

Costa Rica- Costa Rican Electricity Institute (ICE)

ICE Watershed Management Units

SUMMARY

ICE (the largest company, and until recently, state monopoly for energy generation, processing and distribution) has begun some pilot projects for Payment for Environmental Services (PES) through Fondo Nacional de Financiamiento Forestal (FONAFIFO). One of these is located in Sarapiquí, in the Cariblanco watershed. Before this, ICE's approach has gone from a neglectful to a direct approach to farmers in the watershed. In the Peñas Blancas watershed, it aims to develop a PES scheme to maintain forest cover and promote reforestation and regeneration of critical areas through agroforestry. The scheme targets ICE's priority areas and promotes activities that aim at delivering the service ICE is interested in reduced sedimentation. Although it is a tailor-made scheme, independent from the national PES scheme, it will nevertheless involve FONAFIFO when it goes into operation.

Erosion control is a concern in all watersheds where ICE operates, and is addressed in an integrated manner, through various approaches. In the case of the Peñas Blancas watershed, the development of a PES scheme is one of the tools to maintain forest cover and promote reforestation and regeneration of critical areas through agroforestry. The scheme targets ICE's priority areas and promotes activities that aim to deliver the service ICE is interested in: reduced sedimentation.

MATURITY OF THE INITIATIVE

Ongoing. Watershed management units active since 2000 (Reventazon and Penas Blancas watershed, since 2000; Pirris and Sarapiquí watershed units are still conducting diagnostic studies). PES scheme under implementation in Peñas Blancas and Cariblanco watersheds (start date 2007).

DRIVER

Increased pressure for ICE to change its corporate image with respect to environmental and social impacts of its hydroelectric projects. *"Due to pressure upon water resources it became necessary to draw up management plans that catered for the needs of all users. ICE was not unaware of this situation and saw the need to head the management of the watershed in which it works, or plans to work in the future."* Previously, all ICE had to consider was the physical and economic viability of its projects.

ICE has recently introduced Environmental Impact Assessment (EIA) plans for some of its new projects. It conducts a diagnostic study to find environmental problems that may affect production, and devises mitigation measures (see **Commodity** below) - these may or may not include compensation, or a payment. Often ICE's activities include in-kind support for the improvement of infrastructure (rural roads, river channels), cattle waste management techniques, etc. Some of these watershed management activities occur downstream of its dams, as they are mitigation measures for the environmental impacts from the construction and operation of its plants (for example, their fish farming projects).

STAKEHOLDERS

Supply

Watershed areas above the company's dams that are responsible for the sedimentation, for example in:

- i) Penas Blancas, small pasture plots along the river, just above the dam;
- ii) Reventazon, high pressure on the soil through intensive cattle and dairy activities and coffee, sugar cane, cocoa and banana plantations. This means that ICE works primarily

with small and medium farmers, but in some cases also with large landowners, or private reserves (as in the case of Peñas Blancas).

Demand

The ICE, which produces 98 per cent of the electric energy used in the country, 70 per cent of which is hydroelectricity.

Intermediary

ICE deals directly with farmers through its watershed management units, providing technical support and forestry regencies. Payments are to be processed through FONAFIFO's national system.

Facilitators

FONAFIFO will still be involved as facilitator for the legal/official procedures. FUNDECOR was also highly involved in initial negotiations with ICE. In Cariblanco ICE deals directly with farmers for provision of technical and forestry regencies through its watershed management units.

MARKET DESIGN

Service

Sedimentation reduction and regulation of flows.

Commodity

- *Improved-management practices:* agro-conservation, i.e. organic agriculture; soil conservation practices to increase soil fertility; conservation and management of vegetation cover to improve soil stability and water storage (increase of quantity and quality of water); diversification of crops (permanent crops, agroforestry) to increase vegetation cover and diversify income sources; installation of biodigesters to convert animal effluent.
- *Reforestation for commercial purposes*
- *Rehabilitation of degraded areas,* through reforestation and suitable land use options

The activities vary in the different watersheds.

In **Penas Blancas** the Forestry Unit supports activities to maintain forest cover and rehabilitate critical areas through natural regeneration and reforestation with native species (for protection of the soil, timber or food - either fruits for human or animal use, including wildlife, or fodder for cattle).

In **Sarapiquí**, ICE is promoting reforestation of areas affected by the construction of their plant and is now providing incentives for reforestation of areas of hydrological importance, and establishment of biodiversity corridors in private land and potentially in areas of high erosion risk (since this is the service that actually matters to them). The company will provide the trees and technical assistance until 2007.

In the case of the **Reventazon** River, there is a comprehensive Integral Watershed Management Plan, that includes: soil conservation agroforestry and fish-farming; management of vegetation cover by: i) supporting the work of the conservation areas in the higher parts of the watershed; ii) promoting sustainable land use in the buffer zones of the protected areas, in the southern parts of the watershed; iii) reforestation of the riparian strips and infiltration areas; iv) establishment of tree nurseries;

Rehabilitation of water channels/ river beds and sediment control: i) project for flash flood control and; ii) control of erosion on roads; iii) works for rehabilitation of areas of geomorphologic instability (prone to landslides) and sediment control and; education and

rural extension i) support of rural activities; ii) strengthening of rural social organizations and leader formation; iii) environmental education.

Payment mechanism

Direct negotiation: direct negotiation through ICE's watershed management units. Amount paid based on structure already used by FONAFIFO in the national PES scheme (see case profile in this review) and funding for the PES payments will be shared by ICE and FONAFIFO.

Contract between ICE and the landowners, through which ICE agrees to provide them with technical assistance and to deal with all the legal procedures of the application process. ICE also contributes with the trees, transportation and technical studies.

Terms of payment

Since the agreement was processed through FONANFIFO, payment levels and conditions will be the same:

- i) forest conservation (US\$64 per hectare per year for five years),
- ii) forest plantations (known as reforestation), (US\$816 distributed over a period of 10 years) and
- iii) agroforestry - payments are made per tree (US\$1.3 per tree) and there are special requirements in terms of species used and densities allowed.

In Cariblanco, ICE pays US\$15 per hectare per year (nine-year contracts) for forest conservation (FONAFIFO then tops the rest to complete full payments to farmers).

Funds involved

No Information available.

ANALYSIS OF COSTS AND BENEFITS

Economic

No Information available.

Environmental

Activities involved: Production of 13,000,000 trees, Reforestation of 1,100 hectares.

Expected outcomes include lower sediment load leading to savings in reservoir maintenance costs and savings in drinking water treatment (for the communities downstream).

It is also expected that there will be greater protection against natural landslides in primary forest which are also a major problem in the area- one such event recently brought three million cubic metres of sediment into the reservoir. Apparently these events are rare, but have become more frequent in the last three years due to changes in rainfall intensity.

Social

Six hundred farmers receiving technical assistance and training in conservation agroforestry;
environmental education activities reaching 15,000 people (including primary school children, farmers, community leaders and heads of household) and production and dissemination of educational materials (written and audio-visual).

Capacity building and participatory processes.

LEGISLATION ISSUES

Since ICE's work is at the watershed level, coordinating inter-municipal activities can become an obstacle.

MONITORING

No information available.

MAIN CONSTRAINTS

No information available.

MAIN POLICY LESSONS

ICE is devising this tailor-made PES due to the fact that this allows it to target investment to particular areas or activities that will deliver the sedimentation reduction required - for example, natural regeneration. It is interesting to note that for a long time ICE has remained at the margin of all PES activities, preferring the creation of reserves, if there were public funds, or not doing anything. It is only very recently that ICE has introduced corporate social responsibility principles to its agenda.

OTHER INFORMATION

The watershed management units work in a range of areas: fish farming, cattle, forestry (dealing with payments for environmental services), biology, environmental education, infrastructure and social issues. Different projects are proposed and led by each of these units according to the needs in each watershed. In Cariblanco, all technical studies, monitoring, control, promotion and administration of projects in the Sarapiquí River, will be performed by FONAFIFO. ICE will conduct monitoring of contracts as it sees fit through the Environment Management Unit and Basin of Central Generation Toro (Stanton et al., 2010).

CONTACT

No information available.

REFERENCES

ICE. 2006. Presentation by ICE staff on the work of its watershed management units, during IIED Technical Trip: Active Learning from Costa Rica's Payment For Environmental Services, 5-12 February, 2006.

Costa Rica Electricity Institute (ICE) website:

http://www.ice.go.cr/esp/ele/manejo_cuencas/index.html

http://www.ice.go.cr/esp/ele/manejo_cuencas/sarapiqui/areas.html

LINKS

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