

# Program of Payments for Ecological Services in Costa Rica

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## Introduction

The most common approach to promote forest ecosystem conservation and combat land degradation is the development, introduction and promotion of sustainable production systems. Such approach is usually accompanied of indirect incentives such the acquisition of infrastructure, equipment, product marketing, temporary payments for labor, food for labor, etc. The assumption is that new technologies will be adopted, that a market for the derived products will develop, and that they will generate higher incomes to land owners, creating an incentive to maintain the forest ecosystems. An alternative approach to encouraging the conservation and restoration of forest ecosystem is to pay for conservation performance directly to private lands owners (Ferraro and Simpson, 2000). In this approach, those that benefit from the provision of environmental services, derived from land uses and production systems that improve the environment and life quality, make payments to those land owners that supply the services (i.e., to those that adopt the desired land uses and production systems). In the case of land uses such as forest management, commercial reforestation, as well as forest conservation, the payments for environmental services are additional to the incomes from forest products sales, therefore, they help to improve the irregular cash flow frequently seen in forest production systems.

The Costa Rican Payments for Environmental Services Program (PESP) is an application of this approach. In this system, landowners receive direct payments for the ecological services which their lands produce when they adopt land uses and forest management techniques that do not have negative impacts on the environment and which maintain people's life quality. Costa Rica's Forest Law recognizes four environmental services provided by forest ecosystems: (i) mitigation of GHG emissions; (ii) hydrological services, including provision of water for human consumption, irrigation, and energy production; (iii) biodiversity conservation; and (iv) provision of scenic beauty for recreation and ecotourism.

The Costa Rican Payments for Environmental Services Program (PESP), which is executed through the *Fondo Nacional de Financiamiento Forestal* (FONAFIFO) and the *Sistema Nacional de Areas de Conservacion* (SINAC), aims to protect primary forest, allow secondary forest to flourish, and promote forest plantations to meet industrial demands for lumber and other wood products. This paper provides a brief description of the origin of the program, and the way it is presently designed.

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## Main sector issues and strategy

Costa Rica experienced one of the highest rates of deforestation worldwide during the 1970s and 1980s. In 1950, forests covered more than one-half of Costa Rica; by 1995, forest cover had declined to twenty-five percent of the national territory. Approximately sixty percent of forest cover, totaling 1.2 million hectares, is on privately owned lands outside of national parks and biological reserves. World Bank estimates indicate that eighty percent of deforested areas, nearly all on privately owned lands, were converted to pasture and agriculture. Deforestation was principally driven by inappropriate policies including cheap credit for cattle, land-titling laws that rewarded deforestation, and rapid expansion of the road system. These policy incentives have since been removed and Costa Rica has become one of the world's leading proponents of environmentally sustainable development. Due to the forest conservation policy and economic factors affecting agricultural production, deforestation rates have slowed considerably (see Figure 1).

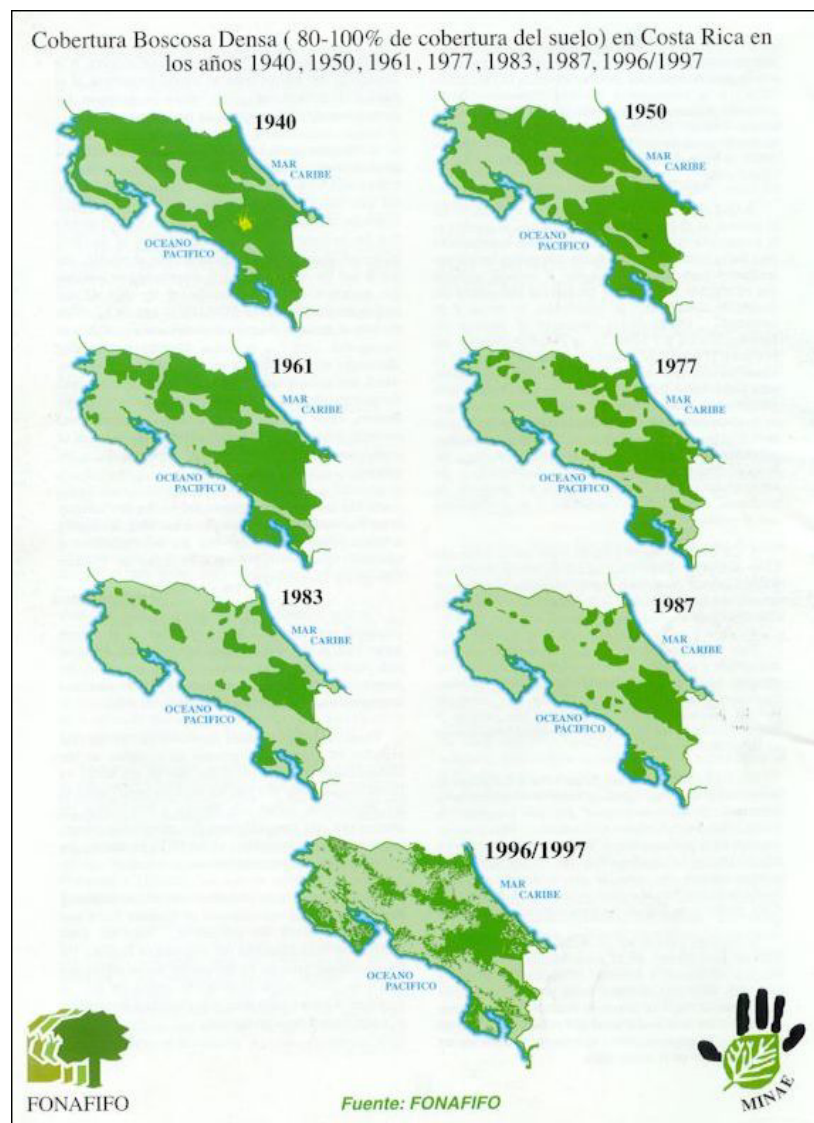


Figure 1. Forest cover changes in Costa Rica from 1940 to 1997/1997 Source: FONAFIFO 2001

A World Bank review of deforestation in Costa Rica carried out in the early 1990s identified three principal types of forest intervention in Costa Rica: (i) clear cutting to change the use of lands under forest cover; (ii) selective cutting of large, valuable trees in primary or secondary forest; and (iii) exploitation by owners of pasture areas that contain patches of forest cover. The study confirmed that clear-cutting and selective logging are principally driven by economic interests. While loggers play an important role in such activities, the main motivation for these processes comes from landowners seeking to obtain revenue from timber sales or agricultural activities. Environmental concerns tend to be external to decisions made by landowners when they are not directly related to on-site productivity.

Kishor and Constantino (1993) also showed that returns from land use change (i.e., deforestation), are always greater than returns from natural forest management. At low interest rates, the conversion to forest plantations dominates the lower-yielding natural forest management. At higher discount rates, the landowner's greatest profit is obtained by clear-cutting the forest (Chomitz et al., 1998). An additional problem to promote traditional forest production activities is the irregular distribution of incomes generated by wood products sales. In the case of reforestation, it requires an inversion of near US\$ 600 at the beginning of the rotation – that is, during years 1 to 5 – but the incomes from wood sales are obtained 10, 12 or even 15 year later. Table 2 shows an example of the distribution of the production costs and incomes from reforestation using melina (*Gmelina arborea*) and teak (*Tectona grandis*). The table shows that the distribution of incomes are unevenly distributed during the rotation period, and therefore small or medium farmers, who normally need constant incomes to satisfy their needs, do not find the economic returns sufficiently attractive to invest in small-scale reforestation, making other land use activities (e.g. cattle-ranching and cash crops) the preferred option (FONAFIFO, 2001).

Costa Rica's efforts to internalize environmental values provided by forest ecosystems date back to 1979, with the passage of the first Forestry Law and the establishment of economic incentives for reforestation. Subsequent laws strengthened incentives for reforestation, broadening opportunities for landowners to participate in reforestation programs and making the program accessible to small landowners within rural areas.<sup>3</sup>

Costa Rica adopted Forestry Law No. 7575 in 1996. It recognizes four environmental services provided by forest ecosystems, provides the legal and regulatory basis to contract with landowners for environmental services provided by their lands, empowers FONAFIFO to issue such contracts for the environmental services provided by privately-owned forest ecosystems, and establishes a financing mechanism for this purpose.

### **The Payments for Environmental Services (PES) Program**

The Payments for Environmental Services Program (PESP) aims to protect primary forest, allow secondary forest to flourish, and promote forest plantations to meet industrial demands

<sup>3</sup> In order to accomplish these objectives, Forestry Law 7032 was passed in 1986 that created the Forest Credit Certificate ("Certificado de Abono Forestal" or CAF), which provided incentives for reforestation activities. In 1990, the CAF was expanded to include sustainable forest management (CAFMA) and in 1995, the CAF was expended to forest conservation (CAF-2000).



for lumber and paper products. These goals are met through site-specific contracts with individual small- and medium-sized farmers. In all cases, participants must present a sustainable forest management plan certified by a licensed forester, as well as carry out conservation or sustainable forest management activities – depending on the type of contract – throughout the life of individual contracts. Management plans include biophysical information on land, and specific actions for prevention of forest fires, illegal hunting, illegal harvesting, and monitoring schedules. Commitments associated with the environmental service contracts are registered with the deed to the property, such that contractual obligations transfer as a legal easement to subsequent owners for the life of the contract.

Landowners cede their GHG emissions reductions rights to FONAFIFO, to be sold on the international market. It bears noting that the ESP program sets different regulations for indigenous territories; experience indicates that indigenous territories have clear land boundaries but they do not always hold individual titles to their land nor have legally established associations as representative of the territory. As a result, FONAFIFO exempts indigenous territories from complying with land ownership regulations (see Table 1).

**Table 1. Contracts of Payments for Environmental Services by Land Owner Type**

<b>Contract</b>	<b>Maximum Area (ha)</b>	<b>Land Owner Type</b>
Individual	300	Individual land owner
Global	300 by land owner There is no limit for NGO	Individual small and medium land owners associated to a local NGO
Indigenous Reserve	600	Indigenous Reserve Development Association

At present<sup>4</sup>, there are three different types of PES contracts. They are (see also Table 2):

- Forest conservation contracts: US\$210 per hectare (equivalent to \$42 per year per hectare), disbursed evenly over a five-year period, for forest conservation easements. Eighty-five percent of contracts in the PES program to date support forest conservation easements (see Table 3), which target the conservation of vegetative cover in primary and secondary forest areas. Contracts are for five years, but can be renew depending upon funds availability.
- Sustainable forest management contracts: US\$327 per hectare, disbursed over a five-year period, for sustainable forest management easements. Nine percent of contracts in the ESP program support sustainable forest management. Landowners must make a commitment to maintain forested areas for a period of 15 years.

<sup>4</sup> The levels of the payments change every year to adjust them due to inflation (1US\$ = 346 colones on February, 2002).



- Reforestation contracts: US\$537 per hectare, disbursed over a five-year period, for reforestation easements. Landowners must make a commitment to maintain reforested areas for a period of fifteen to twenty years, depending upon tree species. Six percent of contracts in the ESP program support reforestation of degraded and abandoned agricultural lands.

**Table 2. Distribution of the payments by contract type during year 2001**

Contract Type	Total Payment (US\$)*	Distribution by year				
		1	2	3	4	5
Forest Conservation Easements	210	20%	20%	20%	20%	20%
Sustainable Forest Management	327	50%	20%	10%	10%	10%
Reforestation	537	50%	20%	15%	10%	5%

US\$ 1 = 346 colones

From a conservation perspective, the PESP provides market-based incentives to conserve natural forest ecosystems. These economic incentives help maintain habitats that are critical to a rich, globally important biodiversity, and have the potential for helping to maintain biological corridors linking national parks and biological reserves. Approaching forest conservation through the PESP program is akin to the system of conservation easements that are widely used in the United States and European countries. Since 1997 to year 2001, near 283,384 hectares of forests have been incorporated into the program. During this period FONAFIFO has paid to private landowners approximately US\$57 million (see Table 3 and 4).

**Table 3. Total area and number of participants by PES contract type and year**

Year	Forest Conservation Easements	Sustainable Forest Management	Reforestation	Total	Number of contracts
1997	88,829.8	9,324.5	4,629.4	102,783.7	1,531
1998	47,803.8	7,620.4	4,172.5	59,915.7	1,021
1999	55,776.0	5,124.8	3,156.0	64,782.0	925
2000	26,583.2	0	2,456.8	29,040.0	501
2001	20,629.0	3,997.0	3,281.0	27,997.0	483
Total	23,9621.8	26,066.7	17,695.7	283,384.2	4,461
%	84.6%	9.2%	6.2%		



## Funding Sources

Principal sources of funding for the program include a tax on fuel sales (see Table 4), payments to FONAFIFO from private sector firms (renewable energy producers, and water blotters, see Table 5) for the conservation of critical watersheds, and through the sale of Certified Tradable Offsets (CTOs) derived from forest ecosystems.<sup>5</sup> The Global Environmental Facility has also donated US\$ 8 million to FONAFIFO to support the program. US\$ 5 million will be invested in direct payments for forest conservation contracts with land owners located in the Mesoamerican Biological Corridors in Costa Rica (MBC/CR), and US\$ 3 million will be invested in increasing institutional efficiency of FONAFIFO, SINAC, and non-governmental organizations promoting conservation, reforestation, and sustainable management of forest ecosystems through the PES.

Table 4. National budget assignation to finance former "*Certificados de Abono Forestal*" (CAF) and the Program of Payments for Environmental Services. From 1997 to 2002. In Millions of Colones/C.R.

Year	Assigned Budget		TOTAL
	CAF	PES	
1997	¢ 1,789.0	0.0	¢ 1,789.0
1998	¢ 2,381.0	¢ 1,269.0	¢ 3,650.0
1999	¢ 1,590.0	¢ 2,406.0	¢ 3,996.0
2000	¢ 1,373.3	¢ 2,098.3	¢ 3,471.6
2001	¢ 1,251.0	¢ 2,345.2	¢ 3,596.2
2002	¢ 1,243.0	¢ 3,066.9	¢ 4,309.9
TOTAL	¢ 9,627.3	¢ 11,185.4	¢ 20,812.7

Source: FONAFIFO, 2001

## Benefits and target population

Important program benefits include the conservation and sustainable use of forest ecosystems in privately owned land outside of national parks and biological reserves. It empowers small- and medium-scale private landowners in the conservation and management of forest ecosystems and in making choices that contribute to sustainable development. It benefits regional users of hydrological services by supporting the provision of high water quality and hydrologic stability from forest ecosystems. Environmental benefits related to biodiversity conservation, and mitigation of GHG emissions, likewise accrue to the global community.

<sup>5</sup> Certified Tradable Offsets (CTOs), or "carbon bonds" are an environmental commodity that provides global environmental and economic benefits, representing internationally recognized Emissions Reductions of GHG expressed in metric tons of carbon. At the present only one sale of CTOs for 200,000 metric tons has been made.





Table 5. Agreements of payments for environmental services between FONAFIFO and Private Firms in Costa Rica.

<b>Firm</b>	<b>Watershed</b>	<b>Watershed Area</b>	<b>Contract Area</b>	<b>Amount (US\$)</b>
Energía Global	Río Volcán Río San Fernando	5,870	4,311	53,340
Hidroeléctrica Platanar*	Río Platanar	3,129	-	-
Compañía Nacional de Fuerza y Luz	Río Aranjuez Río Balsa Lago Cote	9,515 18,926 1,259	5,000 6,000 900	5,188,400
Florida Ice & Farm	Río Segundo	3,870	1,000	272,727
<b>TOTAL</b>		<b>42,569</b>	<b>18,611</b>	<b>5,514,467</b>

Source. FONAFIFO.

\*The contract with *Hidroeléctrica Platanar* has two modalities. US\$ 15/ha/year for landowners with land title, and US\$ 30/year/ha for landowners without land title.

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