The Lab
Global Innovation Lab for Climate Finance

PÁRAMO WILDFIRE RESILIENCE FACILITY

INSTRUMENT ANALYSIS
OCTOBER 2025

Páramo Wildfire Resilience Facility

LAB VEHICLE ANALYSIS

October 2025

The Lab identifies, develops, and launches sustainable finance vehicles that can drive billions to a low-carbon economy. The 2025 Lab cycle targets three thematic areas (mitigation, adaptation, and sustainable agriculture and food systems) and five geographic regions (Brazil, East & Southern Africa, India, Latin America & the Caribbean, and The Philippines).

AUTHORS AND ACKNOWLEDGEMENTS

The authors of this brief are María Ruiz Sierra and Joyce Jiahui Lin.

The authors would like to acknowledge the following professionals for their cooperation and valued contributions, including the proponents Juan José Guzmán Ayala (Strata Advisors) and Mateo Prada Quintero (Strata Advisors), and the working group members: Cathy Oxby (Africa GreenCo), Felipe Leonato (AON), Nidhi Upadhyaya (Arsht-Rock Resilience Center), Nicolás González (Blue Marble), Mayra Melo (Blue Marble), Julieda Puig (BRBRIDGE Competitive Sustainability Partners), Andrea Rodríguez (GIZ, Euroclima), Claudia Cordero (GIZ, Euroclima), Paula Pagniez (Howden), Peter Steiner (Howden), Jaime Lezama (Howden), Camilo Santa (IDB), Felipe Romero (IDB Invest), Fernando Secaria (The Nature Conservancy), Daniela Machuca (UK FCDO) and Gabriel Perez (UNEP FI). The authors would also like to acknowledge Bomberos Bogotá, Corporación Agua Somos and Instituto Humboldt, for their valuable contributions and input to guide this process.

The authors would also like to thank Barbara Buchner, Ben Broché, Morgan Richmond, Amanda Brasil, Amanda Lonsdale, Holly Page, Ricardo Narvaez, Liam Maguire, Carla Orrego, Jennifer Grosman Fernández,, Angela Woodall, Elana Fortin, Pauline Baudry, Júlio Lubianco, Daniela Alvarez and Annie Woscoboinik for their continuous advice, support, comments, design, and internal review.

Bloomberg Philanthropies, the United Nations Development Programme, and the governments of Canada, Germany, and the United Kingdom, have funded the Lab's 2025 programs. Climate Policy Initiative (CPI) serves as the Secretariat and analytical provider.

Bloomberg Philanthropies

Canada

Federal Ministry for Economic Affairs and Climate Action

Foreign, Commonwealth & Development Office

Department for Energy Security & Net Zero

UNDP

CLIMATE POLICY INITIATIVE

SUMMARY

Páramos are high-elevation ecosystems in the Andes that are critical for water provision and regulation. While páramos cover just 2% of Colombia's territory, they supply 70% of drinking water in the country. Despite their significance, they are dangerously exposed to climate hazards such as catastrophic wildfires, exacerbated by climate change and economic activities. Moreover, under-resourced emergency response further intensifies wildfires' impact on páramos.

In 2024, unprecedented rainfall deficits and wildfires led to Bogotá's first-ever water-rationing policy, affecting over 12 million people. During that period, wildfires destroyed 17,000 hectares of forest in Colombia, including 600 hectares near Bogotá's critical watersheds. With compounded water stress and significant increases in water demand projected in the region by 2050[1], there is an urgent need to explore innovative approaches to safeguard water security and address the increasing threat of wildfires to watersheds.

The Páramo Wildfire Resilience Facility aims to address this urgent challenge by unlocking capital for timely and effective emergency response to catastrophic wildfires, and for the conservation and restoration of páramos. These measures aim to enhance the ecosystem's long-term resilience and safeguard water security of communities in the Andean region.

Proposed by Strata Advisors, an advisory firm with expertise in nature and climate risk management, the Facility consists of: (1) a parametric insurance to rapidly disburse capital for wildfire response, and (2) an adaptation and recovery trust fund that allocates financing for wildfire risk mitigation activities, and ecosystem restoration. Assessed against Lab criteria, this instrument is:

1. **Innovative:** A First-of-its-kind mechanism, the Facility leverages a parametric insurance funded by ecosystem service beneficiaries to unlock liquidity for wildfire emergency response. It also finances conservation and restoration efforts pre- and post-wildfire through a trust fund, strengthening long-term resilience.

2. **Actionable:** Strata Advisors brings financial and ecological expertise, partnering with key actors to ensure the instrument meets local needs, combining scientific knowledge and on-the-ground fire suppression experience.

3. **Financially Sustainable:** The parametric insurance is commercially viable, with an initial partial subsidy of the insurance premium. The trust fund, initially reliant on grants, will integrate revenue-generating activities including habitat banks and sustainable productive activities.

4. **Catalytic:** The pilot seeks to demonstrate how parametric insurance can be leveraged so ecosystem service beneficiaries such as water utilities, companies, and municipalities can fund ecosystem-based adaptation.

Over the next eight months, Strata Advisors will complete the feasibility and design phase, including finalizing data collection and parametric insurance modeling, formalizing governance structure and fundraising for the pilot launch.

[1] Water demand in Latin America is projected to rise by up to 43% by 2050, nearly double the global average of 20–25% (IPCC, 2023)

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CONTEXT

Páramos are the main sources of water for Andean communities but are increasingly threatened by catastrophic wildfires driven by climate and human factors.

Páramos are high-elevation ecosystems distributed along the Andes. With rich biodiversity and humid weather conditions, they provide critical ecosystem services, including water capture, storage, provision, and regulation. In Colombia, the Facility's primary geographical focus, páramos cover only 2% of the national territory yet supply over 70% of the country's drinking water (TNC, 2025).

Despite their crucial role, páramos face a host of escalating pressures from climate change and direct human-driven stressors. Rising temperatures, combined with lower humidity in vegetation, diminished rainfall and intensified winds during prolonged El Niño events have made catastrophic wildfires more frequent. These wildfires undermine páramos' ability to regulate and supply water, resulting in loss of critical ecosystem services.

In Bogotá, where páramos cover 24% of the surrounding watershed and provide all the city's drinking water, wildfires affected nearly a third of this area between 1985 and 2022. The impact of catastrophic wildfires is exacerbated by under-resourced and fragmented emergency response. Bogotá's Fire Department is the only professional wildfire unit in Colombia; elsewhere in the country, including the municipalities surrounding Bogotá, where key watersheds lie, response depends on undertrained and underfunded municipal brigades and volunteers. Nationally, the Risk and Disaster Management Unit faces an annual funding gap of USD $500 million for emergency response.

Additionally, to ensure the long-term resilience of páramo ecosystems, dedicated efforts are needed to reduce wildfire risks before they occur and restore degraded ecosystems afterwards. Yet, the country faces a USD 4.5 billion funding deficit for risk mitigation and post-emergency recovery activities between 2025 and 2030.

As páramo ecosystems are considered public goods, investment in their resilience has traditionally been perceived as the government´s sole responsibility. Although companies that depend on their water provision have supported watershed conservation through Bogotá's Water Fund Agua Somos, these efforts have not focused on rapid-onset disasters such as wildfires, which require coordinated emergency response and intentional risk mitigation.

Currently, financing, capacity and coordination gaps limit páramo resilience and, therefore, water provision. The Páramo Wildfire Resilience Facility offers an opportunity to address these gaps and establish a more comprehensive suite of financial instruments to mobilize public and private capital into managing wildfire risk in páramos, eventually strengthening regional water security.

DESIGN AND POSITIONING

1. INTRODUCTION TO THE VEHICLE

By providing timely wildfire response and proactively investing in wildfire risk mitigation and post-wildfire ecosystem restoration, the Páramo Wildfire Resilience Facility addresses critical gaps for páramo resilience, securing water for millions in Colombia.

1.1 **INVESTMENT THESIS:** PROTECTING NATURAL INFRASTRUCTURE AGAINST WILDFIRES TO SECURE WATER PROVISION

The Páramo Wildfire Resilience Facility aims to strengthen water security for Andean communities in Colombia, by increasing the resilience of páramo ecosystems to catastrophic wildfires. It introduces an innovative financing strategy for ecosystem-based adaptation[2], recognizing that resilience-building ultimately safeguards the integrity of páramos to ensure continued water provision in the context of increased wildfire risk and climate variability.

To this end, the Facility enables financing to minimize the impact of wildfires through timely emergency response (*during wildfire*) and reduce wildfire risk through targeted prevention and preparedness strategies (*pre-wildfire*) and ecosystem rehabilitation (*post-wildfire*). This thesis is realized through two distinct and complementary financial mechanisms:

Wildfire Parametric Insurance – Minimizing wildfire impact

The most critical strategy to minimize wildfire damage is rapid and effective emergency response. Fires can spread quickly, and the extent of ecological destruction escalates exponentially over time, increasing the risk of disruption of water quantity and quality[3]. Effective emergency response includes immediate fire suppression as well as rapid restoration to stabilize the soil to prevent erosion and engage in invasive species management. To unlock required funding, the first component of the Facility is a wildfire parametric insurance policy, a financial instrument designed to deploy capital quickly when pre-agreed conditions are met.

The wildfire parametric insurance is a first-of-its-kind financial instrument that channels payouts from companies reliant on water from páramos to professional and volunteer firefighters, enabling rapid deployment of resources for emergency response (Figure 1)**.** Unlike conventional insurance solutions, payouts are not intended to compensate for the financial losses of insurance buyers. Instead, they have a pre-defined use focused on fire suppression and emergency restoration, in turn reducing the likelihood of financial losses for policyholders.

The Facility targets beneficiaries of ecosystem services as insurance buyers, including companies with significant water consumption. There is a strong case for these organizations to pay insurance premiums and transfer the financial risk of water supply disruption caused by wildfire-related degradation of páramos, as insurance premiums that will cover emergency response costs are lower than their potential financial losses.

[2] Ecosystem-based Adaptation (EbA): refers to the use of biodiversity and ecosystem services to help people adapt to the adverse impacts of climate change (IUCN, 2017)
[3] Including direct damage to water catchment areas and indirect damages through source water contamination.

According to an analysis by Strata Advisors, Bogotá's water utility faced estimated losses of nearly USD 20 million from the climate-driven El Niño drought period in 2024. By paying a fraction of this amount as an insurance premium, capital is unlocked for containing wildfire impact, which translates into business continuity and reducing potential losses.

Adaptation & Recovery Trust Fund – Reducing wildfire risk

Emergency response must be complemented by strategies that proactively reduce risks, not only to ensure long-term resilience of páramo watersheds, but also to ensure the financial sustainability of the parametric insurance, which will be improved by reduced catastrophic wildfires over time. The Facility introduces an adaptation and recovery trust fund, hosted by implementation partner Bogotá's Water Fund, to pool resources from public and private actors to finance these risk reduction strategies.

While national and municipal governments, environmental agencies, and NGOs have made significant efforts to protect páramo watersheds, most initiatives focus on chronic pressures such as deforestation, cattle ranching, and mining. These threats remain important but are slow-onset. In contrast, wildfires are rapid-onset disasters that are becoming more frequent and intense with climate change, requiring dedicated wildfire reduction strategies which are largely outside traditional watershed conservation approaches.

The Facility addresses this gap by financing wildfire preparedness and mitigation activities, as well as post-fire ecosystem rehabilitation (Figure 1)**.** By intentionally reducing wildfire risk, the trust fund strengthens the long-term resilience of water provision. Additionally, it is complementary to the parametric insurance, as lower occurrence of catastrophic wildfires will limit how rapidly premium funds get consumed, and will ensure greater financial sustainability of the instrument.

The trust fund will initially tap into existing pools of watershed conservation finance, by presenting a differential and complementary thesis aimed at preventing ecosystem damage that could undermine conservation outcomes. Target donors could also include policyholders of the parametric insurance, leveraging the alignment of interests in reducing wildfire risk which can lead to more efficient insurance coverage and, potentially, premium reduction.

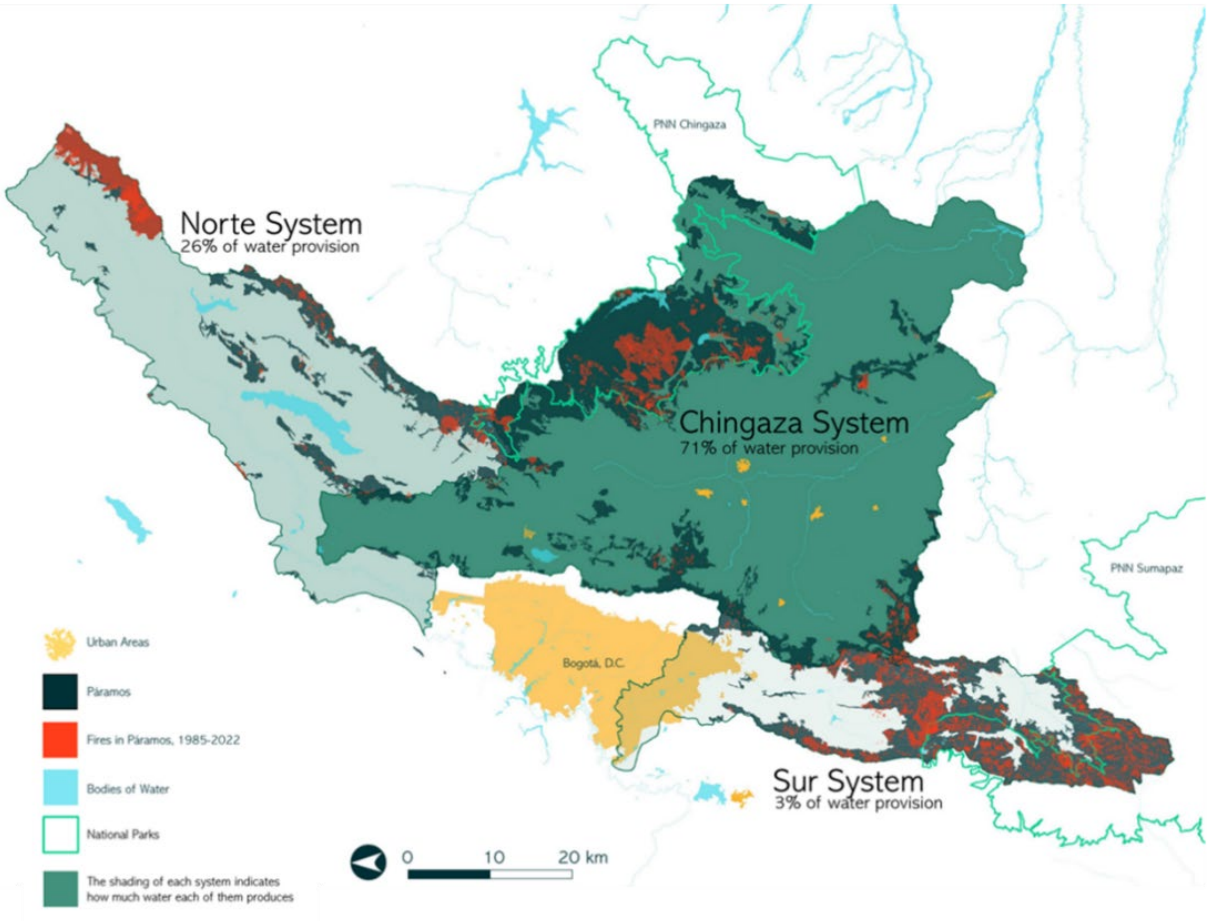
Figure 1*: Activities funded by the Wildfire Parametric Insurance and Adaptation & Recovery Trust Fund*

Geographical Scope

The instrument will be piloted in the páramos that supply water to the metropolitan area of Bogotá, with the potential to be replicated in other páramos in Colombia and in other Andean countries. For the initial stage, it will include the three water systems in Bogotá: the Northern water system (Guacheneque and Guerrero Páramos), the Eastern water system (Chingaza Páramo), and the Southern water system (Sumapaz Páramo).

With its pilot in Bogotá, the instrument has the potential to impact 12.7 million residents living in Bogotá's metropolitan area. In addition, the instrument will also impact ecosystem stewards living within or near the páramos, such as campesino and indigenous communities.

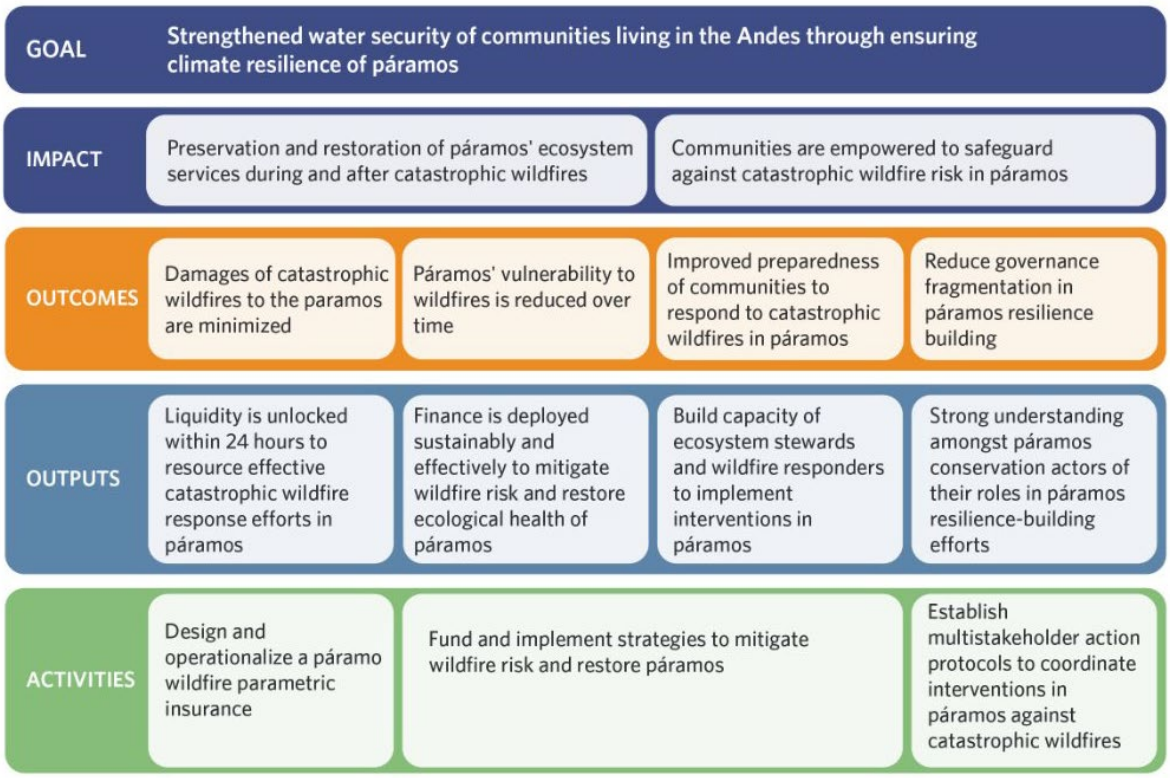
***Figure 2**: Initial Geographical Scope*



Impact Thesis

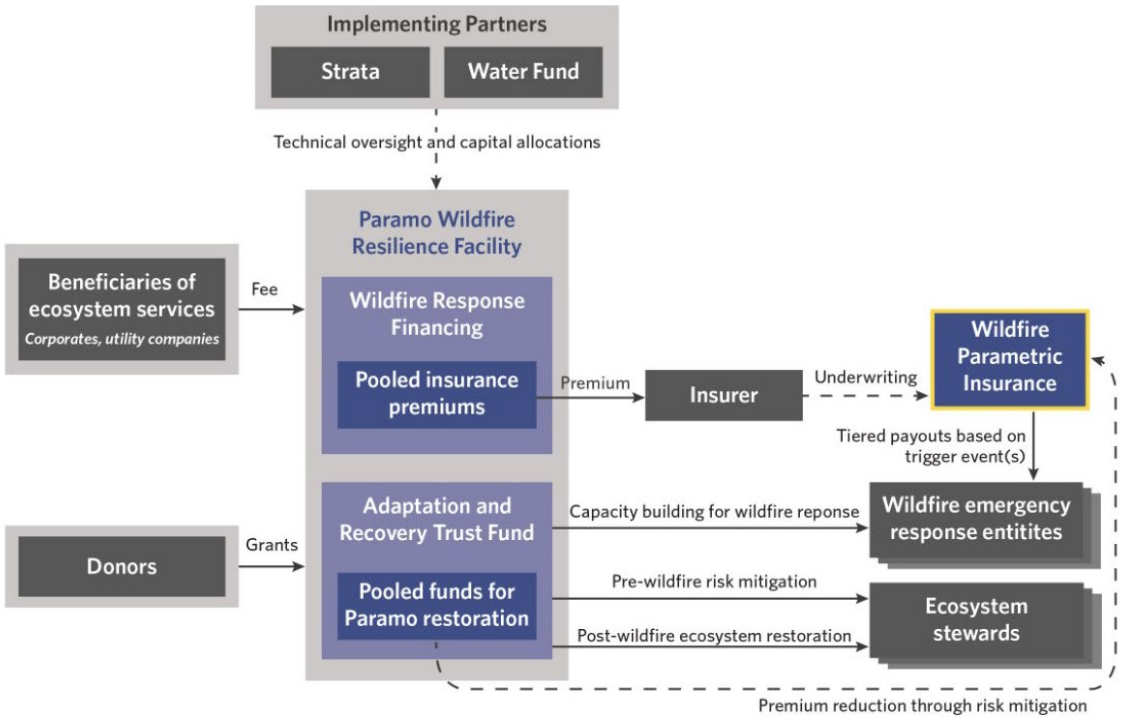
The instrument has a two-tiered impact thesis: one focused on the preservation of ecosystem services from páramos, and the other on empowering local organizations and communities to respond to catastrophic wildfire risk. This is achieved through the financing mechanisms described earlier, as well as capacity building and enabled coordinated action across key stakeholders in wildfire response, watershed conservation, and páramo protection (see the Theory of Change for more details in Figure 3).

***Figure 3** : Theory of Change*



1.2 **VEHICLE MECHANICS:** BUNDLING RISK TRANSFER AND RISK REDUCTION INSTRUMENTS UNDER A UNIFIED GOVERNANCE STRUCTURE

***Figure 4.** Instrument mechanics*



The Facility combines two financing components: (1) an innovative parametric insurance to transfer the financial risk of water disruption from wildfires, which will deploy liquidity for emergency response, and (2) an adaptation and recovery trust fund to reduce wildfire risk, which will deploy capital for risk mitigation, preparedness and ecosystem rehabilitation.

Wildfire Parametric Insurance

Insurance premiums will be paid by beneficiaries of ecosystem services, particularly companies with a strong dependence on the water provision and regulation provided by páramos, including Bogotá's water utility company and large beverage companies. Some of the target organizations are already funding broad watershed conservation through Bogotá's Water Fund, which operates on a USD 5 million annual budget, half sourced from the private sector. The Facility will collect and pool premiums and pay them to a partner insurance company underwriting the insurance.

As a parametric insurance, predetermined payouts are automatically disbursed when specific pre-agreed conditions, or parameters, are met. For the wildfire parametric insurance, the parameter will be based on indicators that serve as proxies for fire severity and propagation risk, such as humidity, wind speed, fuel load and fire radiative power, as well as indicators of fire extension, such as area burned (the final parameter definition is pending feasibility-study and risk modelling results).

Once the parameter is triggered, payouts will be released within 24 hours to fire departments for pre-defined emergency response and restoration activities. The primary objective is to contain wildfires quickly by mobilizing the necessary personnel and equipment to minimize overall damage to the ecosystem and protect water provision (emergency response). Recognizing that catastrophic wildfires threaten not just water quantity but also water quality through post-wildfire soil erosion and increased debris, payouts will also cover emergency restoration efforts right after fire suppression (for example, slope stabilization).

Adaptation and Recovery Trust Fund

The trust fund will pool grant capital to finance wildfire risk reduction strategies implemented by Bogotá's Water Fund and other partner organizations. Financed activities will focus on:

1. Pre-wildfire risk mitigation and preparedness, including removing dry vegetation that acts as fuel and can lead to faster spread, creating buffer zones and clearing invasive species more prone to burning. Sustained engagement with local communities and firefighters is also relevant, to improve the understanding of páramo ecosystems, wildfire mitigation, and suppression protocols, and to strengthen the social fabric, institutional environment, and coordination among relevant stakeholders.
2. Post-wildfire ecosystem restoration and recovery, such as revegetation with native species and hydrological recovery. Restoration activities also include preventing and reverting ecosystem degradation caused by land-use change, agriculture, and cattle ranching. Examples of sustainable productive activities that can replace ecologically harmful economic activities are provided in Annex 1.

Governance

The Facility will be jointly managed by Strata Advisors and Bogota's Water Fund Agua Somos, combining technical and financial expertise with established relations with ecosystem service beneficiaries and local communities. Capital allocation and technical oversight will be informed by a technical committee including representatives from leading scientific institutions, fire departments, and civil society

organizations. The governance framework will align with national climate and disaster risk policies, as well as existing local programs and initiatives to ensure local participation and legitimacy.

1.3 DETAILED INVESTMENT STRATEGY

Wildfire Parametric Insurance

The choice of financial mechanisms to address these financing gaps needs to be carefully considered within the context of Colombia and the challenge at hand. Emergency response requires liquidity to immediately deploy sufficient resources for fire suppression, and its main objective is to contain the impact of wildfires in páramos, mitigate risk of water disruption, and, ultimately, avoid financial losses.

In this context, parametric insurance is the best-suited financial instrument given its ability to provide payouts quickly when a set of pre-agreed conditions are met. It is a tool that has been increasingly used to address climate-related events with a clear correlation with measurable variables. Payouts are predefined and are not connected to actual losses but the occurrence of the triggering event itself, ensuring rapid access to liquidity when it is most needed.

The Wildfire Parametric Insurance incorporates distinct features that differentiate it from both conventional indemnity insurance and other existing parametric insurance solutions. It insures the continuity of ecosystem services to prevent business disruption and financial losses, rather than covering assets or compensating financial losses directly. To achieve this, payouts are directed to emergency response entities for wildfire suppression, and are disbursed during. rather than after, the wildfire which is critical to contain the resulting ecosystem damage. This is illustrated in table 1 below:

***Table 1**. Comparison of Indemnity and Parametric Insurance*

Feature	Indemnity insurance	Parametric insurance	Wildfire Parametric Insurance
Payout timing	After risk materializes	Once parameter is triggered, it can be during or right after a risk materializes	During a wildfire
Payout trigger	After assessment of actual losses incurred	Occurrence of pre-defined trigger event	Parameter indicative of higher probability of catastrophic wildfires
Payout speed	Weeks to months	Hours to days (often within 24-72 hours)	Within 24 hours
Use of proceeds	Compensation of incurred losses	Flexible, can be used to compensate incurred losses or to fund pre-agreed activities	Pre-agreed rapid wildfire control and ecosystem stabilization
Insurance beneficiaries	Policyholders or pre-agreed third parties	Policyholders or pre-agreed third parties	Third party: fire fighters and emergency response entities
Basis risk	Low. Payout closely matches actual losses	Can be higher, it depends on the correlation of chosen triggers with actual exposure	Will be assessed and adjusted in policy in regular reviews
Typical use cases	Private property damage, health, auto, life, crop loss	Natural disasters, agriculture, wildfire, drought, flood, business interruption	Innovative use case on wildfire impact on natural assets. It provides proof of concept for natural infrastructure insurance against catastrophic wildfires.

The preliminary set of insurance policy terms is defined using preliminary data on historical fires in páramos and emergency response costs under different wildfire severity scenarios. The policy will have a total insured value of USD 6 million, and a total insurance premium rate of 15%, equivalent to USD 900,000 per year, which will be distributed among insurance buyers. The indicative terms are summarized in Table 2 below.

Table 2. *Preliminary insurance policy terms*

Component	Description
Total insurance premium	USD 900,000 per year (15% of USD 6 millions of total insured value)
Policy term	One year (expected renewals and policy adjustments after the first year of pilot)
Geographical scope	Three main water systems of Bogotá (Northern, Chingaza, Southern) covering more than 457,000 hectares of páramos, high Andean forests and other mountain ecosystems
Hazard	High severity and catastrophic wildfires in páramos due to climate change
Risk covered	Loss of ecosystem services provided by páramos
Insurance category	Ecosystem service insurance
Use of proceeds	Pre-established disaster response
Premium payers	Ecosystem service beneficiaries: corporates and water utility company
Policy holder	*Páramo Wildfire Resilience Facility*
Beneficiaries	Designated emergency response entities: fire departments.

The financial sustainability of the parametric insurance instrument was stress-tested by modelling its coverage of trigger claims, based on the size of the premiums and severity of wildfires that occur during the policy term. The modelling indicates that, as premiums increase, the product is more capable of covering triggered claims, and that a lower proportion of catastrophic fires improves financial sustainability of the instrument, since catastrophic wildfire claims deplete reserves more rapidly.

Adaptation and Recovery Trust Fund

The trust fund will initially be capitalized by grant capital, drawing on existing and emerging watershed conservation funds. As the initial development of the parametric insurance demands significant resources, particularly for risk modelling, policy structuring and stakeholder coordination, the Facility will focus on operationalizing the trust fund with existing resources and capabilities, prioritizing actionability, and more actively seek revenue-generating alternatives after the pilot.

This approach offers two key advantages. First, Bogotá's Water Fund has an institutional capacity, mandate and strong donor credibility which can be leveraged by the trust fund, given that the Facility will be a vehicle hosted within the Water Fund, indicating a high level of actionability. Second, by focusing on targeted wildfire risk reduction, the trust fund introduces a highly complementary strategy to the current scope of páramo protection programs, that costs only a small portion of these programs' committed budget, making a compelling case to support a cost-effective strategy aligned with their mandate.

As the threat of water stress grows in Colombia, momentum is increasing to enhance páramo resilience, leading to new initiatives and funding commitments. For instance, at the end of 2024, Colombia's Ministry of Environment announced a 25-year páramo conservation program to support water resilience, with a total budget of USD 92 million, including funding from the GCF (Ministry of Environment, 2024). In mid-2025, a consortium of public organizations launched a 5-year initiative to restore over 800 hectares of Bogotá's water systems, with a total budget of USD 3 million (Ministry of Environment, 2025).

After the Facility's initial setup and first year pilot, the trust fund will integrate additional strategies to ensure financial sustainability. These can include:

3. Securing an agreement with Bogotá's water utility company to guarantee a contribution to the trust fund as a payment for ecosystem services. This can be capitalized directly from the company's revenue, or passed on to citizens through utility bills, ensuring affordability and cost-sharing.
4. Developing habitat banks**,** an innovative tool pioneered in Colombia that is gaining traction as a mechanism for companies to meet mandatory environmental compensations and voluntary biodiversity commitments. Terrasos, a leading Colombian organization in the field, has sold USD 7 million in biodiversity credits, impacting nearly 6,000 ha, indicating market potential (Palladium, 2024). Currently, no habitat banks operate in páramo ecosystems.
5. Creating a revolving debt fund to finance sustainable productive activities. Although the pipeline is still at an early stage, several initiatives are already supporting businesses that promote sustainable ecosystem use, such as ecotourism, agroecology, and bioeconomy ventures (more examples can be found in Annex 1).

2. MARKET ADDITIONALITY ANALYSIS

The Páramo Wildfire Resilience Facility is the first financing and multistakeholder coordination mechanism in Colombia to address the continuum of catastrophic wildfire risk in critical water-providing ecosystems: before, during and after the fire occurs.

By integrating complementary risk-transfer and risk-reduction financial tools, the Facility targets market and institutional gaps in páramo conservation and wildfire response, and sets a precedent for deploying scalable climate adaptation finance in Colombia, the Latin America region, as well as in the global context.

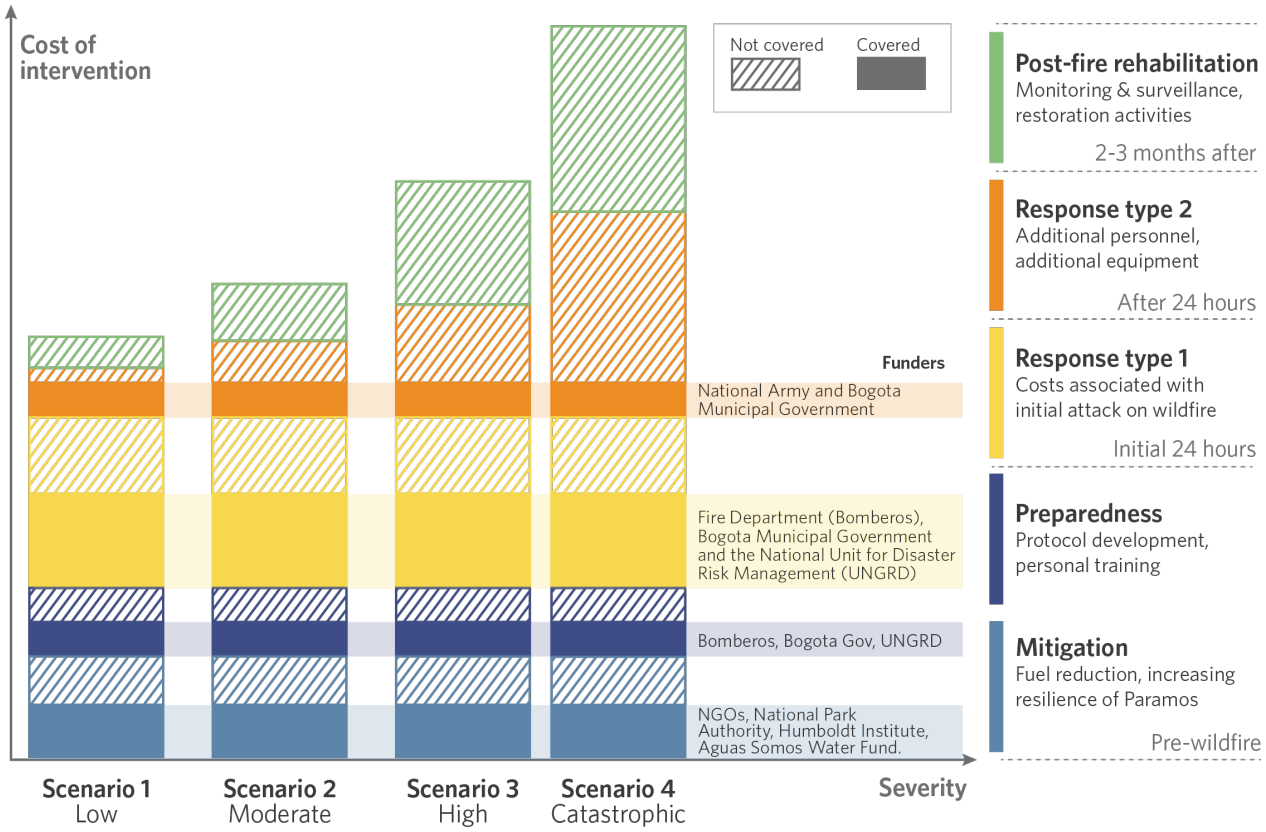
Market additionality in Colombia

To determine where the Facility could provide the greatest additionality in Colombia, Strata Advisors and the Lab undertook an exercise to identify categories of wildfire risk interventions that are not well-addressed in the country due to financing and governance gaps. The team situated these interventions within 4 scenarios of varying wildfire severity, from low to catastrophic. These categories of interventions are (i) wildfire mitigation, (ii) wildfire preparedness, (iii) wildfire response type 1 (takes place in the first 24 hours of a wildfire event), (iv) wildfire response type 2 (takes place after 24 hours of a wildfire event), and (v) post-wildfire rehabilitation.

Currently, all categories of interventions are funded by public sources in Colombia, drawing from national and sub-national budgets, as well as non-profit organizations. Current levels of resources channelled to these interventions are not sufficient to fully address risks of wildfires. For example, resources used for wildfire mitigation are supporting the transition to alternative livelihoods away from economic activities that cause land degradation in páramos, while limited or no resource are allocated for combustible fuel management and wildfire preparedness. Moreover, no funding exists for post-wildfire rehabilitation of páramos, and the financing gaps are especially significant in the scenarios of high and catastrophic-severity wildfires (see Figure 5).

These findings align with the Facility's thesis and demonstrate that an effective resilience strategy for the páramos needs to address significant financing and governance gaps in both risk reduction (pre- and post-wildfire) and rapid risk transfer (during wildfire) by mobilizing private capital from ecosystem service beneficiaries.

Figure 5. *Financing Gaps for Wildfire Risk Management in Bogotá's watershed*



Water Funds in Latin America

In Latin America, Water Funds have been a model for financing watershed conservation since 2000, when the first was established in Quito. In 2011, the Latin American Water Funds Partnership was created through a multi-stakeholder agreement to advance water security across the region. Today, 24 water funds operate in eight countries in the region.

As mentioned earlier, water funds were designed to tackle chronic pressures on watersheds. However, increasing acute threats like catastrophic wildfires due to changing climatic conditions are currently not

being addressed in a targeted manner. This gap risks undermining watershed conservation efforts and affecting both water quantity and quality.

A comparison of three established water funds in Latin America shows that none has directly addressed wildfire risk management in watershed conservation. The Páramos Wildfire Resilience Facility presents an opportunity for water funds in the region to explore a wider set of risk management tools to tackle acute risks to watersheds alongside chronic risks and to integrate wildfire preparedness and response into watershed conservation strategies.

Financial sustainability is a common challenge faced by water funds across the region, primarily due to difficulties identifying sustainable revenue streams. The Quito Water Fund is the most established example of a sustainable water fund, largely because of an enabling environmental policy that mandates contributions from the local water utility company. As a result, 95% of the Quito Water Fund's funding comes from public sources (Lincoln Institute of Land Policy 2022).

***Table 3**. Comparable Trust Funds*

Instruments	Fund vehicle	Funding model	Key risks to watershed	Key activities funded	Key ecosystems
Quito Water Fund (Quito, Ecuador)	Private trust with endowment	Mandatory contribution of 2% of Quito's water utility company revenues to the fund. Current size of the fund is approximately $30 million, with an annual budget of $2.5 million.	Land use changes related to livestock grazing, agricultural expansion, road construction	Enhanced surveillance of protected areas; restoration of degraded areas; land ownership and management	Páramos and high Andean forests
Agua Fondo (Lima, Peru)	Non-profit entity	Annual membership, donations from private companies, non-reimbursable grants. Agua Fondo is not authorized to manage or administer public funds.	Climate change and land use change related to livestock grazing,	Improvement of community access to water, restoration of native wetlands, improvement of grazing practices	Wetlands and grasslands
Agua Somos (Bogotá, Colombia) ***Facility's implementation partner***	Non-profit entity	Contributions from private and public donors.	Land use change related to livestock practices, deforestation, agricultural expansion	Sustainable production and livelihoods	Tropical Andean forests

Parametric insurance in the global context

There is a growing awareness of the critical role of the insurance industry in enhancing climate resilience by supporting ecosystem-based adaptation strategies. Although insurance solutions for natural assets remain at an early stage of development due to market barriers such as limited data, misaligned incentives and low risk appetite, several cases have tested their viability in particular contexts.

The Páramo Wildfire Resilience Facility expands the range of innovative parametric insurance products designed to insure natural ecosystems against wildfire risk. It is the first solution to focus on insuring ecosystem service loss from acute wildfire events during the event itself, adapted to the context of high-

mountain ecosystems in the Colombian Andes. Payouts will flow to those best placed to act quickly and effectively: fire departments, national park authorities, and voluntary brigades who will coordinate through response protocols set up as part of the insurance.

Table 4. Comparable Parametric Insurance

Instruments	Hazard	Risk	Use of proceeds	Geography
Coral Reef Parametric Insurance & Coastal Zone Management Trust	Hurricane	**Loss of ecosystem services** due to damage to coral reefs	**Emergency restoration** to minimize further damage to corals (right after event)	Quintana Roo, Mexico
Wildfire Resilience Insurance	Wildfire	**Damages to private property**	**Post-fire rehabilitation** of insured areas (after event)	Truckee California
Páramo Wildfire Parametric Insurance	Wildfire	**Loss of ecosystem services** in Páramo that increases water scarcity	**Emergency response** by firefighters to control spread of wildfire (during event)	Bogota Colombia (pilot)

IMPLEMENTATION AND OPERATIONALIZATION

3. IMPLEMENTATION PATHWAY AND REPLICATION

The success of the pilot rests on the development of a strong evidence basis for wildfire interventions during the feasibility study stage and on securing corporate buy-in during the instrument structuring stage.

3.1 NEAR-TERM IMPLEMENTATION PLAN

The Facility is currently under development. The initial financial instrument design has been refined by testing key hypotheses with ecological and insurance experts to ensure market demand, instrument viability, and alignment with investment thesis.

There are two phases that need to be finalized ahead of pilot implementation: (1) Feasibility study (in progress) and (2) Facility structuring.

Feasibility study

It involves the finalization of ecological and financial data collection, and will deliver a robust business case that will be used as the foundation for the structuring of the parametric insurance. Ecological data is essential to establish the scientific evidence basis for the Facility's thesis and support the definition of adequate climate parameters correlated with wildfire severity Financial data, in turn, is necessary to quantify emergency response costs, as well as to value potential financial losses and benefits from páramo wildfire resilience, and establish the economic case for corporate buy-in. This phase is underway and is expected to be finalized in the following 6 months.

Facility Structuring

This phase begins with the structuring of the parametric insurance, which involves a two-step process: risk modelling, followed by actuarial and pricing modelling. The risk modelling will be undertaken by Strata Advisors, leveraging data collected during the feasibility study phase. The actuarial price modeling will then be undertaken by an insurer or re-insurer selected through an open tender process.

Risk modelling of wildfire parametric insurance requires expertise and data that extend beyond what traditional insurance actors are usually equipped with, to reduce basis risk and ensure effectiveness. First, it requires ecological expertise and data that goes beyond satellite imagery and meteorological data (which is usual market practice) to on-the-ground monitoring. Second, emergency response costs need to be accurately quantified to ensure adequate estimation of payouts. And thirdly, it needs to be designed around ecosystem boundaries, not political, jurisdictional or property boundaries as is usually the case.

With this input, Strata Advisors will conduct a more in-depth market test with corporate insurance-buyers, as well as to begin fundraising efforts for the partial premium subsidy. In parallel, the Facility's governance framework will be finalized, along with the legal set-up for implementation.

Figure 6. *Implementation timeline*

A one-year pilot is set to begin within a year and aims to test all components of the Facility's model and adjust as needed ahead of the implementation in the following nine years. Insurance policy will be regularly revised to address basis risk by adjusting the parameters, as well as reviewing insured value and payout size to ensure sufficient liquidity is being unlocked and that the instrument's long-term financial sustainability is secured.

Capital Needs - Pilot

The Facility aims to raise USD 1.3 million for pilot implementation by combining commercial capital for the Wildfire Parametric Insurance with concessional capital to partially subsidize the insurance premium in an initial stage and to capitalize the trust fund.

Table 5. *Pilot Financing Needs*

Financing Sleeve	Use of Capital	Target Capital Provider
Parametric Insurance (USD 1 million)	Premium payment (USD 700,000)	**Private** Corporates and utility companies with a clear dependence on water provided by páramos and who are already invested in their conservation.
	Premium subsidies (USD 300,000)	**Concessional** Impact first investors, donors, insurance companies that can subsidize insurance premiums to support proof-of-concept of a wildfire insurance for páramos.
Trust fund (USD 300,000)	Wildfire preparedness and páramos restoration activities (USD 300,000)	**Concessional** Impact first investors, donors and corporate foundations funding watershed conservation in the Andes but have yet to expand their focus to the páramos.

Implementation Partners

A critical element for the Facility's implementation is the successful coordination of multiple stakeholders with complementary institutional capabilities and mandates, particularly in a fragmented governance landscape. A key strength of the instrument is the local capacity and expertise of Strata Advisors and three key organizations they have secured formal partnerships with:

The Facility will be co-managed and hosted by Bogotá's water fund, Aguas Somos, an organization with proven track -record on watershed conservation and established relations with the water utility, corporates and local communities. In addition, it will have technical input from the Humboldt Institute, a world-leading scientific organization specializing in páramos, which will advise on the ecological modelling and conservation strategies; and Bogotá's Fire Department, which is at the frontline of wildfire suppression and is co-designing the emergency response component.

A detailed institutional mapping has been conducted, identifying additional stakeholders that will intervene in the implementation of the instrument (see list in Annex 1).

3.2 POTENTIAL RISKS AND CHALLENGES TO INSTRUMENT SUCCESS

A summary of the main risks for the Facility's implementation and relevant mitigation strategies is presented on Table 6 below:

Table 6. *Implementation risks and mitigation strategies*

Key challenges	Relevance	Mitigation strategies
Uncertainty on participation from ecosystem service beneficiaries	Corporate buy-in is essential for the successful implementation of the Facility, and is a core element of the instrument's catalytic potential. The design of the parametric insurance, in particular, aims to create a proof of concept for private and public actors to finance emergency response to climate hazards, critical for resilience-building. This was emphasized by stakeholders from the insurance industry in engagements across the Lab cycle, who indicated that underwriting the parametric insurance depends on a business case supported by a clear interest from insurance buyers.	The Facility introduces a model where insurance premiums are a targeted strategy for companies to mitigate operational and financial risks, and to do it collectively and herefore in a cost-effective way. The Facility will engage ecosystem service beneficiaries through implementation partner Bogotá's Water Fund. It will build on the water fund's long-standing partnerships with target companies and their interest in contributing to watershed conservation, in line with their business' sustainability. Additionally, an in-depth analysis will be finalized during feasibility stage to establish the economic case for insurance buyers. To date, Strata Advisors has calculated climate-induced financial losses of Bogota's utility company, which show that estimated total insurance premium will cost around 5% of materialized revenue losses.
Reliance on concessional capital and uncertainty around long-term financial sustainability of the trust fund	Availability of concessional capital is essential for pilot implementation, particularly to cover the costs of risk modelling for the wildfire parametric insurance, as well as the premium subsidy. Furthermore, the trust fund will be capitalized fully by grant capital until revenue streams are further explored during implementation, which can raise concerns around the Facility's financial sustainability.	There is an enabling environment that presents opportunities for the Facility to leverage increasing attention and funding commitments for páramo conservation from national and international entities. Increasing water stress in Colombia has renewed the government's commitment to fund water security solutions, with Bogotá's municipal government imposing stricter water tariffs in 2024 to finance investments into watershed conservation. Concessional capital is available from both national and sub-national entities to demonstrate viability of using insurance to channel private capital to watershed conservation. While initially grant-funded, the trust fund will contribute to the long-term financial sustainability of the Facility through reducing catastrophic wildfire risk over time, which will allow the Facility to increase coverage of wildfires with the existing premium size, and even reduction of premiums in the future. Furthermore, instruments like habitat banks and results-based finance are gaining traction, presenting opportunities for the trust fund to incorporate revenue-generating alternatives that will support its continuity over time.

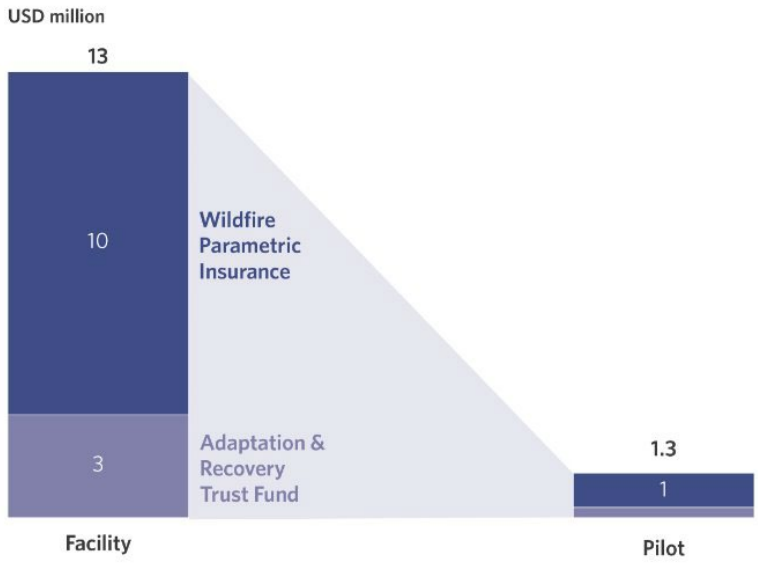
Lack of alignment amongst stakeholders undermining actionability of facility	Potentially challenging coordination of multiple private and public stakeholders, which is needed for successful instrument implementation. The varied types of land ownership and jurisdictional mandates of different organizations (including emergency response entities) in páramos may constrain the range of wildfire preparedness and restoration activities that can be rolled out across Bogotá's watershed.	A key objective of the Facility is to bridge governance gaps (alongside financing gaps) by creating a multi-stakeholder consortium with partners with complementary institutional capacities. A central element of instrument design involves establishing a clear governance and cooperation protocols amongst different actors, including clearly differentiated roles and formal agreements in place to enable wildfire risk interventions across political jurisdictions.
Lack of scientific consensus and data on wildfire dynamics in páramos	There is little consensus on which types of wildfires are beneficial or harmful to páramos and, consequently, the interventions needed. There is also limited data on impacts of wildfires on hydrological processes within the páramos.	Strata Advisors is working with partner Humboldt Institute and local universities to develop an approach to insurance design that consolidates the state-of-the-art available knowledge and responds to ecological processes and real needs on the ground.

4. FINANCIAL MODELING OUTCOMES

An initial financial model has been developed using preliminary data provided by Bogota's Fire Department and a set of assumptions to outline the Facility's building blocks. A more detailed model will be developed once ecological and financial data collection is complete in the next months.

The Facility has a 10-year time horizon, providing financing for high-severity and catastrophic wildfire mitigation, emergency response and ecosystem recovery for the three páramo water systems around Bogotá. The total size of the Facility is estimated at USD 13 million, with a 1-year pilot of USD 1.3 million. Total funding will initially be distributed as 77% for the wildfire parametric insurance and 23% for the adaptation and recovery trust fund.

Figure 7. *Facility and pilot size*



Payouts from the parametric insurance will cover high-severity and catastrophic wildfires only, assuming that emergency response costs for low- and medium-severity wildfires are covered by existing municipal and district budgets. Wildfire severity is determined by both intensity and extent of damaged areas. High-severity wildfires cover large areas with high-intensity flames and vegetation consumption, while catastrophic wildfires exhibit even greater intensity, include ground fires, causes significant tree mortality, and affect broader areas. Data from Bogota's Fire Department enabled an initial valuation of emergency response costs per hectare under different fire intensity scenarios, while preliminary data on historical wildfires in páramos provided an estimate of hectares burned. With these data points, the team calculated total costs associated with high-severity wildfires and catastrophic wildfires.

The estimated size of the insurance premium was modelled using the calculated wildfire response costs and a set of assumptions around the probability of payouts from insurance and the ratio of catastrophic wildfires to high-severity wildfires (full list of input variables for this model can be found in Annex 2).

The model assumes an average number of 414 fires per year, with 15% of these being high-severity and catastrophic fires, which will trigger payouts. Additionally, the model assumes 75% of these payouts to be triggered by high-severity wildfires and 25% by catastrophic wildfires. With these inputs, the resulting total annual insurance premium is approximately USD 1 million. An additional 2% for the Facility´s management fee will be added to the premium.

A sensitivity analysis was carried out to assess how varying the number of catastrophic wildfires will affect premium size required to cover the total insured value, holding total number of fires in a year constant at 414 and a payout trigger probability constant at 15%.

It is clear from the results of the sensitivity analysis that a higher number of catastrophic wildfires relative to high-severity wildfires would correspond to a higher insured value, thus requiring a higher premium size. On the other hand, a lower number of catastrophic wildfires relative to high-severity wildfires would correspond to a lower insured value, thereby lowering the premium size needed.

As seen in Table 7, when the number of high severity wildfires equals the number of catastrophic wildfires (i.e. high-severity to catastrophic fire ratio is 50-50), the total insured value amounts to USD 9 million and would require a premium size of USD 1.7 million. However, when catastrophic wildfires are

much less than high severity wildfires (i.e. high-severity to catastrophic fire ratio is 90-10), the total insured value falls to USD 3.6 million, and premium size required falls to less than 1 million USD.

The sensitivity analysis clearly illustrates the need for the trust fund to complement the parametric insurance, as the resilience benefits achieved by the trust fund through pre-wildfire risk mitigation and post-wildfire ecosystem rehabilitation will eventually lead to a reduction of underlying risk, i.e. a reduction of catastrophic wildfires relative to high-severity wildfires. With an improvement in the high-severity to catastrophic fire ratio, a reduction in premium size is expected over time.

Table 7. *Premium sizes under different wildfire severity scenarios*

	Pessimistic Scenario	Baseline Scenario	Optimistic Scenario
High-severity to Catastrophic Fire Ratio	50-50	75-25	90-10
Sum insured (USD)	8,982,765	5,602,973	3,575,097
Premium size(USD)	1,684,268	1,050,557	670,330

In the initial phase, 30% of the insurance premium will be subsidized to pilot the instrument's design and enhance its attractiveness to corporate buyers. This subsidy will be phased out beginning on year 3, and decreasing 25% annually. This partial subsidy will be financed with concessional funding sourced from the government, MDBs, philanthropic foundations, or other donor institutions, and can also take the shape of tax exemptions.

This effectively sets the annual total premium split at USD 700,000 from companies and USD 300,000 from concessional sources, from pilot until year three, when concessional capital starts to decrease. The wildfire parametric insurance has the potential to be highly catalytic, as it leverages commercial capital for wildfire resilience-building, and allow every dollar of concessional capital to mobilize between USD 2.3 and USD 6.4 of private capital[4].

For the Adaptation and Recovery Trust Fund, the model assumes a funding requirement of USD 300,000 per year, with a 10% management fee. This sleeve will be initially funded by grants and, as the model evolves, the Facility will explore revenue-generating alternatives as described earlier (See Investment Thesis section).

It should be noted that public funding not only represent the dominant source of funding for the highest-capitalized water funds in the Latin America region, like the Quito Water Fund, but also represents most of the funding across well-established water funds (Bremer et al, 2015). The Facility offers an opportunity for Colombia's largest water fund to explore more financially sustainable ways of investing in watershed conservation, as well as to expand the role of the private sector in watershed conservation after pilot.

As seen from the parametric insurance sensitivity analysis findings, the Adaptation and Recovery Trust fund is critical to the long-term financial sustainability of the parametric insurance as targeted resilience-building activities funded will reduce number and spread of catastrophic wildfires over time, allowing the parametric insurance to cover more claims and insure higher sums of damages. As wildfire risk is actively mitigated, the insurance coverage could decrease therefore decreasing insurance premiums over time.

[4] 2.3x assumes that partial premium subsidy does not phase out. 6.4x assumes phase-out occurs as planned.

The Facility's operational expenses will leverage the existing institutional capacity of Agua Somos to achieve economies of scale and will be covered through differential management fees. These will be allocated to each sleeve, assigned based on operational requirements for the Facility management team. The Facility's total annual operating expenses are estimated at USD 50,000**.**

Table 9*. Facility's Management Fee Structure*

	Management fee
Wildfire Parametric Insurance	**2%**
Adaptation & Recovery Trust Fund	**10%**
Weighted average fee	**4%**

5. CLIMATE AND SOCIAL IMPACT STRATEGY AND PROJECTIONS

The Facility is designed to transfer and reduce risks of catastrophic wildfires impacts on páramos, which will support long-term resilience of not only critical ecological systems, but also communities living within and outside of the páramos.

5.1 IMPACT MEASUREMENT AND MANAGEMENT STRATEGY

The catalytic potential of the Facility lies in its ability to unlock capital to both transfer and reduce risk of catastrophic wildfires impacts on páramos. Such activities are severely underfunded as evidenced in the wildfire risk layering exercise conducted for Bogotá.

Wildfire Risk Transfer and Risk Reduction

Measuring and quantifying outcomes from financed activities over time is a key component of the instrument's impact measurement and management strategy. This process demonstrates how risk reduction and risk transfer activities interact to deliver clear financial and ecological benefits. In other words, it is expected that with more wildfire-resilient páramos, there will be a reduced need for risk transfer in the longer term, in the form of either reduced insurance premiums or reduced insurance coverage, thereby lowering the financial burden of ecosystem service beneficiaries.

Table 10. *Wildfire Risk Transfer and Risk Reduction KPIs*

Intervention category	Metrics category	Metrics
Wildfire Response (Risk Transfer)	Deployment	• Ratio of deployable personnel versus needed personnel • Ratio of deployable equipment versus needed equipment
	Coverage	• High-risk communities with reliable access to equipped brigades and protective resources (%)
Wildfire Prevention (Risk Reduction)	Capacity	• Number of professional and voluntary firefighters trained
Ecosystem Restoration (Risk Reduction)	Catastrophic Wildfires	• Reduced number and spread of catastrophic wildfires compared to 2024 baseline

Community and Ecological Resilience

In addition to measuring risk transfer and risk reduction outcomes, the impact strategy also includes measuring the resilience benefits resulting from the achievement of risk transfer and risk reduction outcomes, through the lens of community resilience and ecological resilience. A clearly defined baseline will also need to be established for the metrics to assess progress. This is aligned with the two-tiered impact thesis of the instrument, which focused on the preservation of ecosystem services within páramos, and on empowering communities to respond to catastrophic wildfire risk.

Table 11. *Ecological and Community Resilience KPIs*

Intervention category	Metrics category	Metrics
Community Resilience	Water Security	• Number of residents facing disruptions to drinkable water supply, measured in terms of water quantity and water quality
	Community Preparedness	• Number of local community members (broken down by gender) equipped to respond to wildfires
	Livelihoods	• Number of local community members (broken down by gender) continue with productive activities despite wildfire disruptions
Ecological Resilience	Ecological Integrity	• Reduced damage to native vegetation cover and biodiversity of páramos
	Ecological Health	• Continued provision of ecosystem services

5.2 PRE-INVESTMENT IMPACT MODELING PROJECTIONS

Between 1985 and 2022, wildfires impacted almost a third of the páramos providing water to Bogotá in terms of area (ha). From 2023 to 2024 there was a significant increase in catastrophic wildfires. Between November 2023 to January 2024, over 340 recorded fires destroyed more than 17,000 hectares of forest lands in Colombia (Al Jazeera, 2024). Around Bogotá, wildfires burned more than 600 hectares of forests, leading to an unprecedented water disruption in Bogotá and surrounding municipalities, affecting over 12 million people (VOA, 2024).

During this period, members of the Colombian army, volunteer firefighters and Bogotá's Fire Department were deployed to suppress active wildfires and mitigate risks in unburned areas. Response efforts quickly depleted government emergency funds, and equipment originally intended for other purposes had to be repurposed. For example, planes used to spray chemicals on coca crops were redirected to drop water on wildfires. In January 2024, the Colombian president issued a disaster declaration and requested international aid to support wildfire suppression efforts.

These events underscore the limited financial and human capacity to respond effectively to catastrophic wildfires and contain their spread in a timely manner. Investments in wildfire risk mitigation and post-wildfire rehabilitation in páramos remain minimal, and the 2024 events also revealed significant knowledge gaps on how ecosystem restoration should be implemented[5].

Moreover, the lack of coherent governance frameworks and protocols to guide páramos protection efforts before, during and after wildfires, highlights the high vulnerability of both the natural ecosystems and the communities living within them. These challenges underscore the added value and critical role of the Facility.

5.3 PRELIMINARY GENDER STRATEGY

As part of the feasibility study, resources will be allocated to conduct a community needs assessment to directly engage with páramos inhabitants and understand how catastrophic wildfires affect them.

A gender analysis will be conducted in parallel to identify key gender issues that could limit the Facility from providing equal benefits to women and men living within páramos. It will examine gender differences in decision-making, natural resource management, division of labor as well as underlying factors, such as access to resources, gender roles, and uneven power dynamics.

This analysis will also include understanding the experiences of women firefighters in rural Colombia. Currently, 43% of volunteer community firefighters are women (Ministry of Environment, 2025), who often combine high-risk volunteer emergency service with heavy unpaid caregiving duties, limiting their ability to participate fully in training, leadership, and restoration roles. These structural barriers women face in male-dominated emergency institutions highlight the need to ensure access to high-quality technical training, participation in decision-making spaces, and recognition of their dual role in care and climate resilience.

The gender analysis will determine strategies to mitigate the risks of these differences in undermining gender equality in the implementation of the Facility, and will identify measures to (i) recognize, reduce, and redistribute the unequal care burdens faced by women in páramo communities and brigades; (ii) promote inclusive participation of women in emergency brigades, ecological restoration, and

[5] see Mongabay, 2024: https://es.mongabay.com/2024/03/la-polemica-que-llega-despues-de-los-incendios-reforestar-o-restaurar/

governance bodies linked to the Facility, and (iii) create opportunities for indigenous and rural women to apply their traditional ecological knowledge to restoration and risk management activities.

The findings of the gender analysis will shape the gender action plan and ensure that tailored support mechanisms address gender-specific needs. It will also reference General Recommendation 39 on the rights of Indigenous women and girls, under the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) to recognize and protect the rights of indigenous women to land and natural resources.

ANNEX 1

Examples of sustainable productive activities in páramos

No.	Activities
1	Agroecological farming systems, which promote regenerative practices through practices such as crop rotation, organic composting, native species integration, and soil recovery techniques
2	High-altitude fruit processing (examples of fruits include mortiño, curuba, and goldenberry) into value-added products such as jams, sauces, and dehydrated snacks
3	Andean tuber processing, turning native potatoes, ibias, and mashuas into chips or flours
4	Apiculture, which refers to the production of honey, propolis, and pollen adapted to páramo flora
5	Natural cosmetics using essential oils and extracts from native plants
6	Crafts made with sustainably sourced fibers such as straws or wool
7	Native plant nurseries for ecological restoration or ornamental purposes
8	Activities related to ecotourism, agrotourism, birdwatching, and wellness tourism, which involve local guides, lodging and traditional cuisines

ANNEX 2

Baseline Model Input Variables		
Total Costs of Different Fire Severity Scenarios		
	High Severity Fire	Catastrophic Fire
Cost per Hectare	358	507
Maximum Hectares Affected	100	500
Probability of Payout Triggered		
Payout not triggered	85%	
Payout triggered	15%	
Probability of Payout Triggered for High Severity & Catastrophic Fires		
High Severity Fire	75%	

Catastrophic Fire	25%
Expenses & Margin	
Expenses & Margin	25%
Mean number of fires in a year	
Mean number of fires in a year	414

ANNEX 3

Role of actors in insurance policy issuance

Actor categories	Actors breakdown	Role related to the implementation of vehicle
Key policy actors	Insurance premium payers	Define the size of the insurance policy based on their willingness to pay
	Insurance policy holder	Aggregates financing from ecosystem service beneficiaries and other capital providers to pay insurance premiums
	Recipients of insurance payout	Use payouts to strengthen wildfire suppression and response efforts aiming to contain wildfire and wildfire damages in Páramos
Policy design	Data providers	Supply input data for parametric deal structuring, which is used in modeling and pricing a deal.
	Risk modeling agent	Produces risk models based on the available data and assesses the probability of trigger events, which helps set appropriate trigger levels and payout structures for parametric insurance products
Policy distribution	Re-insurers	Offer and distribute parametric coverage for large-scale deals or backs insurers financially, sharing the risk of large-scale or catastrophic events in parametric insurance. This stabilizes the market and enables higher coverage limits.
	Broker	Serve as intermediaries between insurers and policyholders, helping clients understand parametric insurance products. They advise on trigger selection and coverage options tailored to the specific risks faced by their clients. Brokers often help insurers to design and distribute parametric products, ensuring they are aligned with market needs.
	Insurer	Play a key role in creating, underwriting, and distributing parametric insurance products, and often are also responsible for risk modelling, pricing and underwriting agent roles.
Policy monitoring	Data reporting agent	Supply data to evaluate whether a trigger event has occurred. Reliable data reduces the likelihood of discrepancies between the trigger and actual events (basis risk), ensuring payouts are justified and appropriate.
	Calculating agent	Determine whether predefined trigger events have occurred under the terms set out in the parametric insurance policy. Oftentimes, the roles of Data Reporting and Calculation agents are combined.
	Claims settlement agent	Facilitates the disbursement of payouts once a trigger event has been verified. Ensures payments are processed quickly and efficiently, minimizing delays in compensation processing.

REFERENCES

CPI uses the Council of Scientific Editors reference style NY-system similar to the one used by the International Energy Agency, Independent Evaluation Group-World Bank, and the U.N. For specific details check the CPI Writing and Style Guide.

Al Jazeera. “Wildfires rage near Colombia’s capital as temperatures soar”. January 2024. Wildfires rage near Colombia’s capital as temperatures soar | Climate News | Al Jazeera

Bremer et al. “One size does not fit all: Natural infrastructure investments within the Latin American Water Funds Partnership”. Ecosystem Services. December 2015. One size does not fit all_ Natural infrastructure investments within the Latin American Water Funds Partnership

Forest Trends. “Opening the Tap: State of Finance for Natural Infrastructure for Water Security in Peru, 2021”. February 2022. Opening the Tap: State of Finance for Natural Infrastructure for Water Security in Peru, 2021 - Forest Trends

Laura Obando-Cabrera et al. “The Paramo Fire Atlas: quantifying burned area and trends across the Tropical Andes”. Environmental Research Letters. April 2025. The Paramo Fire Atlas: quantifying burned area and trends across the Tropical Andes - IOPscience

Lincoln Institute of Land Policy. “Water Funds: Conserving Green Infrastructure for Source Water Protection”. August 2022. Water20Funds_Updated_0303222028229-1.pdf

Ministry of Environment. “92 million dollars will be invested to stabilize the water supply of the people of Bogota and the Savannah”. November 2024. 92 million dollars will be invested to stabilize the water supply of the people of Bogota and the Savannah -

Ministry of Environment. “Community brigades save more than 10,200 hectares from being consumed by forest fires”. March 2025. Community brigades save more than 10,200 hectares from being consumed by forest fires -

Ministry of Environment. “Páramos: Historic project for more than $12 billion”. August 2025. Páramos: Historic project for more than $12 billion -

Murad et al. “Multitemporal monitoring of paramos as critical water sources in Central Colombia”. Scientific Reports. July 2024. Multitemporal monitoring of paramos as critical water sources in Central Colombia | Scientific Reports

Palladium. “Habitat Banks: A Pathway to Restoring Biodiversity”. October 2024. Habitat Banks: A Pathway to Restoring Biodiversity

Secaira Fajardo, Fernando, Kathy Baughman McLeod and Bess Tassoulas. 2019. A Guide on How to Insure a Natural Asset. The Nature Conservancy. 28-37_Producers_SPR18_js.indd

The Nature Conservancy (TNC). “Lessons from the Páramos: How Watershed Conservation Is Restoring Biodiversity”. February 2025. Lessons from the Páramos: How Watershed Conservation Is Restoring

UNEP. “Water Funds to Institutionalize Nature-Based Solutions in Ecuador”. February 2021. Water Funds to Institutionalize Nature-based Solutions in Ecuador - Case Study | UNEP - UN Environment Programme

VOA. “Colombia declares emergency over forest fires”. January 2024. Colombia Declares Emergency Over Forest Fires