Using Water Funds to Finance Watershed Conservation in the Andes and Costa Rica

Silvia Benítez, Alfonso Blanco, Jorge Cole, Mercedes Ibáñez, Juan José Rodríguez and Stephan Halloy

Introduction

Institutionally, water management typically involves multiple governing institutions and stakeholders with differing points of view (Milano et al. 2007; CAF and TNC 2009; McAlpine and Wotton 2009). Despite numerous efforts to protect watersheds or establish drinking water projects, few programmes address the link with protected areas, which were often created to conserve water sources (Echavarria 2002; Nel et al. 2009). As a result, the level of investment in the conservation of water sources is miniscule, considering the need to guarantee the regeneration capacity of the resource. To address this situation the Nature Conservancy (TNC) is promoting water funds as a key strategy to protect land and water, considering biodiversity, social equity and distributional justice. Some of the advantages of this approach are outlined below:

- **Watershed benefits**. Improved quality, distribution and quantity of water are major expected benefits. Afforestation and reforestation can lead to reduction of sediments, can lower water treatment costs, ensure greater volumes of water and lead to a more favourable tariff structure.
- **Landscape restoration**. Appropriate management means that landscapes associated with catchment basins increase in value and provide recreation and education, generating income for local populations.
- **Fundraising**. The water fund can provide matching funds to leverage greater resources in the public or private sector.
- **Governance and institutions**. Given their dual private / public figure, water funds are also an opportunity for democratic discussion between stakeholders to contribute ideas and develop new projects for watershed conservation.

In 2007, CAF[1] and TNC organised a regional workshop on Conservation of Environmental Services. Environmental authorities, municipalities, regional governments, environmental services specialists and NGO representatives from Bolivia, Colombia, Chile, Ecuador, Perú and Venezuela provided summaries and exchanged learning experiences from some 40 initiatives, only a few of which have been consolidated (CAF and TNC 2009). There are numerous opportunities to expand on these and to fund new projects.

Water Conservation Fund, "Fondo de Protección del Agua" (FONAG), Ecuador

For over ten years, TNC has been working with local partners to establish a water-based finance mechanism as a long-term source of financing for the conservation of natural ecosystems in montane areas, including several public protected areas. Quito, Ecuador's capital city of more than 1.5 million inhabitants, derives more than 80% of its water from flows originating in several national protected areas: Cayambe-Coca and Antisana Ecological reserves, and Cotopaxi National Park.

The Water Conservation Fund (Fondo para la Conservación del Agua – FONAG) has provided a direct link between consumer and Protected Areas, and has been a key instrument in helping to ensure that the growing population of Quito has long term quality provision of water services. FONAG is an endowment fund that receives money from government, private companies and NGOs; an independent financial manager invests funds and returns investments to fund activities for watershed protection (Echavarria 2002). Only the financial returns from the endowment are spent; the rest remains untouched in order to ensure sustainability of financial resources. The contract signed for the creation of FONAG stipulates permitted conservation activities, as well as the institutional arrangement and the decision-making process.

Though the Conservancy invested a mere US $2000 with overall seed capital of $21,000 when the project began in 2000, annual contributions from Quito's water and electric companies and voluntary contributions from other private organisations[2] had achieved by December 2008 an endowment of $5.4 million, which now releases nearly $800,000 each year in disbursements for conservation projects in the watersheds (Table 1). As well as these financial returns, FONAG has also been very successful in leveraging funding for programmes and projects. For each dollar FONAG puts into a project, they are able to get three more dollars in matching funds. By 2008, FONAG had leveraged $7.5 million (FONAG, 2008). This is a total of $9.8 million invested in watershed conservation, most of which has been directed to five priority watersheds.

In 2002, the first requests for proposals were publicly announced and the first project was implemented by a local NGO in 2003 with US $40,000. During this time FONAG received criticism because a significant amount of money was being allocated to the fund, and yet investment in watershed conservation was still relatively small. In 2004, FONAG was able to hire a person with recognised experience in watershed management to act as Technical Secretary, a move which proved essential to strengthening FONAG's institutional capacity (Brown 2005).

FONAG has determined to invest 80% of its annual financial returns in programmes, meaning permanent activities, and 20% in short term projects. The programmes currently underway are: control and monitoring of protected areas, restoration of natural vegetation, environmental education, and outreach; training in watershed management, productive projects with local communities and hydrological monitoring (FONAG, 2008).

Table 1: Breakdown of FONAG endowment fund sources in US$ (FONAG 2008).

Quito Water Company (EMAAP-Q)	4,886,000
Quito Electric Company (EEQ)	360,000
The Nature Conservancy (TNC)	81,000
National Brewery (Cerveceria Nacional)	36,000
Swiss Cooperation Agency (COSUDE)	30,000
Tesalia Springs Co. (Private water bottling company)	7000
TOTAL	5,400,000

1 Corporación Andina de Fomento

2 Including a Brewery Company (Cervecería Nacional), water bottling company (Tesalia Springs Co.), Swiss Cooperation and TNC.

TNC has learned from the difficulties and successes in establishing and implementing FONAG and is now using this experience to apply the model in other areas. Key learnings have emphasised the need to:

- Use the best science available to assess and monitor the environmental service (e.g. flow regulation, sedimentation control) in the watershed. This will allow the identification of key areas for conservation, and will enable clear communication of the benefits to the public and policy makers.
- Establish clear objectives and goals regarding the targeted environmental service. Activities implemented should be linked with these objectives.
- Allocate funding as soon as possible to gain credibility amongst the general public.
- Develop a good financial plan, and balance funding to the endowment with expenditure on conservation activities.
- Establish a clear system measuring the impact of activities in relation to the objectives of the fund (e.g. flow regulation, sedimentation control, biodiversity conservation). This should be implemented within a framework of adaptive management.
- Ensure a high profile expert occupies the role of the technical Secretariat or Manager of the fund.

We provide one example, below, of an ongoing project, proposal and anticipated application in Costa Rica.

Restoring watersheds while creating sustainable livelihoods in the buffer zones of La Amistad International Park, Costa Rica

Context

80% of the water that supplies the 50,000 people living in the Costa Rican canton of Buenos Aires comes from the highlands of La Amistad International Park. These watersheds are threatened by pineapple farms and a soon-to-be-launched hydroelectric project owned by the Costa Rican Institute of Electricity (ICE), which will build the biggest hydroelectric dam in Central America. The range of elevations in the area provides conditions for a rich ecology to flourish. For example, the Volcán watershed, despite covering a relatively small area, holds five of the 12 life zones found in Costa Rica.

Location and threats

The two micro-watersheds in the area, Volcán and Singri, are part of the Térraba watershed, one of the 12 freshwater priority eco-regions selected in a TNC Mesoamerican Region study (TNC 2009). The two watersheds show high levels of deterioration, especially at middle and high altitudes where cattle and pig farming and intensive pineapple monoculture have caused severe deforestation and pollution (see photo).

The expansion of pineapple plantations has threatened connectivity in the important migration corridors provided by the watersheds. The farms now extend all the way to the water, even though national law dictates that watersheds need 15 metres of forested land on each side, and are close to indigenous territories and the protected area of La Amistad International Park. Meanwhile cattle and coffee farmers steward land that is owned by landowners living outside of the area. Their absence has meant that there has been limited local commitment to changes in agricultural practice.

Pineapple production and hydroelectricity are highly dependent on the watersheds but, until now, their contributions for water under the National Water Tariff law are very low. Communities and local decision makers are increasingly concerned about the threats posed to these watersheds — including increased flooding, a diminishing water supply, and pollution from agrichemicals.

Conservation and compensation

Working with the Ministry of Agriculture and Livestock, TNC and partners have developed baselines, identified areas in the watersheds to install biodigestors, and have carried out a market study to certify 150 acres in organic agriculture. The expected benefits of a PES programme are to demonstrate high nature value agricultural practices, to stimulate a reconversion to lower impact activities compatible with conservation, and to create new alternatives for income that reduce hunting, illegal logging and intensive use of natural resources in the buffer zone of the Park.

Communities have received initial support from the private sector, such as the pineapple grower and export giant PINDECO (Pineapple Development Corporation, more than 35,000 acres planted in Costa Rica), for activities that include forest fire control and reforestation. These companies have also expressed interest in supporting financial mechanisms to maintain and restore the watersheds, but, despite progress, there is still no comprehensive plan in place for management and funding of these activities. It is hoped that by prioritising conservation activities and involving key stakeholders such as local communities, universities, NGOs and private businesses, companies like PINDECO and government institutions could be persuaded to (co)invest in corporate responsibility efforts related to conservation.

Envisioning the mechanism

A new water resources law is being debated in the Costa Rican legislative assembly, which proposes the creation of water funds to be managed by local commissions. TNC and partners are drawing up a five-year Watershed Management Support Plan that will create and strengthen local institutions for this kind of role. In the short term, the plan discusses increasing the number of farms receiving PSA from the FONAFIFO fund,[3] but in the medium to long term it is expected that funding will be primarily from the private sector. TNC is working with local groups to design two financial mechanisms: one for water consumers such as PINDECO and the ICE, and the other to stimulate the carbon sequestration market. Through an organised group, the intention of this ongoing project is to provide the channel to inform, promote, and provide the necessary bureaucratic support to these conservation schemes, thereby increasing their probability of success.

Discussion

Water resources are a key environmental service, and water funds are a mechanism to link conservation of watersheds and biodiversity with water utilisation and conservation. Although there are many other environmental services, water and water funds can act as proxies or catalysts to protect many others including biodiversity, carbon storage, soils, biogeochemical cycles, pollination, waste cycling, etc. Such protection goes a lot further than the economical benefits alone (Luck et al. 2009). The establishment of

3 FONAFIFO pays landowners close to $64/ha of demonstrably conserved or restored forest. There are three incentives given by FONAFIFO that we would use in this project: 1) $64/ha/yr for forest conservation; 2) conservation of water sources, paying $80/ha/yr and 3) reforestation, paying $1.30 per tree (www.fonafifo.com 2009)

Parque La Amistad Vista: Signs of intensification. Photo: J. Rodriguez.

compensation mechanisms sets in motion public awareness and capacity building, which benefits both social and environmental systems whilst optimising public/private partnerships.

The Conservancy has been successful in the replication of Water Conservation Funds in other parts of Latin America (CAF and TNC 2009). In Colombia, we are working to create water funds in Bogota (Werman 2009), East Cauca Valley, Cali, Sierra Nevada and Medellin. In Ecuador, several water funds are already working with TNC support; this includes Paute, Zamora, Espindola and Tungurahua.

For the full article and a description of the proposal for Lima, Peru please visit http://www.mtnforum.org/rs/pesinmtns.cfm

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Silvia Benitez (sbenitez@tnc.org) and Stephan Halloy (shalloy@tnc.org) are working for the Nature Conservancy, USA.