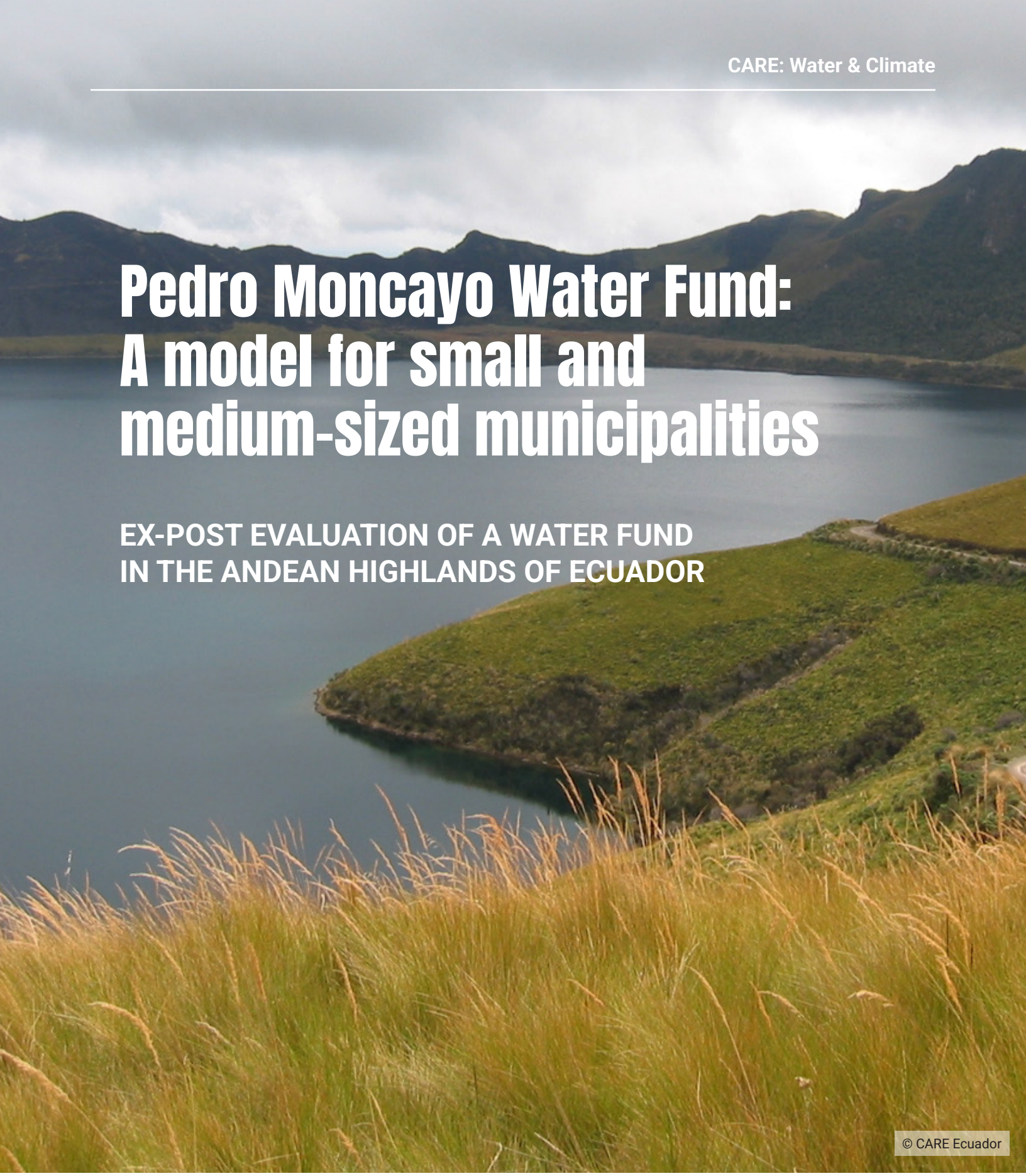

Pedro Moncayo Water Fund: A model for small and medium-sized municipalities

EX-POST EVALUATION OF A WATER FUND IN THE ANDEAN HIGHLANDS OF ECUADOR

Acronyms

ACUS	Conservation and Sustainable Use Area
ACCRE	Climate Change Adaptation Project for Andean populations through the management, conservation and restoration of páramos in Pedro Moncayo.
APH	Water Protection Area
CODEMIA	Development Consortium of Integrated Management of Water and Environment - Cayambe Pedro Moncayo
ECOLEX	Environmental Law and Management Corporation.
EMASA-PM	Empresa Municipal de Agua, Saneamiento y Alcantarillado (Municipal Water, Sanitation and Sewerage Utility)
FONAG	Environmental Fund for Water Protection in the city of Quito.
FONAPA	Water Fund of the Paute River Basin
FORAGUA	Regional Water Fund and Environmental Fund made up of several cities in southern Ecuador.
FONDAGUA	Guayaquil Water Fund for the conservation of the Daule river basin.
GAD-PM	Decentralized Autonomous Government
JAAP	Drinking Water Management Boards
MAATE	Ministry of Environment, Water and Ecological Transition
PDyOT	Development and Land Management Plan
PSH	Payment for Water Services
SENAGUA	National Water Secretariat
UCIBIT	Union of Indigenous Communities and Neighborhoods of Tabacundo
TURUJTA	Tupigachi Runakunapak Jatun Tantanayakuy
UCCOPEM	Union of Peasant and Indigenous Organizations Cochasquí - Pedro Moncayo.
VIPP	Visualization in Participative Programs


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Executive Summary

Background

Water is essential for socioeconomic development, food production, ecosystem health, overall well-being, and is key to climate change adaptation. In South America, the Andes Mountains are crucial for water supply, but climate change and unsustainable agricultural practices often driven by poverty have increased water insecurity. Despite rich biodiversity and ecosystems, Ecuador faces serious water security challenges, especially in the páramo, high altitude grasslands that provide critical water resources and ecosystem services. Páramos capture and retain water, and deliver water to communities and downstream urban centers. Ecuador is home to 13,371 km² of páramo. However, this ecosystem has been degraded by human activities and global climate change, leading to increased risk of fires and a decrease in water availability.

Since 2016, CARE Ecuador has worked with local government, public water utilities and communities in the Andean region to increase adaptive capacities of communities, scale agroecology practices with women producer groups, and protect and restore the páramo ecosystem. As part of this support under the Adaptation to Climate Change for Andean Populations - ACCRE (2016-2019) and Mujeres Andinas (2021-2024) projects, CARE and local partners established and supported the startup, creation, and ongoing implementation of the **Pedro Moncayo Water Fund (2016 - present). This water fund is a public-community managed fund that generates resources to protect and restore the municipality's páramo and ensure the sustainability of water** for 200,000 people**.** CARE is currently scaling this model to three other municipalities under its Mujeres Rurales project (2024-2027).

In 2025**,** CARE conducted an ex-post evaluation to document the process history of the water fund, analyze its effectiveness and sustainability, and identify recommendations for the Pedro Moncayo municipality and considerations for scaling the model to other municipalities in Ecuador.

> **A water fund is defined as a "water governance model of collective action and innovation that promotes solutions so that local governments and their inhabitants can provide themselves with water for consumption in quality and quantity through the implementation of conservation, maintenance and recovery measures for water-supplying ecosystems to guarantee their adequate systemic functioning in the long term, and ensure water production for present and future generations."**
>
> **(Latin American Alliance of Water Funds, 2020)**

Context

Ecuador is a pioneer in the creation of water funds, starting with the Environmental Fund for the Protection of Water in Quito (FONAG) in 2000, designed to protect the city's drinking water sources. This model has been replicated in other territories in Ecuador and in several Latin American countries, where there are currently around 30 water funds.

These water funds operate off a variety of governance models and revenue sources. For example, the Tungurahua Fund in central Ecaudor is a public-endowment model whose interest feeds a revolving fund while other funds like FONAG operate under a public-private endowment model that receives funding from water user fees collected by public utilities as well as contributions from private companies and international donors.

The Pedro Moncayo Water Fund (PM Water Fund) is operated as a public-community model that includes participation of the municipal government (Gobierno Autonomo Decentralizado de Pedro Moncayo - GAD-PM), the public water utility (Empresa Municipal de Agua, Saneamiento y Alcantarillado Pedro Moncayo - EMASA-PM) and community representatives. The fund is financed through a 5% contribution of yearly revenue from water user payments to the public water utility. As of 2025, the PM Water Fund has raised approximately $300,000. The PM Water Fund's mandate is to finance conservation and restoration activities in the páramos and promote sustainable land and water management practices, which are critical for protecting water availability for downstream communities and livelihoods.

The PM Water Fund was established alongside the legal protection process for two conservation areas also established by the Pedro Moncayo municipality and national government of Ecuador with support from CARE. The **Mojanda Conservation and Sustainable Use Area (Área de Conservación y Uso Sostenible - ACUS)** declared in 2019 protects the Mojanda Lake Complex, a series of freshwater lagoons and páramos that covers 6,000 hectares and supplies water to 200,000 people in the Pedro Moncayo municipality. The **Mojanda Water Protection Area (Área de Protección Hídrica Mojanda - APH)** was declared in 2021 and is a national-level declaration that specifically protects the freshwater ecosystems within the Mojanda ACUS – strengthening legal protections for water resources inside the ACUS. The ACUS and APH each have their own management structure and committee which manages the governance and administration of these legally protected areas. The ACUS and APH created a landscape-based conservation framework that helps the PM Water Fund coordinate, plan, and finance conservation activities more effectively.

Results

The ex-post evaluation used participatory research methods including focus groups and semi-structured interviews with local partners and participating groups, as well as direct observation to validate the information. Key results included:

Mapping of PM Water Fund process (2016-2019): The PM Water Fund was legally established in 2019 by a municipal ordinance. However, the process to establish the fund took place over three years between 2016 and 2019. The first two years included technical studies, feasibility assessments, and workshops to design its management structure and financial model. This part of the process required intensive stakeholder engagement and consensus-building. The review, public discussion and approval of the municipal ordinance (legal instrument that formally established the fund) took nearly a year and was aligned with the establishment of the Mojanda ACUS. This phase depended on mayoral leadership and support.

The final phase in 2019 established the **Water Fund Management Committee (WFMC)**, put the municipal ordinance into practice, and activated the disbursement of funds from the public water utility to the PM Water Fund. However, this phase encountered challenges as it coincided with municipal elections and subsequent turnover of municipal staff. As is common in Ecuador, new mayoral administrations often revise political and developmental agendas and give lower priority to actions started under previous administrations. This paused progress of the PM Water Fund and prevented the use of the funds for conservation activities.

Water Fund Form and Structure: The structure of the PM Water Fund is legally defined by the ordinance approved in 2019. The fund has a public-community governance structure and is managed by the Water Fund Management Committee, which includes the mayor and environmental technical staff from the municipality, the manager of the public utility and one representative from civil society. The WFMC is responsible for quarterly review meetings, annual plans and budgets, monitoring and evaluation of conservation activities, and information sharing with local authorities and residents. The PM Water Fund's management plans and strategic vision are intended to align with those of the ACUS and APH to ensure conservation and nature-based solutions are coordinated across the municipality.

The study identified key structural gaps within the WFMC, particularly around expanding participation of community-based structures beyond just one representative from civil society. Groups not yet represented include the community-managed Drinking Water Management Boards (Juntas Administradoras de Agua Potable – JAAP) as well as women producer groups and irrigation user groups.

Operation of the PM Water Fund: Although the PM Water Fund has a clear mandate and strong institutional and legal framework, the WFMC faces operational challenges, and no funds have been disbursed to carry out activities directly. Although the public utility fulfilled its yearly financial commitment (5% of revenue), approximately $300,000 raised since 2019 remains unused, though reserved for the fund, in the public utility's bank account. The WFMC has been inactive since 2019 which has stalled quarterly meetings, coordination with the ACUS and APH, and annual planning and budgeting cycles.

The study identified two key barriers to disbursing funds: concerns about transparency and lack of formal and legal agreement between the municipality and the public utility that delegates decision-making and approval of plans and finances to the WFMC. Although the municipal ordinance already assigned this responsibility to the WFMC, it requires an additional instrument to institutionalize and formalize responsibility. The study also noted that the municipality does provide ongoing leadership and funding to conservation activities in the páramo through other budget sources. Women's producer groups have also continued practicing agroecology and other conservation-based activities.

Long-term financing: The Water Fund's long-term financial viability remains a challenge because it relies on the public utility's 5% annual contribution as it's only revenue source highlighting a need for more diversified contributions from other sources. There are promising signs however. Groups that rely on the health of the páramo, including Drinking Water Management Boards (JAAP), Irrigation Committees, and floriculture companies, have expressed interest in contributing to the fund.

Communication and public awareness: In addition to the structural and operational challenges discussed above, the study noted that public awareness of the PM Water Fund, ACUS and APH is low and that residents have a limited understanding of the importance of protecting and restoring the páramo as a way to support access to water for drinking and agriculture.

Conservation framework at landscape level: The PM Water Fund has a strong potential for impact because the ACUS and APH conservation mechanisms have been established, which have created a protected area of 6,000 hectares in the Mojanda Lake System. However, the bottlenecks to using the PM Water Fund's existing balance must be overcome and in the future the annual planning of the Water Fund, ACUS, and APH should be conducted jointly to better coordinate activities and budgeting.

Conclusions and Recommendations

Key conclusions include:

Water funds can be viable solutions but require several years of commitment and significant financial/technical investment from a range of partners. The Pedro Moncayo Water Fund is presented as a viable solution for small and medium-sized municipalities (40,000 – 150,000 people) seeking to establish conservation financing mechanisms. The process is dynamic, complex and requires 2-3+ years of assessments of technical, financial and institutional feasibility, stakeholder engagement, consensus-building, and drafting and review of legal mechanisms. Government elections and staff turnover have slowed progress.

Water funds should be created, planned, and managed alongside conservation mechanisms to strengthen results. The joint and coordinated establishment of the PM Water Fund, the Mojanda ACUS, and the APH provide a framework for a coordinated model for high-altitude landscape conservation in Ecuador that finances the protection and restoration of the páramo and Mojanda Lake complex to ensure water availability for drinking and agriculture and protect ecosystem health and biodiversity.

Water funds need sustained political support, clarity, and legal agreements on roles and responsibilities around use of funds and financial transparency. The PM Water Fund has a clear mandate, strong legal and institutional framework, and has raised approximately $300,000 as of March 2025. However, a lack of political will and a need for clarity and legal agreement on roles and responsibilities around use of funds and financial transparency between the municipality and the public utility have limited the WF Management Committee's ability to plan, budget and disburse funds for conservation and restoration activities in the páramo. This highlights the need for ongoing technical support, including legal, to help resolve bottlenecks.

Women, particularly Indigenous women, often lead local water stewardship actions, holders of ancestral and place-based knowledge about the location and protection of water springs and play the primary role in collecting and using water at the household level. Women play a crucial role in conserving water resources, but they often have fewer opportunities to take part in decision-making activities. Their engagement in conservation processes is fundamental to implementing effective actions, and the Water Fund must create more opportunities for women to participate in its governance.

Key lessons learned and recommendations include:

Lesson Learned - Legal and regulatory challenges often require support from a legal advisor. Recommendation - Urgently develop a regulation for the PM Water Fund's municipal ordinance that clearly outlines roles and responsibilities between the WFMC, the municipality (GAD-PM) and public utility (EMASA-PM) and formally delegates planning and financial decision-making to the WFMC and the use of a separate PM Water Fund bank account managed by the WFMC. Although the municipal ordinance of 2019 dictated this role to the WFMC, the GAD-PM and EMASA-PM require a legal instrument to ensure compliance. To address legal and regulatory challenges, future water funds should consider a temporary or permanent legal advisor.

Lesson Learned - Water fund structures must include water user groups that have have had fewer opportunities to participate in decision-making. Recommendation - Amend the structure of the WFMC to include representatives from other community-level groups and consider participation from the private sector, such as the floriculture companies. Among the community-level actors, it's important that the Drinking Water Management Boards (JAAP), women's producer groups and irrigation actors join the WFMC. The WFMC will need to implement a participatory and rigorous process to select the form and function of the private sector's participation, and ensure women producer groups and other groups that have had fewer opportunities to participate can help shape decisions.

Lesson Learned - Water funds need to be understood and valued by the people, communities, and institutions they are designed to serve. Recommendation - Conduct communication campaigns and other awareness activities to improve public education and increase understanding of the PM Water Fund and the ACUS and APH.

Lesson Learned - Water funds, conservation mechanisms, and efforts to prepare for environmental shocks benefit from better coordination. Recommendation - Improve cohesion and coordination between the PM Water Fund and the ACUS and APH to ensure more integrated land-use planning. More specifically, the PM Water Fund's annual plans should be coordinated and integrated into the territorial planning at the municipal level, and provincial levels. In addition, the Mojanda ACUS and APH's annual plans should be binding on the Water Fund, ensuring its inclusion in the municipality's Development and Land Use Plan. The Water Fund should also be linked to local, regional, and national adaptation processes, such as Nationally Determined Contributions and National Adaptation Plans that increasingly prioritize ecosystem-based solutions to help communities prepare for environmental risks.

Lesson Learned - Long-term revenue strategies are key to keeping water funds financially viable. Recommendation - Diversify the PM Water Fund's revenue sources beyond the annual contribution of the public utility. To develop a resource generation strategy, the WFMC would benefit from financial modeling and projections that can help inform decisions and strategies that ensure the financial sustainability of the fund. Potential untapped sources include contributions from the Drinking Water Management Boards (JAAP) and Irrigation Committees as well as floriculture companies operating in the municipality – all of which have expressed interest. The WFMC should also consider establishing a privately-managed endowment to generate interest payments. This option is dependent on whether the municipality or partners like CARE can raise the initial capital investment. The search for contributors to the Water Fund should follow clear guidelines that define each partner's role, contribution, and decision-making authority.

Key Factors of Success for Future Water Funds

Consider the context, specifically population, hydrology and ecology, and the policy and legal environment.

Conduct a thorough analysis of all potential water users and partners.

Prepare an accurate timeline for the startup of a water fund.

Hire a permanent legal advisor.

Ensure that processes for the creation and implementation of water funds are done in a participatory manner, prioritizing the meaningful leadership of women.

Provide training on water systems, conservation, and governance that includes all interested and participating groups.

Develop a clear legal framework, so the funds are delimited for conservation, restoration, and monitoring actions, according to established regulations.

Prioritize public education through ongoing communication, outreach and awareness activities, including simple and clear communication materials.


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Introduction

Overview

Water is fundamental to socioeconomic development, food production, ecosystems and human well-being. Water is also crucial in helping communities prepare for changing environmental conditions while connecting people to nature. (United Nations 2024). In South America, the Andes and other mountain ecosystems supply and regulate the region's water. Water insecurity has worsened in the region due to population growth, urbanization, industry, agriculture, worsening drought cycles, and receding glacier coverage linked to changing temperatures and rainfall patterns. In addition, changing environmental factors are expected to negatively affect water quality, due to increased temperature, reduced dilution of agricultural runoff during droughts, increased sediment and pollutant loads during heavy rains, and disruption of treatment facilities due to flooding.

Ecuador has a variety of natural landscapes that support vital ecosystems and rich biodiversity – from dense Amazonian rainforests to tropical dry forests, mangroves and the Andes Mountains. In the municipality of Pedro Moncayo, located in Pichincha province, the páramos – high altitude grasslands – provide water resources and critical ecosystem services for the population. Andean culture considers the páramo a "water factory" due to its sponge-like soil that stores water and slowly releases it to lower-lying areas. However, changing environmental factors, harmful land-use practices, and unequal access to natural resource planning increase fire risks and threaten the páramo's ability to retain, regulate, and provide water for people and food production.

CARE has been in Ecuador for 63 years. CARE's programs work across sectors and focus on humanitarian assistance, women's empowerment and equality, community development, eliminating discrimination and all forms of violence, and long-term solutions. A major component of CARE's work has been to help communities create resilient futures, support and strengthen women producer groups, and improve sustainable management and conservation of water and land resources. From 2016 to the present, CARE Ecuador has developed, strengthened and scaled an integrated management model to help communities prepare for environmental risks and conserve high-mountain ecosystems in the Andes region across three projects: Adaptation to Climate Change for Andean Populations (ACCRE – 2016 – 2019), Mujeres Andinas (2019-2024), and Mujeres Rurales (2024-2027).

For these projects, CARE works across the full landscape, which includes new financing mechanisms that can provide long-term resources to protect and restore the páramo ecosystem. As part of the ACCRE project, CARE, the municipal government (Gobierno Autonomo Decentralizado de Pedro Moncayo - GAD-PM), and the public water utility (Empresa Municipal de Agua, Saneamiento y Alcantarillado - EMASA-PM) established the Pedro Moncayo Water Fund (PM Water Fund) in 2019, a public-community model for small and medium-sized municipalities that finances actions to protect and restore water resources and ecosystems.

A water fund brings local governments, communities, and other water users together to finance the protection of ecosystems that supply water.

Report Overview

The overarching goal of this report is to present results from a 2025 ex-post evaluation and answer the primary research questions of the ex-post evaluation: 1) What is the process, history, and form and function of the Pedro Moncayo Water Fund? 2) How effective and financially viable is the PM Water Fund? and 3) What challenges and recommendations apply to the PM Water Fund and the three other funds currently being expanded under the Mujeres Rurales project?

Water funds are an important tool for CARE's global strategy to address funding gaps for long-term water resource management. Insights and recommendations from this report will also inform CARE's work beyond Ecuador and contribute to global learnings and conversations on water funds.


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Methodology

The study used a participatory research methods based on collaborative information gathering, using community tools and techniques to collect primary and secondary information from participating groups in the watershed. Documentary research, and qualitative data collection, including focus groups, semi-structured interviews with key informants, and direct observations were used.

Research Objectives

The key research questions for this ex-post evaluation were:

- Why was the Water Fund selected, and how does it work within the project's broader landscape model?
- What was the fund's general structure and operating model, and how did the various partners and participating groups contribute to its operation?
- What was the process of creating and managing the fund?
- What conservation activities are being funded through the water fund, how were they chosen, and what were their impacts?
- What challenges were faced when starting and implementing the water fund, and what are recommendations for how the water fund model can be scaled, expanded, replicated, and adapted outside Ecuador?
- What structures, policies, and relationships contribute to the sustainability of the water fund?

Research Methods

Primary Sources

This study was based on primary sources, which were provided by the technical teams of the Decentralized Autonomous Government (GAD) of Pedro Moncayo; the Municipal Water, Sanitation and Sewerage Company (EMASA); the Climate Change Adaptation Project for Andean populations through the management, conservation and restoration of páramos in Pedro Moncayo (ACCRE); and Mujeres Andinas project implemented by CARE from 2016 to 2022. The most critical documents are: i) Baseline of the ACCRE Project (2016); ii) Reports on the Pedro Moncayo Water Fund from the ACCRE Project (2017); iii) Actions from the ACCRE Project; iv) Final report of ACCRE-CARE Project (2019); v) Technical report of the 2019 Conservation and Sustainable Use Area (ACUS) Mojanda ordinance; vi) Technical report of the Pedro Moncayo Water Fund ordinance; vii) ACUS Mojanda ordinance; and viii) Water Fund ordinance.

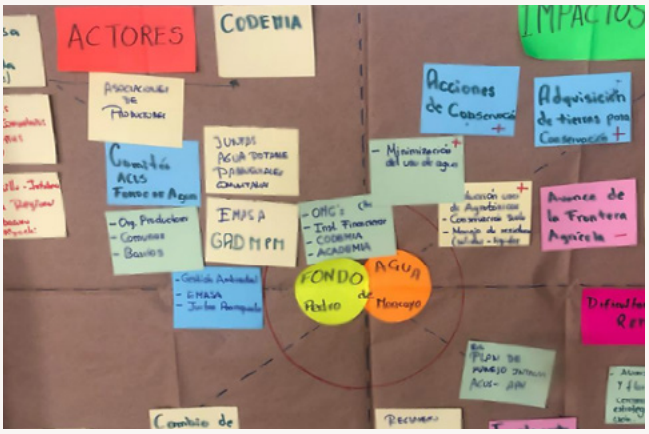
Secondary Sources

Secondary sources for this study included articles, theses or technical documents, which contain data or perspectives from water funds implemented in Ecuador and Latin America, especially those led by the Latin American Alliance of Water Funds. The experience of the Water Fund for Quito (FONAG) was also reviewed as an exemplary regional initiative which has promoted the implementation of other funds such as FONAPA, FORAGUA and the Páramos Fund for the Fight against Poverty in Tungurahua.

Focus Groups

Focus groups were the primary form of data collection for this study, as they provided participant perspectives and created space for validation and feedback. Two focus groups were conducted:

- **Focus Group with technicians.** Composed of technicians from the following directorates: i) Environmental Management; ii) Economic Development and Tourism; iii) Territorial Planning; and iv) the water utility (EMASA-PM), with seven participants, including technicians and directors from those areas.
- **Community Focus Group.** Composed of women and men, mostly producers from Pedro Moncayo who were part of the process of creating and implementing the Water Fund. For this dialogue space, Visualization in Participatory Programs (VIPP)[1] techniques were used to establish a safe and participatory space and to support reliable and specific information gathering. Eleven people participated.



Focus Group responses

Semi-structured interviews

Interviews combined structured questions with the flexibility to explore new lines of inquiry during the conversation. These discussions provided a more detailed understanding of the social, economic, and environmental factors that shaped the Pedro Moncayo Water Fund. CARE conducted 7 interviews: with 1 GAD-PM director, 1 EMASA-PM director; 4 GAD-PM and EMASA-PM technicians and 1 producer/community member. The interviews were mostly conducted in person in the communities and lasted 1 hour and 40 minutes using a structured interview script.

Direct observation

Information was validated through interviews and surveys, which was especially helpful in verifying the conservation process of the Mojanda Water Protection Area, recognized by Ecuador's Ministry of Environment, Water and Ecological Transition in June 2021 with 6097.03 ha set aside for water protection and restoration activities.

1 VIPP is a people-centered methodology that uses visual tools and techniques to enhance participation and collaboration in group events. It emphasizes the active involvement of participants by visualizing ideas, discussions, and processes through interactive methods to foster a more participatory and engaging environment.

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Context

The desk review provided valuable information on the importance of the páramo, the water-related challenges faced as well as the environmental, sociopolitical, and programmatic context surrounding the Pedro Moncayo Water Fund.

Importance of the páramo in Ecuador

Ecuador has 13,371 km² of páramo, an Andean high-altitude grassland ecosystem that represents 5% of it's territory (Beltrán et al 2009). The vegetation of this ecosystem combined with a spongy organic soil forms a water retention system from which several important streams flow, especially in the dry season (Podwojewski and Poulenard 2011; Avellaneda et al 2014).

The páramo has undergone rapid transformation and degradation due to agriculture, cattle ranching, and, in some cases, mining activities (Romo and Calero 2022). Consequently, water flows have decreased and some communities report significant periods of drought (Calvo and Villaverde 2011). Most of the páramo is under communal tenure due to colonization, historical exclusion, migration, and the growth of the mestizaje[2] population, which affects the dynamics of land-use change according to community priorities (Hofstede et al 2014; Avellaneda-Torres et al 2015). Changing global weather patterns are also driving up temperatures and making rainfall variable – contributing to degradation and loss of the páramo and negatively affecting livelihoods.

The páramo is important for the ecosystem services it provides, particularly water supply for drinking and agricultural use (Buytaert et al 2006; Mena and Hofstede 2006). The loss of the páramo means a reduction in water supply to adjacent fields and cities located downstream in the watershed, leading to the search for water from increasingly distant sources (De la Cruz et al 2009). At the beginning of the 21st century, about 64% of the total páramo area above 3000 m had been altered by human activities (Hofstede, Coppus, et al 2002). The Mojanda-Cajas Lake System is a vital water source for Pedro Moncayo and neighboring municipalities. The loss of its páramo from overgrazing, extensive cultivation, and changing weather patterns has increased soil erosion and habitat loss, threatening the water quality and quantity in the Lake System.

2 Mestizaje refers to the history of racial and cultural mixture in Latin America.

Social Challenges

In the Andean region of Ecuador, especially in the northern Andes, water is not a naturally scarce resource. In addition to changing environmental factors, the mismanagement of water resources under colonial regimes has contributed to long-lasting water scarcity. In the northern biocorridor, which includes the municipalities of Pedro Moncayo and Cayambe, this has been historically evident. Under the hacienda regime,[3] the main canals and water systems were for the exclusive use of the haciendas. This included water for human consumption (Manosalvas, 2010; Backer, Tutillo, 2009), which produced shortages in the rest of the biocorridor. Through organizing around land and water, communities and local municipal GADs gained access. This has helped shape how the public sector and communities now manage water resources.

Water Challenges

One of the most evident problems is the availability of water in the páramo, which is being affected in both quality and quantity. This is a worrying factor for all communities in Pedro Moncayo, as it contradicts the ecosystem's role as the "water factory" for Andean communities. The water levels of lakes such as Chiri Yaku, nestled within the páramo and located in the Mojanda lake system, have dropped by at least 7 meters. This decline is mainly attributed to the overuse of the surrounding watershed and ecological pressures like vegetation loss from burning or deforestation, erosion, increased temperatures, and decreased rainfall. Consequently, the páramo loses some of its capacity to retain water and regulate water cycles.

Another factor that contributes to water shortages is the introduction of water-intensive, non-native species for timber production, such as pine and eucalyptus. In a study conducted in Cotopaxi, soils with 20- to 25-year-old pine plantations retained between 39% and 63% less water than páramo soils and that the effect was stronger under drier conditions (Farley, 2011). Other research indicates that eucalyptus plantations tend to have a greater adverse impact than pine and that flow loss is greater when the vegetation is grassland rather than native shrubland (Farley et al. 2005).

3 The hacienda system in Ecuador was a colonial and post-colonial land-holding structure featuring large estates owned by wealthy elites under which Indigenous and mestizo laborers were tied to the land through debt peonage, sharecropping (huasipungo), and servitude.

Programmatic Context

In Ecuador, CARE works to protect and conserve the páramos, help communities create resilient futures, and improve practices around land-use and agriculture. These programs include actions to strengthen rural organizations, especially women's organizations, to influence planning related to droughts, fires, changing rainfall patterns, and policies that affect women and girls. CARE does this by developing capacities of organizations for innovation and circular marketing of their products through clean production strategies, financial education, and community mobilization, including the prevention of violence against women and girls.

Under its water and sustainable futures program, CARE implements projects with the objectives of supporting water security and community resilience to changing environmental factors in Ecuador, as well as financial mechanisms for conservation (water funds), and planting and harvesting safe water to support resilient communities in Ecuador. The Water Fund model was developed and supported under three key projects in the northern and central Andean Sierra: ACCRE (2016-2019), Mujeres Andinas (2021-2024) and Mujeres Rurales (2024-2027). These three projects use a landscape approach based on agroecology, women's economic empowerment, protection and/restoration of páramos and aquatic ecosystems, and participation/advocacy in public policies.

In April 2016, CARE and the Pedro Moncayo municipality (GAD-PM) launched implementation of the project "Adaptation to Climate Change of Andean populations through management, conservation and restoration of moorlands in Pedro Moncayo" (ACCRE). The project aimed to help communities in the high Andean páramos protect their livelihoods against environmental risk factors. A key approach included seeking innovative and resilient processes through the implementation of a financial conservation mechanism.

To this end, ACCRE supported the participatory process for the feasibility, design and creation of the Pedro Moncayo Water Fund (PM Water Fund) and the establishment of the governance and policy framework that supports the fund and the participation of public, private, and community partners. CARE prioritized strengthening the governance processes that prioritized community participation and leadership in collaboration with the local municipality and water utility.

The ACCRE follow-on, Mujeres Andinas (2021 to 2024), continued support to the PM Water Fund, while initiating the participatory feasibility process for three new funds in Cayambe, Cotopaxi and Otavalo. The Mujeres Rurales project (2024-2027) continues to support the new Water Funds in Bolívar and Latacunga.

Water Funds in Latin America

A water fund is based on the design of a financial mechanism that orients and articulates the investment of different private, public and social actors to achieve resilient long-term water access (Latin American Alliance of Water Funds 2020). Financial mechanisms for environmental conservation and water resources management have been conceived as a solution to increase the availability of water resources as mentioned by Creed and Meine van Noordwijk, (2018) which allude to the relationship of people and communities with water resources in their multiple daily activities such as access and use for drinking water, sanitation, irrigation and energy generation, among other uses.

However, the authors point out that the current situation of access to water, biodiversity and the ecosystems that constitute them is becoming much more complex with the effects of changing weather patterns. The tropical Andes also have their own pressures and dynamics that put them at risk. In this context, the communities established around the mountain range benefit from the water provided by glaciers and wetlands, which are at high risk to changing environmental factors.

However, the water problem is much more complex, marked by the historical inequality of access to water in the region, which Urquiza Gómez and Cadenas (2015) describe as a "particularly worrying situation given that in certain localities of Latin America, water availability and inequality is very marked." This has led to constant socioeconomic and environmental conflicts over the control of water. At present, this dispute continues to deepen due to the accelerated growth in demand due to demographic pressures, urban growth and expanding economic activities (Vuille 2013).

> **"In this context, the need to expand the scale of community-based natural resource management programs, the creation of green jobs, the adoption of governance and innovation mechanisms, and the implementation of alternative financing proposals for better water management, have been materialized through mechanisms such as water funds, considered a laudable proposal in the face of the challenges presented by the Latin American water sector."**
>
> **- UN-Water 2019**

Water funds are financial mechanisms that bring key groups together through a shared water governance model. These actions are suitable for cities and their citizens to improve water management and security, focusing on the creation of nature-based solutions (Latin American Alliance of Water Funds 2020). Currently, Latin America has about 30 water funds in the countries of Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Panama and Peru.

Water Funds in Ecuador

Ecuador is home to the first water fund, which was created in 2000 with the establishment of the Environmental Fund for the Protection of Quito's Water (FONAG)[4] in collaboration with The Nature Conservancy (TNC) and the Quito public water utility (Empresa Pública de Servicios de Agua Potable y Saneamiento—EPMAPS). This fund benefits from a privately managed endowment created to protect the natural sources that sustain the city to guarantee the long-term drinking water consumption of Quito's population. This model later attracted funding from private companies and international donors. FONAG protects and conserves the watersheds that supply water to 2.5M people living in the city of Quito.

4 For more information see: https://www.fonag.org.ec/web

What is an endowment in a Water Fund?

An endowment (*fideicomiso)* for a water fund is a financial mechanism in which donations are held in investment portfolios managed by a private, independent financial institution. The principal remains invested and returns (interest, dividends, etc.) are used to finance activities within the fund's mandate. This approach provides a long-term and reliable funding source. However, endowments often require capital seed investment and fees paid to financial advisors.

In Ecuador, there are four other water funds: the Paute River Basin Water Fund (FONAPA), the Regional Water Fund and Environmental Fund integrated by several cities in southern Ecuador (FORAGUA), the Water Fund for Guayaquil for the conservation of the Daule River Basin (FONDAGUA), and the Tungurahua Páramo Management and Fight against Poverty Fund**.** The Tungurahua Fund is public-private model that combines an endowment and an annual revolving fund for the communities. The other funds use the endowment model, where participating municipalities charge fees to water users, add those fees to the endowment, and use the interest to finance management and conservation activities.

It's important to note that these water funds have endowments and are managed at a city (FONAG), provincial level (Tungurahua Fund), or collective of municipalities (FORAGUA). As a result they can generate revenue from a substantial user base which helps attract funding from private companies or international donors. This also points to a gap for water fund models that small to medium municipalities – and highlight the need for models like the PM Water Fund.

Some public initiatives also receive private contributions. A 2020 CARE study on Payments for Environmental Services identified a mechanism in the Peruvian municipality of El Chaco that used surveys to determine an environmental fee within the monthly water bill. Ideally, users would pay $0.068 per month to cover the costs of protecting and restoring 353.84 hectares of the micro-watershed. However, due to initial resistance from residents, the fee started at $0.028, with a commitment to increase it gradually by one cent per year for five years**.** In addition, the municipality opened an exclusive account to collect the fee and cannot use the money for any other purpose other than payment for environmental services. The agreement between the municipality and landowner families in the San Marcos and Chontaloma micro-watersheds, the main water service providers for El Chaco, is formalized through a cooperation agreement for the payment of environmental services. Under the agreement, the municipality commits to pay $22.50 every three months, and landowners must carry out projects outlined in the micro-watershed management plans.

Andean Forest and Mojanda Lake System

High Andean forests and ecosystems, such as páramos, are fundamental regulating water flows and providing drinking and irrigation water to communities and settlements in the middle basin. Andean forests are widely known as flow-regulating ecosystems with a high water yield (Tobón and Arroyave, 2007; Ataroff and Rada, 2000; Cavelier, 1991; Cavelier and Goldstein, 1989). They especially help to control and maintain water flows during dry periods, which makes them especially important to water systems in the tropics (Bruijnzeel, 2006).

The Mojanda Lake System is located in the northern part of Pedro Moncayo**.** According to the Development and Land Management Plan 2021-2023, "… in the Mojanda Lake Zone we can find four lagoons, Caricocha, Guamicocha, Yanacocha and Chiriyacu, which belong to the micro-watershed of the Pisque River. This lake complex is at the top of the mountainous system of the Mojanda and Cajas junction, occupying the crater cauldron of the extinct Mojanda volcano, and has an average altitude of 3,844 meters above sea level."

The Mojanda Conservation and Sustainable Use Area is an important water reserve for the main urban centers in northern Pichincha province, as well as parishes in the municipality of Otavalo. It is estimated that the Mojanda Lake Complex supplies drinking and irrigation water to 200,000 people. This water supports agricultural and livestock activities, including rose production for international markets. Despite its importance, the lake system has suffered degradation from harmful grazing and agricultural practices that have led to deforestation and devegetation of the páramo and reduced the quality and quantity of water provided by the páramo—heightening the risks local communities face.

Mojanda Conservation and Sustainable Use Area and Mojanda Water Protection Area

To protect the Andean forest, páramo, and Mojanda Lake Complex, the GAD-PM, with support from NGO partners like CARE and ECOLEX (Corporacion de Gestion y Derecho Ambiental), developed and passed an ordinance to declare the Conservation and Sustainable Use Area (ACUS) Mojanda in 2019. The ACUS encompasses the parishes Tabacundo, Tupigachi, Malchinguí, La Esperanza, and Tocachi in the municipality of Pedro Moncayo. The ordinance stated that the ACUS would cover an área of of 6,094.38 hectares (PDyOT GAD-PM 2023) and protect over 60 water sources.

Through the ACCRE project, CARE supported community engagement processes to define ACUS agreements and limits between 2016 to 2018. As a result, participating groups across five parishes defined the limit of the agricultural frontier, where agriculture activities transition to the páramo. In addition, compensation agreements and restoration measures were established for the buffer zones degraded by the advance of cattle ranching and extensive agriculture.

The process helped communities and public and private sector partners better understand the benefits of defining the agricultural frontier, establishing the compensation agreements, and creating the ACUS to help protect the páramo and water sources.

In 2021, with support from CARE and ECOLEX, the GAD-PM built on the ACUS and successfully advocated with the Ministry of Environment to declare the Mojanda Water Protection Area (Area de Protección Hídrica - APH), expanding specific legal protection to the freshwater sources within the ACUS. The APH is a national instrument to safeguard water sources that are critical for human consumption and food security across Ecuador. The APH also demonstrates the importance of municipal ordinances like the ACUS – which serve as a predecessor before attaining national-level protection. Both the ACUS and APH have standalone management committees with planning and budgeting cycles.


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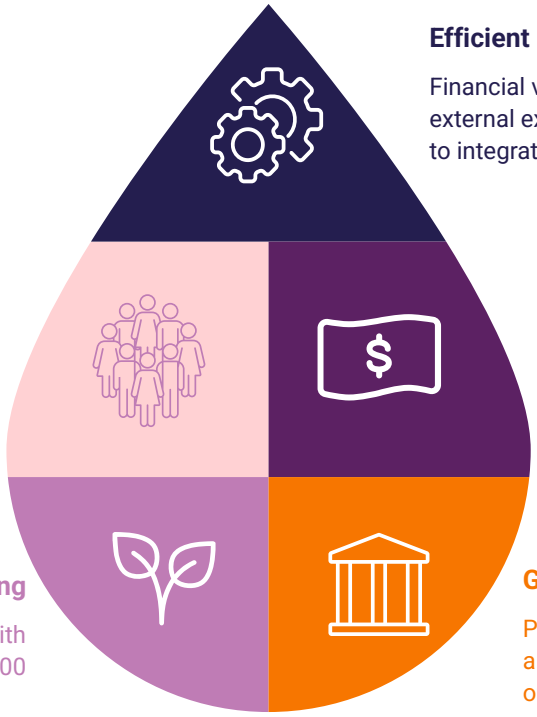
Pedro Moncayo Water Fund

Given the success of water funds in Ecuador and local support for a landscape-level conservation framework, CARE and the GAD-PM began discussions in 2016. These discussions identified the need for a municipal ordinance to protect the Mojanda Lake Complex and the municipality's surrounding páramo, as well as the need for a financing mechanism to conserve these water-providing ecosystems. A public-community model was selected based on geographic and demographic characteristics: Five parishes with a population of 30,000, of which 20,000 received drinking water through the EMASA-PM. The EMASA-PM was identified as the main financial contributor and holds a key position within the management structure. The figure below highlights the main components of the PM Water Fund model.

Components of the Water Fund Model



Efficient Resources

Financial viability without external expenses and an option to integrate a trust

Technical Team

Personnel from the Pedro Moncayo GAD supporting the implementation fo the model

Financial Contributions

Direct yearly financial contribution from EMASA-PM's revenue

Environmental Planning

For small municipalities with populations <60,000

Governance Model

Public-community governance approach for the management of water

The following table summarize the key actors linked to the PM Water Fund.

Key Actors	
Local government: Gobierno Autónomo Descentralizado de Pedro Moncayo (GAD-PM) / Pedro Moncayo Decentralized Autonomous Government. This is the municipal government and includes the mayor and municipal technical teams.	**Public water utility:** Empresa Municipal de Agua, Saneamiento y Alcantarillado de Pedro Moncayo (EMASA-PM) Municipal Public Water, Sanitation, and Sewerage Utility. EMASA-PM provides water and sewage services to urban centers in the Pedro Moncayo municipality.
Local government technical unit: Dirección de Gestión Ambiental del Gobierno Autónomo Descentralizado de Pedro Moncayo (DGA-PM) / Environmental Unit of the Pedro Moncayo Decentralized Autonomous Government. This is the municipality's technical team responsible for environmental conservation and protection.	**Community-based service provision:** Juntas Administradoras de Agua Potable (JAAP) / Drinking Water Management Boards. JAAPs are non-profit organizations responsible for managing and operating community water and sanitation systems. Some form part of the EMASA-PM's management structure but most are independent.
Pedro Moncayo Water Fund Management Committee: The Water Fund Management Committee (WFMC) supports the PM Water Fund's operations, including operational and financial management, strategic planning, monitoring and evaluation, and coordination and outreach with residents and other municipal partners.	**ACUS and APH Mojanda management committees:** The declaration of the Mojanda Conservation and Sustainable Use Area (declaración del Área de Conservación y Uso Sustentable - ACUS) and Mojanda Water Protection Area (declaratoria del Área de Protección Hídrica Mojanda - APH) established a committee for each protected area. These committees manage the governance and administration of these protected areas to support biodiversity and long-term resource management.

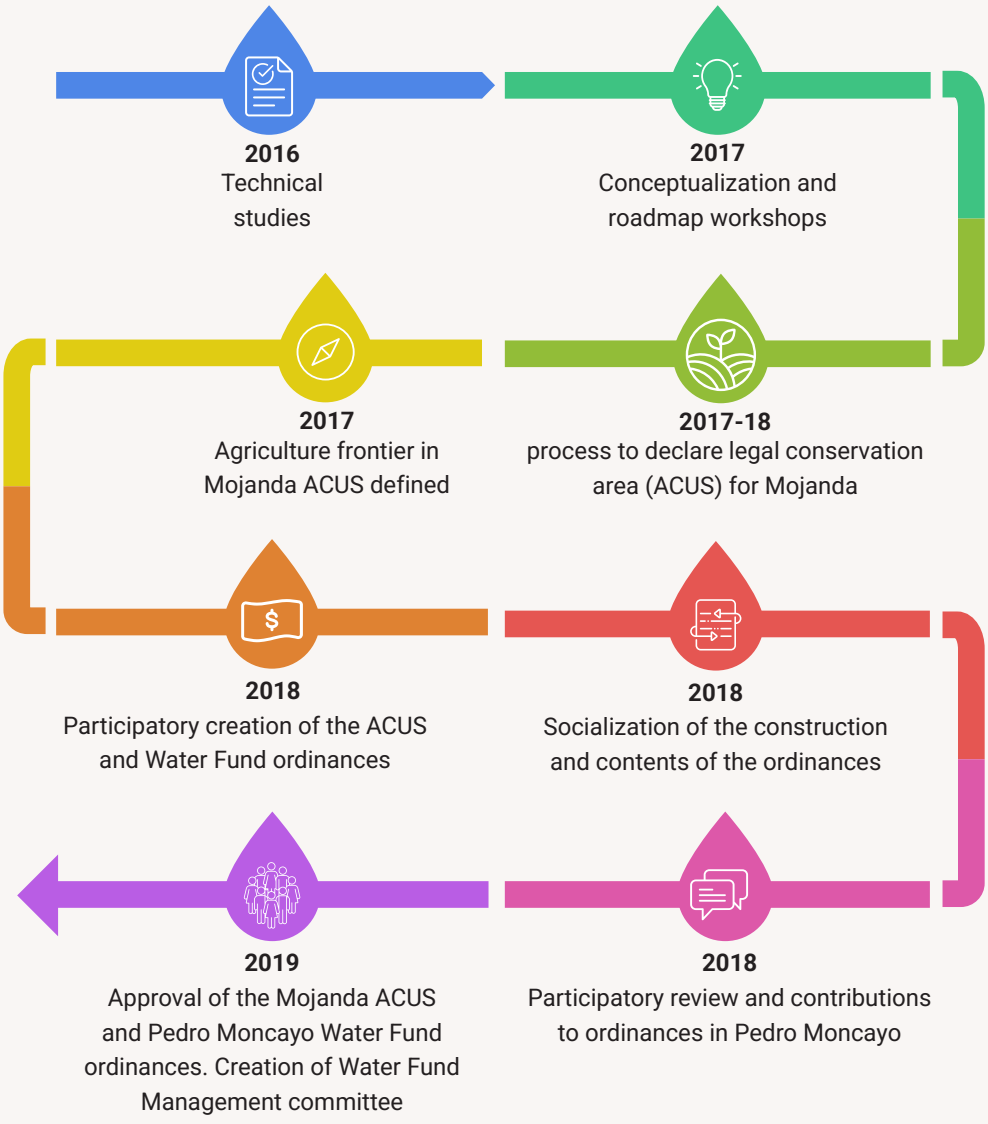
Results

Creating the Pedro Moncayo Water Fund

The focus group with GAD-PM environmental technicians described the creation of the PM Water Fund as a participatory, landscape-level process focused on developing a practical and replicable model for small and medium-sized municipalities. The process took into account two key considerations: i) the number of the municipality's population; and ii) the participating groups in the territory.

The GAD-PM established the PM Water Fund in 2019 after an almost three-year process with technical and financial support from CARE through the ACCRE project. The figure below outlines the timeline step in creating the Water Fund. The steps are divided into an Initial Stage (2016-2018 shown in blue, teal, green, and yellow), Intermediate Stage (2018 in orange, red, and pink), and Consolidation Stage (2019, in purple).

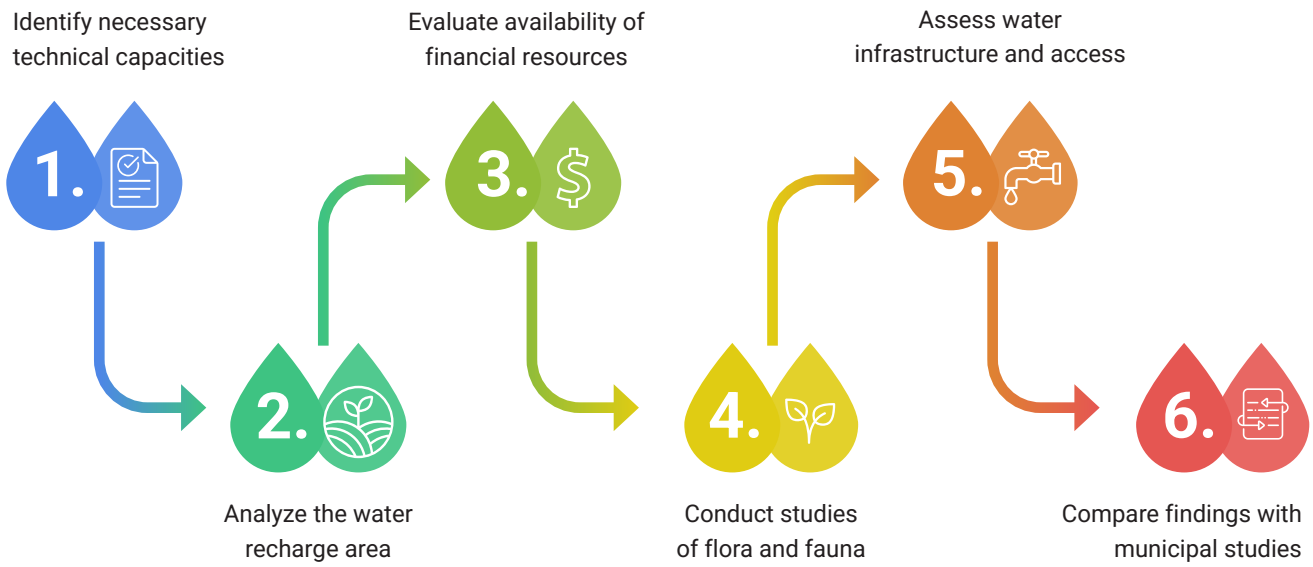
Establishment of the Pedro Moncayo Water Fund



According to focus group discussions and the literature review, the *Initial Stage* of the PM Water Fund lasted from 2016 to 2017 (blue and green steps in the figure above) and focused on agreements between the GAD-PM and CARE and the design of the model.

The Initial Stage included *Feasibility and Design Phases* (2016-2017). The *Feasibility Phase* (2016) included of technical studies that analyzed the water recharge zone, water availability, flora and fauna, basic water access, and diagnostics to be compared with municipal water studies to establish a history of water availability and quality. The figure below outlines the six-step process of this feasibility phase.

Assessing Feasibility of the Pedro Moncayo Water Fund



Compilation of this information allowed the Environmental Management Unit of the Pedro Moncayo GAD (GADM-PM) to justify and recommend the use of a water fund to the mayor. With the mayor's approval and support, the GAD-PM and CARE started the *Design Phase* (2017), which included facilitated participatory discussions and workshops to define the PM Water Fund's mandate, design its governance and management structure, develop a roadmap for its technical proposal for the mayor and municipal council, and begin drafting the municipal ordinance that would legally establish the fund.

At the same time, the GADM-PM requested a loan from the Development Bank of Ecuador to expand Pedro Moncayo's sewerage network, benefiting 20,000 people. This enabled EMASA-PM to change the distribution of the water charges without raising the tariff, so that 5% of the amount collected from drinking water consumption fees would be allocated to the PM Water Fund. This made the EMASA-PM the exclusive financial contributor to the PM Water Fund (Córdova A. & Viteri M. 2020).

Through a process of negotiation and consensus-building, the GAD-PM, EMASA-PM, and CARE reached agreement on a public-community model and governance structure suited to the municipality's relatively small population. While the Feasability and Design phases were being carried out, the GAD-PM, with support from partners like CARE, began the participatory process to declare a legally protected conservation area for the Mojanda Lake Complex in 2017.

According to engineer Amanda Cuzco, Director of the Environmental Unit of the GAD-PM:

> "The water fund was a process that was developed in the territories, with schedules according to the availability of the community. This is why it was created with the public and community representatives, which will allow us to manage independently and without trust representation expenses[5] [the way most water conservation financial mechanisms are currently managed]. The funds were collected under the conservation financial mechanism with a participatory governance structure, where there is representation of the majority of stakeholders in the territory".

The Intermediate Stage lasted about 1 year (2018-19) and included creating, reviewing, sharing, and approving both the PM Water Fund ordinance and the declaration of the Mojanda ACUS. The content of the municipal ordinance for the PM Water Fund was finalized in 2018 following a participatory process between the GADM-PM, EMASA-PM, CARE, FONAG, SENAGUA, and local organizations such as TURUJTA, Agroecological Producers Associations, Unión de Organizaciones Campesinas e Indígenas Cochasquí - Pedro Moncayo (UCCOPEM), and other groups in the municipality**.** The municipal ordinance included the legal and institutional frameworks for the Fund, its structure, and decision-making mechanisms. The proposal was then presented to the Legal Commission of EMASA-PM who approved it to be presented to the Municipal Council. The Municipal Council passed the ordinance in 2019 and established the PM Water Fund as a legal entity.

This stage concluded with a new administration following the mayoral elections in 2018. The elections marked the departure of a mayor and administration that had prioritized and promoted the conservation of the Mojanda Lake Complex and páramo, as well as the PM Water Fund as a critical financial mechanism to accomplish these goals.

The *Consolidation Stage* (2019 – present) focused on establishing the PM Water Fund Management Committee (WFMC) and defining roles, responsibilities, and operational and planning procedures for the PM Water Fund. According to the focus group carried out with GAD-PM technicians, this stage experienced serious institutional challenges.

The mayoral elections and subsequent government turnover in 2019 significantly impacted the GAD-PM's agenda and priorities. Many of the actions carried out with the previous mayoral administration (2015-2019) were not continued, decided upon, or invested in by the new mayoral administration (2019-2023). This resulted in the PM Water Fund receiving less attention and becoming a lower priority. However, EMASA-PM still provided its annual financial contribution, even though the PM Water Fund was dormant and not able to move to an operational stage to carry out conservation and restoration activities. This is a common dynamic in Ecuadorian politics: new mayoral administrations do not take up the political and development agendas and priorities of previous administrations.

According to Carmelina Morán, CARE technician of the Mujeres Andinas project, support for the ordinance and establishment of a draft regulation was prioritized by the GAD-PMs Environmental Unit and the EMASA-PM, but the mayoral leadership did not offer the support necessary for the fund to start operating.

That despite the dormant status of the PM Water Fund, the GAD-PMs Environmental Unit continued to carry out conservation actions with technical and financial support from CARE and the Mujeres Andinas project. The GAD-PM expressed a commitment that, once operational, the PM Water Fund would follow up on conservation actions in the following years. Despite the limited role of the PM Water Fund, women supported by the Mujeres Andinas project continued to lead and carry out water source conservation, agricultural border delimitation, combating the burning of grasslands, and increasing agroecological production in their communities.

This Consolidation Stage also included the declaration of two legally protected conservation areas established by the Pedro Moncayo municipality and national government of Ecuador with support from CARE: 1) the Mojanda ACUS, declared in 2019, which protects the Mojanda Lake Complex, a series of freshwater lagoons and páramos that covers 6,000 hectares and supplies water to 200,000 people in Pedro Moncayo municipality; and 2) the Mojanda Water Protection Area (Área de Protección Hídrica Mojanda — APH), declared in 2021, a national-level declaration that specifically protects the freshwater ecosystems within the ACUS and strengthens its legal protections.

5 Trusts are used to protect and manage assets, estate planning, establish trusts for specific groups, facilitate investment and wealth management, among other things.

These two conservation mechanisms were constructed and approved in parallel with the PM Water Fund. This highlights the importance of having a permanent financial mechanism for water conservation within the context of larger landscape-level planning and conservation.

This is emphasized by Mauricio Ochoa, Manager of EMASA-PM:

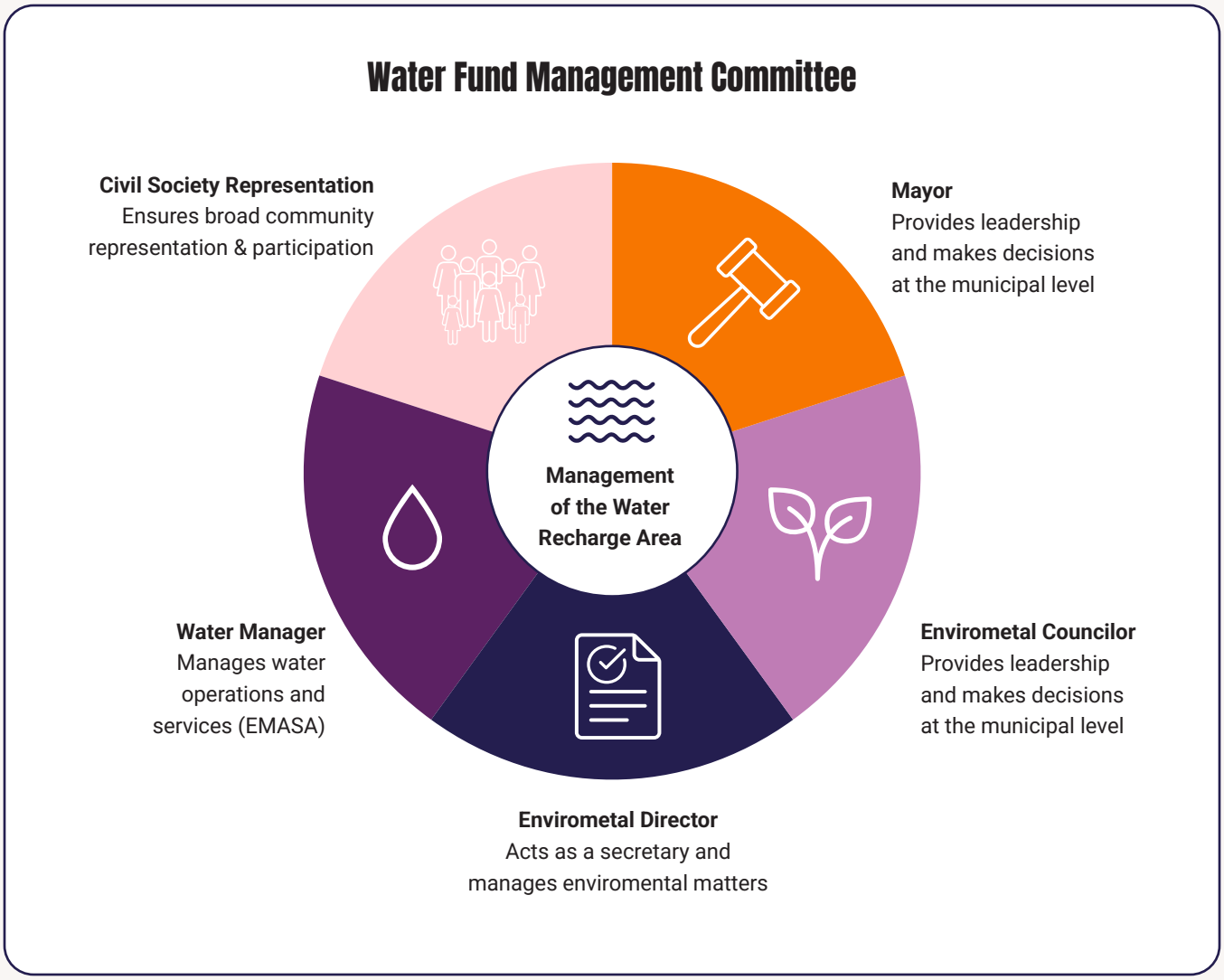
> "There were 3 moments to ensure the objective of water conservation in Pedro Moncayo: the first is the creation of the ACUS with a participatory and socialized process, the second is the creation of the Water Protection Area (APH) - these two instances must have their planning or management plan, and the third is the ordinance and creation of the Water Fund."

Catalina Jiménez, Technician of Productive Development of the GAD, adds:

> "The operation of the Water Fund complements the territorial model that CARE has been working on all these years and will surely improve the sustainability of productive processes".

Water Fund Management Committee Members

This section describes the structure and membership of the Water Fund Management Committee, which the initial ordinance mandated to oversee the implementation of the Fund. The figure below outlines each member and their role within the Committee.



- Decisions are made by a simple majority of its members. The secretary can voice an opinion but does not have a vote.
- Committee members participate on a voluntary basis.
- Among the members assigned to the Committee, a chairperson is nominated to preside over the meetings and a secretary will be nominated to keep records.
- The WFMC meets quarterly to monitor progress and conduct annual planning and budgeting cycles to produce an Annual Operating Plan, which will be coordinated and prepared by the GAD-PM Environmental Director (who also serves as WFMC Secretary).
- This annual plan must be approved by the full committee during an assembly meeting and validated through member signatures. The plan is based on the available budget, which includes EMASA-PM contributions and any other revenue source.

Despite having a mandate outlined in the municipal ordinance, the Water Fund Management Committee has not met or facilitated planning meetings since 2019, according to the focus groups. Participants report this was a decision of the previous administration (2019-2023). They also point to the recurring challenges in maintaining momentum and political support to convene the WFMC amid shifting priorities due to government turnover and transition. Catalina Jimenez, GAD-PM Productive Development Technician, stated:

> "...there has been no socialization of the benefits of páramos conservation and what the Pedro Moncayo Water Fund is for, which would help to improve the participation and involvement of all stakeholders in the territory."

Focus group participants also flagged the importance of integrating additional groups into the Water Fund Management Committee to strengthen local ownership and effectiveness of the PM Water Fund. Some actors can also provide financial contributions to the fund and help diversify its revenue sources. Participants flagged the JAAP (Drinking Water Management Boards) and two actors from the irrigation sector – CODEMIA (Development Consortium of Integrated Management of Water and Environment - Cayambe Pedro Moncayo) and the Regional Irrigation Boards – as important participating groups that should be integrated into the WFMC. Given their social and political capital within their communities, and their major roles providing water services for drinking and agriculture, these Drinking Water Management Boards, Irrigation Committees, and producer groups are vital to protecting and restoring the páramo and freshwater resources in the Mojanda ACUS and APH.

Who are CODEMIA and the Irrigation Committees?

CODEMIA is a consortium of local community organizations and producer groups that manage the Tabacundo irrigation canal (which connectes Pedro Moncayo with a neighboring municipality of Cayambe) to ensure equal distribution of water and that floriculture and other agricultural businesses sustainably use water resources and contribute to the upkeep and maintance of the canal.

Irrigation Committees act as irrigatioin water user groups and determine water allocation for productive use and manage and maintain irrigation infrastructure.

Mauricio Ochoa Manager of EMASA-PM mentions that:

> "An interesting model of broader governance would be with the CODEMIA link, and the 4 JAAP (Drinking Water Management Boards) of Malchingui, Tocachi, Tupigachi and La Esperanza, which would be part of the management committee and could also be [financial] contributors."

The relationship between the WFMC and the Mojanda ACUS and APH is direct, especially in its planning processes, management plans and strategic vision, as well as its objectives, which should seek: conservation, restoration, compensation, and monitoring/reporting the status of the water recharge area and its nearby water sources.

Legal, Technical and Financial Structure of the Water Fund

This section outlines the legal framework for the Pedro Moncayo Water Fund, the technical mandate and planning-implementation process, and the financial structure of the fund.

Source: Project ACCRE-CARE

The municipal ordinance passed in May 2019 served as the legal mechanism for the PM Water Fund and was a critical step in establishing the fund as a legal entity within the Pedro Moncayo municipality and the Mojanda ACUS/APH. The municipal ordinance officially defined the governance and management structure of the fund, including its mandate to conserve and restore the páramo and Mojanda ACUS/APH area, the establishment of the Water Fund Management Committee (WFMC), its membership, and the role and responsibilities of each group. However, according to focus groups, 80% of participants did not fully know the content of the municipal ordinance. Additionally, although 90% of participants reported knowing that there is a financial mechanism for the conservation and management of the páramo and water sources, they do not know how to access the funds.

The PM Water Fund's technical mandate is to carry out protection and restoration activities in the Pedro Moncayo municipality, as well as the páramo and freshwater lagoons of the Mojanda ACUS/APH. Due to the inoperative status of the WFMC, this technical mandate is currently managed and carried out by the Environmental Unit of the GAD-PM with support from EMASA-PM.

The EMASA-PM is the only financial contributor to the PM Water Fund. According to the ordinance, the EMASA-PM must have an "account with an initial fund of 5% of total annual consumption of which will be transferred to the special account of the environmental services program." According to the ordinance and legal agreements, the 5% contribution is equivalent to around $50,000 per year, which must be transferred to an autonomous account as mentioned in the ordinance. Although the EMASA-PM has fulfilled its commitment to contribute 5% of annual revenues to the fund and the funds have remained reserved for this purpose, the PM Water Fund has yet to directly finance restoration and conservation activities since the approval of the municipal ordinance in 2019.

This is the result of several challenges that have prevented compliance with the requirements outlined in the municipal ordinance. At the fund level, the Management Committee does not meet, plan, or budget, and there is no separate bank account for the fund. At the governance and political level, GAD-PM and EMASA-PM have not reached an agreement on transparency, roles, and responsibilities for managing and using these funds.

According to EMASA-PM's Manager, the main reason for not disbursing the annual amount by the public water facility is the lack of clarity from the Municipal Government for the investment processes and actions to be carried out by the Water Fund.

During the development of the Water Fund and the ordinance, there was also an agreement to include fees paid by a nearby floriculture company, which is among the main water users in the area. However, the WFMC did not move forward to formalize and document this contribution due to stalled decision-making and limited political support. The floriculture company, however, remains interested in contributing to the PM Water Fund's finances and management.

Participants in the interviews and focus groups stressed the urgency of passing a new regulation to reactivate the PM Water Fund and its Management Committee. The regulation would legally reinforce the municipal ordinance by clarifying the roles and responsibilities of the WFMC, GAD-PM and EMASA-PM in managing, using, and allocating funds. This regulation would also be an opportunity for the GAD-PM and EMASA-PM to expand the membership of the WFMC to include the JAAP, CODEMIA, Irrigation Committees and women producer groups.

In the focus groups, several groups that could be part of developing this regulation were mentioned:

- Academic institutions: Universidad Central, Universidad Salesiana and Universidad Técnica del Norte;
- NGOs: CARE, ECOLEX, Aves y Conservación, SEDAL, and ECOPAR;
- Local organizations: CODEMIA and JAAP (Drinking Water Management Boards);
- Private Sector: Floricultural companies and financial institutions.

According to Johana Morales, Environmental Unit technician of the GAD-PM:

> "I also belong to a Community Water Board of San José Chico and EMASA-PM always mentioned to the Water Board that there is a water fund that is collecting funds, with which conservation actions can be carried out for the water recharge zone of Mojanda."

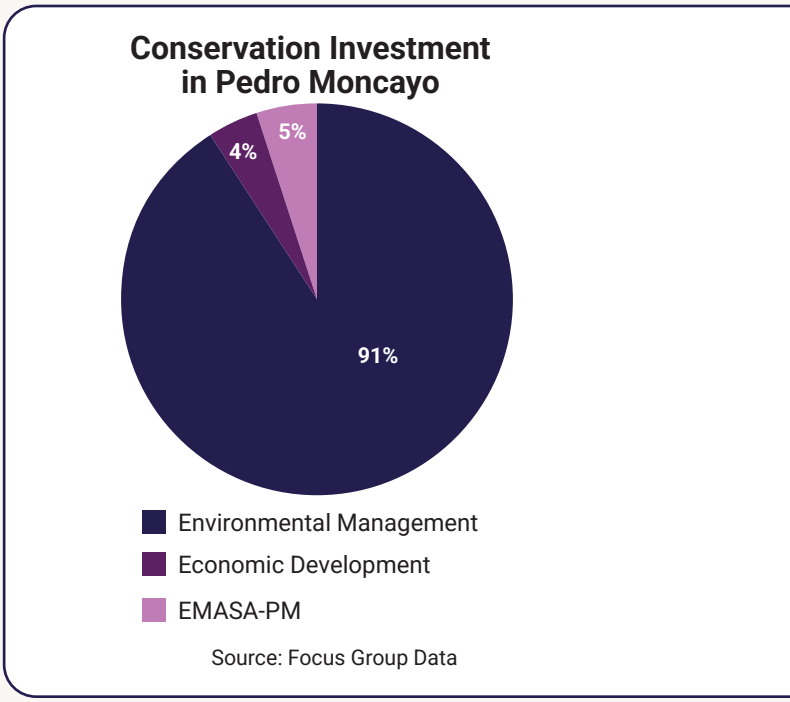
María Andrang, a member of the Association of Agroecological Women Producers of Buen Vivir, echoed sentiments of other interview and focus group participants. She said that a regulation is needed to clarify the use, justification, and accountability of financial resources in the Water Fund and women should have more opportunities to participate in the process of creating this regulation and managing the Fund:

> "Women should be part of these actions of the water fund and its budget, which should support women agro-ecological producers who are a fundamental part of conservation and clean production processes. With CARE, we had been participating in the formulation of the water fund and some conservation actions."

This addresses the crucial role women play in the conservation of water resources, such as women-led networks that monitor and defend water sources, mobilize local assemblies, and implement local stewardship actions.[6] Indigenous women often hold place-based knowledge about springs, sacred water sites, seasonal indicators, and ancestral water management practices. At the household level, women's role in collecting, storing, and using water gives them practical experience in local water quality initiatives, such as safe storage, sanitation linkages, and small-scale water point maintenance.

Despite these operational challenges, the Environmental Unit of the GAD-PM has maintained the technical mandate and financed restoration and conservation activities using other municipal budget lines. According to information gathered from the technician focus group, the GAD-PM allocates an average of $110,000 per year, which is separate from the Water Fund, to conservation activities such as páramo ranger salaries. The EMASA-PM has also been funding communications campaigns on the importance of watershed management.

The figure below breaks down the budget lines used to finance conservation and restoration activities.



Aside from ranger salaries, the Environmental Unit has also carried out reforestation and protection activities in the Chiri Yaku water recharge area. These activities included planting native species, providing tools and materials to fence the area, and supporting community mingas, a traditional form of communal work.

6 Rosero, S. (2023, June 23). *An army of 800 women protects Ecuador's water*. EL PAÍS English. https://english.elpais.com/international/2023-06-23/an-army-of-800-women-protects-ecuors-water.html

If the WFMC were operational, illustrative budget expenses could include: i) park ranger salaries; ii) supplies and equipment for territorial monitoring (radios and motorcycles for patrols); iii) purchase of supplies and plants for restoration activities; iv) development of thematic maps for the ACUS; and v) communications and public outreach.

What is the status of the Water Fund's operation and proposed activities?

Despite its challenges, focus group participants expressed hope that the PM Water Fund will begin to finance conservation and monitoring activities in the páramos once the proper management and governance structures are in place. All interview and focus group participants reported the immense value of having a Water Fund with a budget already established. Mr. Mauricio Ochoa, the manager of EMASA-PM, emphasized the importance of the Water Fund despite its challenges:

> "Having the Water Fund already established is a great achievement for the [municipality] and will allow us to have safe water for the entire population, in addition to the protection of the páramos and wetlands. We, as a company, are willing to be part of how the Fund should work and if possible lead this process."

Participants also emphasized that the Pedro Moncayo Water Fund model is directly linked with the ACUS and APH, and can financially contribute to and expand the impact of the conservation actions already in place through these mechanisms. Amanda Cuzco, Director of Environmental Management of the GAD-PM, affirmed that,

> "The ACUS Mojanda management committee is currently functioning, which has a structure similar to that of the Water Fund, and can contribute to many of the actions that can be determined and implemented under the Water Fund, highlighting a need to establish a single governance process that links the ACUS-APH and the conservation, monitoring and reporting actions that the Water Fund can implement."

The figure below summarizes the benefits and synergies of the PM Water Fund.

Long-term Viability and Replicability

The PM Water Fund's long-term viability remains a constant challenge due to the effects of mayoral elections and subsequent government turnover, institutional bottlenecks that delay decision-making and progress, and a concentrated revenue source. In addition, low awareness of the PM Water Fund and its objectives among residents and other local and traditional authorities prevents these groups from holding the WFMC accountable.

The lack of diversified revenue sources is a major factor that will affect the fund's long-term viability. As mentioned by the manager of EMASA-PM, maintaining the Water Fund's activities with only EMASA-PM's contribution is difficult and not strategic. The willingness from private sector partners such as local floriculture companies to financially contribute has not yet been leveraged.

Poor communication and transparency around the Water Fund's operations and activities also hamper its long-term viability, as noted by María Andrango, agroecological producer of the Association of Agroecological Women Producers of Buen Vivir:

> "...there are actions that the GAD of Pedro Moncayo carries out to protect the páramos and lagoons, but it is not shared whether these are financed by the Water Fund or by another type of budget."

However, there is momentum improve the effectiveness and long-term viability of the Water Fund. The current administration of the GAD-PM, whose 4-year term ends in 2027, is now committed to implementing the PM Water Fund alongside the conservation actions of ACUS Mojanda and has agreed with the EMASA-PM to establish a roadmap for raising private funds with groups in the territory that benefit from the water resources.

Amanda Cusco, Director of GAD-PMs Environmental Unit, describes a process of awareness and communication about the importance of having a territory with an ACUS supported by the Water Fund. She affirms that this type of action will help to improve the understanding of the Water Fund and its application, as well as create further interest among local groups in conservation.

Focus groups and interview participants agreed that the PM Water Fund's model is highly replicable and suitable for other small or medium-sized municipalities, while taking into consideration the following strategic aspects:

1. The Water Fund must be linked to a specific water recharge area like the páramo, which supports a functioning ecosystem.
2. The Water Fund should be linked to an upstream conservation area like the ACUS-Mojanda whenever possible.
3. A public water utility should support the collection of resources and financing of the Water Fund.
4. Authorities and technicians of the relevant GAD should receive training on water conservation and water system function.
5. The promotion of agroecological or long-term production processes and their associated groups should be linked to the creation and implementation of the Water Fund.

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Recommendations

Focus Group and Interview Recommendations

The Pedro Moncayo Water Fund has been a process full of challenges, which require recommendations to help GAD-PM and EMASA-PM become more involved with and responsive to local processes, actions, and needs in terms of conservation, monitoring and reporting.

The table below summarizes the recommendations offered by participants in the focus groups and interviews.

Focus Groups	Interviews
Compensate community members for changes to productive activities that support conservation.	Involve new contributors, such as agricultural and floriculture companies and financial institutions in the area.
Establish a land purchase program for conservation.	Continue implementing the ACUS-APH Management Plan as a basis for conservation activities financed.
Promote communication strategies that inform residents about the Water Fund.	Raise awareness among young people and children, using interactive tools to teach them about the Water Fund.
Raise more funds to supplement the Water Fund's capital.	Create governance spaces that include major community organizations focused on water, such as CODEMIA and Drinking Water Management Boards (JAAP).
Ensure that information about the Water Fund reaches relevant communities.	Establish a regulation for the ordinance that allows the immediate implementation of Water Fund activities.
Promote egal safeguards[1] that no authority can violate or fail to enforce.	Establish a consolidated communication strategy that educates communities on the relationship and shared benefits between the ACUS-APH declarations and the Water Fund.
Establish participatory regulations to support the efficiency and transparency of the Water Fund.	Establish a fundraising strategy for the next 10 years of Water Fund operations.

The subsequent sections outline recommendations both generally and to specific groups based off primary and secondary data sources.

1 Legal safeguard is a legal measure, in which no change or movement to the document and/or process will be admitted until further notice or review

Key Takeaways for CARE and PM Water Fund Partners

Overall, the report offers many lessons learned and tangible next steps for how the strengths of the PM Water Fund can be expanded while addressing the bottlenecks that have limited its potential for conservation, restoration, and water resources management.

Recommendations for PM Water Fund Partners

The sections below group the key takeaways for CARE and the PM Water Fund partners, particularly EMASA-PM and the GAD-PM.

Legal and Regulatory

The GAD-PM and EMASA-PM must ensure compliance with the original ordinance by working with a legal consultant to draft and pass a regulation that:

- Defines the mandate and operation of the Water Fund Management Committee
- Formalizes the designation of a technical secretary
- Establishes a single, autonomous account for the management of the fund's financial resources independently from GAD-PM and EMASA-PM accounts.
- Creates a timeline and legal accountability for the use of the funds

CARE can facilitate discussion and consensus-building and provide financial support for the legal consultant. This regulation will reactivate the WFMC and help accomplish the rest of the recommendations below.

Financial and Operational

- **Once operational, the WFMC must develop a revenue generation strategy and diversify the PM Water Fund's revenue sources to support long-term financial viability.** The WFMC's revenue strategy should track expenses, contributions, and investments and be based on an analysis of financial modeling exercises that provide cost-recovery ratios and metrics that track how spending protects the páramos. The revenue strategy should consider contributions from other water users, such as floriculture companies and local Drinking Water Management Boards (JAAP), and develop basic guidelines for new members and financial sources so that each potential partner or ally is clear about their participation, contribution, and decision-making role. The WFMC, GAD-PM, and EMASA-PM should also consider impact investment mechanisms or an endowment model if they can raise enough seed capital.
- **Once operational, the WFMC should develop plans for the use of current and future funds** accumulated by the PM Water Fund, focusing on a participatory and process that includes multiple groups for outlining the conservation activities to be financed for protecting the páramos. This will need to be done in coordination with the ACUS and APH management committees.

Representative Governance and Accountability

- **With support from GAD-PM and EMASA-PM, the WFMC should establish clear mechanisms for transparency and oversight** to ensure that the funds collected are used exclusively for conservation activities, avoiding community distrust and ensuring compliance with public policies.
- **GAD-PM, EMASA-PM, and WFMC should create more opportunities for women to participate in the governance of the PM Water Fund** through the inclusion of women producer groups in: the structure and decision-making of the WFMC, the development and implementation of monitoring systems for the impacts of funded conservation activities, and overseeing transparency of the Water Fund's budgeting.
- **Add other important groups to the WFMC to improve governance and decision-making processes**, prioritizing the Drinking Water Management Boards (JAAP), CODEMIA and Irrigation Committees, in addition to women's producer groups. The WFMC must expand its membership to include these groups and assess the feasibility of their financial contributions to the PM Water Fund.
- **With support from the GAD-PM, the WFMC should maintain a database for all technical files of the PM Water Fund** (e.g. hydrological and environmental studies, community feedback, details of the ordinance and any associated regulations, etc.), and ensure these files inform indicators that track progress on conservation activities that could be financed through the Fund.

Regional Planning and Knowledge Sharing

- **With leadership from GAD-PM, the WFMC should integrate the PM Water Fund into regional conservation frameworks,** specifically by conducting joint annual planning between the PM Water Fund, Mojanda Conservation Area (ACUS), Water Protection Area (APH); and including these annual plans in the Development and Land Use Plan of the municipal governments and five parish governments.
- **The WFMC to establish an internal and external communication strategy** to help communicate the PM Water Fund's purpose and the Mojanda ACUS as a long-term territorial model for the conservation of water resources and Andean biodiversity.
- **The GAD-PM and CARE to share the PM Water Fund's challenges, benefits, and technical recommendations** with partners in the central highlands of Ecuador to encourage the development of other financial mechanisms for environmental conservation and water recharge. CARE should encourage the adoption of water funds in other contexts by sharing the experience of the PM Water Fund with other country programs and sector partners.


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Considerations for the Startup of New Water Funds

While this report's recommendations are specific to CARE programs in Ecuador, such as Mujeres Rurales, that are planning on scaling and replicating the PM Water Fund model, they are useful for any organization interested in creating a water fund in a small to medium-sized municipality.

- **Consider the context,** specifically population, hydrology and ecology, and the policy and legal environment**.** The PM Water Fund model is suited to small and medium-sized municipalities such as the Cayambe municipality, which has similar environmental and demographic characteristics.
- **Conduct a thorough analysis** of all potential water users and partners, considering community organizations and producer groups, water utilities, Drinking Water Management Boards (JAAP) and governance bodies, environmental conservation and natural resources management organizations, and government partners from the municipal to regional levels.
- **Prepare an accurate timeline** for the startup of a water fund. Because water fund governance is complex, the time needed to achieve maturity and stability in the internal and external components of its formation and decision-making must be considered.
- **Hire a permanent legal advisor**, with experience in the municipal government authority and procedures and in the management of public budgets, to support the government's legal department and the project's technical team.
- **Ensure that water funds are created and implemented through participatory processes** that consider the ecology and hydrology of the relevant watershed and include government partners, water groups, and the people the fund is designed to serve, particulary women.
- **Provide training on water system function,** conservation, and governance for public, community, and private partners in the areas where the fund will operate.
- **Focus on mixed public-community management options,** with clear legal advice to support the development of a local policy document that is supported by technical files, free and informed prior consent (FPIC), and long-term stakeholder engagement.
- **Develop a clear and transparent legal framework**, so that the use of funds is clearly limited to conservation, restoration, compensation, and monitoring activities according to the established regulations.
- **Maintain continuous communication and awareness activities** in all areas where the water funds will be implemented. Develop simple and clear communication materials that allow for a better understanding of the process and its long-term impacts.
- **Integrate water funds into National Adaptation Plans and Nationally Determined Contributions.** By linking utilities, municipalities, and communities, water funds put national policy commitments into practice through measurable actions that improve water security, reduce disaster risks, and enhance carbon sequestration. Embedding water funds in national environmental policy also supports goals to increase participation and access by strengthening the role of women and Indigenous groups in watershed governance.
- **Establish financing schemes for conservation that don't require large user bases.** The framework of the PM Water Fund offers smaller and more rural municipalities an opportunity to reduce exposure to future water security challenges and support water availability for local livelihoods. In a national context, smaller funds can complement larger, more urban water funds and help countries develop fit-for-purpose conservation schemes to meet national strategies and policies around conservation, preparing for changing weather patterns and water security.


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Conclusions

The Pedro Moncayo Water Fund presents a promising and adaptable model for small to medium-sized municipalities that lack the extensive user bases or capital endowments of larger water funds. Instead of relying on large-scale investment returns like other funds, the fund is currently structured around a recurring contribution model financed through 5% of user fees from the EMASA-PM, which serves around 20,000 people. Although the PM Water Fund will need to diversify its revenue sources, the 5% EMASA-PM contribution has already generated approximately $300,000 – representing a significant investment toward conservation and restoration of the páramo and offering a viable financing alternative for small to medium municipalities in Ecuador.

The PM Water Fund also offers a new way of conceptualizing Water Funds that is more localized and smaller in scope for the conservation and restoration of smaller water recharge areas. This requires intensive social processes and engagement with local groups in the beginning but can generate transparency and local ownership.

The creation and legal approval of the PM Water Fund, alongside the ordinances establishing the Mojanda ACUS and APH, mark a significant step in formalizing a conservation-based land management model. Rooted in grassroots efforts, this framework reflects a deepening local and regional understanding of the importance of the páramo to the health of the Mojanda Lake system and the water resources it provides for downstream communities.

Despite its legal foundation and available financial resources, the Water Fund has faced operational challenges since the approval of its ordinance in 2019, primarily due to limited support from a new municipal administration and coordination issues between the GAD-PM and EMASA-PM. These institutional bottlenecks have prevented full compliance with the fund's guiding ordinance. However, renewed support from the current mayoral administration offers a chance to relaunch the initiative. A proposed regulation to complement the ordinance aims to enhance financial transparency, resolve implementation barriers, and reactivate the Water Fund Management Committee.

A major challenge going forward will be maintaining public trust in the management of Water Fund resources, ensuring that budgets are transparently allocated to conservation activities and not diverted for unrelated purposes. While the GAD-PM's Environmental Management Unit has supported some restoration work in the Mojanda buffer zones, these actions could be expanded by utilizing the financial reserves accumulated by the fund over the past five years.

The PM Water Fund also holds untapped potential for broader participation from local groups through its WFMC. Local Drinking Water Management Boards (JAAP) and a coalition of producer groups and community organizations (CODEMIA) have expressed strong interest in contributing to and helping govern the fund.

There is also growing enthusiasm among private sector partners—including floriculture companies, financial institutions, and Drinking Water Management Boards and Irrigation Committees—to join the initiative. However, care must be taken to ensure that private sector involvement does not compromise the fund's environmental goals or lead to undue influence over tax and permit processes.

Improving public awareness and education is another key opportunity. A strategic communication and community engagement campaign could foster broader understanding of the PM Water Fund, the ACUS and APH designations, and the overarching goals of ecosystem protection and long-term water resource management. Such outreach is essential to build community ownership and support.

Lastly, women have fewer opportunities to participate in water governance in Pedro Moncayo. Women are often the most active in water source conservation efforts, yet they remain underrepresented in decision-making spaces. Programs like ACCRE, Mujeres Andinas, and Mujeres Rurales are supporting women-led agroecological associations, which are crucial allies in restoration and agroforestry efforts. The WFMC presents a critical opportunity to create formal roles for these groups in shaping conservation strategies and fund governance.

While the PM Water Fund has faced challenges in its implementation, the establishment of a mechanism devoted exclusively to the conservation of the páramos represents a 'watershed' moment for Pedro Moncayo's commitments to integrated conservation, restoration and water resources management that CARE is already building on in the creation of new water funds in Ecuador. The Pedro Moncayo Water Fund's challenges and strengths provide critical guidance for how to sustain the ecosystems necessary for the gift of safe and reliable water for all.

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