Inter-regional Workshop:
Financial Mechanisms for Sustainable Forest Management: Sharing Experiences from Latin America and Asia-Pacific

PRESENTATION:

Financing Sustainable Use and Conservation of Forests in Central America: The Experience of Costa Rica (Payment of Environmental Services: Impact and Possibilities)

Presented by Carlos Isaac Pérez.

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Outline

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1. Introduction:

In the Latin American context, Costa Rica is a front-runner in environmental legislation and policies, the development of institutions responsible for natural resource management and financial mechanisms to promote conservation and restoration of forest ecosystem. These policies have been especially vigorous with respect to the forest issue; important progress has been made in the past three decades in strengthening reforestation and activities derived from forest use and management, and in designing economic instruments for conservation and sustainable management, among them what is known as the Payment for Environmental Services (PSA) system.

According to the experts, 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.

Figure 1
The Costa Rican Map

Source: FONAFIFO, 2006.

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.

Costa Rica recognizes that the aggregate value of the environmental services offered by its forests constitutes an enormous financial potential beyond the mere commercial value of the wood in the country's natural forests and forest plantations.
The country has introduced innovative mechanisms by which smallholder owners of natural forests and forest plantations receive direct payments for the environmental services that these forests provide to Costa Rican society and to the world at large (Espinoza, Gatica and Smyle, 1999; FONAFIFO, 2005).

Even though Costa Rica has a long history of conserving natural resources through the National Park System and of developing incentive mechanisms for the rehabilitation of wooded lands (Arias and Castro, 1997), it took years of policy debate and societal consensus building to elaborate the approach of paying for environmental services.

2. The Forest Context:

2.1. Situation of the Resource:

Costa Rica belongs to Central America Isthmus and covers an area of 51,100 km^2, of which 25% (1,284,543 ha) is made up of Protected Woodland Areas (ASP).[1] There are varying levels of protection for the forests in these areas, according to the category of the area. The country's main primary forests are found within the National Parks and Biological Reserves, which are the categories of absolute protection. They represent 11% of the national territory, for a total of 590,991 ha in which no exploitation or productive activity whatever is permitted (MINAE 1999). Another important percentage of primary forest is found in the indigenous territories, occupying approximately 180,000 ha in the southern and Caribbean areas of the country (Indigenous Table, 2000).

With respect to total forest cover, some data indicate that Costa Rica has succeeded in turning the deforestation rate around considerably. Between the fifties and seventies, the country had an intensive agricultural development policy that increased deforestation and speeded up the loss of forest cover (Camacho *et al.* 2001). The result was that by the eighties the country registered one of the highest deforestation indices in the world (Camacho *et al.* 2000); in 1985 it only had a 24% forest cover, with a deforestation rate of 32,000 ha/year (MINAE 2002). By 1997, however, the forest cover had increased to an estimated 40.4% of the national territory[2], and estimates based on

[1] These territories include 132 national parks, biological reserves, wildlife refuges and other ASP categories.

[2] This study, prepared by the Tropical Scientific Center and University of Costa Rica with financing from the National Forestry Financing Fund (FONAFIFO), refers to forest cover, which implies a broader concept than non-intervened primary forest; it includes intervened forest, secondary forest and forest plantations. Some environmentalist groups criticized it, as they felt it did not reflect the true situation of Costa Rica's primary forests; they noted the existence of much lower figures in studies prepared by other international agencies such as the WWF.

the information updated to 2002 are that it has now reached 45.4%[3] (FONAFIFO *et al.* 2002).

2.2. Forest-Related Economic Activities:

Exploitation of the forest and value-added lumber activities contribute approximately US$141 million to the national economy, which amounts to 0.87% of the Gross Domestic Product.[4] Close to 8,000 businesses in the country are linked to forest management and generate roughly 18,000 jobs (Barrantes, 2002).

Because Costa Rica's forestry sector has made a major effort to certify its activity's environmental performance, 65,344 ha of forest and forest plantations now use environmental certification schemes of management (Estado de la Nación, 2000).

Eco-tourism is another important forest-related economic activity. The international promotion of Costa Rica as a "green" tourist spot has made the forest a valuable tourist attraction. During the 2005 tourist season, 72% of those who visited the country went to some protected area (national parks, wildlife refuges and others). It is no accident that 40% of the 120 private reserves associated with the National Private Reserves Network are dedicated to tourist activity (Red de Reservas, 1999).

3. Institutionality of Forest Management

3.1. The State Forestry Authority:

The State Forestry Authority (AFE) is responsible for directing forest management in Costa Rica. It is made up of three entities: the National Conservation Areas (SINAC) and National Forestry Financing Fund (FONAFIFO), both of which answer to MINAE, and the National Forestry office (ONF), which is a participatory body for designing policies,

[3] This 2002 study, also conducted by the Tropical Scientific Center, this time in coordination with the University of Alberta and FONAFIFO, mentions that the difference in forest cover percentages between 1997 and 2002 is essentially due to differences in cloud cover in the satellite images used in the 1997 study, as well as improvements in detecting dry tropical forest.

Despite these encouraging figures, however, there is still strong pressure on the primary forests. Various studies mention uncontrolled use in areas where there is a greater presence of primary forest: the north and Caribbean regions (Talamanca) and the Osa Peninsula in the southern area (FONAFIFO *et al.* 2002, Fundación CECROPIA 1999). One of the main forest management problems is illegal felling; recent data indicate that 35% of the timber extracted is done illegally (MINAE 2002).

[4] These figures were provided by Alfonso Barrantes, Director of the National Forestry Office, and are part of a soon-to-be published study conducted by ONF (2002). The data include the contribution of the value-added activities related to lumber (felling, transport, industrialization, construction and furniture).

Research on the biodiversity of Costa Rica's forests is also becoming an economic activity promoted by the National Biodiversity Institute (INBio), the entity responsible for promoting sustainable biodiversity use at a national level. Since 1991, INBio has signed biodiversity research contracts with various transnational corporations and foreign universities valued at over US$2 million.[8]

made up of various stakeholders from the private forestry sector and ecological organizations.

The Authority's main functions are exercised through SINAC and are laid out in the Forestry Law,[5] which in Article 1 establishes as an essential and priority function of the state: *To care for the conservation, protection and administration of the natural forests and the production, exploitation, industrialization and promotion of the country's forest resources destined for this purpose, according to the principle of appropriate and sustainable use of renewable natural resources. In addition, it will see to the generation of employment and an increased living standard for the rural population through their effective incorporation into forestry activities."*

SINAC, the most important forestry administrative body with national coverage, is responsible for administering the State Forestry Patrimony[6] and in fact administers all forests in the country, independent of whether they are found within some category of protected wooded area, are in private hands or belong to the municipalities. It should be clarified that the Forestry Law considers as forest any extension of land of two ha or greater with at least 60 trees per hectare.[7] The scope and limitations of SINAC's

[5] The legal framework that establishes SINAC's competencies regarding forest management and administration is very ample: the Forestry Law (1996), the Biodiversity Law (1998), the Organic Environmental Law (1995), the General Wildlife Law (1993) and the National Parks Law (1977).

[6] This patrimony is made up of forests and the forested lands of the national reserves, areas declared inalienable, farms recorded in their name and those belonging to the municipal governments, autonomous institutions and other public administration agencies (Forestry Law Art. 13).

[7] The Forestry Law defines a forest as an autochthonous native ecosystem, intervened or not, regenerated by natural succession or other forestry techniques, occupying a surface of two or more ha, characterized by the presence of mature trees of different ages, species and size, with one or more canopies covering over 70% of this surface and having more than 60 trees/ha of 15 cm or more in diameter (Art .3). This definition of a forest is so broad that a forested plantation could be considered a forest if it fits within the suppositions of the cited article, which is totally feasible. Nonetheless, for purposes of forestry exploitation, plantations only require a Management Plan to be eligible for the Payment for Environmental Services. If the plantation is not within the PSA system, it only needs a "certificate of origin," which is a document prepared by a forestry regent verifying that the lumber exploited comes from a forested plantation.

Any kind of forestry exploitation requires a Forestry Management Plan that establishes the technical conditions to guarantee its sustainability. This plan must be prepared by a forestry regent contracted by the party interested in the exploitation. The management plans drafted by the regents must be endorsed by SINAC and must respect the official requisites and guides.

Forest exploitation in lands not considered forest also requires SINAC's authorization. Terrain with forest cover of under two ha requires the presentation of a study called a "forest inventory," which is less technical than the management plan but must contain minimal sustainability criteria for the exploitation and must also be prepared by a regent.

When terrain for agricultural use without forest is at issue, a "Permit to cut trees in pasture," issued by the Regional Councils of Conservation Areas, is required. The Forestry Law establishes that the municipal governments should grant this permit, but the competency was later transferred to the Councils, though in practice they are currently granted by SINAC because the Councils have not yet been created.

administration vary, depending on whether the forest is found within some ASP or is in private hands as well as the kind of use being contemplated.

3.2. Sinac's Deconcentrated Structure:

SINAC, created in 1995 through an executive decree,[8] meant an important change in management of the country's natural resources, since the Wildlife Department, Forestry Department and Parks Service were unified into a Superior Division of the National System of Conservation Areas. The country was divided into 11 conservation areas, and regional departments and sub-regional offices were set up in each one of them (see figure 1). The management competencies and approval of certain procedures were also transferred, as were regional-level permits and forest control. This regionalized organization is unique within MINAE.[9]

Figure 2
Costa Rica: The National System of Conservation Areas (SINAC)

[8] Decree No. 24652-MIRENEM of September 20, 1995.

[9] This reform, which in principle might seem simple, has taken several years, and many SINAC officials feel it is not yet in its final and best form. The reality is that an attempt was made to bring together in a relatively short period three departments that traditionally worked independently and with different orientations.

Source: MINAE, 2006

In an attempt to promote local participation in managing MINAE/SINAC, certain participation arenas were formalized legally. In 1995, the Organic Law of the Environment created Regional Environmental Councils as maximum deconcentration entities under MINAE with the capacity to make policy recommendations and process denunciations, although without specific competencies on forestry issues. In 1998, the Biodiversity Law created Regional Councils of Conservation Areas, with functions more related to forestry management, such as:

- To recommend to the National Council of Conservation Areas the creation, modification or change of category of protected wooded areas.
- To participate in fighting pests and forest fires.
- To recommend the areas that must receive incentives.
- To authorize the cutting of trees in pastureland.[10]
- To issue certificates of origin for the timber extracted from forest plantations.[11]

3.3. The National Forestry Financing Fund (FONAFIFO):

FONAFIFO's history dates back to the year 1990, with the promulgation of Forest Law No. 7174 and its Regulations, together with Executive Decree No. 19886-MIRENEM. Subsequently, the National Forestry Financing Fund was created in 1991 through Rule No. 32 of Law No. 7216 of the Ordinary and Extraordinary National Budget, and later FONAFIFO was established through Article 46 of Forest Law No. 7575 (FONAFIFO, 2006).

FONAFIFO's general objective is to finance small and medium-sized producers, through loans or other mechanisms, to promote the management of forests, both intervened and natural forests, in order to encourage forest plantation and reforestation processes, the establishment of forest nurseries and agro forestry systems, the rehabilitation of deforested areas, and also to benefit from technological advances in the use and industrialization of forest resources. FONAFIFO also mobilizes funds to pay for the environmental services provided by forests, forest plantations and other activities to strengthen the development of the natural resources sector.

FONAFIFO is a fully decentralized body within the organizational structure of the State Forest Administration. The aforementioned Law 7575 grants it relative autonomy, instrumental legal status and the authority to engage in any type of licit non-speculative

[10] In view of the difficulties of creating the councils, these competencies have not been exercised, so they have been assumed directly by the administration of each Conservation Area.
[11] The region can also extend this certificate, needed for transporting timber off the farm and for its export. At this moment, the councils do not exercise this power.

legal transaction, including the establishment of Trust Funds, to guarantee the effective administration of its patrimonial resources.

FONAFIFO is administered by a Governing Board, composed of five members (two representatives from the private sector and three from the public sector), appointed for a two-year period. To carry out its work, FONAFIFO has an Executing Unit, headed by an Executive Director, and five departments or Areas of Action: Environmental Services Area, Credit Area, Administrative Area, Legal Area and the Resource Management Area. FONAFIFO currently uses the modality of a Trust Fund to carry out its tasks and operations[12].

4. A little Explanation What Environmental Services Means:

Traditionally, environmental services (ES) have been understood and defined quite narrowly in terms of facilities that provide water and waste-treatment services, often by the public sector. However, there is a need of moving beyond this stage, and to consider ES holistically. Therefore, ES can be defined as a set of benefits generated for society by the existence and dynamic development of natural resources or ecosystems, in this case with a particular interest on tropical forests.

Also, ES can be seen as a set of regulatory functions (on stocks and flows of matter and energy) of the natural ecosystems and some agro-ecosystems that help to maintain or improve the environment and people's life quality (Odum and Odum, 2000; NRC, 2004). De Groot *et al*. (2002) define ecosystem functions as *"the capacity of natural processes and components to provide goods and services that satisfy human needs, directly or indirectly"* and additionally, these authors identified 23 ecosystem functions that provide goods and services, making a contribution to the ecological understanding on ecosystem services and a proposal for valuing them.

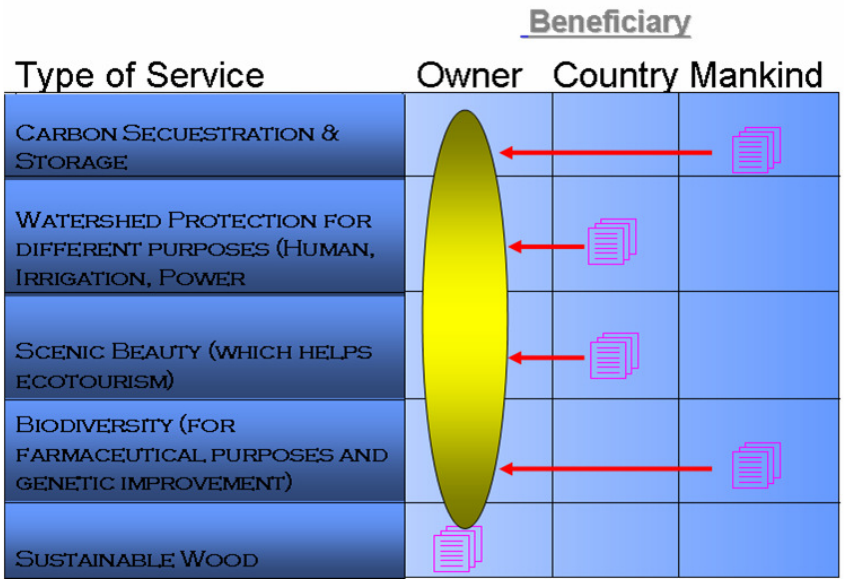
In the case of forests, they produce oxygen and remove carbon dioxide from the atmosphere, regulate the surface and underground flow of water, smooth out peaks and troughs in water availability, and provide very effective filtration systems for higher water quality (FAO/REDLACH, 2004). Additionally, forests support a diversity of native flora and fauna, and provide valuable goods and services, ranging from timber through scenic beauty.

The four main types of ES usually recognized by different authors (Mejías and Segura, 2002; Wunder, 2005) and pointed out in the Costa Rican Forestry Law 7575 (1996) are:

[12] FONAFIFO's Central Offices are located in San Jose and it also has eight Regional Offices in different parts of the country.

i) Carbon sequestration and storage; ii) Watershed protection; iii) Biodiversity protection; and iv) Landscape beauty.

Table 1
Who is to manage Environmental Services costs and who will benefit?



5. Valuation of Environmental Services:

Environmental services valuation can be a difficult and controversial task. In conventional economics it is generally accepted that measures of economic value should be based on what people want or the amount of one thing a person is willing to pay. At present, the valuation of ES in agriculture, forestry and natural resources, and also in relation to ecosystem services is in a shaping state (Gutman, 2003; Lewandrowski *et al.*, 2004), probably because of the term valuing ES is often used as attaching economic values to ecosystem services which are treated as public goods and therefore have no market value[13].

Therefore, attempting to assign values to ES presents several challenges because of the environment provides several services simultaneously, and different types of value are measured by different methodologies and expressed in different units, which involves subjective judgments (Fausold and Lilieholm, 1996). Although this review does not attempt to enter in a discussion on valuation, it is important to say that people are not

[13] Sell, J. 2005. Swiss Federal Institute of Technology Zurich (ETHZ). Zurich, CH.

familiar with purchasing such services if they are not specific stakeholders, then their willingness to pay may not to be clearly defined. However, this does not mean that ecosystems or their services have no value, or cannot be valued in dollar terms.

The most used methods for valuing ecosystem services are stated preference techniques such as contingent valuation and choice experiments. The contingent method differs fundamentally from other conservation approaches because instead of presupposing win-win solutions, this approach explicitly recognizes hard trade-offs in landscapes with mounting land-use pressures, and seeks to reconcile conflicting interests through compensation (Wunder, 2005). Additionally, there is a large body of literature about valuation of ecosystems and environmental services (Costanza *et al.*, 1997; O'Neill, 1997; Pearce, 1997; Daily *et al.*, 2000; De Groot *et al.*, 2002; Pagiola *et al.*, 2002; NRC, 2004).

6. 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.

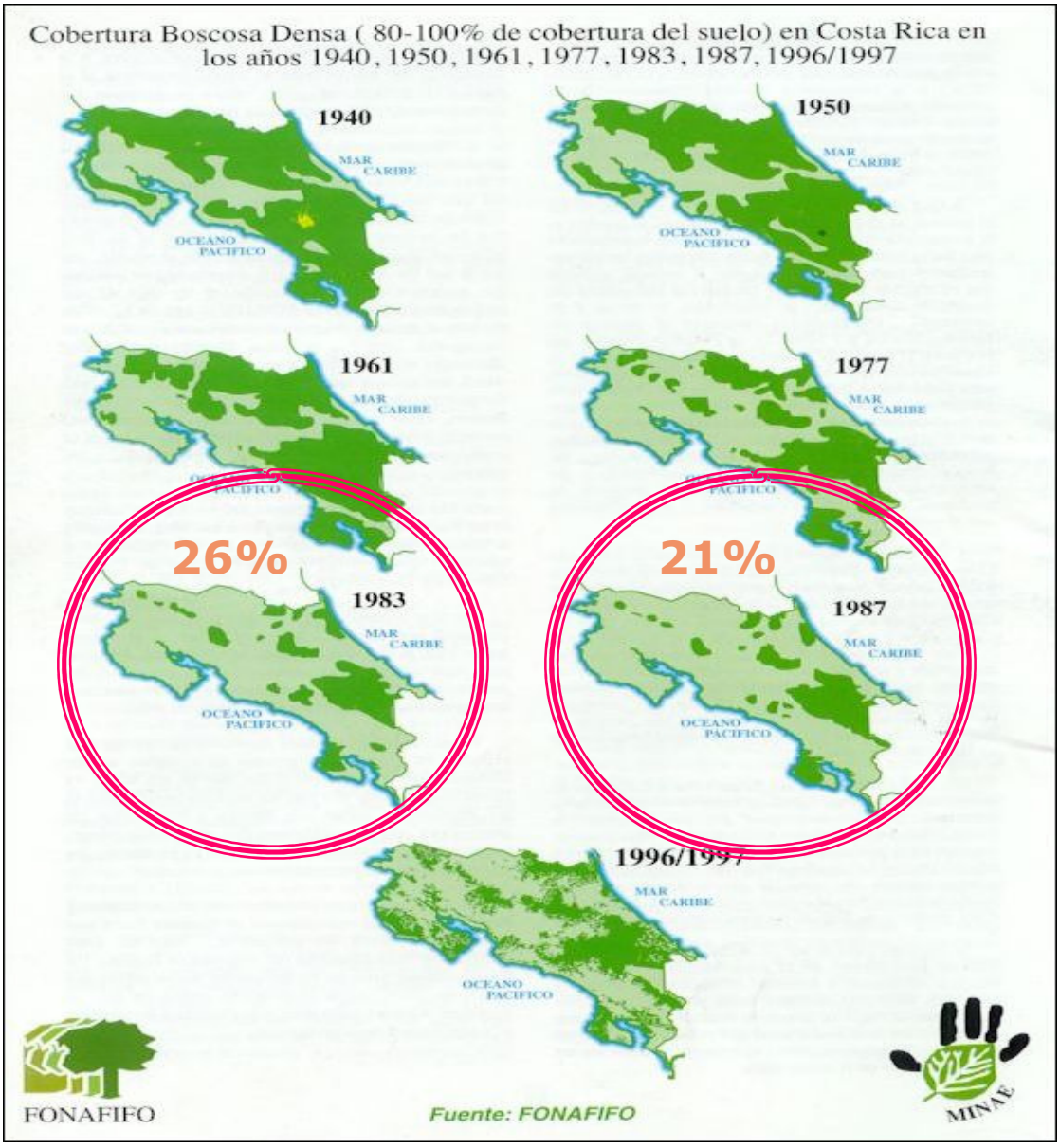
World Bank estimates indicate that eighty percent of deforested areas, nearly all on privately owned lands, were converted to pasture and agriculture. Deforestation was principally driven by inappropriate policies including cheap credit for cattle, land-titling laws that rewarded deforestation, and rapid 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.

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 be external to decisions made by landowners when they are not directly related to on-site productivity.

Figure 3
Forest Cover Changes from 1940 to 1996/1997



(Source: FONAFIFO, 2005)

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 at, 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, 2002).

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%

* Source: FONAFIFO, 2005. (US$1 = 346 colones on February, 2002). The levels of the payments change every year to adjust them due to inflation.

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.

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.

7. The Program Of Payments For Environmental Services In Costa Rica:

The Program of Payments for Environmental Services (PSA) implemented in Costa Rica is an alternative approach to halt environmental degradation derived from deforestation in low income nations (Castro *et al.*, 2000; Castro *et al.*, 2001; Ortiz, 2002). Land and forest owners are paid for the environmental services they produce when they adopt land use and forest management activities that preserve the forest and biodiversity and maintain people's life quality.

The Costa Rican program of environmental services aims to protect primary forest, allow secondary forest recovering, promote reforestation of abandoned pasture and degraded lands, and promote forest plantations to meet industrial demands for lumber and paper products (Rodríguez Zúñiga, 2003).

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.

Table 3
Contracts of Payments for Environmental Services by Land Owner Type

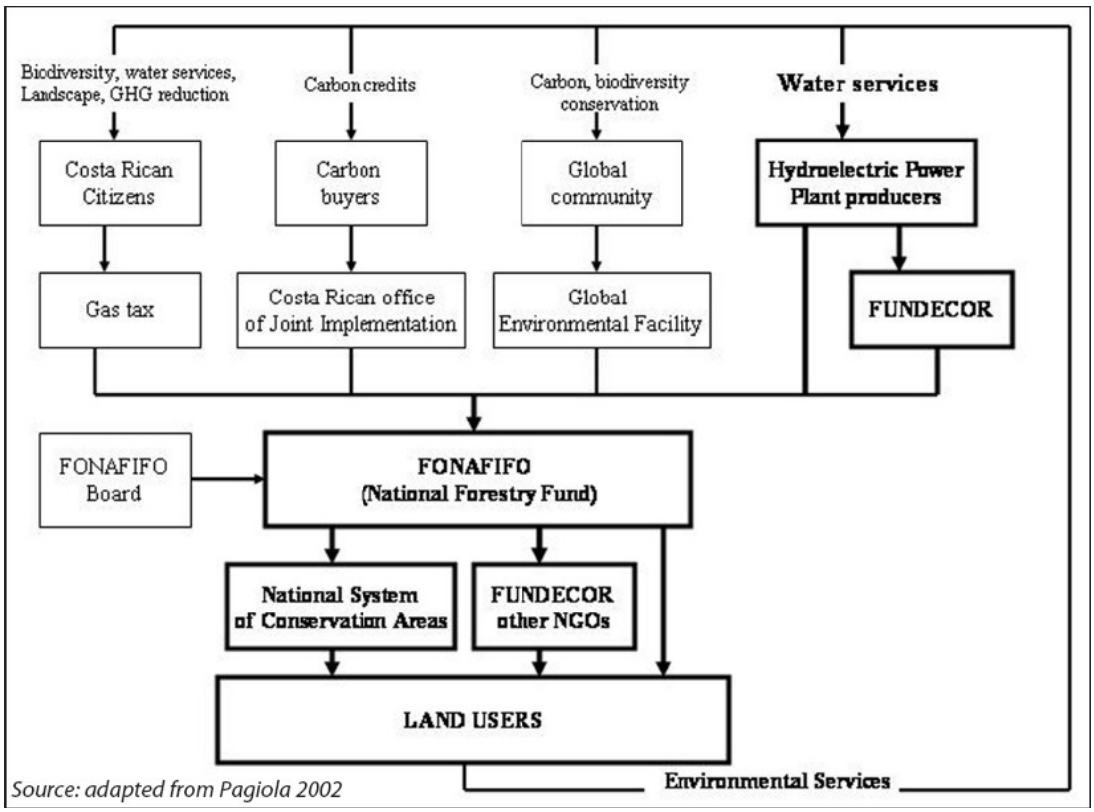
Contract	Maximum Area (ha)	Land Owner Type
Individual	300	Individual Land Owner
Global	300 by land owner There is no limit for NGO	Individual small and medium land owners associated to a local NGO
Indigenous Reserve	600	Indigenous Reserve Development Association.

Source: FONAFIFO, 2005

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 3).

The program functions like a funds transfer system from those who are benefited of the environmental services toward those that produce such environmental services (Mejías and Segura, 2002, See Table 1 & Figure 4). It was designed as a financial mechanism to promote the conservation of the forest resources of the country. It is a program where forest and plantation owners are financially and legally acknowledged for the environmental services that their forests provide to the community.

Figure 4
The Costa Rican Payment Program for Environmental Services.



The legal basis for the program is Costa Rica's Forest Law 7575, which recognizes four above mentioned ES provided by the forest ecosystems (See Figure 4): i) Carbon sequestration and storage (mitigation of GHG emissions); ii) Watershed protection (hydrological services); iii) Biodiversity protection (conservation); and iv) Landscape beauty (for recreation and ecotourism). In addition, it has also been proposed that the PSA be an instrument of wealth redistribution that comes to fortify the family economies in rural areas (FONAFIFO, 2005).

The Ministry of Environment (MINAE), through FONAFIFO, is charged with channeling government payments to private forestry owners and protected areas. Payments vary

according to the type of activity undertaken[14]: reforestation, agro-forestation, forest conservation and sustainable forest management.

Table 4
Distribution of the Payments of PES during year 2005

Contract Type	Total Payment (US$)	Years of Commitment
Forest Conservation Easements[(a)]	320	5
Sustainable Forest Management[(b)]	410	10
Reforestation[(c)]	816	15
Agro forestation[(d)]	1.30/tree	5

Source: FONAFIFO, 2005. The levels of the payments change every year to adjust them due to inflation.
(a) 20% each year for 5 years. (b) 10% each year. (c) 46% year 1 & 6% year 2 – year 10. (d) 65% year 1, 20% year 2 & 15% year 3.

Payments are made over a five-year period. In return landholders cede their environmental service rights to FONAFIFO for this period. When the contracts expire, landowners are free to renegotiate prices, or sell the rights to other parties. They are, however, committed to managing or protecting their contracted forest for 20 years (or 15 in the case of reforestation). Their obligation is recorded in the public land register and applies to future purchasers of the land.

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 is akin to the system of conservation easements that are widely used in the United States and European countries. Since 1997 to year 2005, near 507,830 hectares of forests have been incorporated into the

[14] At present, there are three different types of PES contracts. They are:

- Forest conservation contracts: US$320 per hectare (equivalent to $64 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, 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$410 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 10 years.
- Reforestation contracts: US$816 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.

program. During this period FONAFIFO has paid to private landowners approximately US$120 million.

Table 5
Payment of Environmental Services
Total Area and of Participants by PES Contract Type and Year

Year	Type of PES					Number of Contracts
	Forest Conservation	Forest Management	Reforestation	Total (Has)	Agro forestry System (Trees)	
1997	88,830	9,325	4,629	**102,784**	-	1,200
1998	47,804	7,620	4,492	**59,916**	-	597
1999	55,776	5,125	3,880	**64,781**	-	622
2000	26,583	-	2,457	**29,040**	-	271
2001	20,629	3,997	3,281	**27,907**	-	287
2002	21,819	1,999	1,086	**24,904**	-	279
2003	65,405	-	3,360	**68,765**	97,381	672
2004	71,081	-	1,557	**72,638**	412,558	760
2005	53,493	-	3,602	**57,095**	513,684	755
Total	**451,420**	**28,066**	**28,344**	**507,830**	**818,897**	**5,443**
(%)	**88.89%**	**5.52%**	**5.59%**			

Source: FONAFIFO, 2006

8. Financing The PES Program (Funding Sources):

Principal sources of funding for the program include a tax on fuel sales, payments to FONAFIFO from private sector firms (renewable energy producers, and water blotters) for the conservation of critical watersheds, and through the sale of Certified Tradable Offsets (CTOs) derived from forest ecosystems[15].

The fuel tax, also referred to as the "ecotax", is a special tax on the consumption of any crude-oil derivates, passed as part of the new Forest Law in 1996. Originally FONAFIFO was supposed to receive 5% from every fuel sale; however, in 2001 the law was reformed and the fund now receives 3.5% from every fuel sale (Number 8114/2001 - Tributary Simplification and Efficiency Law), which totals approximately *US$3.5 million annually*.

[15] 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.

In addition, through agreements with hydro-electric companies and other private enterprises, FONAFIFO obtains payments for the protection of water resources. Four companies are involved in this program, with a total investment of US$560,000 annually at present (see Table 6).

Table 6
Agreements of Payments for Environmental Services Between FONAFIFO and Public and Private Firms in Costa Rica.

Firm	Watershed	Watershed Area	Contract Area	Amount/Annually (US$)
Global Energy	River Volcán River San Fernando	5,870	4,311	40,000
Hydroelectric Platanar*	River Platanar	3,129	-	39,000
National Power & Light Company	River Aranjuez River Balsa Lake Cote	9,515 18,926 1,259	5,000 6,000 900	436,000
Florida Ice & Farm	River Segundo	3,870	1,000	45,000
TOTAL		**42,569**	**18,611**	**560,000**

Source. FONAFIFO, 2005
*The contract with *Hydroelectric Platana*r has two modalities. US$ 15/ha/year for landowners with land title, and US$ 30/year/ha for landowners without land title.

Additionally, the international community places a high degree of confidence in the PES Program and the institutional framework developed by FONAFIFO and the National System of Protected Areas (SINAC) to implement it. For example, the World Bank and the Global Environment Facility (GEF), through the so-called Ecomarkets Project, have provided, respectively, a credit line of US$32.6 million and a grant of US$8 million, for five years, to help finance the program of payments for environmental services and to strengthen FONAFIFO, SINAC and the local non-governmental organizations involved in the implementation of the program. KFW (German Bank) approved a grant of US$1.8 million for seven years.

Another mechanism implemented by FONAFIFO to promote the national and international market for environmental services are the Certificates for Environmental Services (Certificados de servicios ambientales - CSA). These CSAs are issued for voluntary contributions by the private sector, and the funds are used to finance the PES. The buyers of certificates normally define to which forest areas the funds must the applied. Moreover, a CSA can be used to provide the company with a good image, given that it is cooperating with the protection of forests, and the investment is deductible from gross income for tax purposes by presenting it as an operational cost. A budget of US$ 1.35 million annually is reported by FONAFIFO (2005) as allocated to this modality.

It means that more than 23% of the financing of the program comes from this national fuel tax, 3.7% from agreements with hydro-electric companies and other private enterprises, 64% of credit lines from the international community and 9.3% from CSA (De Camino *et al.*, 2000; Rojas and Aylward, 2003; FONAFIFO, 2005).

9. Comments on The Program and Conclusions:

The model of Payment for Environmental Services that Costa Rica has implemented since 1997 undoubtedly has been a pioneer attempt in the Central Americas region, and may be considered as fairly successful.

However, what has really been fundamental in the implementation of the program has been the forest policies institutional framework. This includes, for instance:

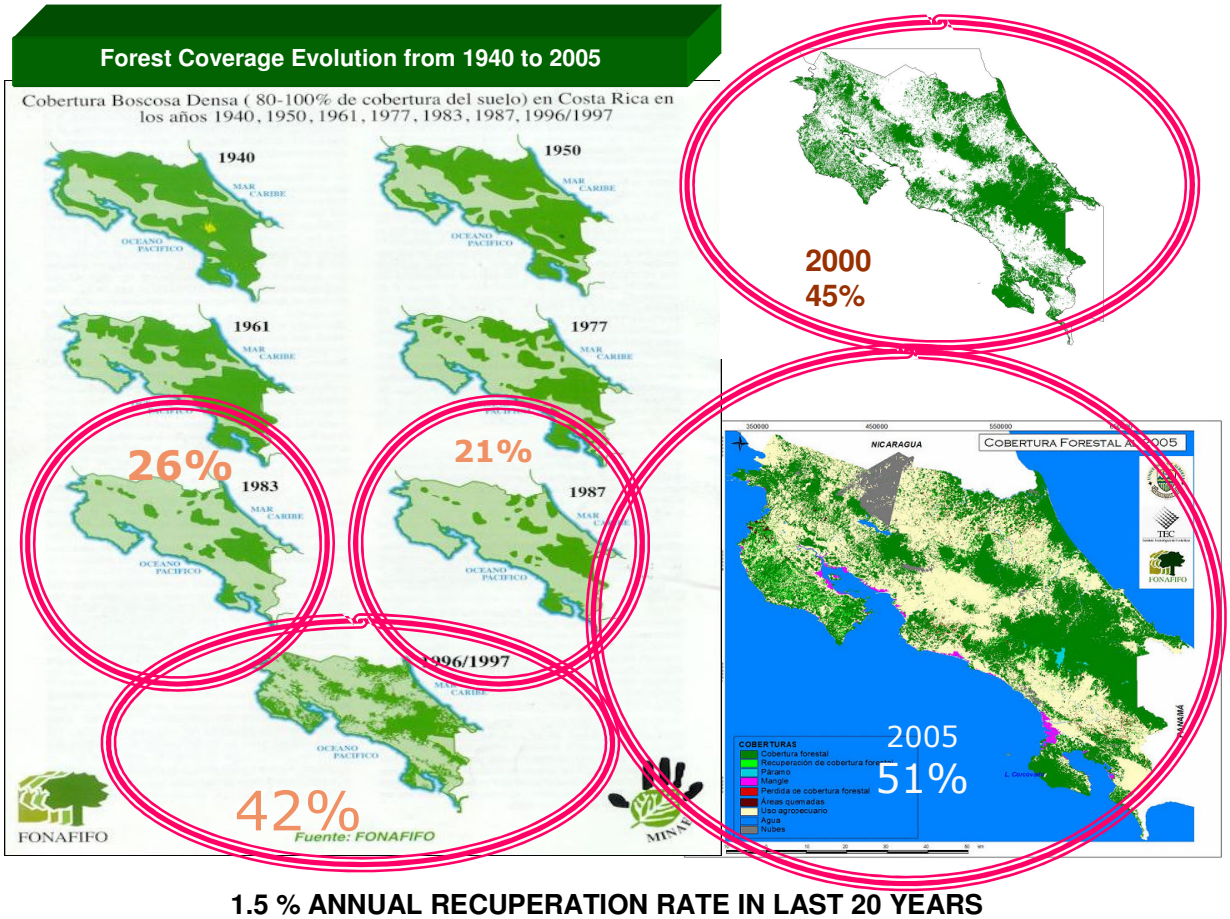
- The existence of SINAC that has a minimum of infrastructure and an institutional presence in each region of the country.
- The National Forest Financing Fund (FONAFIFO) that was established to handle financial issues for forests and natural resources.
- All the body of legislation that protect the nation's natural resources, including the Environment Law, the Biodiversity Law, and the Forest Law.
- The establishment of a tax on fossil fuels to pay for environmental services.
- The multiple efforts that have been made to protect biodiversity and generate income from it (70% of tourists visited the public and private protected areas in 2005, and represented an economic revenue equivalent US$134 million).
- The Costa Rican Office of Joint Implementation (OCIC) that was established to trade carbon emissions in the international market.
- The establishment of a national system to certify good forest management practices, including a National Commission on Forest Certification (CNCF).
- A strong forest owners sector having organizations that give them technical support for reforestation, forest management, and forest conservation.

According to these key factors of success, the results for Costa Rica have been the following:

- Reduce the rate of deforestation (particularly from illegal logging since 1992).
- Increase contribution to poverty reduction and sustainable development objectives and Enhance Rural Development (7,000 families throughout the country directly benefited from the program, contributing to rural poverty reduction).
- Enhance forestry related industry and non traditional production and exports.
- Improve forest cover and reduce land degradation (see Figure 5).
- Contribute to the fulfillment of national, regional and global environmental goals.

- Investments mainly oriented to small and medium landholders (average size of farms for conservation 30 Has. and 85 Has. for reforestation).

Figure 5



1.5 % ANNUAL RECUPERATION RATE IN LAST 20 YEARS

The success of a PES program depends in great part on pre-existing conditions and may not constitute a cost-optimal instrument in all circumstances and those countries that want to develop a similar initiative as the Costa Rican model. The recommendation, in this case, for those countries, is the PES will work best when:

- Is visible and shows the importance of broad participation in the early stages of PES schemes to ensure their long-term legitimacy and sustainability. An accelerated institutionalization of PES schemes, without adequately including the interests of

small producers, generates restrictions that are difficult to overcome later (Rosa et al., 2004).

- Beneficiaries are well organized and land user communities are well structured. Without strong and representative organizations of small producers and local communities, it is difficult to ensure participation that will result in truly inclusive schemes.
- The global orientation, eligibility criteria, and operational rules largely determine the capacity for inclusion in the PES schemes. In some settings, greater inclusion requires seeing beyond the forest to link up with other productive activities that are central to livelihoods.
- Have clear and secure property rights, strong legal frameworks, and are relatively wealthy or have access to resources.
- A broad focus on a wide range of practices for the provision of environmental services can be important for improving, diversifying, and strengthening the livelihood strategies of rural communities. The impact of PES schemes can be enhanced when they promote environmentally improved productive activities such as agro-forestry, agro-ecotourism, non-timber products, and sustainable agriculture.
- The incorporation of local-level perspectives, priorities, and visions can empower local communities and promote participatory management.

In the year 2006, with the support of FAO, the Netherlands Government, GTZ, World Bank, IUCN and other international organizations, the Central American countries have decided to carry out an ambitious program of forest development, known like PERFOR. One of their strategic objectives is support so that each one of the countries implementing their own National Strategy of Forest Financing (ENFF).

The Program of Environmental Services is one of the most important components inside the ENFF of each Central American country, and based on the experience of Costa Rica more others to international level; they have decided to implement the following five pillars, so that the financial mechanisms are a key issue in the sustainable management of the forests:

i. Legal Framework: Clear legal regulations and principles that enable the development of the system as a whole, including:

    - Internalization of prices into public services tariffs, land use change regulations and forest concept.
    - Environmental services payment definition and funding sources.
    - Linkage with international agreements to strengthening the legal framework.

ii. Institutional Framework: Adequate the administrative structure for the fulfillment of the proposed goals of the program, its integral management and the administration of financial resources.

iii. Financial Framework: Develop different public, private and mixed sources of funding, using internal and external sources and Market-oriented mechanisms.

iv. Political Framework: Among others things, it includes:

- Processes and instruments for the definition of national environmental policies (goals and targets): National Development Plan, National Forestry Development Plan, Illegal logging control strategy.
- Specific policies for the promotion of the management, conservation and sustainable development of natural resources, within the scope of national development policies.

- Usefulness of ESP as a mechanism for democratizing distribution of wealth.

- Coherence with Poverty reduction strategies.

v. Transparency And Accountability: It includes:

- Monitoring and verification Systems (Geographic Information Systems and others to control the goals and results of PES Program).
- Internal and external technical and financial Audits.
- Forestry regencies (to delegate the control of the projects in the rural zones)
- Property registry regulations (the contracts should be registered to guarantee the protection of the benefits and responsibilities of the PES Program).

With the implementation of PERFOR in the next years, it expects an increment in a significant way, of the benefits that include the conservation and sustainable use of forest ecosystems of Central American Countries.

It empowers small land 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.

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