

Costa Rica- CNFL

CNFL Payment for Environmental Services (PES) project for protection of the Aranjuez, Balsa, Cote and Virilla watersheds

SUMMARY

Hydro-Electric Power (HEP) company, (CNFL) pays landowners in four watersheds to reduce siltation. The company created its own environmental department to run the PES programmes (payments still go through the National Forestry Fund, FONAFIFO); the department works also on environmental education, waste management and agro-conservation. Up to 2004, the company's PES scheme involved mostly larger landowners who were likely to retain their forest without any financial incentive ('non-additional' conservation). The PES for forest regeneration was not high enough to compete with agricultural land use in some of the areas with higher opportunity cost (like the Virilla Watershed). Since 2004, investment has been redirected to address these constraints on effectiveness.

MATURITY OF THE INITIATIVE

Ongoing.

DRIVER

The initiative seems to have come from CNFL, but mostly due to the "hype that existed around the national PES programme in the late 1990s" no cost benefit analysis (CBA) was done by the company and available data on forest-hydrology links was not consulted (de Man, M. et al., 2003).

STAKEHOLDERS

Supply

- i) In the Aranjuez watershed: 2,305 hectares (originally it was intended to be 4,000 hectares) are currently under PES. Providers are a) private landowners (20 contracts for 13 households in the upper parts of the watershed, representing a participation of three per cent of the 400 producers in the middle and upper parts of the watershed), the Monteverde Conservation Association (746 hectares) and the coffee cooperative Coope Montes de Oro.
- ii) In Balsa: 4,257 hectares of forest are under PES contract (of the intended 6,000 hectares in a total watershed area of 18,926 hectares). Payments are made to 11 different types of societies with an average area of 316.4 hectares per contract. Only five private landowners receive payments with a mean of 155.3 hectares.
- iii) In Cote: One private corporation with 500 hectares of land and 12 other forest-owning companies with an average of 300 hectares (total of 800 hectares of the intended 900 hectares in a total watershed area of 1,259 hectares).
- iv) In Virilla: 4,000 hectares (1,000 hectares reforestation, 2,000 hectares primary forest conservation and 1,000 hectares secondary forest conservation).

In 2011 the CNFL had 2601 hectares in Aranjuez, 4688.5 in Balsa, 870 hectares in Lago Cote, provided extension services to 3870 hectares in Virilla and maintenance to 210 hectares of reforested forest (source: Estados Financieros del CNFL al 30/06/2011):

Demand

CNFL: private corporation (but majority-owned by the state utility company - Costa Rican Institute of Electricity, ICE) - power generation through small run-off-river hydropower plants. CNFL created an environmental department to run the PES project; payments are still processed through FONAFIFO. Additional US\$7 each month paid by CNFL to FONAFIFO in overheads.

CNFL has also invested in PES in the Virilla watershed – the Environmental Improvement Project for the Upper Part of the Río Virilla Watershed (Plama-Virilla), a bundled watershed carbon project (at the time a pilot AIJ) involving 4,000 hectares of forest: 1,000 hectares for reforestation, 2,000 hectares for existing primary forest conservation and 1,000 hectares for existing secondary forest conservation. The Project was funded by the Norwegian Government as a purchase of 200,000 metric tonnes of carbon storage (conservation) and sequestration (reforested areas) worth US\$2 million.

Intermediary

FONAFIFO .

Facilitator

FONAFIFO and the NGO FUNDECOR.

MARKET DESIGN

Service

Water quality (erosion control) and water flow regulation (higher flows in dry season).

Commodity

Improved Management Practices through agroforestry.

Reforestation for commercial Plantations.

Conservation and Protection of Existing Ecosystems.

Rehabilitation of Degraded Ecosystems for protection.

Contracts are valid for a period of 10 years in four watersheds where the company is developing new hydropower projects.

Payment mechanism

Intermediary-based: CNFL pays FONAFIFO US\$47 per hectare per year, from which US\$40 per hectare per year are channelled to the landowners; during the first year of the contract the amount is US\$53 to cover the initial costs of implementation - management plan, legal procedures, etc.

CNFL covered FONAFIFO's full amount per hectare, despite the fact that it is interested in only one of the environmental services (water). However, currently FONAFIFO is paying higher compensation (see Costa Rica PSA case).

Terms of payment

Cash instalments during a 10-year contract (longer than the typical FONAFIFO agreement in other watersheds, usually five years).

Funds involved

For a total of 11,000 hectares under contract (Aranjuez, Balsa and Cote) funds involved are around US\$ 602,186 (US\$53 per hectare per year) for the first year and US\$534,014 for each of the following nine years of the contract (US\$47 per hectare per year), coming to a total of about US\$5 million, which is entirely funded by CNFL (from its CDM project). This used to be equal to the full amount received by landowners under the national PES scheme and CNFL paid in full, even though it was only interested in one of the environmental services (water).

ANALYSIS OF COSTS AND BENEFITS

Economic

In the case of Aranjuez:

Transaction costs are quantified by CNFL as US\$13 for the first year, covering FONAFIFO's costs in promoting and implementing the programme (management plan). Costs to obtain a land title could be between US\$350 and US\$800. This is likely to be a larger burden for small landowners, since the costs are probably not proportional to property sizes, so costs are higher on a per-hectare basis for small landowners.

Opportunity costs may not be very high in this case, either because the participants have other motives for conserving their forest, e.g. for recreation or because alternative uses of the forest (usually a combination of cattle ranching, coffee production and subsistence crops) do not give high returns in this watershed. For example, the returns from converting forest land to cattle ranching are estimated to be around US\$40 anyway (accounting for long term profits of cattle ranching and short term timber harvesting). A new cost for the landowners of the land under PES is the total ban on felling trees for wood or fencing.

Income benefits: the distribution of the payments by the participants is as follows: a) 63 per cent of the payments is received by two participants with land over 700 hectares (one private landowner and the Monteverde Conservation Association) and 37 per cent by all the other 12 participants, with forest lands covering an average of 66.8 hectares. Annually the extra income from the PES can in this way range from US\$30,000 per year for the large landowner mentioned, or US\$2,676 for the average size property of the other landowners, down to only US\$236.

The relative importance of the contribution from PES can be appreciated if compared to average annual income which ranges from US\$2,820 to 5,640 for participating farmers. For the average sized property owner, the contribution from the PES can considerably increase the family's annual income (by 50 or even 100 per cent) although this does not seem to be perceived by the participants: some consider payments low, others see it as a windfall since they would not use their forests for other purposes anyway.

Environmental

No environmental impacts have actually been measured. However: a) in 2002 CNFL created an environmental department to run the PES programmes in the different watersheds and this department also works on environmental education, waste management and agro-conservation, so it is likely that there are important side impacts in terms of reduced waste in the rivers. b) In de Man et al. (2003) it is argued that in this case, the agricultural practices may contribute more to high sediment loads than deforestation, since in this area the (illegal) deforestation rate is presently low. In this way it is likely that CNFL will not really appreciate sizeable improvements in the reduction of erosion from deforestation (i.e. economic efficiency of this considerable investment is likely to be low).

Additionality of the scheme: most of the areas remaining under forest cover are areas less attractive for other purposes, or they were not planning to convert it anyway - additionality of the PES may therefore be negligible.

Social

Impacts on vulnerable groups: In this area nearly all inhabitants have a basic standard of living. Although the area of the Aranjuez watershed is considered to be a marginal rural area, the vast majority of the inhabitants of the watershed are not poor and most people have access to sufficient income, proper housing, electricity, education and health services (Ministry of Health, 1995 cited by de Man, 2003).

Property rights issues: Initially established rights of possession were enough, but from 2002 due to conflicts in overlap of tenure, land titles were required.

LEGISLATION ISSUES

a) Since in this case the PES is financed entirely by the buyer (CNFL) there are some variations with regard to the usual way FONAFIFO organizes its PES schemes. For example, contracts last for 10 years instead of the usual five; applications can be made throughout the entire year and there is no top limit in terms of area enrolled (FONAFIFO's limit is 300 hectares). b) This allows for cases where, for example, one single landowner can claim payments for an area greater than 700 hectares. In a personal communication with Michiel de Man, he claimed that CNFL is rather unhappy with this unequal distribution of its PES payments that seems to benefit large landowners.

MONITORING

a) Compliance is monitored twice a year by a forestry engineer from FONAFIFO; b) in 2004 the environmental department of CNFL stopped making contracts for forest conservation in the three watersheds due to uncertainty over whether or not the PES scheme was being environmentally successful. There is no clear indication how they measure success, if in terms of land use, or of the actual service being delivered.

MAIN CONSTRAINTS

According to de Man's (2003) study the main obstacles may lie in: a) the selection processes by intermediaries prioritising large land owners; b) the legal requirement of land titles; c) complex and expensive bureaucratic procedures and implementation costs and d) lack of access to detailed information about PES.

MAIN POLICY LESSONS

- i) In this case personal intermediation by a promoter of the PES (like FUNDECOR) project is believed to have played an important role in motivating and informing landowners, leading to increased participation.
- ii) The lack of evidence on the effectiveness of the conservation approach to hydrological improvements led the environmental department of CNFL to stop issuing new contracts for forest conservation in 2004 (note that the power plant construction is still underway) and to a shift in interest towards investing in wider agro-conservation measures (due to erosion problems in marginal agricultural lands (high gradient slopes and areas of overgrazing).
- iii) Because PES for forest regeneration cannot compete with more profitable agriculture activities, in these areas action is being diverted towards better

environmental management of these agricultural activities. CNFL, the local producer cooperatives and the local Agriculture Ministry agencies are working on a plan for integrated watershed management, with funds from the Japanese development agency JICA. According to a news release from the World Wildlife Fund (WWF), there is already an Aranjuez Agro-ecological Association, that has been active since 2001, helping farmers transform unproductive fields (for example due to degradation by cattle ranching) into organic agriculture productions, as well as other general sustainable production techniques (area: 6,056 hectares in the upper and middle watershed of the Aranjuez, 45 farms bordering the Aranjuez River). Support is given by WWF Central America and by Kenco coffee (a UK coffee company).

- iv) *FONAFIFO and CNFL partnership* - Although CNFL has its own environmental department to deal with the PES scheme, they are also working through FONAFIFO because i) contracts under FONAFIFO are backed up by the forestry law and are stronger in legal terms (for example they are attached to the property deeds: land cannot be sold without upholding the PES commitments) and ii) FONAFIFO has experience in managing the funds, and CNFL does not "want to be a bank."

OTHER INFORMATION

No information available.

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REFERENCES

CNFL website:

http://www.cnfl.go.cr/Gestion%20Ambiental/WEB_GESTION/htm/Index.htm.

de Man, Michiel and Verweij, Pita A. (2003) Local Impacts and Effectiveness of Payments for Environmental Services in Costa Rica. The case of payments for forest hydrological services in Costa Rica's Aranjuez watershed. Unpublished Master Dissertation. Copernicus Institute of the University of Utrecht, The Netherlands; personal communication with Michiel de Man on 07/02/05.

Flores, C. (2004) Costa Rica Grows Organic, news release 13/12/04 at http://www.panda.org/news_facts/newsroom/features/news.cfm?uNewsID=16871;
FONAFIFO (2005) The environmental Services Program: A success story of sustainable development implementation in Costa Rica. FONAFIFO, over a decade of action. Edited by Rodriguez, J.M. Costa Rica National Forestry Fund (FONAFIFO). San José.

Porras, I. Neves N. and Miranda M. 2006. Developing Markets for Watershed Protection Services and Improved Livelihoods. Technical Trip: Active Learning from Costa Rica's Payment For Environmental Services, 5-12 February, 2006. IIED.

Soto J., G. (2006) Options for the development of payment for environmental services mechanisms: the case of CNFL. Presentation by Gabriela Soto, Engineer with the hydroelectric company CNFL, Costa Rica, during IIED Technical Trip: Active Learning from Costa Rica's Payment For Environmental Services, 5-12 February, 2006.

LINKS

<http://www.cnfl.go.cr/> <http://www.grupoice.com/esp/invers/cnfl.htm>

http://www.fonafifo.com/paginas_espanol/proyectos/e_pr_convenios.htm



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