

WATER FUNDS TO INSTITUTIONALIZE NATURE-BASED SOLUTIONS IN ECUADOR



GUIDING PRINCIPLE 4: AVOIDING ENVIRONMENTAL IMPACTS AND INVESTING IN NATURE

Adverse environmental impacts from infrastructure should be minimized, and natural capital enhanced to the greatest degree possible. Construction should be avoided in areas important for the persistence of biodiversity or having high ecosystem service value. The development of physical infrastructure should seek to complement or strengthen, rather than replace, nature's ability to provide services such as water supply and purification, flood control, and carbon sequestration. Nature-based solutions should be prioritized.



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BACKGROUND

Ecuador's water supplies rely fundamentally on the smooth functioning of sensitive ecosystems. Many of the country's most populous settlements, including the capital, Quito, and Cuenca, obtain their water supply from the Andes mountains, where cloud forests and grasslands regulate water flows and help retain humidity during drier months (Echevarria 2002). However, these ecosystems have been threatened not only by climate change but also by land degradation associated with physical infrastructure development, including road networks. These developments risked reducing nature's ability to deliver a critical service to communities: a clean water supply. Water funds are designed to address these issues and are

participatory institutions with financial mechanisms for prioritizing nature-based solutions.

Water underpins Ecuador's livelihoods and economic activity, but also holds important social and cultural value. Indeed, the indigenous Andean philosophy *buen vivir* – enshrined in the national constitution in 2008 – strives for balance between humans and nature and advocates community-based governance systems to manage natural resources such as water (Fatheuer 2011). In this context, water funds were created to address the growing demand for water amid environmental stress and limited government fiscal capacity.

WATER FUNDS

Since the year 2000, Ecuador has gradually developed water funds in different locations across the country, including Quito, Cuenca and Guayaquil and on a regional scale in the centre and south of the country. The funds use nature-based solutions for water security, by channelling user payments towards conservation efforts that ensure sustainable water management and supply. Water funds are therefore designed to promote environmental sustainability, but also address other dimensions of sustainability through innovative financing mechanisms and participatory governance structures. Furthermore, Ecuador's water funds represent an infrastructure "system" on a large scale (the watershed scale for entire cities' or regions' water supply, with institutional coordination), as opposed to an individual water management infrastructure project.

PRESERVING NATURE FOR HIGH QUALITY SERVICE DELIVERY

Conservation of nature lies at the heart of the water funds' approach to infrastructure service provision. In Quito, for example, 80 per cent of the city's water flows from three protected areas: the Cayembe-Coca Reserve, the Antiana Reserve and Cotopaxi National Park (Arias, Benitez and Goldman 2010, p.1). Despite the protected status of these areas, human activities still threatened the integrity of ecosystems in the reserves, compromising the ability of the native vegetation to provide water retention and slow release of freshwater. The sponge-like grasslands and cloud forests retain humidity and regulate water flows when snow from the surrounding glaciers melts, or low-level clouds and fog hover among the forest canopy (Browder *et al.* 2019). The precipitation is captured

by the vegetation and soils, which also absorb pollutants – storing them or transforming them into less dangerous substances (Calvache, Benítez and Ramos 2012). Maintaining this "natural infrastructure" enables long-term freshwater retention and slow release into water bodies and wetlands, and the water can then be fed to different users.

Built infrastructure, including water purification plants, was initially proposed as a solution to improve water quality and supply, but did not address the root cause of the problem (i.e. increasing degradation of the ecosystems) (Arias, Benitez and Goldman 2010). Instead, water funds offered a means of prioritizing nature-based solutions, which include maintaining and improving the function of reserve watersheds through replanting the native vegetation species, riparian fencing, and purchasing land for conservation. Within five years, the Regional Water Fund in southern Ecuador (FORAGUA), for instance, had established 174,028 acres of municipal reserves, protecting and restoring watershed ecosystems that supply water for 432,196 individuals (Paladines *et al.* date unknown, p. 10).

The funds have led to improvements in water supply and quality, while safeguarding the intrinsic value of Andean ecosystems. For example, comparative analyses conducted in surrounding areas not managed by the Quito Water Fund (FONAG) showed a significant increase in the presence of suspended solids in water, compared to areas managed by the water fund in the same period (2014-2017) (Latin American Water Funds Partnership 2018). The high costs associated with removing the sediments highlight the financial benefits of this nature-based solution. The same study compared the projected cost of conservation over 20 years, finding a return on investment of 2.15 USD for each 1.00 USD invested.



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INTEGRATING CONSERVATION WITH INCLUSIVE FINANCE

The Regional and Quito Water Funds were established as 80-year trust funds that receive revenues from water users, public utilities, companies and non-governmental organizations to fund the nature-based solutions (Kauffman 2014). For all of Ecuador's water funds, independent trust managers invest the funds' assets in financial markets and distribute the income to different stakeholder groups to fund conservation and watershed management activities, which are detailed in the fund's contract. Decisions regarding where funds are directed are made by a board of directors, often with broad representation from local government, water users and other stakeholders. Contractual arrangements define relations between members and specify how funds are to be used.

The long-term nature of the trust mechanism provides a stable financial arrangement, which allows for planning and encourages investment from other entities (United Nations Water 2011). Water funds therefore successfully integrate environmental sustainability with financial sustainability. Their inclusive financing mechanism, drawing on user contributions, ensures that funding nature-based solutions does not rely solely on external contributions. At the same time, the mechanism avoids privatizing control of water resources in Ecuador; an important requirement in terms of *buen vivir* and in light of the country's political context.

GOVERNANCE AND A SYSTEMS PERSPECTIVE

Ecuador's water funds do not consist of one individual infrastructure project in one particular location. Rather, they represent a system of assets, nature-based solutions and institutions on a larger scale. Initially, there were barriers to creating water funds in Ecuador; a law on public financing prohibited government institutions (including local water utilities) from investing in such financial mechanisms (Browder *et al.* 2019). However, a change to this law altered the enabling environment for water funds at a national level.

Water funds themselves consist of decentralized governance structures that provide space for a broad range of stakeholders. The newer funds, in particular, have developed associated institutions such as Tungurahua's "Water Parliament", which provides oversight, sets priorities and ensures implementation of conservation activities. This participatory, systems perspective has helped develop a more effective system for water supply in multiple areas of the country (Kauffman 2014). In addition, the funds are based on grassroots social foundations; for example, the Tungurahua fund was set up via detailed consultation and negotiation among the province's three indigenous movements (Kauffman 2014). The funds therefore often reflect local knowledge and preferences from the outset, which has helped to build a sustainable and inclusive "water culture" (United Nations Water 2011).



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REPLICABILITY

Water funds have already been expanded across Ecuador since their inception, with the original fund model now evolving to fit local circumstances. Indeed, the first fund was established at a city level, and the model proved flexible enough to be used at a regional level with the Regional Water Fund, where slightly different arrangements and conservation activities were required. Water funds are now used in several Latin American countries, including Colombia, the Dominican Republic and Mexico. They provide an institutional framework for nature-based solutions which is also financially sustainable. This is essential in a global context where government finances are increasingly constrained and inequalities are rising. Since water funds are participatory – formed and shaped by local stakeholders – they are by definition not “one-size-fits all”. They can therefore be replicated in other parts of the world with similar political economies, taking local contexts into account.

KEY INSIGHTS

- > Water funds are decentralized and participatory governance structures that incorporate local knowledge by design. This arrangement helps conserve priority ecosystem services.
- > The Quito Water Fund more than doubled its return on investment, improving watershed function, water supply and water quality. Prioritizing nature-based solutions can simultaneously improve economic and environmental outcomes.
- > The inclusive finance mechanisms of the water funds draw on user contributions. Allocation decisions are made by a board with broad stakeholder representation which cultivates long-term accountability and sound financial management.

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