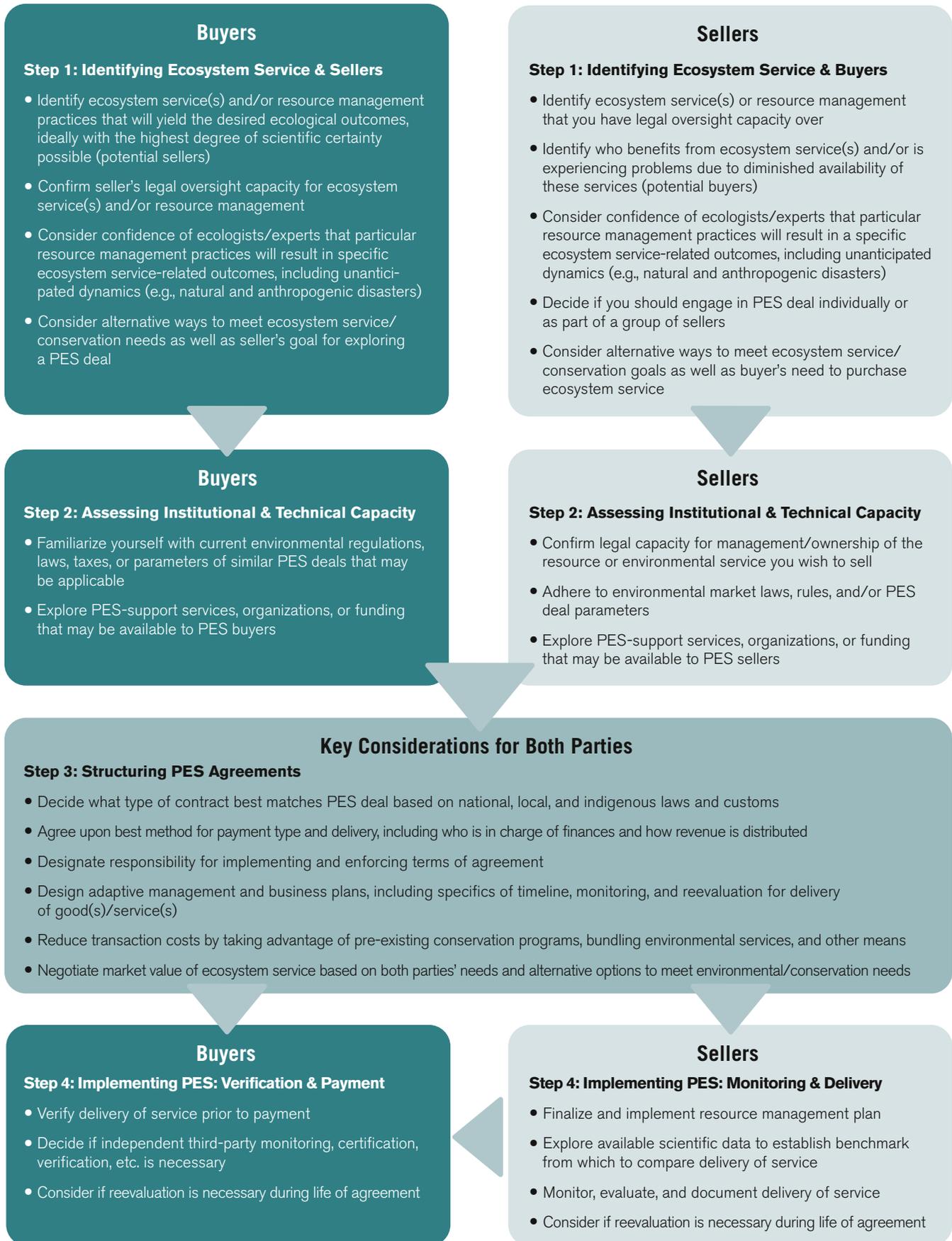
## Section IV. Management Mechanisms

- **Effective Protected Areas**
  - Are riparian, coastal, and marine protected areas effective?
  - Are multiple use protected areas employed to scale up protected area management?
- **Spatial Management / Zoning beyond protected areas**
  - Is resource use and access addressed through spatial planning mechanisms?
  - Is the coastal or marine area zoned?
- **Resource Use Limits**
  - Have sustainable limits for resources been determined?
  - Do quota markets exist?
  - Are multiple quotas in place (e.g., catch limits, entrant limits, visitor limits)?
- **Cap and Trade**
  - Are cap and trade systems in place?
- **Adaptive Management Mechanisms**
  - Are there mechanisms for adaptive management?
  - Is the monitoring and evaluation protocol adequate?

## Section V. Existing PES Markets

- **Do PES markets (terrestrial or marine) exist in the region?**
- **Do similar coastal / marine PES markets exist elsewhere that could serve as a model?**

## Framework for PES Design





# Section 3: Opportunities, Risks and Ideal Conditions for Poverty Reduction



*Payments for ecosystem services are not designed to reduce poverty, but they can alleviate poverty and at the same time finance management that conserves ecosystems. Where PES schemes overlap with areas owned by impoverished communities, or areas where communities have a bona fide role in management, PES schemes have the potential to supplement the income of individuals and local communities, bettering both livelihood and the marine environment.*

PES offer economic incentives to foster more efficient and sustainable use of ecosystem services. The opportunities for designing PES which enable low-income people to earn money through their restoration or conservation efforts are particularly profound in the marine setting. This is a critical selling point, since rural coastal communities, particularly those involved in subsistence or artisanal fisheries, are among the most impoverished and vulnerable.

Throughout the developing world the coastal environment plays an important role in sustaining the livelihoods and food security of large numbers of rural people, including the poorest sectors of society. Many within rural coastal communities earn their living from natural resource-based activities, such as fisheries, aquaculture and resource extraction. Although the developing world accounts for 60% of global marine fisheries production, it represents approximately 95% of all fishers. Over 500 million people in the developing world rely, directly or indirectly, on fisheries and aquaculture for their livelihoods. Although small-scale marine extraction can contribute to poverty reduction at the household level, its principal contribution is perhaps its role in poverty prevention. One of the most important contributions comes from the provision of essential nutrients. Fish can account for 19% of protein intake in developing countries, exceed 25% in those poorest countries, and reach as much as 90% in isolated coastal areas or small developing states. Resources are by no means limited to fisheries and food — for example, mangrove forests provide a wide range of contributions to poverty prevention, including a cheap source of fuel and construction materials.

However, increasing coastal populations, unmanaged coastal development, and unregulated extraction all have led to the pollution and degradation of marine ecosystems and the important environmental services they provide – degradation which in part can be explained because many of the benefits of coastal and marine ecosystems are not received by those who manage them. As such, short-term incentives exist for unsustainable practices, which can draw down natural capital and limit options for future development.

### BOX 3–1

#### Payments for Watershed Services

"Payments for Watershed Services (PWS) currently exist in Costa Rica, Ecuador, Bolivia, India, South Africa, Mexico, and the United States. In most of these cases, maximizing watershed services through payment systems has led to poverty reduction.

While there is clear potential for tradeoffs between poverty reduction and watershed services goals, practitioners and policymakers around the world have already shown that they can design and implement PWS programs that minimize these tradeoffs. Indeed, because PWS initiatives are (by definition) voluntary, because they involve transfers of wealth (often from wealthier urban areas to poorer rural areas), and because they can empower the poor by recognizing them as valued service deliverers, PWS schemes are actually more likely to have pro-poor impacts than most other environmental management interventions."

Excerpted from: Asquith et al. 2007; L.A. Bruijnzeel and Meine von Noordwijk. 2007; C. Agarwal and P. Ferraro. 2007.

For example, both mangroves and coral reefs play extremely important roles in the lifecycles of many commercially important fish, fish which are more often caught some distance from these habitats. Some coastal communities may receive greater benefits, at least in the short-term, from unsustainable fishing practices and mangrove clearing. Indeed, as previously noted these resources may in fact account for unaffordable but essential protein and energy needs in impoverished coastal areas.

### PES Benefits to the Poor

In certain contexts, PES can present new incentives for sustainable management — in the form of regular payments for ecosystem services. These regular payments could in turn promote long-term sustainable use and even conservation of the resource base by providing both a reliable source of supplemental income, additional employment, and local community development. Even a modest payment, reliably delivered over many years, may in certain contexts

## Section 3: Opportunities, Risks and Ideal Conditions for Poverty Reduction

provide a meaningful increase in net income as well as a mechanism for adopting more sustainable management practices. Although to date there has been no implementation of true PES in coastal and marine settings, lessons can be learned from the terrestrial setting. The relationships between PES and poverty reduction is explored further in Box 3-1.

Evidence from terrestrial PES case studies suggests the majority of such schemes have had a positive poverty reduction effect, although these gains are seldom large and the distributional implications largely ignored.

In exploring PES, it is important to remember that you can structure deals for individuals, entire communities, or both — depending on the situation. PES schemes have implications for a number of poor stakeholders, and not only those participating, as presented in Box 3-2. How a deal is structured will have implications for all of these groups. It is important to also consider the non-participants as they can include some of the most vulnerable members of society.

Regardless of whom the deal is structured to benefit, when appropriately designed, schemes that benefit the poor can have long-lasting positive “ripple effects” – such as increased local economic development and improved natural resource productivity. That is, over the lifespan of PES agreements, communities are also likely to derive additional indirect benefits from the regulating and supporting services these ecosystems deliver, such as water filtration, coastline protection and flood regulation. The benefits to the poor derived from a PES scheme are further presented in Box 3-3.

The key is to carefully consider the benefits that a community, group of sellers, and/or the individual seller of marine ecosystem services is interested in during the initial design stage of a PES deal. Failure to correctly identify individual / community wants and needs, and how these can work alongside traditional cultural and social values from the onset, can lead to project failure if communities do not feel adequately engaged or compensated.

## Considerations of Risks

### Proceed With Caution — even more so in coastal and marine settings

It is important to note that marine PES schemes will, on the whole, be more challenging to implement than their terrestrial counterparts, and such deals will seldom provide all of the financial resources needed for a resource-dependent family or community.

Moreover, despite the favourable benefits of poverty reduction associated with PES deals, not all coastal and marine problems will be amenable to a PES solution. A PES approach would not be applicable within an open-access fishery for example, where the issue is not one of externalities but of an unlimited number of users (and indeed claimants).

In fact, even if a fishery were not ‘open access’ but local communities were unable to prevent others — without legal title over the resource — from accessing it, a PES would do little to address the service supply.

### BOX 3-2 PES that Benefits the Poor

Where a service production exists, is at risk and overlaps with areas of impoverishment, PES schemes have the potential to benefit three categories of the ‘poor’:

- Those ‘poor’ who provide the environmental service;
- Those ‘poor’ which demand the environmental service;
- And those other ‘poor’ groups which are potentially impacted by the implementation of the PES.

The degree to which a scheme will benefit the poor will depend on the following:

- The extent to which small stakeholders are able to sell environmental services compared to better-off competing suppliers;
- Where smallholders have the ability to participate, the extent to which this impacts on their well-being;
- And the impacts these market-based initiatives have on the well-being of other ‘poor’ non-participants.

Adapted from:

Wunder, S. 2008. Payments for environmental services and the poor: concepts and preliminary evidence. *Environment and Development Economics* 13: 279-297.

Grieg-Gran, M., Porras, I. & Wunder, S. 2005, “How can market mechanisms for forest environmental services help the poor? Preliminary lessons from Latin America”, *World Development*, vol. 33, no. 9, pp. 1511-1527.

## BOX 3–3

## Potential Benefits of PES for the Rural Coastal Poor

## IN THE SHORT-TERM

## Income Benefits:

- **Increased cash income** for consumption or investment purposes (such as increased caloric intake for children, expanded access to education and health care, new products for sale, improved enterprise productivity, etc.).
- **Diversification of income** provides a more reliable and stable cash income against fluctuating commodity prices and seasonal properties of coastal areas.

## Non-income Benefits:

- **Investment into alternative livelihoods** – Training schemes associated with improved resource management also allow diversification into alternative livelihoods. In rural coastal settings, where education can be hard to access this can be particularly valuable.
- **Formalization of tenure rights** and the clarification of property rights. Since PES schemes explicitly recognize the role of environmental stewards, PES agreements could strengthen rural peoples' position in other resource-based negotiations. Within a marine context, communities located in regions with customary and de facto tenure rights – as is common in low-income countries – could benefit from legal recognition, enabling a stronger security over coastal and marine resources.
- **Increased social capital** – PES schemes require strong internal organizations and external linkages; these skills can improve internal community co-ordination and organization and facilitate other external relationships.
- **Expanded experience with external business activities** through PES-related economic transactions and interactions with PES-relevant intermediaries.
- **Increased knowledge of sustainable resource use practices** through training and technical assistance associated with PES deal implementation.

## IN THE LONG-TERM

- **Improved resilience of local ecosystems** and flow of ecosystem services.
- **Potential for higher productivity land** and recovery of coastal environment due to ecosystem service investments.

Coastal and marine PES suffer from all of the complexities associated with terrestrial counterparts. For example, PES may be quite difficult to implement in areas where institutional capacity and transparency are lacking. In these situations, buyers will be leery of engaging in deals because they will have doubts that the activities paid for will be implemented over time or yield the desired ecosystem service outcome. More importantly, if deals are poorly structured, then sellers of ecosystem services could see resource rights undermined, conflicts accentuated, and/or benefits minimized.

However, marine PES schemes will be more difficult to implement due to much weaker tenure rights and greater enforcement challenges associated with coastal and marine goods and services. Marine environments are characterized by a larger number of stakeholders than terrestrial systems. These include individuals of different user groups, as well as socioeconomic standing, each of which may overlap in area yet all of which may have an equal claim. This is unlike most terrestrial systems, where owners have rights over a specific area. In some cases it may be necessary to engage all stakeholders to provide an improvement in ecosystem service. Alternatively, it may be more cost-efficient to target larger services users, who are unlikely to be the poorest, as buyers of the service. PES schemes which target a larger number of smallholders are likely to have higher transaction costs than those who do not.

PES schemes have implications beyond participants. Just as the wider community can benefit from well-designed PES, they can equally suffer from those that are inadequately constructed. This is particularly profound in rural coastal areas where communities are far from homogenous. Within coastal communities conditions may already exist which prevent certain 'poor' actors from participating, these include levels of discrimination and inability to access technologies.

The negative implications for ALL these separate groups should also be considered — not only because these can include some of the most vulnerable individuals but also because the perception of equity by local communities is vital to the success of continuing environmental service provision. For example, where a marine protected area (MPA) failed to adequately address the social costs to neighboring communities, interventions have been undermined and success limited. Remote coastal PES schemes must rely on a high degree of community involvement and trust.

The risks associated with PES agreements for rural coastal residents and communities, both participants and non-participants, are addressed below.

#### Potential Risks of PES for “Sellers” of Ecosystem Services

A range of potential risks exists for the rural coastal poor in entering into PES deals. Therefore, careful consideration should be taken of the following:

- **Inadequate understanding of what is being bought and sold, and long-term implications for local livelihoods and resource rights.** The use of PES implies a market-based focus on relatively abstract ecosystem services, which may contrast with cultural conceptions and economic models operating within traditional coastal communities. In particular, new market-based deals may conflict with traditional coastal management practices. It is important to identify and consider these potential issues and “friction” points prior to actively exploring a PES deal.
- **Loss of rights to harvest products or environmental services.** This is a particularly important concern in marine PES, where tenure rights are often de facto. Prior to agreeing to a PES deal, it is essential to lay out a resource plan that accounts for sellers’ access to marine resources – for food, fuel, mangrove forest products and other items. This component is key to ensuring that the PES deal does not result in loss of rights to critical, non-negotiable activities for prospective sellers and/or local communities. Consultations with all resource users in the area in question are essential in this process
- **Other opportunity costs.** The possible loss of non-PES opportunities should be weighed against revenues from a PES deal. For example, if a community enters into a PES contract, donors and aid organizations may decide the community is less in need of their support. It is worth assessing whether any such potential opportunity costs are associated with a PES deal. Opportunity costs in a marine setting may need to consider such issues as seasonality, fluctuating commodity prices and local improvements in environmental quality that can in the longer-term improve extraction rates.
- **Loss of employment.** Where a coastal or marine PES requires closures of or limited access to specific areas, this could lead to a reduction in harvesting effort, reducing jobs and/or income.
- **Unfair outcomes.** There is a potential for unfair sharing of net revenues when rural communities form partnerships with business entities to supply ecosystem services, especially when there is asymmetric information on the demand market.
- **Increased competition for tenure or loss of tenure rights.** Success with PES could attract speculative investors, which could in turn squeeze out indigenous landowners, especially in many marine settings where only low levels of and de facto tenure security exist.
- **Creation of conflicts.** Poorly designed schemes and contracts can exacerbate inequity within communities, leading to new sources of tension and conflict within communities.
- **Loss of critically important ecosystem services.** In designing a project, the needs of the entire ecosystem must be taken into account. In the marine context, poorly designed PES projects are highly vulnerable to leakage (a shift in unsustainable practices in place of the one(s) specified in the PES deal). Furthermore, projects which measure success as an increase in one environmental good, such as aquaculture, may lead to negative impacts for biodiversity and water quality.
- **Confusion over resource and ecosystem service rights.** PES schemes compensate people for taking action to maintain or enhance ecosystem services, but do not necessarily transfer resource rights. This distinction (and accompanying confusion) could be particularly pronounced in marine-related services payments, which do not entail transfer of tenure rights, per se. In the same way, biodiversity offsets payments would not necessarily imply accompanying control over biological or genetic resources. It is essential that agreements are clear on these distinctions.

- **Loss of control and flexibility over local development options and directions.** Poorly-designed easements or long-term contracts can limit management activities to a narrow range of alternatives, which could cost community residents their rights to exercise certain management options. These limitations should be carefully scrutinized in light of potential future options that sellers of ecosystem services wish to keep open.
- **Performance risk and need for insurance.** Where payments are dependent upon delivery of specific ecosystem service outcomes, factors outside producers' control may result in failure to achieve contractual obligations and, subsequently, non-payment. For example, coral bleaching, algal blooms, boat-strikes, increased fresh-water from flooding or increased rainfall, to name a few, can affect ecosystem service delivery. Climate Change impacts can further exacerbate all of these risks. Therefore, it is ideal that all participants in PES schemes employ some type of insurance strategy, such as purchasing formal insurance or managing a larger area to buffer against partial failure to deliver the total improvement agreed to. Unfortunately, formal insurance policies are rarely used in marine management, but new insurance products are being developed for large-scale companies. The key of course will be the cost of these insurance policies and who bears the cost. If a buyer is willing to pay for insurance, that is — from a seller's stance — ideal. However, if that approach is not of interest to a buyer, then at least it is ideal to have risk sharing — between sellers and buyers — included in agreements so that not all risk is borne by sellers.
- **Incompatibility of PES with cultural values.** In some communities, PES is viewed as a commoditization of services that should not have a price tag attached. Critics are also concerned that communities who are the custodians of those services or other poor "downstream" beneficiaries could themselves be made to pay for services as well.
- **Inability to absorb new cash sources.** In some rural communities the infrastructure may not exist to effectively deal with the injection of new cash sources. This could lead to an inefficient compensation of individuals/communities who cannot fully absorb the cash benefits.
- **Higher risk if scheme fails.** Where schemes involve a change to more sustainable management practices, this will require a level of investment by the individual and/or community. This level of investment is more likely to be proportionally higher for smaller-holders, and so they would be at greater risk if the scheme failed.

## Potential Risks for "Non-Participants" of PES Schemes

The complex, multi-stakeholder nature of many coastal and marine resources will require careful consideration of PES non-participants – those who do not benefit directly from the PES deal. These include individuals who choose not to participate as well as those who are unable to due to social and economic discrimination, which include some of the most vulnerable community members. For example, social marginalization is widespread within coastal communities, and gender, kin systems, ethnicity and religious affiliation may influence one's ability to access a fishery or resource. Economic exclusion can discriminate further against some of the poorer community members. For example, where poorer households cannot afford the technical equipment to harvest those resources defined under a PES, they will also be excluded from any poverty intervention.

For this reason careful consideration should be made of the following:

- **Loss of previously communal resources.** Within many marine settings, areas may be 'owned' by one individual, a community, or the government; however, informal arrangements allow others to access these areas. Projects which commoditize coastal or marine areas may lead to the dissolution of previous traditional customs which allowed poorer 'landless' community members access to privately owned areas for goods important to these households but previously without market value. Furthermore, due to the highly variable and fluctuating nature of coastal areas many communities often rely on reciprocal relationships with other neighboring communities — relationships that also may be dissolved under a PES scheme to the disadvantage of one community.
- **Loss of employment.** Likewise as for PES sellers, non-participants may suffer employment losses. For example, where a PES scheme requires closures of specific coastal or marine areas, this could lead to a reduction in harvesting effort, reducing jobs and/or income. Where resources, permits to harvest, or equipment required to access are owned by 'richer' individuals (e.g., those who employ fleets of workers), payments will likely not filter down to poorer community members (i.e., the previous employees). On the other hand, a PES scheme may require additional labor. For example, improved stewardship or monitoring activities which may lead to an increase in local labor.
- **Increased commodity prices.** In rural areas, where market access is limited, reduction in extraction efforts may

lead to an increase in local commodity prices. This will have the greatest impact on those not earning a subsidiary income, and for commodities which make up a large and important percentage of household consumption.

- **Loss of income to downstream vendors.** Where a marine PES closes areas or limits harvest, it is likely to affect numerous downstream vendors. While this may not be a concern for more mobile individuals, in many rural coastal settings, women are involved in the gleaning / modification and re-selling of resources, and this activity can represent the only form of cash income. Yet these women will likely have no tenure claim over the 'resource' itself and, therefore, not be entitled to compensation. Although not 'resource-sellers' per se, these individuals should be considered if a scheme is truly to reduce poverty.

## Recommendations to Reduce Possible PES Risks and Improve Potential

A number of actions can be implemented to reduce the risks associated with PES schemes, and make programs more beneficial:

- Prior to investing in a full-fledged PES deal, potential sellers and/or their partners should not only undertake a risk assessment in order to understand whether these issues or others are relevant to a specific site and context, but also consider the context in which PES deals are currently carried out, as well as the situations in which PES deals are most relevant and likely to succeed.
- A robust initial analysis of local conditions and suitability for a PES scheme should be further undertaken. This can be initiated by an intermediary party more familiar with the local environment. This includes identification of the most appropriate benefit sharing mechanism. For example, cash payments may not always prove to be the most efficient initial mechanism, and contracting communities over individuals may not guarantee equitable distribution of benefits.
- Seller transaction costs should be kept as low as possible in order to enable poorer members to participate. This can be facilitated through contracts with community co-operatives and intermediary brokers. Again, analysis of how benefits are to be shared is recommended.
- Flexible contracts to mitigate issues with multiple different stakeholder groups as well as issues of seasonality and fluctuating opportunity costs. In a coastal setting, it may be necessary to tailor contracts to account for multiple, and very different, stakeholders. In certain circumstances, flexible contracts which allow these different stakeholders to participate at different levels may be necessary. This is likely to reduce the cost-effectiveness of any scheme, and will require a degree of trade-off.
- PES projects should consider investment into social capital through training schemes and alternative employment or livelihood activities.
- If a PES scheme is to be considered equitable and to alleviate poverty, safety nets should be considered for those non-participants likely to be made worse off.

## Considerations of Conditions for PES

### Ideal Conditions

PES deals are most likely to flourish when and where:

- **Demand for ecosystem services is clear and financially valuable to one or more players.** PES are most likely to occur when there is at least one beneficiary of ecosystem services with both an incentive to invest in the maintenance of this service and available funds for doing so.
- **Supply is threatened.** If resources are clearly diminishing to the point of scarcity because of a declining ecosystem service, then a PES deal holds potential.
- **Specific resource management actions have the potential to address supply constraints.** For PES to be a viable option, it is essential to identify what resource management practices could be changed and what ecosystem services results will ensure improvement of 'supply' issues.
- **Effective brokers or intermediaries exist** who can assist with documenting ecosystem service conditions, identifying specific resource management alternatives, aggregating multiple coastal landowners / resource users (if needed), engaging and negotiating with prospective buyers, and any other activities related to implementation

(including monitoring, certification, verification, etc.). Effective intermediaries can also go a long way to reduce the transaction costs that may be associated with those coastal and marine PES schemes involving numerous smallholders.

- **Contract laws not only exist but are enforced, and resource tenure is clear.** The supplier must have control (but not necessarily ownership) over the area where the PES agreement is to be implemented, and the buyer must have assurance, and recourse to ensure, that contract provisions of the deal are secure.
- **Clear criteria for evaluating equitable outcomes across partners are established.** In the case where partnerships are formed to supply the ecosystem service, clear criteria of fairness need to be designed and agreed by all parties to the transaction.
- **Design of PES schemes where benefits are relatively short-range.** Many marine PES schemes will have multi-directional benefits, often over long distances and numerous beneficiaries. Those schemes where benefits are relatively short-range, where the cause-and-effect pathway is easy to assess, will be much easier to implement, both in identifying suppliers and demand. Such schemes include coastal protection and beach stabilization projects.
- **PES established in coastal or marine areas that are zoned for such purposes.** Ocean zoning, and corollary coastal zoning, is becoming a more accepted practice in coastal areas around the world. Zoning establishes not only what uses are permissible where, but can also be used to establish trading zones: flagging areas within which rural communities can sell ecosystem services protections.

FIGURE 3-1

### Considerations of PES That Are Equitable and Beneficial to the Poor

**Market Access:**

To what extent are poorer stakeholders able to compete with larger environmental service providers?

- Does area of interest overlap with areas of impoverishment?
- Do contracts favour larger or smaller stakeholders?
- Do transaction costs reduce smaller stakeholder opportunities to participate?
- Is scheme low risk to landowners?
- Do smaller stakeholders have skills to implement scheme?
- Does community have organisational skills to participate?

**Participant Welfare Gains:**

To what extent are poorer stakeholders made better off?

	POTENTIAL IMPACT	EXTENT WILL DEPEND ON
Coastal owners with secure tenure	• Income from PES (+)	• Payment amount (+) • Opportunity cost (-)
Coastal owners with insecure tenure	• Income from PES (+)	• Payment amount (+) • Opportunity cost (-) • Ability to participate • Ability to prevent seizure of tenure by politically stronger groups
Tenants	• Income from PES (+)	• Payment amount (+) • Opportunity cost (-) • Division of benefits
Poor downstream service users	• Pay for PES (-) • Receive Services (+)	• Amount of service (-) • Consequence of lack of PES programme (+)

**Non-Participant Welfare Gains:**

To what extent are poor 'non-providers' affected?

	POTENTIAL IMPACT	EXTENT WILL DEPEND ON
Laborers	• Change in labor demand (+/-)	• Relative labor needs for PES-promoted practices compared to current (+/-) • Opportunity employment opportunities (+/-)
People dependent on collection of goods from marine and coastal areas	• Change in availability and access of goods (+/-)	• Nature of current and PES-promoted practices (+/-) • Local context
Downstream vendors	• Change in availability of goods (+/-)	• Nature of current and PES-promoted practices (+/-) • Local context

**Other Considerations for Equitable PES Schemes:**

- Is market access denied to specific community groups?
- Will PES scheme induce community conflict?
- Will PES scheme increase commodity prices for the poor?
- Will alternative employment opportunities and training schemes be available?

Adapted from:

Grieg-gran et al. 2005. How can market mechanisms for forest environmental services help the poor? Preliminary lessons from Latin America. World development 33. 9. pp1511-27

Pagiola et al. 2005. Can payments for environmental services help reduce poverty? An exploration of the issues and the evidence to date from Latin America. World development 33. 2. pp237-253

### Limiting Factors

Nonetheless, a range of limiting conditions currently inhibits the widespread application of PES in rural coastal communities, including:

- **Limited access to information** about payments for ecosystem services, the economics of ecosystem use, and downstream resource users or prospective PES buyers.
- **Lack of financing for PES assessment**, start-up and, transaction costs.
- **High transaction costs on both sides of market.** High transaction costs for buyers are associated with a large number of stakeholders, as well as various different stakeholder groups. On the seller side, transaction costs are likely to represent a larger proportion of gross income for smallholders than larger participants.
- **Limited ‘easy to measure’ proxies and monitoring of PES success.** Complex multi-directional pathways make assessing PES success difficult, this makes identification and analysis of PES outputs more difficult in a marine setting. Whereas in a terrestrial setting hectares under forest cover could provide a proxy for the amount of carbon and biodiversity provided, similar proxies are harder to establish in the marine context. The rural setting can also limit monitoring where proxies have been established.
- **Limited bargaining power** to influence, shape, or enforce rules and contracts; to resolve disputes; or to process grievances, particularly with private sector actors.
- **Limited asset base** to absorb risks, invest time and resources in management, or to weather periods of lower returns or higher labor requirements.
- **Limited organization** or outreach to aggregate supply of services needed to attract a range of buyers.
- **Lack of efficient intermediary institutions** to reduce transaction costs along the value chain to buyers.
- **Local priorities** for meeting ecosystem service needs that conflict with broader priorities.
- **Unclear** jurisdictions, property rights, access rights, or uncodified tenurial arrangements.

Overall, the development of PES will be shaped by the context in which it is emerging. Within this context, proactive efforts will be needed to meet the needs of low-income ecosystem service sellers and users. On a discrete PES deal-basis, honest brokers can play an important role, as discussed below and throughout this primer.

However, if PES is to develop on an ecologically and economically significant scale, then a robust set of private, public, and nonprofit institutions — as illustrated in Figure 3-2 — must be established to meet and adapt to market needs.

Without a dedicated effort, PES will bypass the poor. Opportunities must therefore be carefully developed, nurtured and monitored to ensure that the benefits are realized by the people who need them most. Entities and institutions that are nurturing this process along will be important components of the process.

### Considerations of When to Pay for Expertise

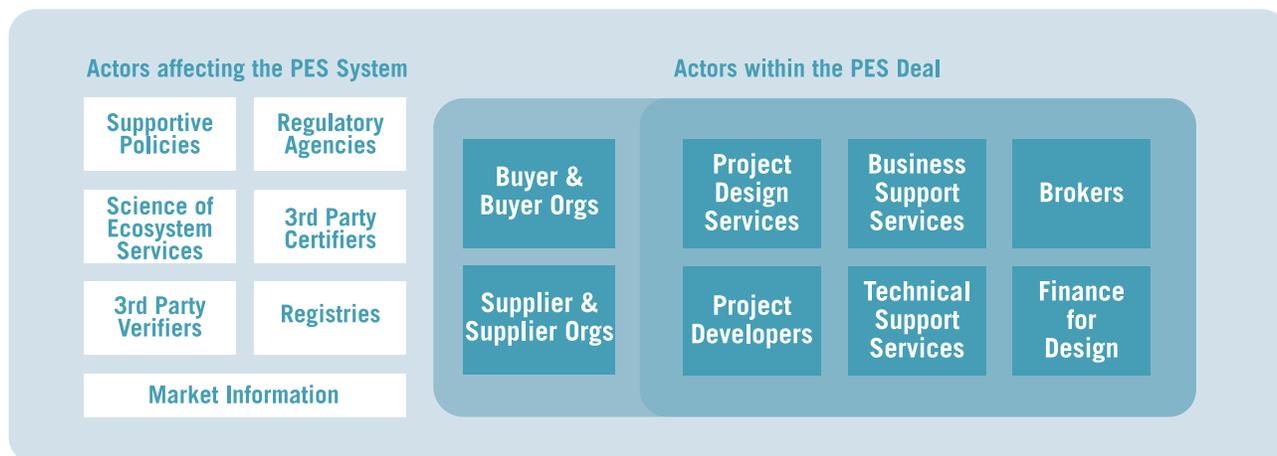
If you are a potential ecosystem service seller or represent a group of sellers, then you need to honestly and critically appraise your own risks, opportunities, experience and abilities. In addition to considering the potential risks and benefits (laid out above), this assessment should consider capacity related to key PES activities, such as measuring and creating a “baseline” / current status study of ecosystem services, negotiating deals, managing complex resource management projects, and other such activities related to PES deals, before trying to develop a PES deal.

Overall, key questions to ask in any PES assessment in a particular area — or with a specific group of resource and coastal land owners — should include:

- **What is the capacity and past experience of potential ecosystem service sellers (or ‘key partners’) to:**
  - Assess potential risks and benefits associated with complex agreements, such as PES deals?
  - Negotiate complex agreements with external (potentially private sector) entities, including multi-year or even multi-decade deals?
  - Handle financial transactions with external / non-community-based entities?

FIGURE 3-2

## Institutional Actors in Expansion of PES Deals over Time and Geographic Areas



Adapted from: Bracer, C., S. Scherr, A. Molnar, M. Sekher, B. O. Ochieng, and G. Sriskanthan. 2007. "Organization and Governance for Fostering Pro-Poor Compensation for Ecosystem Services." CES Scoping Study Issue Paper No. 4, ICRAF Working Paper No. 39. Nairobi, Kenya: World Agroforestry Center.

- Ensure (if the deal is community-focused or even multiple seller-based) equitable and fair distribution of the revenues generated by a deal with a non-local entity?
- Implement complex natural resource management deals?
- Assure, through ongoing monitoring, evaluation, and even external, third party verification, that the money paid with a PES deal will indeed lead to the promised (ecosystem service-related) outcomes?
- **Based on this review of past experience and existing capacity, what needs to be done in parallel to address any gaps, such as:**
  - Analytical and / or technical knowledge related to assessing and developing a PES deal?
  - Negotiation experience or advocacy experience?
  - Understanding of local laws, customs, and/or traditions?
  - Financial management capability that is transparent and clear to rural community members with variable levels of experience with accounting and financial management?
  - Natural resource management know-how related to sustainable fisheries and aquaculture, mangrove harvesting, and nutrient cycling, etc.?
  - Rigorous monitoring and evaluation?

In many communities and for many prospective PES sellers, significant gaps will emerge in an initial PES capacity assessment. For this reason, it is likely that many potential PES sellers will benefit from external assistance with a few or many aspects of the PES agreement.

Many prospective sellers of ecosystem services — particularly multiple sellers within rural community — will find that they need trusted brokers and strategic partners who can identify potential PES deals, prepare key documents, and assist in negotiating agreements. Without honest brokers advising on the intricacies and risks of these deals, rural community residents could find themselves carrying all of the project liability over years or even decades. If that happens, then events beyond their control, such as hurricanes / typhoons, could easily undo improvements from their ecosystem management activities and negate all payments promised within PES agreements.

### Section 3: Opportunities, Risks and Ideal Conditions for Poverty Reduction

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What is more, buyers generally are not obligated to pay for the services until the seller actually delivers them – and this, again, may be years or decades after the work has begun, raising the issue of how to cover “start-up” and “transaction” costs, which may be substantial. These include the cost of assessing the value of the ecosystem services, identifying and approaching prospective buyers, negotiating and closing a deal, and finally implementing the agreement.

An honest PES broker can advise prospective ecosystem service sellers on how to explore ways of covering these costs up front, whether through donor organizations, other revenue generating schemes like ecotourism, loan mechanisms, trust funds or nongovernmental organizations that are focused on PES. In rare cases, prospective buyers will be able to finance these start-up costs and then subtract them from the amount paid to the seller upon delivery.

You may also find PES intermediaries such as aggregators, who are still buyers, but focused on putting together multiple projects that they lump together and then sell further. These entities are often willing to fund the start-up, aggregation and registration costs in exchange for profit-sharing with communities or landowners in the ultimate sale of the ecosystem services. Again, an honest broker can be useful in finding, comparing, and selecting a potential intermediary to work with as one way to defray start-up costs.

Brokers can also assist in finding and negotiating with potential buyers. This first element of finding a buyer is key, as is discussed in detail below. Without a willing and able buyer, there is no PES deal. Another element to finding and convincing a potential buyer to engage is assuring the buyer that a PES deal will not shift unsustainable resource practices to other areas (i.e., “leakage”).

Ecosystem service buyers will be open to criticism (and less willing to continue with the deal) if such a shift in impacts occurs. Therefore, it is important to develop an explanation of why/how such “leakage” will not occur and it may be useful to have an honest broker / advisor assisting in considering this issue.

Sellers may wish to have an experienced advocate at their side during negotiations – not only to ensure that all the details of the deal are favorable to the seller, but to ensure that the deal does not include any provisions that would ask community members to adopt coastal or marine use or management practices that undermine their livelihoods or reduce their access to ecosystem services and resources. It is also useful to have an advocate for the buyer and seller sharing risk over time.

Finally, brokers can assist in advising on particulars of accounting and reporting systems to ensure that they are transparent to both seller and buyer. If the seller is a community, then members need to openly and equitably agree on how to invest the proceeds of the sale into the community in a way that does not lead to adverse unintended consequences. A third party can assist by facilitating these discussions. Open dialogue and agreement among all participants, and any community seeking to raise income via PES should explore this issue area in depth.

Overall, identifying and crafting PES deals require significant investment of time and resources, which can be trying for a potential seller who is focused on providing for his or her family or community. Therefore, the most feasible approach may be for community-based and/or community-focused nonprofit organizations to play a role in many of these steps, such as those outlined below.

Throughout the process of building PES deals, intermediaries acting as honest brokers have the potential to play an enormous enabling role.

If you are a prospective ecosystem services seller considering potential brokers, you should begin by approaching formal and legitimate organizations that are engaged in the community. Many NGOs, for example, have years of experience working with indigenous people and/or rural communities. When contacting a community organization or a support NGO, it is always important to remember that the interests of these organizations do not always reflect those of the people they ostensibly represent. It is critical to examine how the NGO interacts with and relates to the community, and to verify trust in the organization. This assessment could include reviewing:

- how a potential partner / broker is funded,
- who else they have partnered with,

- what their mission statement is, and
- whether they adhere to a set of institutional values that govern their operations.

You should, obviously, look for partners who have experience with other PES deals or similar agreements (including terrestrial PES deals). You can get a feel for the level of experience a broker has with PES by talking through each of the steps in developing a PES deal and asking the potential broker / partner to describe their past experience with each element.

### BOX 3–4

#### Potential Roles for Honest Brokers of PES Deals

- **Helping sellers assess an ecosystem service ‘product’ and its value to prospective buyers**, through identifying and documenting:
  - what ecosystem services may be available to sell,
  - how much exists,
  - what the market context is (such as regulated or voluntary),
  - what business case exists for a company to invest in, and
  - what value the ecosystem service has and what market price has been paid (ideally based on comparative prices from the same area).
- **Assisting sellers with establishing relationships and rapport with potential buyers**, through:
  - developing a list of potential buyers,
  - setting up meetings between prospective sellers and buyers, and
  - facilitating meetings to ensure that expectations of both buyers and sellers are met.
- **Enabling sellers get to know potential buyer(s) well**, by ensuring that meetings reveal key details, such as:
  - prices paid for comparable payments for ecosystem services (and why these are the prices),
  - buyer’s views on potential business benefits, and risks, of entering into agreements and making payments for ecosystem services, and
  - challenges being faced by the company that may inform their interest and price sensitivity related to a purchase.
- **Assisting with proposal development**, by:
  - quantifying ecosystem services to ensure appeal to buyers,
  - pricing of services,
  - addressing, and lessening as much as possible, transaction costs,
  - structuring agreement,
  - selecting a payment type that interests both seller and buyer,
  - assessing various approaches to financing,
  - identifying and getting agreement on corporate point people, and
  - keeping the discussions in motion.
- **Ensuring that the final agreement is in sellers’ best interest and providing risk management advice and services**, as well as negotiating on behalf of the community.





# Annexes





# Annex I: Navigating the Ecosystem Marketplace

The Ecosystem Marketplace (EM, [www.ecosystemmarketplace.com](http://www.ecosystemmarketplace.com)) was born to provide you with the information services needed to build a revolutionary new economy that will pay for, and invest in, ecosystem services. In particular, EM covers payment programs for three kinds of ecosystem services:

- Climate stabilization (carbon sequestration in trees, plants and marine ecosystems)
- Water-related ecosystem services (water quality, groundwater recharge, flood control)
- Biological diversity benefits (scenic beauty, ecosystem resilience, pollination, pest control, disease control, etc)

The EM has tagged the different areas of its MarketWatch coverage simply as: carbon, water, and biodiversity.

You will find a link to the MarketWatch section on the EM homepage where you can track transactions across 14 different markets around the globe. If you want to find out what buyers are paying for ecosystem services in different corners of the world, click on the MarketWatch section and then pick your market.

In addition to MarketWatch information, EM provides several other types of services that might be of interest. The homepage runs new features focusing on important issues in the world of environmental markets, as well as wire reports and other news gathered from media sources around the world that touch on some aspect of payments for ecosystem services. Check the list of articles on the right hand side of the screen for a daily update.

After features run on the homepage, they are all permanently archived on the site, where you can find them by entering a keyword in the search bar at the upper right of the homepage. If you click on the news tab, you will see all the news articles of the past two months.

Beyond MarketWatch and news services, EM has a directory that you can use to find organizations working on setting up payments for ecosystem services in your area, and an event section where you can keep your eye out for conferences and meetings you may want to attend.

Last but not least, EM has a sizeable library of scholarly articles, case studies, and toolkits that you can access by clicking on the library tab on the homepage. You might use this area to research what is happening in market-based marine conservation or terrestrial projects that may be similar to your own.

However you choose to use EM, we hope it will be of use to you and we welcome your feedback: [info@ecosystemmarketplace.com](mailto:info@ecosystemmarketplace.com).



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*There are also many other references, particularly related to terrestrial PES, that can be found in the original Payment for Ecosystem Services: Getting Started: A Primer (2008) produced by Forest Trends and The Katoomba Group. It is available for download at the Forest Trends website ([www.forest-trends.org](http://www.forest-trends.org)).*



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