

## **Costa Rica- Empresa de Servicios Públicos de Heredia (ESPH)** *(Heredia Public Service Enterprise)*

### **SUMMARY**

Heredia Public Service Enterprise (ESPH), a private water utility through public concession, collects an environmental fee from water users (together with their water bill), to invest in watershed protection mainly through direct payments to upstream landowners. Funds are administered by Procuencas, the ESPH programme that promotes protection and reforestation in the micro-basins. One interesting point is the low level of competition between the Payment for Environmental Services (PES) payments and the values of the land for other uses such as urbanisation.

### **MATURITY OF THE INITIATIVE**

Environmental fees charged since 2000 and payments to upstream landowners began in 2002. This scheme was considered active as of 2008.

### **DRIVER**

Heredia's water company is keen to maintain water quality and regular flows. ESPH serves 50,000 users and delivers 15.5 million cubic metres per year- average use per family is 1,000 litres per day. Current demand from agro-industrial sectors (e.g. coffee, dairy farms and flower cultivation) amounts to 76.24 million cubic metres per year. Water is not a scarce resource, but demand is high and growing. Water supply is sourced mostly from springs and rivers, but during the dry season (two months) groundwater is the only source in the lower parts of the watershed.

The project has also had charismatic people involved from the outset, who believed the organisation could create a targeted Environmental Service (ES) initiative parallel to the national scheme led by Fondo Nacional de Financiamiento Forestal (FONAFIFO). The relationship between the local ESPH scheme and FONAFIFO has varied over time but they generally collaborate and coordinate efforts in overlapping areas.

### **STAKEHOLDERS**

#### **Supply**

*Private landowners* (sellers) in the target areas (highest parts of the watershed and micro-basins of the rivers Ciruelas, Segundo, Bermúdez, Tibás and Pará). Currently the programme covers 1,900 hectares and involves 21 landowners. ESPH has also made two land purchases. In 2008, 27 landowners were participating, supplying 1,190 hectares to the scheme.

Funds are used for forest protection (mainly in the higher parts of the watershed) and reforestation of underused land or land currently used for livestock farming, although this is more difficult due to the high opportunity cost of land in the area (US\$150 per hectare per year). Investment is also made in slope recovery and an emergency fund for natural disasters.

In the middle parts of the watershed, urban expansion is the main problem and ESPH has set a goal to protect a band of between 0.5 and 1 kilometre around strategic water sources through targeted payments (opportunity cost of land in these areas attractive for urban development is very high: price of land around US\$60-100 per square metre).

#### **Demand**

*Private water utility company* (through public concession) of the city of Heredia, on behalf of the end users. Drinking water is distributed through the ESPH, a utility owned by three municipalities in the province of Heredia but administered privately, and through the National Water and Sanitation Company.

In 2002 the Company Florida Ice & Farm (a brewery and bottler of water and fruit juices) and the ESPH signed an agreement with FONAFIFO and FUNDECOR to protect and manage the Río Segundo watershed, which provides water to both companies. Pooling demand allowed the payment to landowners to be raised to US\$67 per hectare per year.

### Intermediary

*Direct negotiation.* The ESPH (in representation of final users) works directly with landowners. The company has created a programme (Procuencas) to administer the payments.

*Intermediary-based:* In parts of the Rio Segundo watershed the ESPH is collaborating with the bottling company *Florida Ice & Farm* (see case in this review). In this case, ESPH pays FONAFIFO to act as an intermediary with landowners.

### Facilitators

FUNDECOR is responsible for providing "regencia forestal" (professional foresters that verify the compliance of the forest management activities carried out, with the national forestry laws).

## MARKET DESIGN

### Service

*Maintain water quality and regulate flows.*

### Commodity

The goal is to protect water abstraction areas from pollutants and inappropriate land use.

- *Conservation and protection of existing ecosystems:* forest conservation and natural regeneration contracts and purchase of land in strategic areas of high vulnerability.
- *Reforestation for commercial plantations with native species.*

### Payment mechanism

*Direct negotiation and user fees:* ESPH raises funds for watershed protection by adding an extra charge to water use, clearly specified in the water bill.

Funds are administered by Procuencas, the ESPH programme that administers the programme. Procuencas is responsible for identifying priority areas for protection and reforestation in the micro-basins in question, processing applications, formalising contracts with farmers and distributing payments.

#### *Determination of payment level*

*Demand side:* Initial Willingness to Pay (WTP) studies suggested a tariff of 15 colones per cubic metre (US\$0.03) and final result of the valuation study came to seven colones. However, given the uncertainty regarding the possibility of achieving the results and the inexperience of the institution in managing the scheme (particularly in terms of financial sustainability), the tariff approved by the government, in March 2000, was 1.90 colones (US\$0.004 per cubic metre).

*"The initial fee adjustment was useful to successfully begin the programme. Today we have more experience, knowledge of economic valuation, hydrology, soils, and water quality information to make the case that the amount is not enough to operate" (personal communication Luis Gámez).*

*The company has requested a fee of six colones per cubic metre, but such a rise has not been granted and current fee (approved April 2004) is 3.8 colones per cubic metre (US\$0.01).*

*Supply side:* The payment to farmers is based on the opportunity cost of land (i.e. ranching activities, approx. \$165 per hectare per year), and a correction factor for the hydrological importance of forests. The payment has been in use since March 2000.

*Land purchase:* The ESPH has also purchased lands located in critical aquifer recharge areas, using its own funds rather than the environmental user fee. (Luis Gámez, personal communication).

### Terms of Payment

*From users: environmental fee* of colones 3.8 per cubic metre (US\$0.01 per cubic metre).

*Providers receive on-going cash payments* (after Gámez, 2006):

- *conservation and natural regeneration:* colones 47,720 per hectare per year (about US\$90 per hectare per year) during 10 years;
- *reforestation:* colones 90,000 per hectare per year (approximately US\$172 per hectare per year) for the first five years of contracts (full term of contracts is 15-year)

ESPH also provides technical support for biological waste management alternatives and environmental education.

### Funds involved

In the period 2000-2004 ESPH collected user fees worth 191 million colones (approximately US\$2.3 million). Currently, annual water fee contributions amount to around 60 million colones (approximately US\$115,000). Investment began in 2002, and until 2005, ESPH has invested over 200 million colones (approximately US\$383,000) in 23 PES contracts and two land purchases, covering 1,900 hectares (Gámez, 2006). In 2008, the average value of the scheme was US\$125,285. This was derived by 186.50 per hectare per year (US\$132 per hectare per year for 10- and 15-year conservation/natural regeneration contracts, and US\$24 per hectare per year for five-year reforestation contracts).

## ANALYSIS OF COSTS AND BENEFITS

### Economic

*Free-riders:* San Jose and other municipalities abstract (surface and ground) water from this watershed, but do not contribute to the scheme.

### Environmental

ESPH perceives the following benefits: i) establishment and protection of forests in the upper part of the watershed can help biodiversity through informal buffer corridors extending from the Braulio Carrillo National Park. ii) additional protection of key strategic catchment areas in the mountains that are not protected by national parks or regulations limiting urban development. There is however no quantitative evidence on the impact of the scheme on water flows and water quality.

### Social

Part of the revenue is used to fund environmental education projects, social infrastructure (bridges, roads, etc), and local research in ecological economics.

*Poverty issues.* The scheme has little impact on poverty reduction, as most landowners are rather wealthy (this area holds the highest score in Human Development Index (HDI) in the country) and derive their income from other (non-land related) activities (75 per cent of the population are urban and semi-urban. Survey of downstream households indicates that their average WTP is greater than the environmental user fee, hence negative impacts of the new fee on livelihoods downstream should be limited.

It is important to note that the quality of water distributed by the ESPH is very high and their water sources are very much the same as those used by Florida Ice & Farm, which sells bottled water for almost US\$1 per litre.

This PES scheme also increases land tenure security since it strengthens the landowners' power to expel squatters, by having the PES-related institutions backing them up to defend the land under threat. This benefit is particularly useful for wealthy landowners who keep forests and have second homes there but do not spend most of their time in the area.

## **LEGISLATION ISSUES**

The payment scheme involves the introduction of a new fee, but otherwise builds on existing structures, such as a water tariff system and a monitoring agency. Any adjustments in public services fees (for example water tariffs) are highly regulated in Costa Rica by an independent regulatory authority, Autoridad Reguladora de Servicios Públicos - Public Service Regulating Authority (ARESEP), and the ESPH was required to guarantee that its other services (e.g. quality, drainage, distribution) were of a certain level before they were allowed to increase the environmental user fee. If services are not at the required level this could be a restriction to other municipalities interested in using an environmental user fee. This could also be an issue of debate if a national water fee is proposed (Luis Gámez, personal communication, 2005).

## **MONITORING**

Monitoring is done through the Geographical Information System (GIS) and visits to the area. The main objective is to control and reduce water pollution threats, such as dairy and flower farm, which impact safe drinking water quality and human health. ESPH observes and follows strict water quality controls and it is closely monitored by ESPH quality control department and by the National Health Department. Impact has been quite positive and benefits are clearly worth the cost (Stanton et al., 2010).

## **MAIN CONSTRAINTS**

This scheme tries to overcome the problem posed by the lack of environmental zoning, limiting urban development in the mid-upper watershed, which for some of these municipalities is the main source of revenue. However, it is very difficult to compete with this alternative use of the land.

## **MAIN POLICY LESSONS**

*Reasons for success* (according to Luis Gámez, personal communication, February 2006)

- Easily enforced: users are well identified (metered) and their payments can easily be tracked on a monthly basis, in case of non-compliance supply of electricity and water can be terminated; In this way the company can count on a steady monthly flow of funds;
- Earmarked: revenue from the environmental fee goes into a separate fund (it is assigned a separate accounting code) and can only be invested in ES activities;
- Good service delivered: ESPH already provides quality water through an effective distribution system;
- Simple and transparent: The mechanism is kept very simple, using existing capacity with no "rocket-science."

*Obstacles for replication of the scheme* (according to Luis Gámez, personal communication, February 2006).

- Quality of the service delivered: other neighbouring institutions have failed because they

did not deliver water quantity and quality and therefore consumers were not willing to pay for protection.

- Lack of institutional capacity: lack of qualified staff, funds or financial studies to support the adjustment of their fees and justify this to the regulatory authority (ARESEP).
- Land use restrictions: landowners do not want restrictions on land use and many farms are not interested as they feel that PES is an obstacle to future sale of their properties.

*Direct negotiation versus intermediary-based.* Because ESPH works directly with landowners in its own scheme, but goes through FONAFIFO in its joint agreement with La Florida Ice & Farm, they have experience of both; yet it is uncertain what the advantages and disadvantages between its own direct approach and using an intermediary. According to the ESPH, they have the resources and capacity to implement the programme without intermediation (Luis Gámez, personal communication, 2005). On the other hand, FONAFIFO feels that its experience and capacity allows it to access and deal with landowners in a more efficient way (Alexandra Saenz, FONAFIFO, personal communication 2005).

The ESPH has the capacity to carry out monitoring and technical supervision through its own staff, as the institution was already carrying out environmentally-oriented activities. Management of funds is done as part of the organisation's usual water fees collection (additional work was limited to the creation of a new accounting code for the funds collected through the new fee) so there was no need to develop or require additional financial systems. The capacity created by the ESPH staff in understanding and experimenting with payments for ES is remarkable and they are also willing to collaborate with other groups or individuals (national and international).

## **OTHER INFORMATION**

### **CONTACT**

Director of the environmental programme: Luis Gámez (lgomez@esph-sa.com)

### **REFERENCES**

Barrantes and Castro (1999), Rosa, H. et al (2003), <http://www.esph-sa.com/procuencias.shtml>; Miranda, Porras and Moreno (2003); Rojas and Aylward (2003); Ortiz (2003); personal communications with Luis Gámez.

Cordero, Doris. Procuencias, Un esquema de cobro y pago por servicio ambiental hídrico en la Provincia de Heredia, Costa Rica. Oficina Ambiental ESPH.

Cordero, D. 2001. Implementación de un esquema de cobro y pago por servicio ambiental hídrico: el caso de la Empresa de Servicios Públicos de Heredia S.A. In II Foro Regional Pago por Servicios Ambientales (April 2001, Montelimar, Nicaragua).

Gámez, L., Solano, V. and Bolaños, J.D. Los recursos hídricos como servicio ambiental y aplicaciones prácticas de su valoración: El Caso de la Empresa de Servicios Públicos de Heredia (E.S.P.H.), Costa Rica.

Gámez, L. 2006. Presentation by Luis Gámez, director of ESPH environmental programme, Costa Rica, during IIED Technical Trip: Active Learning from Costa Rica's Payment For Environmental Services, 5-12 February, 2006.

Gámez, L., Solano, V. and Bolaños, J.D. Los recursos hídricos como servicio ambiental y aplicaciones prácticas de su valoración: El Caso de la Empresa de Servicios Públicos de Heredia (E.S.P.H.), Costa Rica.



---

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.

Rojas, M. and Aylward, B. 2003. What are we learning from experiences with markets for environmental services in Costa Rica? A review and critique of the literature. International Institute for Environment and Development.

Stanton, T., Echavarría, M., Hamilton, K., Ott, C., 2010. State of watershed payments: an emerging marketplace. Ecosystem Marketplace.

#### **LINKS**

<http://www.esph-sa.com/procuencas.shtml>

<http://www.ecosystemmarketplace.com>