



INNOVATIONS FOR SUCCESSFUL SOCIETIES

CREATING A GREEN REPUBLIC: PAYMENTS FOR ENVIRONMENTAL SERVICES IN COSTA RICA, 1994–2005

SYNOPSIS

In 1994, Costa Rica's new minister of the environment, René Castro, faced a difficult task. The finance ministry was planning to cut the funding of a subsidy program that had started to reverse decades of forest loss, and Castro urgently needed a new policy that would sustain the program's progress. First, Castro built a broad-based coalition to press for a revamped national forestry law. The coalition persuaded the legislature to ban the conversion of forested land to other uses and to create incentives for landholder compliance. In 1997, Costa Rica implemented the world's first countrywide payments for environmental services program, which recognized the continuing economic contribution of forests in terms of greenhouse gas mitigation, biodiversity conservation, water protection, and scenic beauty. Funded by a new fossil fuel tax, carbon credit sales, and money from companies that benefited from the forests, the program offered landowners financial incentives to preserve and expand tree cover on their properties. The program helped reduce the destruction of primary forest and encouraged reforestation of degraded land. From 1997 to 2005 Costa Rica's forest cover increased to 51% of total land area from 42%.

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INTRODUCTION

"It was like you had dropped an atomic bomb in the middle of the Amazon," said Carlos Manuel Rodríguez, recalling a 1992 visit to Costa Rica's Caribbean lowlands, where he saw a 400-hectare banana plantation carved out of previously untouched forest. The young lawyer, who would later play a pivotal role in rejuvenating the country's effort to save its forests, was part of a delegation of members of Costa Rica's congress, government ministers, and civic leaders sent to take stock of environmental degradation in the area.

Rodríguez recalled that although the country's environment minister described the scene as a catastrophe, others in the delegation disagreed. Representatives from the Ministry of Agriculture, who sought to raise farmers' incomes by expanding the banana industry, saw progress in the scene that lay before them. They reasoned that the conversion of forests into agricultural land could boost the country's economy, which was just beginning to emerge from a sharp downturn it had experienced in the 1980s.

The banana plantation scene exemplified a widespread problem. A World Bank report on

Costa Rica's forest policies estimated that Costa Rica had one of the world's highest rates of deforestation during the 1980s.¹ By 1986, the country's forest cover had shrunk to just 20 to 30% of total land area, from approximately 72% in 1950.²

Since 1986, when the government adopted a new forestry law and created the Ministry of the Environment (then known as the Ministry of Natural Resources, Energy, and Mines), Costa Rica had made progress in restoring forest cover. But in 1994, the Ministry of Finance decided to

cut the reforestation subsidies the government had been using as its main policy tool. Decision makers had to look for a new approach.

From 1986 to 1994, the government ended agricultural subsidies, prices weakened for many commodities, new industries such as ecotourism took hold, and foreign direct investment rose (see text box). By the time of the 1994 presidential election, public opinion had shifted to support forest preservation.

Although the election was a close contest between the Social Christian Unity Party's Miguel

Box 1

Changing Incentives to Conserve, 1986–1994

While forests on private land in Costa Rica shrank throughout the 1970s and 1980s, government-protected forests grew. An economic downturn in the 1980s saw the national parks budget slashed, but the reduction was offset by increased conservation funding from international NGOs and foreign governments. Alvaro Umaña, appointed Costa Rica's first environment minister in 1986, worked with ecologists and conservationists to negotiate between donor countries and the Costa Rican government certain agreements that forgave national debt in return for investments in forest conservation. These "debt-for-nature swaps" and other investments from the international community helped preserve more Costa Rican land in national parks and supported park management. By 1990, Costa Rica had one of the highest percentages of protected areas in the world: 16.8% of the country's territory.

As word of the scenic beauty of Costa Rica's national parks spread, ecotourists began visiting the country. The annual number of tourists visiting Costa Rica increased to 785,000 in 1995 from 278,000 in 1987, and the contribution of tourism to the country's gross domestic product rose from 3 to 8% during the same period.

International interest in the country's national parks—and the money that tourists

brought with them—helped shift Costa Ricans' own attitudes toward the environment. A 1995 survey found that 91% of residents in both San José and rural areas outside the capital were willing to pay more for water and electricity if the extra money they paid got invested in biodiversity conservation.

As tourism grew and public opinion shifted, the economics of converting forested land to agriculture also changed. First, to comply with the terms of international loan requirements, the government removed agricultural subsidies and price guarantees that had made it artificially profitable to clear land for production. Second, global meat prices fell, and farmers began to abandon their cattle pastures. And third, new investment by foreign companies created job opportunities with higher incomes than people could earn in agriculture. In that context, growing interest in forest protection converged with diminished landholder interest in clearing land, which led to a favorable climate for new policy and new legislation.

Sources: Paul F. Steinberg, *Environmental Leadership in Developing Countries*, Cambridge, MA: MIT Press, 2001, 75–76. Ronnie de Camino, Olman Segura, Luis Guillermo Arias, and Isaac Pérez, *Costa Rica: Forest Strategy and the Evolution of Land Use*, 12. José Alfredo Sánchez, Juan Carlos Barahona, Roberto Artavia, "Turismo en Costa Rica: El Reto de la Competitividad," working paper, 1996, 45; <http://web.media.mit.edu/~barahona/main/publications/cen650.pdf>. Karen D. Holl, Gretchen C. Daily, Paul R. Ehrlich, "Knowledge and Perceptions in Costa Rica regarding Environment, Population, and Biodiversity Issues," *Conservation Biology* 9;6(1995):1548–1558.

Ángel Rodríguez and the National Liberation Party's José María Figueres, both candidates understood the need to protect the country's forests. To lead the environmental components of their campaigns, they chose men who would later play leading policy roles. Rodríguez put his nephew, the young lawyer Carlos Manuel Rodríguez, in charge of his campaign's environmental policy, and Figueres chose René Castro, a senior National Liberation Party figure. The Rodríguez-Rodríguez duo would later get their chance in government, but in February 1994, Figueres won the election—by 50% to 48%.

Figueres made environmental concerns the focus of his presidency. On his first day in office, he hosted an international forum called From Forest to Society and announced that he was introducing a “new development model for Costa Rica . . . based on the intelligent and nondestructive utilization of Costa Rica's extraordinary biological diversity.”³ Castro, the new minister of the environment, focused his speech on the economic value of Costa Rica's forests.

In designing a new forest conservation policy, Castro had little precedent to guide his thinking. No other country in the world had managed to reverse forest cover loss, and there were no well-tested policy tools to reduce deforestation.

THE CHALLENGE

Historically, the Costa Rican government had encouraged the conversion of forested land into farms and ranches. Successive democratic governments offered farmers land titles and access to cheap credit if they agreed to convert forests into “productive” land such as cattle ranches or crop farms. The government guaranteed above-market prices for beans, rice, and maize, and offered subsidies to encourage commercial farming. High global prices for coffee, bananas, and beef underpinned the government policies.

As landholders responded to the incentives, Costa Rica's forest loss worsened.

In 1986, Costa Rica's legislature had recognized the high deforestation rate as a national problem and enacted a forestry law that provided financial incentives to restore tree cover. The law authorized the Directorate General of Forestry, part of the Ministry of the Environment, to issue forest bond certificates—redeemable for payment—to landowners who replanted trees. The program started to operate in 1988, but the incentives did not always work as anticipated: landowners sometimes cut down older primary forest in order to plant new trees, receive certificates, and capture the payments. Despite those problems, the program helped Costa Rica begin restoring its forest cover.⁴

Landowners challenged key provisions of the 1986 law, however, and four years later, in 1990, the constitutional court struck down the statute on the grounds that it violated private property protections. Although the legislature quickly passed provisional measures to retain the bond program, it failed to craft a new, more comprehensive law within the three-month deadline the court had set.

Castro had to find a solution that not only respected that 1990 constitutional court ruling but also responded to a new challenge: the incoming minister of finance notified Castro that financial support for the bond program would be cut from the national budget in response to pressure from international financial institutions and that all funding for bond certificates would stop at the end of 1995.

The new minister also had to address internal challenges within the Ministry of the Environment. Three agencies within the ministry shared responsibility for forest protection: the National Park Service managed national parks, the Directorate General of Wildlife oversaw wildlife reserves, and the Directorate General of Forestry handled forests on private lands.

Although the three agencies were within the same ministry, there was little cooperation among them. Carlos Manuel Rodríguez said that disjointed responses to forest fires illustrated the problem. “There were dry forests, and every year there was a forest fire issue,” he said. “Almost every year, the same thing happened: A fire would begin in the wildlife refuge, and you’ve got five ground staff at the wildlife refuge. You’ve got a national park right next to it with 35 staff. The five guys go like crazy trying to stop the fire, and then you have the 35 guys waiting on the line dividing both areas because it was not their responsibility.”

In addition, the three agencies managed disparate projects. In the late 1980s and early 1990s, several international donors had set up small forestry projects financed by trust funds, each with its own management unit. But the administrative fragmentation made coordination, follow-through, and oversight difficult.

FRAMING A RESPONSE

In 1994, two distinct camps of environmentalists had divergent ideas on how to improve Costa Rica’s forest cover.

The first group focused on state-led conservation and wanted to expand national parks and protected areas. The group’s plan was to purchase private land, put it under state control, and provide sufficient funding from the national budget to employ more staff for managing the protected areas.

The second camp, led by a nongovernmental organization (NGO) called Fundecor (formally, Foundation for the Development of the Central Volcanic Cordillera), advocated a market-oriented approach based on valuation of the economic contribution of Costa Rica’s forests. The Tropical Science Center, an independent research institute based in the capital city of San José, had conducted forest valuation studies from 1991 to 1993. Fundecor director Franz Tattenbach and other market-oriented conservationists

maintained that forests provided services such as clean water, carbon storage, biodiversity, and scenic beauty, and they wanted forest owners to receive payments from those who benefited from those services. They proposed a new system called *payments for environmental services* (PES) that would establish a market to link buyers of environmental services—such as households, businesses, and governments, which benefited from forests—and sellers: the landholders who owned forests or who agreed to reforest their land.

Tattenbach acknowledged that for both camps of environmentalists, the ultimate goal was conservation of forests. “But which policy was more cost-effective and faster? It was obvious to me that the old method was not working,” he said. Tattenbach and his colleagues argued that forest conservation had to be economically viable for farmers. “It was very clear to me that it was about opportunity cost. For the farmer, that is what matters,” he said.

Fundecor operated in Costa Rica’s central volcanic region, supported by an endowment from the United States Agency for International Development.⁵ Fundecor’s mission was to reduce the region’s alarmingly high deforestation rate, which the NGO estimated was 8% per year from 1986 to 1992. In 1992, as part of an independent pilot program, Fundecor had made payments for environmental services to a group of farmers who chose to conserve their forests and invest in the development of ecotourism on their land. The \$10-per-hectare payments covered an area of 1,600 hectares.

In communities where ecotourism was less feasible, Fundecor offered farmers incentives to switch to timber production as an alternative to farming cattle or growing crops.

German Obando, a Fundecor field staffer, worked with farmers to create forest management plans and secure the government permits required to legally harvest trees. “At the beginning, it was not easy, but we started financing the

administrative procedure to obtain cutting permits. We gave that service for free, so it was more attractive for forest owners,” he said.

Farmers earned \$50 per hectare from Fundecor for sustainably managing their forest, as well as revenue from trees harvested with little impact on biodiversity or water resources. Obando said that receiving that double income had a major impact on reducing deforestation. “If you have both PES and the income from wood, you can compete against not just cattle ranching but also some types of crops,” he said.

Helping farmers increase their incomes gained Fundecor respect in the region and across the forestry industry. Farmers’ participation grew as they realized Fundecor had no interest in seizing their land for national parks—as some of the traditional conservationists had advocated. Tattenbach cited Fundecor’s “total respect for stewardship of private property” as critical to gaining the trust of private landowners.

An opportunity to expand Fundecor’s pilot program arose as the Figueres administration began its search for new policy tools. In their first months in office, Figueres and Castro signed the United Nations Framework Convention on Climate Change that had been negotiated in Rio de Janeiro at the 1992 Earth Summit, a conference of 108 heads of state and more than 2,400 NGO representatives. Castro created the Office of Joint Implementation to facilitate Costa Rica’s participation in partnerships with wealthy nations that wanted to invest in climate change mitigation in developing countries, where carbon offset projects were less expensive to implement. Castro believed such activities could attract significant foreign investment.

Tattenbach and his staff at Fundecor designed one of the first joint implementation activities that Castro approved. Project CARFIX (short for *carbon fixation*) proposed using PES to “stabilize existing forested areas and expand forest cover through reforestation, sustainable

management of natural forest, and natural forest regeneration,” with the goal of creating a “buffer zone” around one of the national parks in the region where Fundecor worked.⁶

When new environment minister Castro began to reframe forest policy, Fundecor’s earlier success with PES and Project CARFIX caught his attention. He appointed Tattenbach to a national-level role as head of the newly formed Costa Rican Office of Joint Implementation and as the country’s special envoy for climate change. “In that setting, it was very easy to push for reform in forestry law,” Tattenbach said.

While considering new policy tools to protect forests, Castro also started internal reforms at the Ministry of the Environment to improve the ministry’s capacity and efficiency. First, he ordered a merger of the directorates of forestry, national parks, and wildlife into a National System of Conservation Areas (known by its Spanish acronym, SINAC, for *Sistema Nacional de Áreas de Conservación*). He appointed Raúl Solórzano, former director of the Tropical Science Center, to lead the merger process and take over the new organization.

Seeking a legal expert to be his second-in-command, Solórzano suggested Carlos Manuel Rodríguez, Castro’s counterpart in the main opposition party. To many in the Figueres administration, the idea of bringing the opposition leader’s nephew into a high-ranking position within the environment ministry was unacceptable. Nevertheless, Castro persuaded President Figueres to move forward on the appointment, based on Rodríguez’s reputation and Solórzano’s endorsement.

Although agency directors retained titular control of their operations, Castro instructed them to report to Solórzano. Castro also began consolidating into one office certain forestry projects around the country, many of which had been started by international donors.

GETTING DOWN TO WORK

Castro faced several daunting tasks in 1995. First, he had to convince congressional members of his own party and of the opposition party to support the forestry reforms he wanted. Second, he had to design the world's first national-level PES program. And third, he had to find a politically and publically acceptable way to fund the new program.

Passing a new forestry law

In 1995, Congress was already engaged in debates about replacing the forestry law.

Ottón Solís, a National Liberation Party congressman, proposed a ban on all logging except on tree plantations that landowners had planted themselves. Many members of Costa Rica's conservationist community and some members of the legislature voiced their support for his proposal.

Castro worried that his colleague's plan would result in illegal logging because it meant that forest owners would suddenly lose an income source without access to an alternative income. He and the other market-oriented conservationists supported a ban on conversion of forested land to other use but claimed that any restrictions placed on landowners would not work without compensation to make conservation financially attractive.

To counter the Solís proposal, Tattenbach worked with Fundecor staff to write a new forestry law for Costa Rica with assistance from SINAC's lawyers. On the blackboards of Fundecor's offices in San José, Tattenbach and the Fundecor staff drafted a plan to compensate forest owners—through a tax on fossil fuel consumption—for the environmental services they provided by conserving and managing forests.

The minister of finance was more open to the idea than the market-oriented conservationists expected. "Gasoline and diesel were already expensive in Costa Rica," said Castro, "but at the

same time, [a fuel tax] was the most-efficient tax collection method the government had because they collected it at the distribution company" (a state-owned monopoly called RECOPE). The proposed new program was a win for both the finance minister and the environment minister. The finance minister could increase tax revenue, and Castro could get the proposed new policy funded.

To build public support for the tax, Castro and his staff mobilized rural communities, which wanted to attract money to their regions through the PES program. "The minister of finance needed support from the public to increase the fuel taxes. We gave him that," Castro said.

Castro also conferred with media representatives in San José to convince them that the new law was a good thing for the Costa Rican economy. He specifically cited Tropical Science Center data on the economic value of the services provided by forests.

Castro's team members built support in other ways, too. SINAC director Solórzano courted support from the environmental commission of the legislature, which discussed and finalized the bill to be brought to a vote. Carlos Manuel Rodríguez persuaded members of congress in his party to endorse the law as a less-extreme alternative to Solís's proposal. And Tattenbach negotiated international backing by way of his new role as special envoy for climate change.

Logging companies and farmers initially opposed the ban on converting forests to other use because, they claimed, it infringed on private property rights. However, the new proposal allowed for "sustainable logging," a practice the companies had pledged to support when lobbying against Solís's draft law. Castro's law banned land-use change but still allowed for the sustainable harvesting of trees in existing forests as long as the cutting had minimal impact on the environmental services the forests provided. The law also offered forest owners compensation through PES and so

appeared more neutral in its effect on landholder revenues. In the end, Rodríguez said, “The logging companies had to accept [the new proposal] . . . a land-use-change ban was very consistent with the sustainable logging they were preaching.”

Tattenbach said farmers softened their opposition when they learned of Fundecor’s involvement in the new law. “It was a consummation of the trust Fundecor had built with farmers,” he said.

Tattenbach used his new position at the Office of Joint Implementation to sweeten the deal. At the time, the Norwegian government was seeking to invest in alternative energy in Costa Rica to offset Norway’s carbon emissions. However, knowing the new forestry law was in the works, Tattenbach convinced the Norwegians to fund PES instead. Norway committed US\$2 million to fund forest preservation projects in Costa Rica. Tattenbach considered using the money for the joint implementation projects but ultimately decided to direct it toward the national program instead. “I was hopeful that we could have a national reform,” he said. “We didn’t go for the easier thing; we were thinking more long term.” The foreign investment in the program and the prospect of future carbon offset purchases from wealthy nations encouraged members of congress to support the proposed law.

On February 5, 1996, the legislature adopted Forestry Law 7575.⁷ With passage of the law, the stage was set for Costa Rica to implement the world’s first PES program on a national scale.

Creating the National Forestry Financing Fund

While negotiating enactment of the law, Castro established a joint-management structure for the new PES program. SINAC—which absorbed the Directorate General of Forestry in the reforms led by Solórzano—was the Ministry of the Environment’s agency responsible for forestry. But Castro was hesitant to give the

agency sole administration of the program. “I knew that because the SINAC people were mainly park rangers and biologists, they would have difficulty in working with farmers in rural communities,” he said. He therefore created a trust fund called the National Forestry Financing Fund (known by its Spanish acronym, FONAFIFO, for *Fondo Nacional de Financiamiento Forestal*) to administer the program in collaboration with SINAC.

The joint-management structure divided administrative tasks. SINAC selected priority areas to fund, it received and processed applications, and it monitored program implementation. FONAFIFO oversaw payments, program finances, and external fund-raising. The market-oriented conservationists said FONAFIFO could act as a facilitator between buyers and sellers of environmental services. The two organizations had to jointly establish operating procedures for the program.

Trust funds were common vehicles for managing resources from earmarked taxes or international donors. FONAFIFO was set up as a trust fund with the Costa Rican Cooperative Bank, a private company. The Cooperative Bank oversaw the financial transactions, and FONAFIFO focused on service provision. Castro consolidated staff and resources from other forestry-related trust funds, many of which had been set up with foreign development aid or debt-for-nature swaps. “What I did was to organize all the remaining money from the donors’ trust funds. I put them in one, and that was the backbone of FONAFIFO,” he said. Castro added that he made the decision based on the advice of Ronald Vargas, head of the Directorate General of Forestry, who then merged the funds within his agency.

Oscar Sánchez, who became director of FONAFIFO’s PES program, said the trust fund structure was advantageous because it kept start-up and operating costs low. “The bank did many

tasks for FONAFIFO,” he said. “For instance, it managed human resources as well as purchase of the equipment we needed, such as vehicles. Such a structure was very common across ministries in Costa Rica. Many agencies had trust funds.” With the bank taking over most of the administrative duties, FONAFIFO’s staff, a group of 14 or 15 forest engineers and biologists, could focus on operational challenges.

The forestry law specified that a national fossil fuel tax on gasoline would underwrite the PES program. The tax was collected at the pump by RECOPE, the state company in charge of fuel sales, and delivered to the Ministry of Finance. However, because of poor communication and lack of coordination, the Ministry of Finance did not deliver the designated funds during the first year, and FONAFIFO relied on the \$2 million from carbon credit sales to Norway to roll out the PES program.

Streamlining and decentralizing SINAC

As the legislature deliberated over the new forestry law, Solórzano and Rodríguez pushed ahead with the merger of the Directorates General of Forestry, National Parks, and Wildlife. Solórzano said that at the time the new forestry law was enacted, the three directorates were “totally uncoordinated and fighting [each other] for financial resources.”

Solórzano and Rodríguez also decided to divide Costa Rica’s mainland territory into 10 conservation areas in an effort to streamline management of the country’s many protected areas. They established 33 subregional offices where landowners could submit their applications to participate in the PES program. The new agency, SINAC, had to open and operate the subregional offices and spread management roles across the new conservation areas.

The reorganization proved far from easy. Forestry staff worried that SINAC would become too focused on environmental conservation, and

national park staff worried SINAC would be too focused on the private sector. Solórzano and Rodríguez formed regional environmental councils to encourage citizen participation in the decision-making process and permitted civil society representatives to serve on SINAC’s board—in hopes of diluting entrenched points of view and nudging the organization into new patterns of behavior. But silos persisted.

According to Sonia Lobo, who became SINAC’s coordinator of PES, “creating a shared vision among staff from the three separate agencies was one of the greatest challenges in setting up the new organization.”

SINAC staff had to coordinate with their counterparts at FONAFIFO as well in order to design and administer the new PES program. Together the two organizations had to develop standard procedures to follow for applications, supervision, and payments. Castro entrusted his agencies with those tasks while he worked on deciding the levels of compensation that would be available through the new system.

Valuing environmental services

The 1996 forestry law outlined four environmental services eligible for compensation: greenhouse gas mitigation, biodiversity conservation, water protection, and scenic beauty. To value the four services across different types of forests, Castro hired the same organization that had conducted the forest valuation studies that influenced passage of the law: the Tropical Science Center. According to Sánchez at FONAFIFO, “The amounts of the payments were the biggest sources of conflict. All of the landowners wanted them to be more.”

To establish the price of services for which there was not yet a market, the center drew on studies from different parts of the world and considered the returns landowners could generate from alternative uses of forested land: the opportunity costs. According to Jaime Echeverría,

one of five environmental economists involved in the study, there were huge variations in the values assigned to environmental services. “One paper said a ton of carbon was worth \$2, and another said it was worth \$150,” he recalled. The team found that changing even the least-significant parameters in the valuation could result in a 500% difference in calculated price per hectare.

Echeverría said, “It was better to have a simple system,” and he opposed differentiating payments for each environmental service and type of forest.

In August 1996, the research team published a report that recommended annual payments of \$58 per hectare for the environmental services provided by conservation of primary forest, and annual payments of \$48 per hectare for the environmental services provided by sustainable management of primary forest and forestry plantations. The payments were comparable to the average annual profit for raising cattle (\$50 to \$62 per hectare) but significantly less than the average annual profit for growing crops such as coffee, corn, and beans (about \$350 to \$450 per hectare).⁸

Castro discussed the report with his staff and then cleared the proposal with the Ministry of Finance.

Crafting procedures

PES program staff at SINAC and FONAFIFO developed the operating procedures for the program, with input from other organizations, including the National Forestry Office, an NGO set up under the new forestry law to represent the private forestry sector, and the College of Agricultural Engineers.

Under Costa Rica’s forest bond certificate program, the College of Agricultural Engineers had organized, accredited, and regulated forest regents, who were forest engineers certified by the college to visit properties and write the management plans required for compensation. The 1996 Forestry Law gave the country’s 400 forest regents a similar role under the new PES

system and entrusted them with ensuring landholder compliance with PES contracts. The forest regents “allowed FONAFIFO to have a lot of information without having to have a huge staff,” said Sánchez. Landowners paid the forest regent for preparing their reports, and the college set the fees the regents could charge landowners.

SINAC and FONAFIFO staff used the forest bond certificate program as a starting point for the new PES procedural framework. According to Lobo, they also “held regional workshops with participation by the private sector and forest regents.” She said, “We took the recommendations we received from this process and integrated them into the new manual of procedures.”

One of the biggest problems that SINAC and FONAFIFO faced was lack of a payment mechanism to distribute funds to forest owners. Staff were under time pressure to make the new program operational in 1997, and they worried that having to devise a new payment mechanism would delay the start date. To overcome the payment roadblock, staff members proposed using the same payment mechanism as the forest bond certificate program used. Under that mechanism, landowners were issued five-year bonds that were paid in annual installments. SINAC and FONAFIFO won Ministry of Finance approval to continue using the bond certificates so that the PES program could begin the following year.

Launching the PES program

In 1997, the Ministry of the Environment began accepting PES applications. Landowners submitted pre-applications at their local subregional SINAC offices along with copies of their land titles and descriptions of the lands they wanted to enter into the program. Contracts were available for forest protection, sustainable forest management, and reforestation.

To publicize the launch of the program, SINAC distributed flyers at its 33 subregional

offices, and FONAFIFO promoted the program around the country through various media.

According to José Luis Aguero, who managed the PES program at the Sarapiquí subregional office in the central volcanic region, most applicants learned about the program because of outreach by Fundecor and other NGOs. “In my opinion, the NGOs had more access to the people and more capacity to explain the program to them,” said Aguero. “I think every applicant in the first year worked with one of the NGOs.” Aguero added that his subregional office never actively promoted the program because he and other staff had neither the time nor the resources to do so.

Sánchez said, “The biggest problem was that we didn’t have resources to include everyone,” so he was not concerned about outreach to areas of the country where it was harder to disseminate information.

SINAC staff recorded the dates and times that applications were received, because contracts were to be awarded on a first-come, first-served basis. So, to ensure they gained a place in the program, some landowners waited outside the office before the application period started. “In some cases, people waited in line for a whole day and night in order to be first in line the following day,” said Carlos Barrantes, who worked with Aguero in Sarapiquí.

At the end of the application period, Aguero advised SINAC regional staff how many pre-applications had been received, and then the regional staff reported the total number of pre-applications in the conservation area to FONAFIFO. FONAFIFO allocated a portion of the national PES budget to each conservation area, and then the regional staff told the subregional staff which pre-applications were to be accepted according to the list they had received from the local office. Once Aguero received notification of the approved applications, he contacted the landowners, giving them

approximately one month to complete the full application and sign their contracts.

According to Aguero, there was never enough available funding to accept all applicants. “Each year, we received two or three times more applications than we were able to accept,” he said. That trend was reflected across the country, so FONAFIFO decided to halt its mass-media promotion. “We had to suspend it because of the avalanche of applications we received,” Sánchez said.

There was far greater demand for contracts covering forest protection than for those covering reforestation or forest management. Aguero said the initial investment of time and money for reforestation made reforestation less attractive to landowners than forest protection, which required little work and no investment.

Monitoring compliance

Forest regents had to ensure that landholders who signed up for the program complied with their contracts, and staff at the subregional SINAC offices checked the regents’ work.

Almost all forest regents in the Sarapiquí region were Fundecor staff members or were associated with other NGOs. There were, however, three or four independent forest regents who worked in the region. Whereas the independent regents charged an up-front fee for the fieldwork required to enter the program, Fundecor and other NGOs allowed landowners to pay their fee after they had received the first PES payment, thereby making the program more accessible to poorer landholders.

After completing the initial documentation, the regents were required to revisit properties once per year to ensure landholders were complying with the terms of their contracts and not cutting down trees on enrolled land. Every year, staff from the local SINAC office would inspect a selection of properties enrolled in the program to ensure the regents’ reporting had been accurate. SINAC staff

checked that a property had the required signage, that the forest met the required density, that there had been no illegal tree cutting, and that there were no cattle in the forested area.

Aguero said that each year, his team visited 30 to 50% of properties enrolled in the PES program. “Each year, we rotated the projects we visited,” said Aguero. “We checked all properties at least once or twice during their five-year contract periods.”

When field staff detected deforestation, they reported it to SINAC’s national office, where legal staff would initiate court proceedings. “Even if we saw just one tree cut, we sent in a report,” said Barrantes. Aguero said there were some “isolated cases” of serious infringements. In those cases, landowners were required to pay back the money they had received from FONAFIFO.

Lack of compliance was not limited to landowners. “Sometimes we had problems with the regents, in that they said there was more forest than there actually was,” said Barrantes. “In those cases, we sent reports to the College of Agricultural Engineers. There were some suspensions of one or two months, during which the regents were prohibited from working.” The College of Agricultural Engineers dealt with corruption claims, and it disciplined regents who submitted dishonest reports. SINAC did not accept applications made by suspended regents.

Aguero said: “The biggest problems were with the independent regents [compared with the regents working with NGOs]. Sometimes the landowners would threaten not to pay the regents if the regents were going to report a contract violation. And because the regents depended on the landowners to get paid, there was opportunity for manipulation.”

In addition to actions by corrupt regents, program supervision was compromised by lack of necessary technology and equipment for effective monitoring. “We did not have GPSs or cameras

or many other things that would have made the job easier,” said Aguero.

Improving the program

After the first year of operation, the program still needed a firm financial footing as well as continued adaptation. Although an opposition-party victory in the February 1998 presidential election could have disrupted the political support necessary for making those refinements, it instead brought a friendly face back into a leadership position. The victorious Social Christian Unity candidate Miguel Ángel Rodríguez appointed his nephew Carlos Manuel Rodríguez as vice minister of the environment.

In his new role, Carlos Manuel Rodríguez began negotiating with officials at the World Bank about investing in Costa Rica’s PES program. “We needed to build capacity within the ministry and FONAFIFO,” he said. His team negotiated with the World Bank’s Costa Rican representatives, settling on a \$40-million grant and loan package with the Global Environment Facility for a project dubbed Ecomarkets, whose funds were to provide financing for PES contracts, build capacity among staff at SINAC and FONAFIFO, and introduce new targeting mechanisms into the program. In particular, the World Bank wanted to increase participation by women and indigenous communities. It also wanted to prioritize the connecting of land in the Mesoamerican Biological Corridor, which it considered to be of high importance to biodiversity.

Initially, to Rodríguez’s disappointment, the minister of finance objected to the project on the grounds that the loan was not a priority given Costa Rica’s existing level of foreign debt. “I didn’t realize that ministers of finance are like reptiles; they’re cold-blooded,” said Rodríguez. “They don’t speak any language other than finance and economics, and I wasn’t speaking that

language.” Rodríguez went back to his team and hired several economists to do more studies on the economic benefits of forests in Costa Rica’s national parks. “National parks represented just 30% of the nation’s forests but brought in hundreds of millions of dollars in revenue,” said Rodríguez.

In his second meeting with the minister of finance, Rodríguez brought in the economists he had hired—people who could speak the minister of finance’s language—and they explained in depth the methodology of payments for environmental services. Rodríguez recalled telling the minister of finance that the national accounting system had failed to consider the benefits that forests provided. “Land-use change, irrational fishing, and many activities that really damage our national capital [were] seen as positive growth, and the positive externalities from forests [were] not reflected,” he said. After the meeting, the minister of finance offered his support for the loan, and in 2001, the Ecomarkets project was launched with an \$8-million grant from the Global Environment Facility and a \$32.6-million loan from the World Bank.⁹

FONAFIFO used the funding from Ecomarkets to improve the organization’s technical capacity. The organization procured new geographic information system technology to improve monitoring of the program and the detection of infractions, hired IT staff to improve its online capabilities, and worked with Costa Rican universities to teach its staff—most of whom were forest engineers—about management and administration. Technology also made the application process easier for landowners. After the official land registry moved online, landowners no longer had to provide land titles, because FONAFIFO staff could easily look up such information on the Internet.

FONAFIFO also hired specialist staff to attract more private buyers of environmental services. Those specialist staffers approached

private enterprises that benefited from the environmental services forests provided and encouraged them to enter into contracts with FONAFIFO to fund payments to forest owners. FONAFIFO had developed some experience in that kind of recruitment when it had attempted to attract private enterprise funding in 1997. “We financed a study to show hydroelectric companies the benefit they received from having the lands around their operations forested. There was a steady flow of water, with less solids that could damage their machines,” said Sánchez. The study led to FONAFIFO signing agreements with four hydroelectric companies, which collectively funded or partially funded PES contracts covering more than 15,000 hectares of forested land.¹⁰

With the influence of World Bank advisers, FONAFIFO began to consider the social aspects of the PES program. To ensure that the program did not benefit only wealthier landowners, it started to focus more on women and indigenous communities. In 2003, the requirement of possession of a formal land title for entering the program was dropped, and FONAFIFO started accepting other indicators of landownership. FONAFIFO also began to prioritize applications from regions of the country with the lowest rankings on Costa Rica’s social development index, calculated by the Ministry of Planning by applying several health, education, and quality-of-life variables.

OVERCOMING OBSTACLES

In 2003, FONAFIFO staffers were becoming increasingly frustrated with their counterparts at SINAC. FONAFIFO was known for being an efficient, well-organized operation, and Sánchez claimed that processing delays at SINAC were damaging the PES program’s reputation. The World Bank, too, was concerned that the requirements for the Ecomarkets project weren’t being met. “In 2003, a World Bank evaluation found that we weren’t meeting our

commitments in regard to prioritization areas,” said Sánchez.

That year, Carlos Manuel Rodríguez, who became minister of the environment when the Social Christian Unity Party again won the election in 2002, decided to hand over all aspects of PES program administration to FONAFIFO. SINAC retained a supervisory role in the program, but its relationship with FONAFIFO continued to deteriorate. With SINAC pushed aside, FONAFIFO went about building a more-effective administrative structure on its own.

The first step in that process was for FONAFIFO to open up regional offices that would receive applications for PES. “SINAC had 33 regional offices. We did an evaluation and realized we didn’t need so many offices; it would have cost too much for offices and personnel,” said Sánchez. “We opened up offices in the areas we most needed to protect. At first there were five, which we then increased to eight. The ministry instructed us to put our offices inside SINAC’s offices so that we didn’t appear separated.” After initially complying with that request, FONAFIFO later opened several of its own offices separate from SINAC’s facilities. FONAFIFO doubled its workforce to staff each office with two or three new employees.

Renting office space and hiring new staff meant an increase in FONAFIFO’s administrative costs. “Administration costs increased from 7 to 13 or 14%,” Sánchez said. Some of the money came from the Global Environment Facility grant, which had a component for the financing of administrative costs, but to cover rising expenses, FONAFIFO had to reduce funding of the PES program. “The public, in general, didn’t know this detail about the increase in administration costs of the program,” said Sánchez. “The two directors of the board who represented the private sector questioned the decision, but it was a necessary

change. We couldn’t have continued the project with the World Bank without that change.”

After setting up its new offices, FONAFIFO introduced new procedures to make the program more efficient. One step that slowed down processing times at local SINAC offices involved site visits made by SINAC staff to confirm the forest regents’ reports. FONAFIFO’s administration team decided that site visits were unnecessary and placed full faith in forest regents’ reports.

FONAFIFO also expanded its monitoring and auditing controls. From 2002, FONAFIFO staff used satellite monitoring systems—financed by the World Bank loan—to monitor land-use changes. The agency also chose a sample of 400 projects to audit each year.

In its supervisory role, SINAC continued auditing PES contracts. But according to Aguero of the Sarapiquí office, the auditing was more symbolic than practicable. “After 2002, we made very few site visits—only around 10 per year,” he said. According to Lobo, the number of site visits conducted by SINAC staff around the country decreased to 200 to 250 per year after the change in administration.

ASSESSING RESULTS

According to FONAFIFO, the main goal of the PES program was “to get as close as possible to 70% forest cover,” which corresponded to the amount of land believed to have “forest potential.”¹¹ By 2005, Costa Rica’s forest cover had reached 51%, an increase from 42% when the program began in 1997. During that period, FONAFIFO spent approximately \$110 million on PES contracts protecting 400,000 hectares of land (almost 8% of the country’s total land area, or 11% of that deemed to have forest potential).¹²

Scholars disagreed over how much of the gain in forest cover was due to the PES program. Several studies found that the program itself had

minimal impact on reducing deforestation, arguing that plots of land included in the program were not at risk of being deforested in the first place.¹³ Some of those studies compared land not included in the program with similar plots of land that were, and they found that deforestation rates remained low in both areas.¹⁴

Supporters of PES argued that the studies were flawed because they analyzed the program in isolation from the land conversion ban. The two policies had been developed to be complementary, they said, and PES was being used as an incentive to ensure compliance with the land conversion ban. Carlos Manuel Rodríguez recalled that that argument was used in explaining to congress how the land conversion ban would be enforced: “We told them . . . if we do PES, the market will be on our side and people won’t be induced to cut the forest illegally.”

Other factors also played roles in reducing deforestation. Echeverría of the Tropical Science Center called attention to the significance of the country’s changing economy. “The country switched to a more-diversified economy—one with financial services, industry, and technology,” he said. “We are not an agricultural economy anymore. I think that reduced a lot of pressure on the forests. That combined with the law, combined with PES. It is an interesting package that makes people think twice about deforesting.”

In 1997, the year the program began, Intel Corporation, a US maker of computer chips, built a factory in Costa Rica, sparking investment from many other multinational technology firms. The Intel operation alone accounted for 60% of Costa Rica’s 1999 growth in gross domestic product.¹⁵ The industrial expansion diminished the importance of exports associated with deforestation, like agriculture.

Carlos Manuel Rodríguez said the biggest result achieved by the program was that it placed a value on Costa Rica’s forests that hadn’t existed before. “The World Bank thought that PES

focused entirely on reversing deforestation and [was] concerned that we were making payments in areas not at risk of deforestation. We were more interested in fixing the market failure” by putting value on forests, he said.

Fundecor director Tattenbach agreed. “Good analysis shows that PES is a deterrent to deforestation,” he said. “Maybe the concept is this: you don’t pay people; you change the rent of land . . . If all of a sudden a forest has a per-hectare value it didn’t have before, that changes the economic balance.”¹⁶

An evaluation report for the Ecomarkets project said the PES program “often tended to focus on larger, better-off landholders,” as opposed to poorer, smallholders.¹⁷ In 2014, Jaime Echeverría said it was those smallholders that posed the biggest risk to forests. “Deforestation is illegal,” he said. “I do not believe that any respectable company wants to get into trouble with deforestation. The small guy who’s clearing things here and there who is doing it for subsistence I think is more damaging in some areas than large enterprises are. There are many small guys, and they’re hard to detect because they’re operating on the fringes of the national parks. The big pineapple company is much easier to stop than the little guy who chops back his forest a little bit every year.”

REFLECTIONS

Costa Rica’s payments for environmental services program showed how a middle-income country could pay most of the cost of a program that successfully incentivized landowners to protect and reforest their land. Despite initial expectations in Costa Rica that the program would be funded by international sources and private businesses, Costa Rican citizens funded 80% of contracts by paying fuel taxes.

According to Franz Tattenbach, who served on the executive board of the Clean Development Mechanism for the United Nations Framework

Convention on Climate Change (UNFCCC) from 2002, countries that focused solely on international funding to finance anti-deforestation initiatives failed because of the slow pace of international climate negotiations. Tattenbach suggested that the only progress in forestry has been made in Latin American countries that have funded their own initiatives. “United Nations conventions have been so slow. Almost nothing has happened in countries in Africa and very little in Asia. Fifteen to 20 years later . . . it would be about time to have some success stories,” he said.

René Castro lamented that Costa Rica’s success had not spread to its regional partners. Castro expected the program would spread to many other tropical countries, but that “didn’t happen because of opposition from developed countries that had doubts about the science and methodology of PES, as well as opposition from some developing countries, like Brazil and the Republic of the Congo, which feared they might lose sovereignty over their natural resources,” he said.

However, World Bank PES expert Stefano Pagiola said Costa Rica’s PES program had had a huge impact on other countries in the region. “We now have several national-scale programs—for instance, in Mexico and Ecuador—and in various Brazilian states, we have a large number of local-level PES programs,” he said. “It’s hard to say whether any of that would have happened without Costa Rica, but . . . the amount of interest

generated by [the Costa Rican PES] program and this kind of approach was huge. Really, it had a snowball effect.”

One reason that PES did not spread to more tropical countries was that the international carbon credit market did not grow as fast as the Costa Rican government had expected. After 2001, the Ministry of the Environment’s attention turned from activities implemented jointly, such as Project CARFIX and other forestry initiatives, to the UNFCCC’s Clean Development Mechanism (CDM). CDM projects—which funded reforestation initiatives but did not fund programs like PES that aimed to avoid deforestation—were largely failures in Costa Rica. Oscar Sánchez said Costa Rica received less funding for CDM projects than it had invested in preparation work for the projects.

After 2008, FONAFIFO began courting international funding from a UNFCCC initiative called REDD (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries, later rebranded REDD+). In 2014, Tattenbach feared that REDD+ could fail in Costa Rica as well. “I have been carbon fool number one several times,” said Tattenbach, “but I am not anymore. I didn’t expect it would take so long [to get funding from international countries for carbon offset projects], and it is still being used as a way of enticing policy reformers [through REDD+]. It could backfire again.”

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