

CASE STUDY 8

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Organization: Corporación Sistema de Investigación sobre la Problemática Agraria en el Ecuador (SIPAE)
Region: Latin America and the Caribbean (LAC)

In the central highlands of Ecuador, Indigenous Peoples govern the *páramos*—high-altitude grasslands and shrub-lands that sustain life far beyond their borders. These neo-tropical ecosystems serve as critical sources of water storage, regulation, and carbon sequestration, while also embodying ancestral knowledge, spiritual practice, and collective memory. The Union of Indigenous and Peasant Communities of Mariano Acosta (UCICMA) brings together 14 communities in Pimampiro canton, overseeing 1,790 hectares of cultivable land. Men and women alike participate in communal work, reinforcing traditions of reciprocity and solidarity.

Community governance of the *páramos* is deeply rooted, with records of collective management dating back to 1764. Yet, these territories face mounting pressures. The advance of agricultural and livestock frontiers, prolonged droughts, and metal mining—particularly gold extraction in water recharge zones—directly degrade fragile ecosystems. Climate change exacerbates these threats, intensifying drought cycles, altering hydrological systems, and multiplying environmental shocks. Territorial disputes and governance conflicts further complicate efforts to ensure sustainable management.

In response, Indigenous communities rely on traditional ecological knowledge and collective agreements to regulate land tenure, restrict harmful land uses, and safeguard access to páramo resources. Management is structured through both formal and non-formal regulatory tools, ensuring flexibility and resilience. Organizational and economic strategies reinforce these governance practices. Communities have established protection zones, strengthened water management systems, and developed livelihood opportunities aimed at reducing youth outmigration. These initiatives not only sustain families but also conserve territory and enhance community identity. By combining ancestral governance systems with modern legal tools, communities maintain jurisdictional authority over their lands, affirming collective rights to self-government. The ecological outcomes are significant. The *páramos* under community management function as a vital carbon sink, absorbing approximately 11.1 $ktCO_2e$ per year, while continuing to regulate water cycles for downstream populations[38]. These results underscore the importance of community-led governance in sustaining one of the most critical ecosystems of the Andes.

Community-based management of páramos has specific models that vary from one organization to another, even from one community to another. Added to this are the actions, policies, regulations, and lack of institutional frameworks operating in each locality. However, they also have common elements. The conditions for community-based management of *páramos* are shaped by a complex balance between agreements and actions on the ground. This may vary depending on the local and community context, due to changes in leadership, changes in sectional authorities, the occurrence of conflicts, or specific problems such as water scarcity, among other socio-organizational factors.

Community *páramo* management is the management, administration, and decision-making regarding the resources, values, and ecosystem services provided by the *páramo*, by communities and organizations exercising their collective rights and as an expression of direct and community democracy, recognized in the Ecuadorian Constitution. In Ecuador, the *páramo* communities are present in the territories of 15 indigenous peoples of the Kichwa de la Sierra nationality. In the Andean mountain range, these peoples are: Pasto, Karanki, Otavalo, Kayambi, Kitu Kara, Panzaleo, Chibuleo, Tomabela, Salasaka, Quisapincha, Puruha, Waranka, Kañari, Saraguro, and Palta.

38 Harris, N.L., D.A. Gibbs, A. Baccini, R.A. Birdsey, S. de Bruin, M. Farina, L. Fatoyinbo, M.C. Hansen, M. Herold, R.A. Houghton, P.V. Potapov, D. Requena Suarez, R.M. Roman-Cuesta, S.S. Saatchi, C.M. Slay, S.A. Turubanova, A. Tyukavina. 2021. Global maps of twenty-first century forest carbon fluxes. Nature Climate Change. ***https://doi.org/10.1038/s41558-020-00976-6***.