

CONSERVATION  
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# Payment for Ecosystem Services: A Conservation International Analysis

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# INTRODUCTION

This document is intended to provide straightforward information on the necessary policy and institutional frameworks to enable sound implementation of national scale Payment for Ecosystem Services (PES) schemes<sup>1</sup>, including definitions and a description of common types of projects and how they are structured.

The Millennium Ecosystem Assessment (MA) defined **ecosystem services as the benefits people obtain from ecosystems**.<sup>2</sup> This basic definition was further divided into categories of supporting, provisioning, regulating and cultural services. Economists consider, ecosystem services (ES) to be **positive environmental externalities**, meaning that they provide a positive benefit to social and economic activities but the cost of maintaining or enhancing them is not considered in the cost of the good or service involved. For example, a hydro-electric project may not consider the cost of keeping forest standing to ensure low levels of sedimentation in the dam in the final cost of electricity produced. Globally, environmental externalities are rarely addressed in mainstream markets. As a result, communities and landowners are economically incentivized to irrationally exploit, rather than protect and sustainably use, the natural landscape and the ecosystem services it provides. This has a negative effect on a country's natural capital and people in poor rural communities, who often depend on natural resources for their livelihoods.<sup>3</sup>

One policy approach that has been promoted to effectively address these environmental externalities is Payment for Ecosystem Services, a **system in which beneficiaries provide payments to a steward of an ecosystem service**. PES is an innovative approach generated to help address the market failure that treats ecosystem services as externalities<sup>4</sup> so that people have an incentive to protect the ecosystems that provide multiple benefits such as climate mitigation, water purification, biodiversity, soil conservation and pollination, among others.

## BUILDING BLOCKS

### Common Definitions

The most commonly cited definition of PES is that it is:

1. a voluntary transaction where
2. a well-defined ES (or a land-use likely to secure that service)
3. is being 'bought' by an ES buyer (minimum one)
4. from an ES provider (minimum one)
5. if and only if the ES provider secures ES provision (conditionality).<sup>5</sup>

This definition allows for many variations of design for a PES scheme. For example, while PES can occur as a private transaction between two entities, it may also occur with a government acting as the primary buyer on behalf of beneficiaries in society and funding the purchase with a tax on those beneficiaries. The chart below provides further details on some of the viable models for PES schemes.

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<sup>1</sup> Also known as "Payment for Environmental Services."

<sup>2</sup> Millennium Ecosystem Assessment (MA). 2005. Ecosystems and Human Well-Being: Synthesis. Island Press, Washington. 155pp.

<sup>3</sup> Martín-López, B., Montes, C. and Benayas, J. 2008. "Economic Valuation of Biodiversity Conservation: The Meaning of Numbers." *Conservation Biology*, 22(3), pp.624-635.

<sup>4</sup> Braat, L. and de Groot, R. 2012. The ecosystem services agenda: bridging the worlds of natural science and economics, conservation and development, and public and private policy. *Ecosystem Services* 1 (2012) 4–15.

<sup>5</sup> Wunder, S. 2005. Payments for environmental services: Some nuts and bolts. Center for International Forestry Research Occasional Paper No. 42.

<b>PES Criteria</b> Adapted from Griebner/IUCN definitions <sup>6</sup>	
<b>Type</b>	<b>Criteria</b>
<b>Private PES Schemes</b>	<p>Self-organized schemes between private entities which involve one or more of the following:</p> <ul style="list-style-type: none"> <li>● Direct payments by service beneficiaries to service providers for the protection or restoration of ecosystem services;</li> <li>● Cost-sharing among involved private parties;</li> <li>● Purchase of land and lease back to former owner with the objective to ensure ecosystem services originating from the land in question; or</li> <li>● Purchase of development rights to land, which are separated from property rights.</li> </ul>
<b>Cap and Trade Schemes</b>	<ul style="list-style-type: none"> <li>● Establish a cap (an aggregate maximum amount) for a behavior that degrades the ecosystem service in question;</li> <li>● Allocate pollution or removal permits which divide the allowable overall total among ecosystem service users; and</li> <li>● Allow trading of permits between those who do not need permits and those who need more than their allocation.</li> </ul>
<b>Public PES Schemes</b>	<p>Public PES schemes are government driven programs which involve:</p> <ul style="list-style-type: none"> <li>● Public agencies as a buyer and include user fees;</li> <li>● Land purchase and granting of rights to use land resources; and</li> <li>● Fiscal mechanisms based on taxes and subsidies that are publically funded.</li> </ul> <p><b>This design for a PES scheme is closely related to the most common definition of PES (p.1).</b></p>

## How it Works

**The idea behind PES is to bring ecosystem services into the wider economy and address market failures to recognize the value of services provided.** It involves a series of payments to land managers in return for their management above and beyond what they would normally provide in the absence of payment with the intention of producing one or more specific ecosystem services. Generally, countries are not conserving sufficient protected areas to preserve ecosystem services over the long term. In addition to insufficient protected area coverage, there are gaps in policies, legislation, and management efforts outside areas designated as protected, where there is a lack of incentives for private landowners to conserve these services. PES schemes can help address all of these hurdles to protect these ecosystem services.

There are **three common types of PES projects: carbon sequestration and storage, biodiversity protection, watershed protection.** More rarely, PES is created to sustain landscape beauty. Sometimes several services can be provided together in a “bundled” payment method, where several ecosystem services feed into one payment for a landowner. Alternately, credits can be sold as “stacked” or “layered,” where the same piece of land can generate separate payment from several credit types for different ecosystem services.

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<sup>6</sup> Greiber, Thomas (Ed). 2009. Payments for Ecosystem Services. Legal and Institutional Frameworks. IUCN, Gland, Switzerland. xvi + 296 pp.

One notable upside of PES is its co-benefits, as the protection of natural resources for one explicit purpose generally has the benefit of protecting other positive externalities. For example, protecting a watershed through a water-focused PES can also store carbon and protect local species. There are also social benefits, as landowners gain income and land management skills. When a payment for one ecosystem service indirectly benefits other service not covered by the payment, it is referred to as “piggybacking” the ecosystem services.

An estimated 63 countries have some level of experience with PES, and these examples include a range of project sizes and focal areas. Countries that have effectively implemented PES at a national level include Costa Rica, Ecuador, Mexico, and to a lesser extent Sweden and China.

## Who Might Participate in a PES System?

Creating a financially sustainable PES system generally involves integrating several different sources of public and private finance. These funding streams can differ in duration, from financing of start-up costs (including stakeholder negotiation and baseline studies) to supporting long-term tariff structures.<sup>7</sup> The chart below describes potential buyers in a PES system and the motivations that tend to drive their interest in this type of project, which can enable a PES program to target their most likely supporters.

<b>Buyers and Motivations</b> From Forest Trends, The Katoomba Group, and UNEP, May 2008.	
<b>Buyer</b>	<b>Motivations</b>
<b>Private Company</b>	<p>Regulatory Markets:</p> <ul style="list-style-type: none"> <li>● Regulatory compliance (e.g., related to greenhouse gas / carbon markets)</li> </ul> <p>Voluntary Markets:</p> <ul style="list-style-type: none"> <li>● Reducing operating and maintenance costs by investing in ecosystem services</li> <li>● Hedging of risks (e.g., maintaining supply of key natural resource inputs, potential future regulation, etc.)</li> <li>● Increasing investor confidence by proactively addressing environmental issues</li> <li>● Enhancing brand and improving public image</li> <li>● Maintaining license to operate 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>● See additional details on Intermediaries on page 5</li> </ul>
<b>Government</b>	<ul style="list-style-type: none"> <li>● Meeting commitments under international policy (e.g., United Nations Framework Convention on Climate Change)</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., floods due to degradation)</li> </ul>

<sup>7</sup> Wunder 2005.

	<ul style="list-style-type: none"> <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>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 (real-estate, etc.)</li> </ul>

**PES Intermediaries**

In addition to buyers and sellers, many PES programs also include an intermediary that serves to link suppliers and beneficiaries of ecosystem services and can have a role in incorporating donors and in the creation and implementation of a PES scheme. Intermediaries can be groups, individuals, NGOs, international agencies, donors, national, regional and local governments, or private companies. Often these groups have experience in PES or specific capacities that they bring to the success of the PES program and the program can be designed to leverage these benefits.

Intermediary roles include:

- Designing payment mechanisms, feasibility studies, management plans and monitoring systems
- Providing scientific advice to project developers
- Collecting data around project indicators
- Facilitating negotiations among all stakeholders, including mediating disputes and representing underrepresented groups
- Building capacity, particularly around land management practices
- Administering the contract or funds
- Promoting information about PES
- Monitoring and evaluating project outcomes as a third party
- Allocating funds and payments, and
- Serving as an intermediary for buying and selling services.<sup>8</sup>

In the table below are some specific examples of the varied roles intermediaries are playing in PES schemes around the world.

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<sup>8</sup> Greiber 2009, Ch.2.

Examples of PES Intermediaries <sup>9</sup>	
Location	Intermediary Role/Obligations
<b>Brazil</b>	<ul style="list-style-type: none"> <li>• The Brazilian state of Amazonas created the Sustainable Amazonas Foundation (FAS in Portuguese), a private nongovernmental institution, to manage the PES program and which aimed to be independent of political interests; it manages the program and provides institutional stability and credibility to attract funds.</li> <li>• Federal ministries and state organizations act as intermediaries for national REDD+ program.</li> </ul>
<b>Colombia</b>	<p><a href="#">Instituto Humboldt</a>, acting as a PES intermediary in Chaina (near Villa de Leyva), prepared this payments-for-watershed-protection-services scheme in which municipal water beneficiaries pay upland farmers to change land-use practices. CIFOR assisted the Institute during implementation to test and adapt different types of incentives.</p>
<b>Costa Rica</b>	<p>National Forestry Financing Fund (FONAFIFO), a semiautonomous agency attached to the Ministry of Environment, buys several types of environmental services as a bundle from local landowners before unbundling them and supplying them separately to a mix of national and international buyers.</p>
<b>Tanzania</b>	<ul style="list-style-type: none"> <li>• NGOs (CARE, WWF)—bring together buyers and sellers, e.g. facilitated agreement between water utility and CARE for payment delivery, and between CARE and village authorities concerning terms for payment.</li> <li>• Village Council—trains partners and monitors activities, transfers payments from village authorities to farmers.</li> <li>• Group of influential government officers from city of Dar es Salaam + PES project implementing unit—prepared business cases for companies in Dar es Salaam, negotiated the Memorandum of Understanding with major water users, developed mechanism for disbursing funds.</li> <li>• Local nonprofit subsidiaries buy carbon offsets from individual farmers and then supply these credits to international investors.</li> </ul>
<b>Ecuador</b>	<p>Trust intermediary &amp; user fees/pooled transaction—regular payments by beneficiaries for watershed protection are channeled through an independent trust fund, the Water Conservation Fund (FONAG). This fund was launched in January 2000 with support from The Nature Conservancy (TNC), USAID and Fundacion Antisana. The total seed capital was US\$21,000 and the trust fund is now \$11 million.</p> <p>Management of the Fund:</p> <ul style="list-style-type: none"> <li>• Managed by Enlace Fondos, an independent private asset manager;</li> <li>• Governed by a Board of Directors with representatives from local communities, HEPs, the national protected area authority, local NGOs, private companies and government;</li> </ul>

<sup>9</sup> Loft, L., Thuy, P.T., Luttrell, C. March 2014. Lessons from Payments for Ecosystem Services for REDD+ Benefit-Sharing Mechanisms. CIFOR Info Brief No. 68.

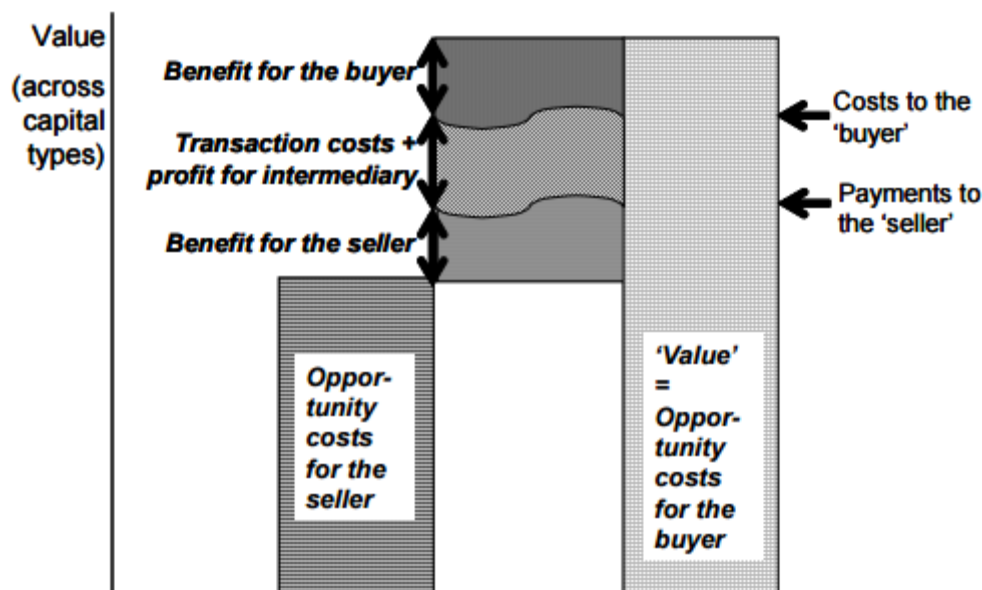
	<ul style="list-style-type: none"> <li>• Legally registered - use of funds will be made in cooperation with the local environmental authority;</li> <li>• Execution of projects funded is done through specialized conservation entities and involves active local participation;</li> <li>• Administration costs are limited to 10% total expenditure. In addition to creating a central funding institution to coordinate watershed protection, users may form user associations to contribute to the fund.</li> </ul>
<b>Indonesia, Thailand</b>	For the Rapid Agrobiodiversity Appraisal (RABA) tool, intermediaries find interested parties (buyers) to make an initial investment for environmental services. This tool has been used in Bungo, Indonesia and North Thailand.
<b>Indonesia</b>	<ul style="list-style-type: none"> <li>• Multi-stakeholder forum (Forum Komunikasi Cidanau)—manages funds, facilitates contracts with farmer groups, monitors and verifies rehabilitation activities, raises awareness of PES among potential buyers in the surrounding industrial area.</li> <li>• Ad hoc team of the Forum Komunikasi Cidanau, consisting of representatives of government institutions at provincial and regional level in watershed area plus an NGO—facilitates the scheme: (i) managing the payment of PES funds from the buyer to the farmers for their rehabilitation and conservation activities; (ii) supporting planting on private farms involved in the PES project; (iii) encouraging other potential buyers to join the scheme; and (iv) advocating the integration of the PES scheme in the provincial and district governments' environmental management policy.</li> <li>• Local representatives and research institutions—build capacity of local communities by developing institutions at relevant scales.</li> </ul>
<b>Nepal</b>	<ul style="list-style-type: none"> <li>• Local intermediary for Sardu Watershed: A PES Board was created as an intermediary, and includes members from: Watershed Conservation &amp; Management Committee, Resource Mobilization &amp; Monitoring Committee, and Dharan Municipality Water Supply Management Committee.</li> <li>• IUCN and its partner Centre for Environment and Tourism Development Dharan served as intermediaries until the platform was capable of sustaining the PES scheme.</li> </ul>
<b>Vietnam</b>	<ul style="list-style-type: none"> <li>• Provincial authorities from Forest Protection and Development Fund, managed by the Provincial Department of Agriculture and Rural Development (DARD) and monitored by the Provincial Finance Department—provide guidance and approve proposals on planning and implementation of PES.</li> <li>• PES management boards are established at district to village level with representatives from DARD and departments of finance, planning, and investment—monitor and verify the quality of forests, sign contracts on forest protection with forest owners, distribute payments.</li> <li>• Provincial authorities—measure economic value of ecosystem services; identify buyers and sellers, establish organizational and institutional structures for the distribution of payments.</li> </ul>



## The Business Case

For a PES scheme to be accepted, **it's vital to ensure that beneficiaries and stakeholders perceive the same level of resource scarcity and resource value** as lawmakers and policymakers do. Otherwise, the beneficiaries whose payment is essential to the success of the PES scheme will resist paying for a resource that has always been seen as free. Therefore, it's imperative to have a **business case** to drive demand. It's also important to agree on specific and tangible **metrics** so that beneficiaries know what they are paying for and what they are receiving in return for their payment. Reliable and good quality data is vital for policymakers to see the need for PES and for buyers to see its impact.

Finding the right price point for a resource is essential, and one of the first steps in creating a PES scheme is to gather information through an economic study on the overall worth of the good being provided, whether it's water, carbon, biodiversity, or something else. The results of these studies generally put the worth of the ecosystem service at a much higher price point than payers are willing to pay. This is the foundation of the business case for requiring payment via a PES program but also requires a negotiation for providers and sellers to agree on a fair price. This process will create a greater understanding among beneficiaries around the benefits they can receive from this type of policy mechanism, and more importantly, go a long way in having beneficiaries internalize the value of the resource in question so the process is more politically resilient.



**“Schematic representation of the value chain: if the opportunity costs for the seller exceeds the opportunity costs for the buyer + unavoidable transaction costs, no transaction is likely to take place; if there is space for negotiations, the benefits will be shared between buyer, intermediary and seller, depending on their strength in the negotiations.”**

*Source: van Noordwijk et al 2007*

Governments, usually Environmental Ministries, have a role to play here, as negotiations don't happen naturally and need oversight to ensure the process remains fair and transparent. If the process is transparent and the beneficiaries are fully bought into the value of the policy, there will also be more support to the PES mechanism when it's implemented.

In the initial process of determining if PES is the right mechanism in a given area, it's essential to evaluate if the value of service exceeds the service provider's opportunity costs. Sven Wunder notes that a PES system is likely to be most cost-effective in a middle range of activities, where it's marginally more profitable than the desired land use. “For less profitable activities, PES is likely to be irrelevant; for substantially more profitable

activities, finite funding tends to fall short of the compensation needed.”<sup>10</sup> PES works best at the margin, where additional input can change land use to more sustainable practices without incurring high costs.

## **PES and Other Conservation Agreements**

There isn't consistent agreement on how PES relates to other conservation agreements, which are defined as formal or informal contractual arrangements that aim to achieve conservation goals in which one (or more) parties voluntarily commit to take certain actions, refrain from certain actions, or transfer certain rights in exchange for one or more other parties committing to deliver explicit direct or indirect economic incentives. Strong overlaps exist between this definition and that of PES cited earlier. PES could be considered a subset of conservation agreements, as both provide a certain benefit in exchange for some kind of land management. Difference arises in that a conservation agreement can be much more informal than PES, and the conservation goal need not be tied specifically to a human-centric ecosystem service that benefits human well-being as it is with PES.

REDD+ is defined as a set of activities that reduce emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks. REDD+ activities are acceptable for meeting mitigation commitments under the United Nations Framework Convention on Climate Change (UNFCCC) under the Paris Agreement. It is possible for countries to carry out these activities on public lands under their domain; they can also either mandate or provide paid incentives to private or communal landowners in their countries to carry out these activities. Some argue that REDD+ is separate from a carbon PES because of its established international guidelines, but in fact follows the same strategic framework as national carbon PES projects. The preparation and piloting of REDD+ is often the same as with PES.

## **Conclusion**

Successful PES projects are responsive to local circumstances while maintaining alignment with best practices, particularly around stakeholder engagement and transparency. These basic building blocks of a successful PES scheme can be considered as we look at national level implementation and see how these basic structures can be effectively expanded at the national level.

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<sup>10</sup> Wunder 2005.

# NATIONAL FRAMEWORKS AND POLICIES

The aim of this section is to determine and examine the necessary legal, policy and institutional frameworks to enable sound implementation of a national scale Payment for Ecosystem Services (PES) scheme.

Countries embarking on the path to establish a national PES system have the option of adopting a specific PES law or building their program from a mix of existing policies. Creating a PES-specific law and integrating it into a country's existing legal framework has the advantage of creating a coherent and predictable policy to apply to PES projects and of bringing visibility to the fact that a PES program is now active in the country. However, this approach is not yet a common practice, and just a few countries such as Costa Rica and Argentina have taken this route. Most countries choose a mix of existing policies. In part this may be due to the hurdle of potentially overcomplicating a country's legal framework by adding to existing environmental laws. An effective legal instrument would need to consider and integrate other environmental laws in a country to maintain coherence and avoid legal conflicts.<sup>11</sup>

Creating a PES program at the national scale can be a challenge if not building on some existing projects or sectoral level experiences and the policies that have been developed to support them. These smaller scale efforts help to build capacity in a country and can inform the creation of a national framework. This may also contribute to the common approach of creating PES programs based on a mix of existing laws.

As an alternative to creating a new PES law or adding to an existing legal framework, some countries choose to develop national level guidance on PES, and Rwanda is one such example. These countries have published national-level PES guidelines to inform and steer projects in their country, but without establishing a national mechanism and leaving sub-national projects to determine their own financing options. Countries with national guidance in place are likely to have more project protections in place than those with stand-alone projects and their approach may be more streamlined, but this guidance does not necessarily lead to the creation of a national PES program. Importantly, the additional guarantee of national policies and government support that exist in a truly national program makes it easier to find sustainable sources of financing for PES activities in a country.

We have drawn from research, case studies and CI program experience to identify critical policy and design elements that need to be considered when creating a national level PES system. We begin by discussing foundational policies for PES arrangements, including the essential legal frameworks that need to exist for a PES system to be put in place. We then cover key elements of PES program design that should be captured in the policies establishing the program to ensure effective and efficient implementation of a national level PES scheme. These include structuring the pricing, funding, and monitoring of national systems. Throughout we use examples drawing from research to illustrate how these policy considerations have been addressed in multiple countries.

## Foundational Policies

There are certain policies and laws or institutional arrangements that need to be in place for most PES schemes to work at any scale. Without these policies in place, the core elements of PES such as demand for a service, a clear seller of that service, and arrangements for exchange of payment cannot be counted on. Examples of these foundational policies include contract law and property rights.

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<sup>11</sup> Greiber 2009, Ch. 3.

## 1. Regulatory framework to drive demand

PES schemes are successful when there is some “willingness to pay” for the ecosystem service. Sometimes this willingness exists in theory but is difficult to translate into sufficient flows of funding in reality. This is particularly the case when an ecosystem service is “non-excludable,” meaning that it is difficult to prevent someone from enjoying the ecosystem service even if they have not paid for it. Biodiversity and carbon sequestration to help minimize climate change fall into this category.

In order to create a successful PES scheme for these types of public, non-excludable services, it is necessary to put some kind of regulation in place to drive demand.<sup>12</sup> A PES scheme works best when a source of an ecosystem service is at risk of degradation by one group(s) and the service itself is of some value to another group(s). Mandating the maintenance or limiting the degradation of the source of the ecosystem service creates the supply, and requiring payment for the ecosystem service provides buyers and demand for that supply. For example, if the ecosystem service is water provision and a forest is the source of that water provision, then regulation must be put in place to prevent destruction of the forest and then charge water users a fee for the maintenance of the forest that provides the water they use.

Mandating the maintenance of certain ecosystems to prevent their destruction can provide the foundation of a PES system by ensuring that there is supply of the service to be offered. Such “inventories” of priority ecosystems for maintenance are given due consideration, for example, in the General Environmental Law of Peru, as well as in different planning instruments in Colombia.<sup>13</sup> Building on this foundation, regulations can take the form of mandating a tax or fee for a service to ensure that there are sufficient funds flowing to pay for maintaining that ecosystem service.

A policy can establish rights or quotas for impacting the ecosystems targeted by the PES scheme that can then be exchanged, sold, or leased. This is known as a “cap and trade” system because it establishes an upper limit or a cap on permissible levels of impact on an ecosystem, and credits can be issued to those who restore or protect the ecosystem, keeping negative ecosystem impacts to sustainable levels. These credits can then be sold to another party who is unable to reduce their negative ecosystem impact as an offset.<sup>14</sup>

Such trading schemes are usually rather complex, requiring for example:

- A clear definition of those activities that have a negative impact on ecosystem services and thus lead to obligations to offset these impacts;
- The development of transparent standards to quantify the unit of exchange (e.g., based on their actual value and/or function, or based on the size and/or geography of the concerned land);
- A determination of units of restored, created, enhanced, or preserved ecosystem services which will be converted into tradable credits;
- The establishment of procedural frameworks for opening, managing, and closing offset banks, for protecting the resulting ecosystem services in perpetuity, and for ensuring fair trade of units;
- The creation of insurance and liability systems to guarantee long-term offsetting and stewardship success; and so on.

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<sup>12</sup> Jack, B.K., Kousky, C. and Sims, K.R.E. 2008. “Designing payments for ecosystem services: Lessons from previous experience with incentive-based mechanisms.” *PNAS*, 105(28), pp. 9465-9470.

<sup>13</sup> Griebler 2009, Ch.3.

<sup>14</sup> *Ibid.*

## 2. Property and land tenure rights

In order to ensure that landowners are engaged in a PES scheme, property rights need to be clearly delineated. Rights following from ownership can be distinguished by, first, the use rights to access land; second, control rights for making decisions about natural resource use; and third, transfer rights to transmit land to others to reallocate use and control rights.<sup>15</sup> In most PES scenarios the buyer will pay the seller for either a unit of the ecosystem service or for certain land use management that is assumed to deliver the desired ecosystem service. For a PES scheme to succeed it must be clear that the seller has all of the rights and therefore can enter into a contract to sell the ecosystem service/land use and deliver the units being paid for. It also must be clear that no other potential owners will come along and claim payment for the ecosystem services.

In order to provide this clarity, many PES schemes require that anyone wishing to sell ecosystem services in a PES scheme hold certain property rights in order to participate. This requires that a country have a clear system of land tenure in place, as without clear land tenure it is difficult for buyers to have sufficient confidence in the system to make payments.

**Example:** In Ecuador the Program for North Border Sustainable Development, financed by IDB, was implemented in the northern Amazon Region with an objective to standardize and manager land tenure to support the conservation of Cuyabeno Wildlife Reserve and its ecosystem services. The landowners received support in accessing to their land titles on the condition of implementing a management plan to use and conserve their forests. Over the course of 18 years the deforestation rate slowed significantly.<sup>16</sup>

In many countries, however, great uncertainty regarding property titles may occur, if their granting is subject to a complicated or highly bureaucratic regulation process or if there are questions around property rights of indigenous peoples and other marginalized groups. If such processes prove to be costly, slow and cumbersome, property titles might be envisaged by statutory law, but not exist in practice. Another common property rights problem in practice is unclear borders. Even if an actor holds a formal title to land, the precise size and borders of the land may not be determined, given the prohibitive cost of engaging surveyors.<sup>17</sup>

**Example:** A country may have a good tenure system, but the realities of local landowners having title deeds may be different, and it's essential to ensure the policy in place translates to the reality on the ground. For example, in Kenya, an intermediate type of proof of land tenure called "allotment letters" are given out by the local chief. They provide a proof of ownership to the land to the person claiming the land, but may not be strong enough to warrant the legal basis for a payment.

In cases where clear land tenure does not exist to an appropriate level in the country then there are a few options for addressing this so that a PES system can be successful at national level:

- A PES system can recognize formal (statutory and created by law) or informal (customary or traditional) rights to land tenure. This requires defining what those rights are, who has the authority to recognize them, if such rights need to be registered, and so on.
- As it may not be clear who holds certain rights, it might be advisable to develop rights inventories or registers and regulate their permanent updating.
- Legal and technical support needs to be available to provide neutral guidance for navigating the approach, particularly for vulnerable communities.

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<sup>15</sup> Food and Agricultural Organization of the United Nations, 2002. Land Tenure and Rural Development. FAO Land Tenure Studies 3. Rome.

<sup>16</sup> Holland, M. et al. 2014. World Development. Volume 55, March 2014, Pages 21–36.

<sup>17</sup> Griebner 2009, Ch. 4.

In most countries ecosystem services themselves have not been regulated, implying that property rights over the land include property rights for the ecosystem services produced by that land. (This includes less tangible services such as carbon, and the lack of defined rights over this type of service may create complications in the future, especially as possible national scale activities for climate like REDD+ evolve.) It is possible, however, to legally separate the ownership rights to an area of land from the right to use the natural resources on that land or the ecosystem services associated with the land, which could be an important distinction for PES schemes.<sup>18</sup>

**Example:** In Peru, the state is the owner of natural resources and holds the property rights over ecosystem services. The state can transfer certain property rights over natural resources to individuals. Questions remain, however, as it is not yet clearly regulated whether these rights also comprise the right to receive income from the ecosystem services which are provided by the transferred natural resources.

**Example:** In Mexico's National PES Program, the existing legal frameworks that consider water sources like aquifers to be national property are a notable element of success for the National Program for Hydrological Environmental Services (PSAH) by bringing it into the public sector. This enables Mexico's National Forestry Commission (CONAFOR) to charge for water use and compensate landowners for maintaining ecosystems.

### 3. Contract rights/law

Many PES programs are built on some kind of contractual arrangement between buyer and seller, even if the primary buyer is a government entity. This requires that some sort of established contract law be in place, specifying the rights of each party to a contract in order to give both buyers and sellers peace of mind on the terms of their agreement.<sup>19</sup> This type of contract law will normally include the objectives and obligations, participation mechanisms, the monitoring and verification provisions, payment structure, and timeframe of the project to ensure the implementing landowner is informed of his or her contractual obligations.

This approach requires a legal system based on *pacta sunt servanda*, a basic legal principle of civil and international law meaning "agreements must be kept." Contract law in a country generally includes three elements:<sup>20</sup>

1. Requirements regarding contract form and enforceability. There must be an agreement (consisting of an offer and a subsequent acceptance), consent must be free and without coercion, the contract form must be established (i.e., decisions on whether it must be in writing and must be signed), and the contract must not infringe on existing laws.
2. Rules on legal capacity. Parties must have an established legal capacity to enter into contracts (e.g., proof of land ownership, full mental capacity), and provisions must be established that do not allow a party to choose another country's law (parties must agree on which one country's laws will govern the contract) to govern the contract.
3. Establishment of a sanction system, which can be applied in instances of a party's violation of its contractual obligations. Enforcement of a contract requires the existence of a sanction system that provides access to legal recourse to address non-compliance.

Beyond having the basis of contract law in place, there also should be a general respect for rule of law and low levels of corruption.<sup>21</sup>

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<sup>18</sup> Griebler 2009, Ch. 4.

<sup>19</sup> Wunder, Sven. 2008. Necessary Conditions for Ecosystem Service Payments. Conference Paper: Economics and Conservation in the Tropics: A Strategic Dialogue.

<sup>20</sup> Mäntysaari, Petri. 2009. The Law of Corporate Finance: General Principles and EU Law. Volume II. Contracts in General: The Legal Framework.

<sup>21</sup> Griebler 2009, Ch. 3

**Example:** The Costa Rican PES model is based on contracts, allowing property owners to enter into contracts with the government. Contracts in Costa Rica are governed by the national Código Civil (Civil Code).<sup>22</sup> Key elements of Costa Rican contract law include:

- The consent of both parties must be free and clearly stated, and the contract is voidable if consent was given by force, fear or deceit;
- Contracts have the force of law between contracting parties;
- Both parties are obliged to fulfill the terms of the contract;
- Neither party can unilaterally change the contract;
- The contract must allow for the parties to appeal to the community courts if necessary; and
- Neither party can withdraw its contractual obligations without justification or without due consideration.

## Design Policies

The policies, laws, and institutions that need to be considered in implementing a PES program may differ depending on design of the program — for example, whether the program functions with intermediaries or not will change the details of the necessary framework. Some basic elements need to be considered and included in some way for all situations to establish basic parameters such as clear roles and rights, the scope of the program and how payments will be made.

This can be achieved through a single policy or law or by combining multiple instruments, including a mix of new and existing laws or policies. Countries often have existing laws that can be interpreted to regulate PES programs and these can be a strong foundation to build on. However, a new legal framework to ensure integration of existing approaches and, importantly, to give legal certainty to PES transactions and incentivize participation is usually needed.

Need for and Role of PES Legal Frameworks <sup>23</sup>		
Type of PES Scheme	Need for Legal Frameworks	Role of Legal Frameworks
Private PES scheme	Medium to low	<ul style="list-style-type: none"> <li>• Promote a nested approach</li> <li>• Scale up from local to regional/national level</li> </ul>
PES trading scheme	High	<ul style="list-style-type: none"> <li>• Create trading scheme</li> <li>• Regulate complexity of trading system</li> <li>• Control/supervise the market</li> </ul>
Public PES scheme	High	<ul style="list-style-type: none"> <li>• Promote PES development</li> <li>• Create legal certainty</li> <li>• Ensure good governance</li> </ul>

**Example:** In Bolivia, sectoral laws include economic instruments, which can be interpreted as a basis for PES development. At the same time, the use and implementation of these instruments is hampered by

<sup>22</sup> Civil Code Book Four: Contracts and Quasi Contracts and Crimes and Quasi Crimes as a Civil Obligations Cause. Retrieved from <http://www.cendeisss.sa.cr/etica/codcivil.pdf>.

<sup>23</sup> Chart from Greiber 2009, p.16

contradictory policy approaches and legal interpretations, which result in a clash between agricultural and forest conservation policies. A new framework is needed to clarify the legal details in order to have a successful national PES system.<sup>24</sup>

## 1. Purpose and Scope

PES schemes work best when they are linked to national priorities and integrated into existing policy and legal systems. Any policy or legislation for PES should specify a purpose — for example, the “right to a clean environment, to acknowledge the economic and social value of ecosystem services, to mobilize additional financial and human resources for sustainable development, to promote co-management of natural resources, etc.”<sup>25</sup> A clear statement of intent allows for an understanding of how the PES scheme relates to existing policies, laws and programs.

This will also help to establish agreed terminologies and to make clear which unit in question can be bought and sold under a PES scheme. For example, a PES scheme might allow for compensation of a measurable unit of an ecosystem service, such as tons of carbon, or it might provide compensation for a land use that serves as a proxy for the ecosystem service, such as forest conservation. Because it can be difficult to measure the impact of the PES system, hectares of land have often been a proxy measurement for individual ecosystem services, such as in Costa Rica, as it’s an easier indicator to track and quantify.

**Example:** In 2008, the Ministry of the Environment of Ecuador (MAE) approved the Programa Socio Bosque (Forest Partners Program) to address both forest conservation and development/poverty alleviation objectives by targeting poor farmers and indigenous communities to receive benefits for conserving forests. It was launched as part of the National Development Plan to address both forest conservation and development/poverty alleviation objectives.

## 2. Price, method and type of payment

A successful PES system will require agreement on a price that all participating parties feel is a fair price for and a sufficient incentive to deliver the ecosystem service in question. The price, or a clear formula for establishing the price, must be specified. Different possibilities exist for setting the exact payment price, from reverse auctions (where sellers compete to obtain business from the buyer) to simple negotiation processes.

When considering this structure of PES financing, differentiated or non-differentiated payments can be applied to best respond to the aims of the PES program - that is, whether benefits and payments are adjusted by recipient or distributed uniformly. A non-differentiated, or flat, payment structure may be seen as more equitable and is often easier to implement. However, a differentiated payment structure can be more responsive to differences in types of ecosystems and take into account varying participation costs and project co-benefits.<sup>26</sup> Additionally, differentiating payments by the type of buyer (for example, having an industry like a hydroelectric company pay more for water usage than individual homes and farms) can reduce tax burden on poorer households or in developing countries. It can, however, be difficult to find quantitative indicators to allow for payment differentiation.<sup>27</sup> Setting this price also generally includes a cost-benefit analysis to compare the advantages of implementing a PES system in comparison to other actions that could be taken to protect ecosystems.

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<sup>24</sup> Greiber 2009, Ch. 3.

<sup>25</sup> Greiber 2009, Ch. 3.

<sup>26</sup> Greiber 2009, Annex II.

<sup>27</sup> FONAFIFO, CONAFOR and Ministry of Environment. 2012. Lessons learned for REDD+ from PES and Conservation Incentive Programs. Examples from Costa Rica, Mexico and Ecuador.



In addition to setting a price, or a method for establishing a price, the details of type of payment need to be determined. Payment can take the form of cash or deposits into a bank account, cash-value vouchers, dedicated vouchers (redeemable for, e.g., agricultural goods), income tax credits, or in-kind payments such as technical assistance (e.g., land management training) or materials (e.g., barbed wire). In Bolivia, participating communities have received in-kind payments of bee boxes—which provide a long-term economic opportunity and serve as a visible display of the benefits of PES.<sup>28</sup>

The timing of payment and the duration of the agreement are also important to determine. Payments can be made at the beginning of the agreement (front-loaded), upon completion of the terms of the agreement (back-loaded), or periodically throughout the agreement’s duration based on the achievement of established milestones.<sup>29</sup> Duration of PES agreements is typically between five and ten years, with options for renewal for subsequent contract periods upon demonstration of success. To ensure sustainability and permanence of the gains made in ecosystem conservation, contractual elements can include the extension of land management requirements beyond the PES payment period.

**Example:** In Costa Rica, an initial payment is made to the landowner upon signing the contract, and further payments are made periodically upon verification of the landowner’s compliance with the land management plans. Reforestation contracts are designed to reforest land that was previously degraded. Payments occur annually for five years, but the terms of the contract require participating landowners to maintain the reforested area for fifteen to twenty years.<sup>30</sup>

### 3. Monitoring

Success of any PES system depends on ensuring delivery of the ecosystem service in question, and monitoring is an important way of verifying delivery. A large-scale PES system, such as one operating at national scale, will need to establish a monitoring system. Monitoring can consist of periodic evaluation and reporting by assigned public institutions through a combination of field checks, satellite imagery, and GIS mapping. Discovery of violations triggers agreed-upon non-compliance penalties such as withholding of payments until corrective action is taken or even termination of the PES agreement.<sup>31</sup>

### 4. Enforcement

Establishing a monitoring system provides information on the success of the program overall as well as the individual performance for each seller to be paid accordingly in the case of a differentiated payment system. A monitoring system can also help to deter non-compliance. PES violations should be defined and flexible response measures for violations should be determined in the legal framework for the PES program. A dispute settlement mechanism should also be established; this can “comprise administrative, judicial and/or alternative dispute-resolution systems, such as arbitration, mediation or special water-related tribunals.”<sup>32</sup>

Assigning specific institutions to monitor compliance with the terms of the PES scheme is important to ensure an efficient system. This requires the determination and clear definition of the investigative powers given to these institutions. Regulating their accountability and transparency through access to information, public participation as well as periodical auditing processes is significant. Some kind of registry system of PES projects

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<sup>28</sup> Griebler 2009, Ch.6.

<sup>29</sup> Ibid.

<sup>30</sup> Steed, B. Fall 2007. Government Payments for Ecosystem Services – lessons from Costa Rica. *Journal of Land Use*, Vol. 23:1. Pp. 177-202.

<sup>31</sup> Griebler 2009, Ch. 6.

<sup>32</sup> Griebler 2009, Ch. 3.

and contracts is one option for transparency and compliance, but this runs the risk of burdensome regulation and should depend on national context.<sup>33</sup>

Finally, both the buyer and seller need to be sure the legal system can and will effectively and fairly enforce sanctions for non-compliance. Many of these issues are, at root, questions around whether there is confidence in a national context of a landowner's property rights.

**Example:** In Brazil's Project Oasis, non-compliance in the form of observed environmental degradation — such as building a road through the conserved land — is reported by the monitoring institution O Boticário Foundation's Environmental Assessment Commission. The non-complying landowner is informed, and must respond within three to fifteen days by completing actions identified in the assessment report. If this is not completed to the satisfaction of the Commission, future payments are withheld or the contract can be completely annulled.<sup>34</sup>

## 5. Funding

A sustainable source of funding needs to be determined for any PES scheme; these can include financial instruments such as taxes, tax exemptions, and fees. All of these should be identified in the legal framework for a PES scheme and should be supported by appropriate and transparent legislation.

**Example:** The Amazonas State directs at least 50% of the income from its protected areas (including environmental fines and visitor fees) toward conservation initiatives like its Bolsa Floresta program.<sup>35</sup>

When considering sustainable sources of PES funding, an existing tax or fee can be redirected to PES, or a new fee could be introduced, accompanied by legal regulations to ensure funding is correctly distributed. Most large-scale programs collect funds from one or more sources and distribute them from a central fund or account to the sellers of the ecosystem service. External funding is also possible through international PES payments. **Sustainable financing will be most effective if PES policies can be integrated with existing administrative processes** for fund disbursement, registration, and project monitoring.<sup>36</sup> National programs which distribute the costs of implementation over a number of programs and private sector actors are able to increase the policy's financial stability.

The location and allocation of the funds and institutional responsibility for managing them should be defined in the legal framework. However, transparency is key to address potential corruption issues. To ensure long-term sustainability, the finance structure also needs to consider how to fairly distribute funds between management and transaction costs and to land managers. A legal framework may also need to provide the authority for a public entity to be authorized to take legal actions such as signing contracts as a participant, thereby committing public resources to the project. For transparency purposes, this use of public funds should be monitored by a clearly acknowledged independent party.

The chart on the next page gives an overview of different types of funding and examples of their use in areas around the world.

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<sup>33</sup> Griebner 2009, Ch. 3

<sup>34</sup> Griebner 2009, Ch. 6

<sup>35</sup> Griebner 2009, Ch. 3

<sup>36</sup> FONAFIFO, CONAFOR and Ministry of Environment, 2012.

## Financing PES Programs

Adapted from TEEB - The Economics of Ecosystems and Biodiversity for Local and Regional Policy Makers (2010).

Type of Funding	Location	How it works
<b>Voluntary contribution</b>	Mexico (Coatatepec Municipality in Veracruz)	Recognizing the link between deforestation and water scarcity, domestic and commercial users may voluntarily contribute funds (about US\$0.09 per month) through their water bill to finance watershed conservation. (Mexico's National PES Program (PSAB) was launched in 2003 using a similar structure, an allocation of US\$20 million from water-fee revenues.)
<b>Annual fee</b>	Indonesia (North Sumatra district)	PT INALUM, an aluminum smelter and hydroelectric producer, pays an annual fee to the North Sumatran district government. The fee covers investment in the rehabilitation of critical lands in five districts within the catchment areas of the Lake Toba, where the company draws its water for hydropower generation.
<b>Endowment fund</b>	Brazil	The Bolsa Floresta Program rewards traditional communities for their commitment to stop deforestation. The funds are generated by the interest on a core fund first established with contributions from Amazonas Government and Bradesco Bank. Funds are paid to families and income generation activities.
<b>Share of water charge</b>	Japan (Aichi and Fukuoka Prefectures)	Urban residents pay a fee per ton of water usage, which goes into a fund to protect source forests and implement partnership programs to improve cooperation between government entities.
<b>Watershed protection fee from industry</b>	South China (Xingguo County)	The 'Household Responsibility' system requires that industry pays a share of their sales revenue to support tree-planting and management for soil conservation. Sample rates are, by industry: chemical 3%; metallurgy 0.5%; coal, 0.1 Yuan/ton produced; hydropower, 0.001 Yuan/kWh.
<b>Certificate for environmental services</b>	Costa Rica	Individuals or organizations purchase certificates to pay for environmental services (1 certificate = 1 ha of forest set aside for conservation). Buyers can specify how they would like their funds invested or let the National Forestry Finance Fund decide. Contributions are tax-deductible.
<b>Ecological sales tax</b>	Brazil	Funds raised through sales tax are allocated by ICMS Ecológico (a common name for initiatives launched by several Brazilian states) to municipalities depending on their support and maintenance of protected areas or their level of municipal sanitation infrastructure.
<b>Public Funds</b>	Ecuador	The Socio Bosque program is fully financed through public funds designated yearly by the National Secretary for Planning and Development, as the program also has an objective to fight poverty. The Ministry of Environment also offers opportunities

		for national and international public or private stakeholders to contribute funds.
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## 6. Transparency

Some conditions for success are difficult to meet via a legal structure, especially if the political will for enforcing a legal structure is absent. Issues of corruption and creating trust are key examples; mutual trust between service users and providers is needed to move a project forward, but is difficult to build if the political climate isn't conducive to participants having confidence in legal systems. In this case, often the design of the program itself can help to create conditions for success without having to eliminate the problem of corruption throughout the entire government system.

When it comes to the funds for a PES system, it can be beneficial to have an oversight body with representatives from all stakeholders to ensure transparency and accountability, especially when there is risk of corruption. Independent oversight increases transparency of fund management in situations where corruption may create mistrust and reduce willingness to buy.

## 7. Leakage

PES can change the practices of individual landowners or actors in a local community or even a country to support crucial ecosystems, but it may not change the actions in neighboring areas. Indeed, if not evaluated carefully, destructive practices in an area protected under PES may simply shift to another area, a phenomenon known as "leakage". Monitoring both project progress and issues in the surrounding area can help determine how the project is affecting nearby areas. Larger PES projects also tend to have fewer issues with leakage than smaller, localized projects as national-scale guidelines and monitoring are likely to also cover areas where leakage may occur.<sup>37</sup>

PES is meant to work in concert with existing laws and incentivize environmental actions that would not otherwise occur, but it is not a replacement for consistent implementation of environmental management in other sectors.

## Institutional Framework

Policies and laws become action when they are carried out by the institutions mandated to enact them; therefore, the effective and efficient implementation of a PES scheme requires an enabling institutional framework. When setting up a national PES system it is possible that new institutions will need to be created or existing ones may need to be adjusted to minimize overlap and build on existing strengths. Establishing the legal scope, powers, and responsibilities of these institutions and ensuring their integration and collaboration within an existing national framework require dedicated policy decisions in concert with the implementation of a PES scheme.

The following institutional functions need to be distinguished:

- Supporting PES project development (e.g., scientific research and project planning);
- Collecting and managing financial resources
- Managing participation, access to information and conflict resolution (e.g., capacity building, stakeholder dialogues, facilitation of negotiations);
- Monitoring compliance (e.g., contractual obligations, management of public funds);
- Enforcing laws, regulations and contracts;

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<sup>37</sup> Smith, S., Rowcroft, P., Everard, M., Couldrick, L., Reed, M., Rogers, H., Quick, T., Eves, C. and White, C. (2013). Payments for Ecosystem Services: A Best Practice Guide. Defra, London.

- Coordination of the whole program across institutions and levels of government.<sup>38</sup>

Assignment of specific functions and powers is important to ensure clarity and efficiency in the program; however, coordination across different institutions is crucial for success. The following actions may help to improve institutional coordination:

- Establish cross-sectoral linkages – ideally, public institutions with similar responsibilities should be consolidated;
- Ensure subsidiary public and private institutions are held to common principles and visions (national governments and institutions that represent a geographic area are better placed to undertake visioning exercises and develop joint policies); and
- Formalize communication channels between different authorities and agencies – ideally, communication should be institutionalized via a formal agreement or memorandum of understanding.<sup>39</sup>

**Example:** In Bolivia, fragmentation, decentralized expertise, and poor coordination among entities is an issue for watershed PES. Although there are three ministries involved in the running a PES scheme for watershed management, the division of responsibilities among the ministries has been criticized, especially because of uncertainty over environmental responsibilities. This has led to the deforestation of important extensions of upstream forests in the Santa Cruz valleys, causing water problems for downstream communities.<sup>40</sup>

Aside from a functional and efficient institutional structure a commonly cited prerequisite for successful PES projects is the presence of appropriate institutional capacity.<sup>41</sup> Whatever the institutions designated to carry out the roles specified above, they must have the appropriate capacities to do so or the PES program is likely to struggle. The capacity to manage large sums of money in a responsible and efficient manner is a common example of a capacity gap for implementing a PES system.

## National Level Case Study: Integrated PES in Costa Rica

Costa Rica, one of the earliest adopters of the PES policy approach, has been the most successful in national-level implementation of PES, and has structured the system to be notably more financially sustainable than most systems. While there are a number of case studies that can be reviewed for projector local level results, the policy framework in Costa Rica is one of the few that can be studied to determine **how multiple national- and regional-level PES policies can be structured to address crucial environmental externalities.**

Forest cover in Costa Rica declined from 70% in 1950 to 20% in 1987. It has since recovered to 52%. The PES program was introduced by the new Forestry Law 7575 in 1996, which banned all conversion of existing forests and introduced the payments for reforestation, conserving and managing forests on private properties. Costa Rica's PES program has helped to conserve nearly one million hectares of forest by payments for protection (90%), reforestation (6%), sustainable management (3%) and more recently regeneration (1%).<sup>42</sup> The program covers all three common types of PES projects (carbon sequestration and storage, biodiversity conservation, watershed protection) as well as landscape beauty by providing payments for each.

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<sup>38</sup> Adapted from Greiber 2009, Ch. 5.

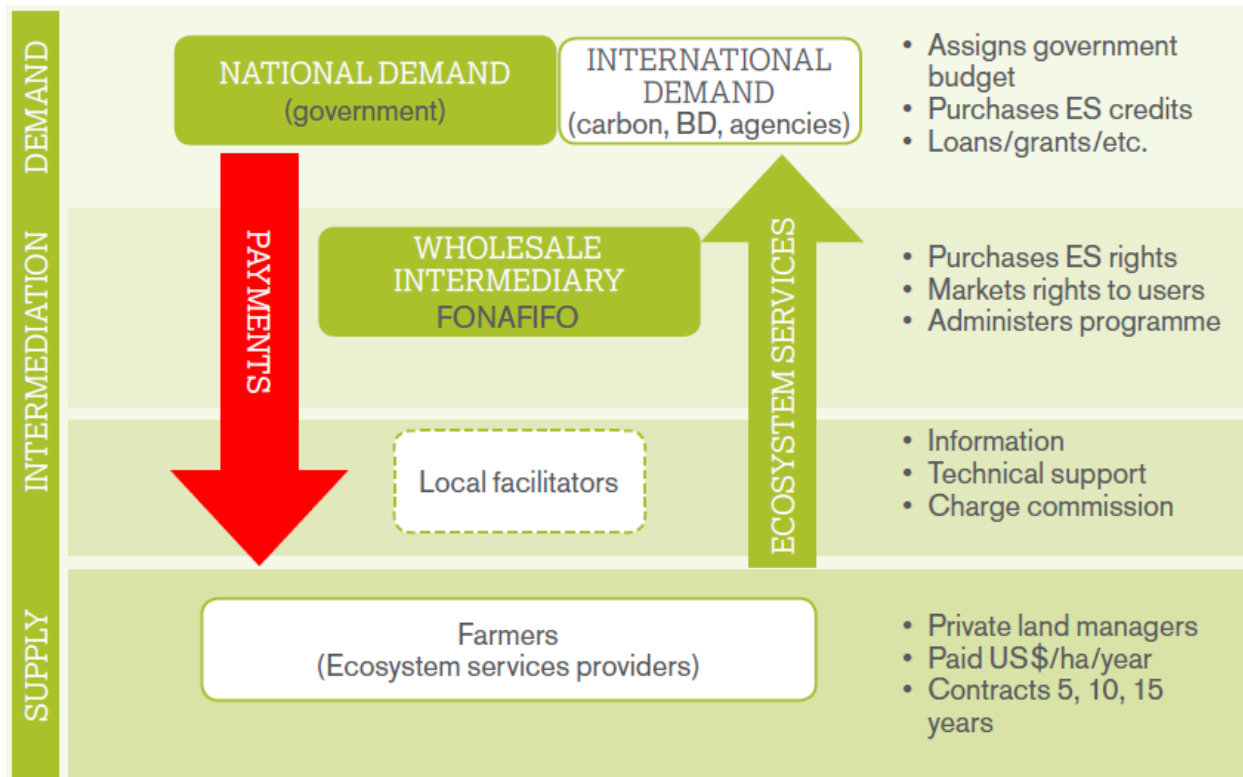
<sup>39</sup> Ibid.

<sup>40</sup> Griebler 2009, Chapter 2.

<sup>41</sup> Wunder 2008.

<sup>42</sup> Porras, I., Barton, D.N, Miranda, M. and Chacón-Cascante, A. 2013. Learning from 20 years of Payments for Ecosystem Services in Costa Rica. International Institute for Environment and Development, London.

Costa Rica has pursued a form of PES where the mechanism takes the form of a private transaction between suppliers and users, where **the government designs the system by creating the rules, capacities, and framework**. The National Forestry Financing Fund (FONAFIFO) is the primary intermediary administering the PES program. It signs land use contracts with forest owners and monitors compliance through local forestry technicians and forestry organizations. Landowners give over the rights to the ecosystem services to FONAFIFO, which then sells these credits to buyers. Private sector buyers purchase Certificates of Ecosystem Services and are able to choose which ecosystem they are investing in. Between 1997 and 2012, FONAFIFO distributed approximately US\$340 million.



**Structure of Costa Rican PES Program (Porras 2013)**

The program was established using a loan from the World Bank for forest protection (Ecomarkets 2000-2006), which was co-funded by the GEF and the national government. The initial government funding came in part from a tax on fossil fuels and forestry trust funding. Current funding includes tax revenues (mainly through water tariffs, fossil fuel taxes, and conservation trusts), voluntary deals with private companies (particularly hydroelectric companies who would benefit from sustained water supplies) and loans and agreements through international banks and bilateral donors. FONAFIFO has also diversified funding sources by developing financial mechanisms to promote matching funds from individuals, public, and private actors.

As an example of how the system works, in its watershed PES, Costa Rica started a water market payment system to regulate water flow for hydro electricity generation. Payments to landowners were made by a utility company through a local NGO; these payments were supplied by government funds. Landowners who protect their forests receive \$45/ha/yr; those who sustainably manage their forests receive \$70/ha/yr, and those who reforest their land receive \$116/ha/yr.<sup>43</sup>

<sup>43</sup> Forest Trends, The Katoomba Group, and UNEP. May 2008. Payments for Ecosystem Services Getting Started: A Primer.

Costa Rica's PES program has been carried out through a mix of policies rather than a single mechanism. In addition to the 1996 Forestry Law, the policy-institutional process has included annual presidential decrees, regulatory plans, and determination of buffer and conservation areas.<sup>44</sup> The government of Costa Rica has also developed a number of complementary regulations that provide rules regarding protection of forests, wildlife, water, topsoil, and mangroves. The Framework Environmental Law (Ley Orgánica del Ambiente) Law No. 7554, established a National Environmental Council as a deliberative body to enact regulations, coordinate environmental policies, and promote their integration in sustainable development. The Council includes members from the Ministry of Health, Education, National Planning and Economic Policy, Agriculture, Science and Technology, and Environment and Energy to facilitate integration of environmental issues across the national government structure.<sup>45</sup> This mix of policies and frameworks, when done intentionally and with an eye to increasing coordination and outreach to a variety of stakeholders, can make PES policy more sustainable with fewer administrative costs and can adapt to new priorities or national circumstances.

Since 1997, the PES program in Costa Rica has promoted conservation on an average of 60,000 hectares of private lands per year.<sup>46</sup> Hectares of land have been a proxy measurement for individual ecosystem services such as water or carbon, as it's a more straightforward indicator to track and quantify. Co-benefits of this program have included increased participation of indigenous and local communities and female-headed households and standardizing property ownership.

## Conclusion

The above examples of the necessary policy and legal frameworks that need to be in place to enable sound implementation of national scale PES are intended to be starting points for action. These examples can provide guidance in addressing identified gaps at the national level and tailoring PES programs to meet national needs and circumstances. PES has proven to be an excellent tool to mobilize domestic resources—not just to achieve progress in national policies and targets, but also to achieve progress toward international commitments. For example, it's a tool that can be used toward the achievement of the Convention on Biological Diversity's Aichi Target number 3, for REDD+ in under the UNFCCC, and as a cost-effective tool to achieve landscape objectives under the United Nations Convention to Combat Desertification (UNCCD). Countries wishing to implement PES for either domestic or international policy and legal objectives will find many additional examples in the resources cited in this document.

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<sup>44</sup> Porras 2013.

<sup>45</sup> INBio National Biodiversity Institute. 2014. Retrieved from [http://www.inbio.ac.cr/estrategia/Leyes/Ley\\_Ambien.html#CAPITULO\\_XVII](http://www.inbio.ac.cr/estrategia/Leyes/Ley_Ambien.html#CAPITULO_XVII)

<sup>46</sup> Ibid.