



## Securing water supply in the tropical Andes

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The water supply of the tropical Andes region (Venezuela, Colombia, Ecuador and north Peru) relies on a complex and extremely vulnerable ecosystem. Because of the scarcity and rapid decrease of glaciers and the complexity of groundwater exploitation, water is withdrawn from the upper Andean grasslands that are locally known as paramos. This ecosystem, located above the natural forest border, is characterised by a cold and wet environment and porous, volcanic soils that provide excellent water storage and regulation. Due to the low intensity of human activities, the surface water sources of the paramo are of excellent quality. However, increasing human activities pose severe threats on the water supply function of the paramo. Intensive livestock grazing, commercial forestry activities, and mining alter the hydrological regime of the paramo, degenerate the soils and decrease water quality. Additionally, global climate change is expected to have a strong impact on the local climate and the soil properties. The hydrophysical soil properties are strongly dependent on the elevated organic carbon content of the soils (up to 40%) which is the result of very specific climatic and geographic conditions. Alterations in these properties are likely to affect the hydrological behaviour of the paramo, but up to present, these effects have not been quantified.

The recently initiated Proyecto Paramo Andino, a project financed by the Global Environment Facility (GEF), intends to improve the sustainability of paramo management in order to safeguard its environmental functions and to minimise the impact of global change. Given the very specific hydrological conditions of the paramo, our scientific understanding of its hydrological cycle is limited, and extrapolating knowledge from other ecosystems is awkward. A major aim of the Proyecto Paramo Andino is therefore to identify priorities for scientific research to optimise sustainable paramo management. This case study summarises the results of a workshop held in March 2007 in

Merida, Venezuela. It is organised by the Proyecto Paramo Andino and unites hydrologists studying the paramo ecosystem with policy makers from local to international level.