

## *Payments for Environmental Services – an instrument to maintain global ecosystems*

*The efforts to conserve ecosystems in the last decades have not been sufficient. The Millennium Ecosystem Assessment states that the majority of ecosystems on which human well-being depends, are being used in an unsustainable way. Payments for Environmental Services (PES) is an innovative market-based instrument to mobilise financial resources and improve the performance of conservation initiatives by recognising the importance of ecosystem services, their contribution to human well-being and the need to boost tangible synergies between conservation and development.*

Good ecosystem management provides benefits from local to global scale – e.g. the local population benefits from clean water and productive soils and the regional to global community benefits from hydrological flows, biodiversity conservation and climate regulation. These benefits are usually not recognised in monetary terms, and therefore do not have an explicit economic value and are not taken into account in decisions on resource use. This makes unsustainable land uses more profitable, feasible and attractive in the short term.

The fact that many environmental benefits and costs do not have a monetary value can be considered an institutional and market failure. Payments for Environmental Services (PES) seek to address these failures by considering (or internalising) the benefits and costs

(externalities) of particular land uses, including their impacts on ecosystems (Engel et al 2008). PES transforms environmental benefits into economic incentives by establishing a voluntary transaction between the supplier of a service, who is paid by the consumer of this service for its supply. The recognition of the benefits of conservation and restoration practices are supposed to create economic incentives for the

ones who control the land (called “providers”) by enabling landholders to choose and enforce more environmentally friendly activities (e.g. water users downstream pay landholders upstream to reduce erosion and conserve water sources). Thus, the logic behind PES is that through an institutional arrangement or a financial transaction, environmental externalities can be tackled in a more effective way.

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## *PES in the real market life*

PES and markets require appropriate conditions in order to be established and work jointly. Clear property rights and a suitable legal framework are necessary. In particular, the institutions involved need to be committed (e.g. water companies), a certain level of information among stakeholders has to be ensured in order to allow fair negotiations, and beneficiaries must be willing to pay for the service. Thus, these conditions often need to be developed and consolidated to make fair market transactions possible. In this respect, projects usually have considerable start-up costs for designing the scheme and negotiating the transaction. In the case of carbon and biodiversity markets, projects are also required to bring comprehensive information characteristics of their location to design baselines and permit monitoring (e.g. carbon stock, biodiversity indicators and vegetation cover). These costs are frequently taken on by non-governmental organisations or institutions from development co-operation.



Photo: IUCN

*Most of the 300 PES initiatives are in Latin America, where functioning institutions exist with the capacity to administer financial resources.*

## **State of the art of Markets in Environmental Services**

As yet, carbon markets are the only PES real markets and may either be voluntary or driven by regulation. Conservation projects can so far only play a role in the voluntary schemes but this situation could change over the next years in the post-Kyoto regime. The main “buyers” in this sector are electricity, industrial and transport companies. Markets for sustainable watershed management are being established mainly at local and regional levels. Water and hydropower companies as well as domestic and industrial consumers support conservation measures in the upper parts of their watersheds, hoping to ensure the quality and quantity of water flows. In PES for biodiversity, the involvement of the private sector is still limited but growing. Companies who pay for biodiversity services usually use and have an impact on biodiversity directly or indirectly, like the ones that promote production chains (coffee and timber), or the ones interested in access and benefit-sharing (pharmaceutical companies). Some of them act for social responsibility or philanthropic reasons while others are interested in improving their image and reputation. The chief shortcomings of such initiatives are the high transaction costs involved and the fact that a number of the financial sources could be controversial, since the companies involved can sometimes be the ones causing the damage (i.e. biodiversity offsets).

Nowadays, there are about 300 initiatives world-wide, in different stages of implementation and most of them located in Latin America (Landell-Mills and Porras, IIED, 2002). This regional bias is related to favourable conditions such as functioning Institutions with enough capacity to administrate financial resources and decentralisation trends where local and regional governments open up space for initiatives at these levels. Especially in PES water, many municipalities and water companies have used this opportunity to build schemes that support conservation and sustainable land use in the upper parts of their watersheds (e.g. Pimampiro, Ecuador and Heredia, Costa Rica). Additionally, some good PES practices like the National Fund for Forest Financing (FONAFIFO – see also Box on page 16) in Costa Rica resulted in a regional domino effect, disseminating the idea to other countries (such as in Bolivia and Nicaragua). In parallel, local initiatives also provided the opportunity to develop national schemes (e.g. Mexico and Ecuador).

Initiatives vary from local to national level, can be government or user financed, and are mostly anchored in other mechanisms such as conservation trust funds. Arrangements can be made with individuals or communities,

depending on the land tenure rights. Payments are made in cash or in kind, according to the context and what people have negotiated. The quality of schemes varies regarding the management capacity of the institutions involved, type of contract, conditionality of the payments and the committed land users’ degree of compliance.

A major challenge is to find buyers willing to pay for the environmental benefits. In fact, most of the schemes are still at least partly financed through public funds. Markets in environmental services are growing but are still in an incipient stage of development, depending on the institutional context (e.g. regulations and degree of compliance), type of environmental service and perceived benefits. Public awareness and information also play an important role, through mobilising actors and increasing their willingness to pay.

## *Main challenges: bringing together conservation and development*

Even though many PES initiatives flowered in the spring of market-oriented approaches, not all of them have survived or reached the desired environmental impacts. Two important reasons are the lack of appropriate conditions through which fair negotiations



## Payments for Environmental Services in Vietnam

In the last decades, Vietnam developed a range of command and control regulations to conserve forest ecosystems. However, such regulations have not yet embraced enough economic facilities to support forest users to manage the forest in a more sustainable way. As a result, the forest sector was and is in an economic stagnation, the quality of forest dependent livelihoods declined, social conflicts emerged and natural forests continued to be degraded. In April 2008 the Government developed a PES policy that sets the framework conditions for two regional pilot PES initiatives in the Son La and Lam Dong Provinces. The policy aims to protect forests, improve the land and forest use, assuring the supply of environmental and economic services from both natural and plantation forests. Furthermore it aims to valorise these benefits and thus to improve socio-economic conditions of the rural population living with the forests.

One of the PES pilots is located in the Son La Province and specifically seeks

to promote sustainable land and forest management to ensure water regulation, soil protection, biodiversity conservation and landscape beauty protection. Selected providers of these services are 7,585 officially recognised forest owners, including communities, individuals, organisations and companies for management of a total 105,150 hectares of forests. The payments vary from 100,000 to 121,000 Vietnamese Dong (vnd) per hectare and year, according to different categories of site conditions and land use. In line with this, the PES policy aims to ensure agreements among parties, and to provide conditions for a participatory but strict monitoring.

At the beginning, research was carried out to identify the capacity of potential beneficiaries or users to pay for the environmental services. Selected beneficiaries include two hydro-power plants and two water supply companies, interested in the maintenance of forest ecosystems to ensure quality and quantity of water flows and to reduce costs caused by

erosion. Payments are defined upon the potential benefit resulting from additional productivity induced by improved land management.

The PES implies a contract between the forest owners (or providers of environmental services) and the users or beneficiaries of such services (water/electricity users, companies and possible tourism companies). The contract is controlled through a PES Provincial Steering Committee, which is part of the institutional structure of a Provincial fund for Forest Protection and Development. Payments are made through a third party, i.e. the Social Policy Bank which is allowed to pay PES providers under the conditions that they comply with concrete land and forest management practices, as well as the institutional requirements (e.g. PES certificate provided by the Steering Committee; contract and confirmation of forest and land use compliance).

The German Development Cooperation (GTZ) supports the process, by building capacity, advising the identification of environmental services and safeguarding the process of fair negotiations among providers and beneficiaries. It also supports the involved partners with the design of enforcement mechanisms and the monitoring of the implementation process.

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Photo: gtz-Vietnam

*Uncontrolled water flows due to heavy rains bring serious damage to the land if it is not managed in a sustainable way.*

can develop and difficulties in combining different interests and environmental goals. In many cases, some key elements for PES do not emerge (e.g. buyers), or sometimes it may be difficult to bring providers, services and buyers together in a single contract. In other

cases, it may not be possible to address the environmental problem through a PES scheme because its underlying causes are rooted in other sectors (such as agricultural subsidies).

The actual success of PES depends on the management capacity of the

institution's scheme and the design of "appropriate incentives" to ensure environmental impacts of the land uses and socio-economic impacts for the service providers. For example, if hydrological flows are to be improved, restoring native vegetation in the high-

*Downstream water users pay upstream landholders to reduce erosion and conserve water sources, as being practised in India.*

lands is likely to be more suitable than monoculture of exotic trees species while having different users and diverse impacts. In this sense, there is a need to understand the relations between land uses and environmental services, as well as to clarify formal and informal property rights on natural resources.

A range of institutional and organisational aspects should be considered, regarding accountability, transparency and governance. In line with this, the negotiation process, contract design and levels of trust are just as important as the consideration of socio-cultural norms and beliefs. The availability of technical expertise and economic resources also influences the design, outputs and functionality of the schemes. Last but not least, the payment or incentive offered needs to be sufficiently interesting to the service provider.

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### Looking forward

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After a decade of trial and error, some of the initiatives are now well established, while others are in a more initial stage or still need to be consolidated, and some have not taken



Photo: GlobalAware

off. PES has proved to be an adequate tool when there is a potential demand (interest, need and willingness to pay) and the aspects mentioned above are taken into account. Thus, in many cases, such schemes may lack effectiveness or even fail if a cross-sectoral policy, institutional or market failures

are undermining the efforts that PES is trying to address. Political interests may sometimes jeopardise the desired environmental goals, while overloading the initiatives with too many objectives can at the end of the day kill the main goal by not reaching any of them. Efficiency can be relative to the context. Basic conditions (such as defined land tenure) should be first clarified and general information provided before considering any launch.

An appropriate regulatory framework can mobilise companies to invest in environment and conservation activities, increasing the demand for PES. Some examples are the Kyoto Protocol, which commits industrialised countries to reduce their emissions, and the EU Environmental Liability Directive, which obliges companies causing environmental damages to pay for them, if they cannot be avoided. At national level, environmental fiscal reforms can encourage the integration of conserva-

### PES and poverty

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PES are usually voluntarily arranged, especially from “the provider’s side” (landholders) and generally mean a possibility to diversify incomes, particularly for those living in marginal rural areas (e.g. highlands or remote forest areas). However, the socioeconomic impacts of PES also depend on the type of land use to be promoted (strict conservation versus sustainable use). Mostly, if strict conservation measures are promoted, the creation of other income possibilities, i.e. in buffer zones, is necessary to assure that the approach can support poverty alleviation. Specific conditions to join a scheme may impede the participation of poorer sectors if they are not located where environmental services are generated. However, poverty reduction impacts can be improved, if poverty is applied as one criterion to select and favour provider groups. A weak organisation and little access to information hinder the participation of poorer rural sectors and can reduce the quality and the output of the negotiation. Nevertheless, experience shows that those who have access to and join the system mostly agree with it. From “the buyer’s side”, when there is no capacity to pay, the payers should be found somewhere else.



## The Costa Rican PES programme

In 1996, Costa Rica approved its third Forestry Law (7575), which recognises four forest environmental services, namely:

1. carbon sequestration,
2. water protection,
3. biodiversity conservation and
4. landscape beauty.

The Costa Rican Programme of Payments for Environmental Services (PES) was created in 1996, as a national effort to set up a market for environmental services, aiming to substitute the forestry subsidies for a more efficient performance based approach. However, this process can be seen as a result of an evolving national concept to use markets and payments to ensure the provision of the products and services that ecosystems provide to societies. The enforced Forestry Law established a PES definition that not only became a national model but also set an international milestone for the development of policies that promote the economic value of environmental services, transforming them into financial incentives targeted on the providers of such services.

The National Forestry Financing Fund (FONAFIFO) was created by the same forestry law in the framework of a national PES programme. At the beginning, the National Government committed itself to finance the scheme with five percent of the revenue from the tax on fossil fuel, but later on a diversification of funding sources took place to cover the

vast request of landholders (or providers) to join the programme. New sources of funding include the private sector and the international community. At present, the main financial resources are coming from: 3.5 percent of the fossil fuel tax, forestry taxes, hydropower companies, a national private brewery, a World Bank loan and a contribution of German Financial Cooperation (KfW).

The PES scheme pays landowners to enforce specific land uses that provide the four environmental services, recognised by the law. To join the system, landowners must submit their titles (or legal land possession documents), and a sustainable forest management plan should be approved. Afterwards, specific practices (e.g. timber plantation, forest management, forest conservation) must be adopted. Initial disbursement can be requested upon contract signing, but all subsequent annual payments require verification for compliance, and payment varies according to the type of activity carried out (e.g. landowners receive about 65 US dollars per hectare and year for conservation), (Asquith and Wunder, 2008).

FONAFIFO acts as an intermediary, buying environmental services from forest and landowners and selling them to interested parties (buyers) at international, national and local levels, depending on the service. Farmers can access the programme on their own (directly) or through local (private) facilitators (Porras 2007). By the end of 2007, around

60,000 hectares were under PES agreements promoting forest protection, forest management and reforestation activities. Also, almost two million trees were planted in agro forestry systems during the last five years, while deforestation was stopped and there was an increase in forest cover (FONAFIFO 2008).

Despite the official attempt to create a market for environmental services, voluntary private agreements were made between particular companies and landowners, like the voluntary contract between La Esperanza Hydropower Project and the Monteverde Conservation League (Rojas and Aylward 2003). Another example is the PES scheme for watershed services run by the Heredia Province Water Utility (Empresa de Servicios Públicos de Heredia – ESPH) owned by three municipalities. In 1999, they included an environmental component in the drinking-water tariff to compensate forest owners and finance forest restoration to maintain water quality in the long term.

The stability of the PES programme in Costa Rica is based mainly on:

- financial sustainability,
- legal framework,
- capacity of institutions to administer the programme,
- political support from the highest to the lowest levels,
- participation of civil society,
- transparency and credibility of institutions and actors regarding the administration and implementation of the scheme.

New strategies are being developed and proposed, including water fees at the national level, funding opportunities considered by the Kyoto Protocol under the Clean Development Mechanism, voluntary carbon markets and private investors, also with regard to biodiversity enterprises.

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*The PES scheme for watershed services is one example of successfully implemented environmental services in Costa Rica.*



Photo: IUCN

## Zusammenfassung

Der Schutz und die nachhaltige Nutzung der Ökosysteme bringen sowohl auf lokaler als auch auf globaler Ebene einen Nutzen, der in der Regel nicht honoriert wird. Mit dem Instrument der Zahlung von Ökosystemdienstleistungen (Payments for Environmental Services, PES) wird versucht, diesen Umweltnutzen in wirtschaftliche Anreize umzuwandeln; diese sollen es den Landbesitzern ermöglichen, nachhaltige Landnutzungssysteme einzusetzen und zu fördern. PES können zum Erhalt der Ökosysteme beitragen und gleichzeitig die Lebensbedingungen der lokalen Bevölkerung verbessern. Damit PES aber die gewünschten Effekte erzielen, müssen einige Voraussetzungen erfüllt sein – etwa ein geeigneter institutioneller und regulatorischer Rahmen, aber

auch eine effektive Nachfrage nach dem Erhalt der Ökosysteme, die sich in eine nachhaltige Finanzierungsquelle umsetzen lässt. In der Entwicklung und Stärkung der institutionellen und menschlichen Kapazitäten, die nötig sind, um Verhandlungen zu führen und Vereinbarungen zu treffen, die dem Erhalt der Ökosysteme und der Verbesserung der Lebensbedingungen der lokalen Bevölkerung zugute kommen, spielt die Entwicklungszusammenarbeit eine wichtige Rolle.

## Resumen

La conservación y uso sostenible de los ecosistemas provee beneficios a escala local y global, los cuales usualmente no son reconocidos. Los esquemas de pago por servicios ambientales (PSA) buscan transformar dichos beneficios ambientales en incentivos económi-

cos, permitiendo a los propietarios escoger y promover usos de la tierra sostenibles. Los PSA pueden contribuir a conservar los ecosistemas, así como a mejorar las condiciones de vida de las poblaciones locales. No obstante, se requieren algunos elementos básicos, como una serie de condiciones institucionales, un marco regulatorio apropiado y una demanda efectiva por conservación, que se traduzca en una fuente de financiamiento sostenible, para que los esquemas de PSA puedan funcionar adecuadamente. La cooperación al desarrollo juega un rol importante en la creación de capacidades institucionales y humanas con miras a desarrollar arreglos y negociaciones que conlleven beneficios para la salud de los ecosistemas y el mejoramiento de los medios de vida de las poblaciones locales.

tion into the system of intergovernmental fiscal relations, mobilising resources as well as changing consumption and production patterns. A better understanding of the different actors with their corresponding interests can contribute to increase the engagement of the private sector.

PES has often been analysed, since expectations on it were rather high. The lessons learned contribute to understanding particular requirements to make it work. PES is only one instrument among others and should be designed, implemented and combined in a coherent form with other appropriate instruments and policies. We should move from an instrument to a problem-solving approach broadening the scope and diversifying the strategy. This implies working in the appropriate framework conditions, seeking a coherent combination of instrument and policies and understanding when PES can contribute to solve part of the problem. The latter means recognising institutional and economic aspects such as operative, administrative and opportunity costs derived from land and other resource uses that compete with conservation. If these guiding

principles are obeyed, PES can evolve to an effective mechanism to conserve ecosystems.

Development co-operation can contribute with financial support, advising partners to improve framework conditions and strengthening weaker actors to get better outcomes of negotiations. In fact, development co-operation has been playing a significant role in supporting the design, implementation, monitoring and evaluation of PES. Such tasks include the clarification of property rights, facilitation of economic valuations and the development of markets, through awareness rising and environmental communication.

One key aspect is co-ordinating different stakeholders by fostering win-win agreements among them. Lessons learned show that negative impacts can be avoided if governance, economic and technical aspects are well considered. In line with this, donors should co-ordinate their efforts to promote sustainable schemes that improve the livelihoods of the local people and contribute to maintaining ecosystems.

*A full list of references can be obtained from the authors.*

## More information

- PES /IIED: <http://www.iied.org/eep/pubs/MarketsforEnvironmentalServicesseries.html>
- Economic Commission for Latin America and the Caribbean (ECLAC) bzw. CEPAL: <http://www.eclac.cl/faq/default-i.asp>
- GTZ-CEPAL: [http://www.gtz.cl/cepal\\_de.htm](http://www.gtz.cl/cepal_de.htm)
- Worldbank: <http://lnweb18.worldbank.org/ESSD/envext.nsf/44ByDocName/PaymentsforEcologicalServices>
- Conservation Finance Alliance: [http://www.conservationfinance.org/About\\_CFA\\_pages/About\\_CFA.htm](http://www.conservationfinance.org/About_CFA_pages/About_CFA.htm)
- FAO: <http://www.rlc.fao.org/foro/psa/>
- Ecosystem Valuation: <http://www.ecosystemvaluation.org>
- Ecosystem Marketplace: [www.ecosystemmarketplace.com](http://www.ecosystemmarketplace.com)