BioOne COMPLETE

# Payment for Environmental Services in El Salvador

Authors: Herrador, Doribel, and Dimas, Leopoldo

Source: Mountain Research and Development, 20(4) : 306-309

Published By: International Mountain Society

URL: https://doi.org/10.1659/0276-4741(2000)020[0306:PFESIE]2.0.CO;2

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 29 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

Mountain Research and Development Vol 20 No 4 Nov 2000: 306–309

*Doribel Herrador*
*Leopoldo Dimas*

# Payment for Environmental Services in El Salvador





*Much of El Salvador's crop production is in mountainous areas with gradients over 15%. The main crops are shade-grown coffee, sugar cane, citrus and other fruit trees, and staples for local consumption, including maize, beans, rice, and sorghum. The latter are produced on small-scale subsistence farms in mountainous zones (0.3–2 ha per farmer) characterized by intensive use of the soil and a lack of conservation practices (Figures 1, 2). Until now, most rural development projects have used incentives to mitigate the effects of the resulting environmental degradation. Records for Central America show that approximately 86% of soil and water conservation projects use incentives. Nevertheless, it is rare to observe spontaneous diffusion and medium- or long-term adoption of the technologies promoted through incentives on a significant number of farms or larger areas. Most technologies are implemented locally by a few farmers and are abandoned as soon as the project terminates. Therefore, efforts are now being made in Central American countries to institute payment for environmental services (PES).*

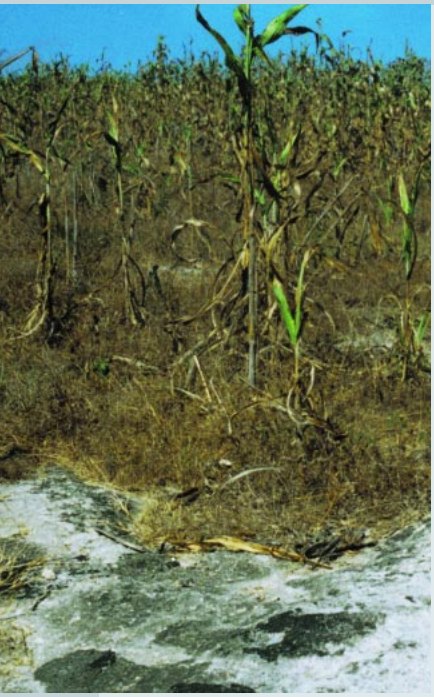


**FIGURE 1** Scarce land resources in El Salvador (here near San Isidro) force farmers to use extremely shallow soils on marginal lands. (Photo by Kai Schrader)



**FIGURE 2** Forest cover has been increasingly cleared to provide agricultural land. However, soils are very prone to erosion and land degradation has become an acute problem. The photo shows a location near Tonacatepeque. (Photo by Kai Schrader)

## The nature of environmental services

In El Salvador, land degradation has led to growing acceptance of environmental services provided by ecosystems. Their traditional image as producers of food, raw materials, and other products has gradually evolved to one in which they are also seen as providers of environmental services such as

- Preservation of biodiversity, through the protection and sustainable use of species and conservation of ecosystems and ecological processes.
- Protection of hydrological resources in terms of quality, temporal and quantitative distribution for urban, rural, and industrial use, and production of hydroelectric power.
- Preservation of scenic beauty—consisting of forests, natural landscapes, and biodiversity—that attracts tourists.
- Mitigation of the greenhouse effect through fixation, reduction, and storage of carbon dioxide and other greenhouse gases.
- Maintenance of forests, marshes, and mangrove tree plantations that mitigate the impacts of disasters caused by inundation, landslides, and droughts.

Many additional environmental services have not yet been valued, either by consumers or the people who produce them. We shall focus here on one particular ecosystem—the agroecosystem—in which people act as both administrators and consumers, deciding what is to be done with the products and goods emanating from the agroecosystem and intervening with various techniques to improve the quality and quantity of production. Although the objective is production, environmental services are also generated (Figure 3). The quality of these services depends on the impact of interventions undertaken by farmers.

## Incentives for conservation

Much has been done to convince subsistence farmers to adopt soil and water conservation practices and implement agro-

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 29 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

forestry systems suitable for small plots. Most projects designed for this purpose have used a wide range of incentives to stimulate the adoption of different practices. But as mentioned above, this approach has not brought lasting success. Indeed, the aim of incentives is to enhance agricultural production and the economic status of smallholders. Subsistence agricultural systems need alternatives that generate immediate profit. This poses a major difficulty with regard to the adoption of conservation measures. Although they can improve profitability, the measures themselves can only be applied on a medium- or long-term basis. Producers facing poverty naturally prefer immediate benefits (even if they are very scarce) to medium- or long-term benefits.

Conventional cost-benefit analyses of conservation practices show that the benefits are likely to cover or even surpass the costs but not on a short-term basis. These traditional analyses only consider the private benefits that accrue to the producer (eg, income resulting from the sale of staple grains). However, preservation activities generate other types of benefits (ie, provision of environmental services) that offer advantages to people who live outside the area of production.

## Payment for providers of environmental services

Recognition of environmental services is leading to innovative alternative approaches that aim to remunerate those who invest in such services. Recent trends at the global, national, and local levels that favor the sale of environmental services originating in forests and agroecosystems offer new possibilities to the owners and administrators concerned. Payment for environmental services (PES) places a value on at least some of the environmental and social benefits that have previously gone unrecognized by the market. It acknowledges the extra effort made by those who produce goods for the market and also provide environmental services (Figure 4). In the case of agriculture, PES acknowledges not only production of goods but provision of vital environmental services as well, thereby providing an inducement to shift from traditional farming to sustainable production.



**FIGURE 3** Live fences of *gandul* and *vetiver* in a validation plot monitored by CENTA-PASOLAC. This type of conservation structure provides environmental services that should be acknowledged as such. (Photo by Martin Fischler, PASOLAC)

This novel management mechanism is rapidly being adopted in different countries, including Costa Rica, where it has been incorporated into a new forestry law (no. 7575). PES in Costa Rica presents an opportunity to earn foreign exchange through the provision of carbon dioxide sinks. It also offers a chance to make agreements to utilize biodiversity for pharmaceutical purposes and earn cash from the sale of environmental services such as protection of hydrological resources.

## Implementation of PES

We have learned that incentives stimulate adoption of conservation measures to a modest degree because they promise immediate benefits for the small-scale producer. The concept of PES recognizes the additional effort a farmer puts into the production of agricultural goods, that is, to provide an environmental service as well as produce for the market. The concept involves payment rather than incentives because an incentive (in any form) is short-lived, whereas PES is of a permanent nature since the services are produced continuously. Furthermore, payment implies identification of the producers as well as the consumers who use the environmental services.

The implementation of payment schemes for environmental services is a process that involves a range of aspects and actors, including a variety of conservation measures, producer communities, and actors who demand the services. Implementation must involve clear identification of the flow of services and, in




**FIGURE 4** PES is a financial mechanism that can promote acceptance of the agricultural sector as a producer of environmental services, thus serving as a potential catalyst for agricultural development in mountain regions.

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 29 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

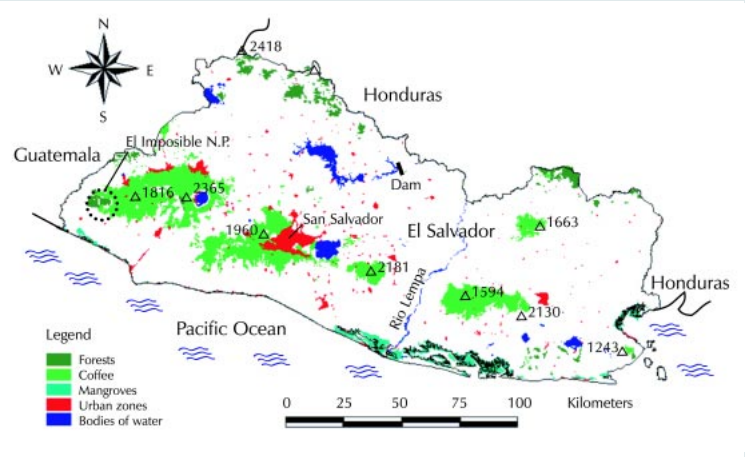



**FIGURE 5** Map of El Salvador showing vegetation cover, urban zones, and main bodies of water. (Source: PRISMA, DGEA [1996] and BID [1970s])

some cases, quantification, economic valuation, and establishment of an appropriate framework where political, legal, institutional, and marketing dimensions are considered.

Different types of PES schemes have emerged, such as voluntary agreements between producers and consumers that require only simple institutional adjustments. There are also schemes at the national level, where the creation of an appropriate framework is necessary to take account of legal and political aspects. This may involve new institutions or the incorporation of existing ones to guarantee transparent and participatory procedures.

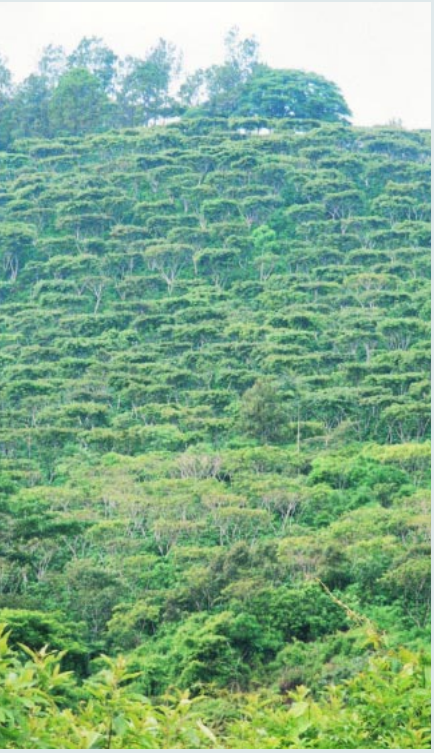


**FIGURE 6** Shade trees (mostly of the *Inga* spp., locally known as *Nacaspirol*) in coffee plantations provide a natural habitat for many migratory birds. (Photo by Martin Fischler, PASOLAC)

## PES in El Salvador

The Ministry of Environment and Natural Resources (MARN) has given official consideration to the question of PES in the Law of the Environment. Article 75 of the Law states, "MARN will promote a special program for training and transfer of technologies as well as a National Plan to combat deforestation, erosion and desertification." Furthermore, Article 77 mandates MARN and the Ministry of Agriculture and Husbandry, together with appropriate sectors, to elaborate and apply market mechanisms to facilitate and encourage reforestation. These mechanisms are based on economic valuation of the forest in terms of goods and services produced for commercial purposes and also on environmental services.

The achievements of Costa Rica in implementing PES have undoubtedly encouraged other Central American countries to pursue the issue. PES has gained popularity in El Salvador under the current presidential administration. The National Action Plan elaborated by the National Commission on Development has recognized the northern part of the country as a zone where environmental services are produced: "Every effort is being made to convert this region into a production zone for environmental services, with adequate remuneration for producers." This region is particularly important as a source of water for San Salvador, the country's main urban center (see Figure 5).

## "El Imposible" National Park

The case of the "El Imposible" National Park is an example of progress in instituting PES in El Salvador. Remuneration is offered for scenic beauty through a minimum fee of US$3, paid by local and foreign visitors who want to enjoy the park. Furthermore, various actors and participants have entered into an agreement to implement PES in the framework of projects that provide drinking water in 2 districts in the municipality of San Francisco Menéndez. Approximately 8500 inhabitants in these districts have benefited, of whom only 19% had prior access to drinking water.

Users of the new water supply system agree to pay a monthly fee per family, which helps to cover administrative, operational, and maintenance costs of the system. This fee amounts to approximately US$6 and pays the salaries of 2 park guardians who protect the park environment. This arrangement is based on recognition of the actors involved and the services furnished by the park, such as protection of water quantity and quality. A legal contract was drawn up to govern the payments for this environmental service. In this case, the intervention of institutions was important; in the end, it helped to some extent to internalize the profits generated by environmental services in the park.

## Biodiversity-friendly coffee

Due to the lack of extensive forested areas (only about 3% of El Salvador is covered by forests; see Figure 5), coffee plantations, on which coffee is largely shade grown, are key providers of environmental services. "Coffee forests" (Figure 6) protect water resources, function as carbon dioxide sinks, and offer refuge for wildlife

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 29 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

and various species of birds whose migration routes pass over the areas where coffee is cultivated.

Given the environmental potential in expanding and connecting conservation areas in the Central American Biological Corridor, the Global Environment Facility (GEF) is supporting a project aimed at gathering experience relevant to reproducing and expanding such areas. The Rainforest Alliance designated coffee produced by the project as "biodiversity-friendly" under its "ECO-O.K." label. The project also identified small niche markets for this shade-grown coffee.

## Adapting PES schemes to local conditions

Payment schemes for environmental services involve clarification of technical issues such as identifying the dynamics of service production, quantification in some cases, economic valuation, and determination of the amount of payment. Empowerment of the producing communities and awareness on the part of different consumers are equally important. Different types of payment are possible to comply with the basic principle of compensation for the producers of environmental services. Frequently, payment will be in cash, but it can also take other forms.

Success achieved to date with some forms of PES in Costa Rica, Mexico (communal forest management), and Brazil (watershed management in Paraná) continues to fuel expectations in other developing countries. This is particularly true with respect to the commercial potential of natural resources such as carbon dioxide sinks. However, the success of PES schemes will depend largely on whether they are compatible with biophysical, social, and economic conditions in a particular country.

The contrast between El Salvador and Costa Rica is important since the difference in the amount of forested area is even more significant when we analyze the socioeconomic context and the political priorities of different sectors. Costa Rica is very interested in preserving its forests because they are the basis of its growing ecotourism sector, which is an important source of foreign exchange. In El Salvador, however, watershed conservation is vital in order to meet growing demand resulting from urban and industrial development in the southern part of the country.

This sheds light on concerns about how to replicate PES schemes and illustrates that each country must proceed according to its own strategic priorities. PES represents a potential to generate cash flow from industrialized to developing countries (through the sale of global environmental services) and also within developing countries.

However, it is important to remember that, in order to implement PES, it must be visualized as a process requiring different key elements that challenge a country in terms of authentic institution building and capacity building. Nevertheless, the mechanism as such offers opportunities to recognize the importance of providing strategic environmental services to advance sustainable development, in which rural areas play an indispensable role.

**AUTHORS**

***Doribel Herrador***
Apdo. Postal 01-440, San Salvador, El Salvador.
doribell_h@yahoo.com

*Doribel Herrador is an agronomist, with an MSc in environmental economics, who has worked as an extensionist and researcher at the Centro Nacional de Tecnología Agropecuaria y Forestal (CENTA: National Center for Agricultural and Forestry Technology). At present she is doing research for the Programa Salvadoreño de Investigación sobre Desarrollo y Medio Ambiente (PRISMA) in the field of "Agriculture and Environment in El Salvador" and lectures for the chair of Environmental Economy at the Universidad Centroamericana "José Simeón Cañas" (UCA).*

***Leopoldo Dimas***
Apdo. Postal 01-440, San Salvador, El Salvador.
ldimas@theglobe.com
International Mailing Address: VIP 992, PO Box 52-5364, Miami FL 33152, USA.

*Leopoldo Dimas is an agronomist with an MSc in environmental economics. His current activities include research for the Programa Salvadoreño de Investigación sobre Desarrollo y Medio Ambiente (PRISMA: Salvadorian Research Program for Development and Environment) in the field of "Agriculture and Environment in El Salvador" and a professorship at the Universidad Dr. José Matías Delgado in San Salvador. He specializes in agricultural economy.*

**FURTHER READING**

***Espinoza N, Gatica J, Smyle J.*** 1999. *El Pago por Servicios Ambientales y el Desarrollo Sostenible en el Medio Rural*. 1a ed. *Serie de Publicaciones de Unidad Regional de Asistencia Técnica (RUTA).* San José, Costa Rica: Instituto Interamericano de Cooperación para la Agricultura (IICA).

***Programa de las Naciones Unidas para el Desarrollo (PNUD).*** 1999. *Mecanismo Financiero para el Desarrollo Sostenible de los Bosques.* Borrador de trabajo (working paper).

***Rosa H, Herrador D, González M.*** 1999. *Valoración y Pago por Servicios Ambientales: Las Experiencias de Costa Rica y El Salvador.* No. 35. San Salvador, El Salvador: Programa Salvadoreño de Investigación sobre Desarrollo y Medio Ambiente (PRISMA).

***Rosa H, Herrador D, González M, Cuéllar N.*** 1999. *El Agro Salvadoreño y su Potencial Productor de Servicios Ambientales.* No. 33. San Salvador, El Salvador: Programa Salvadoreño de Investigación sobre Desarrollo y Medio Ambiente (PRISMA).

***Schrader K.*** 1998. *¿Incentivos? Marco Orientador para un Manejo Adecuado de Incentivos en la Promoción de una Agricultura Sostenible*. Working paper. Managua, Nicaragua: Programa para la agricultura sostenible en laderas de América Central (PASOLAC) and Intercooperation.

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 29 Mar 2024
Terms of Use: https://bioone.org/terms-of-use