

**ASISTENCIA A LOS PAÍSES ANDINOS EN LA REDUCCIÓN DE RIESGOS Y DESASTRES
EN EL SECTOR AGROPECUARIO**

POLICY BRIEF 4. WATERSHED PERSPECTIVES

Climate, Energy and Tenure Division
Natural Resources Management and Environment Department



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POLICY BRIEF 4. WATERSHED PERSPECTIVES

What is the strategic importance of adopting a watershed perspective when dealing with the impacts associated with climate variability and change on the mountain-flat lands dynamics?

Climate change is definitely affecting the tropical Andean region's hydrological cycle. Mainstreaming CC adaptation together with the sustainable management of land and water resources is therefore of the utmost importance for the region as a whole. The main recommendation of this policy brief is to adopt an Integrated Watershed Perspective (IWP) to design policy and institutional solutions both at different river basin scales, and at the whole basin areas. The IWP we propose aims to demonstrate that the sustainable restoration and management of the hydrological cycle is everyone's responsibility, from the top of the Andes to the Pacific and Atlantic coastal areas. Planning with multiple stakeholders and involving local municipal and regional governments in watershed management can be institutionalized linking watershed committees and inter-municipal commissions with an integrated watershed perspective. In the tropical Andes, the involvement of rural dwellers in Watershed Users' Organizations (WUOs) and Payment for Environmental Services (PES) in watersheds by city dwellers and industries are some institutional arrangements that have been recently attempted. Watershed Commissions and the inter-municipal (mancomunidades) commissions should be linked following an IWP to sustainable manage natural resources, including all stakeholders in a participatory manner. This shared responsibility could be institutionalized through a watershed PES (Payment for Environmental Services) or CES (Compensation for Environmental Services) scheme.

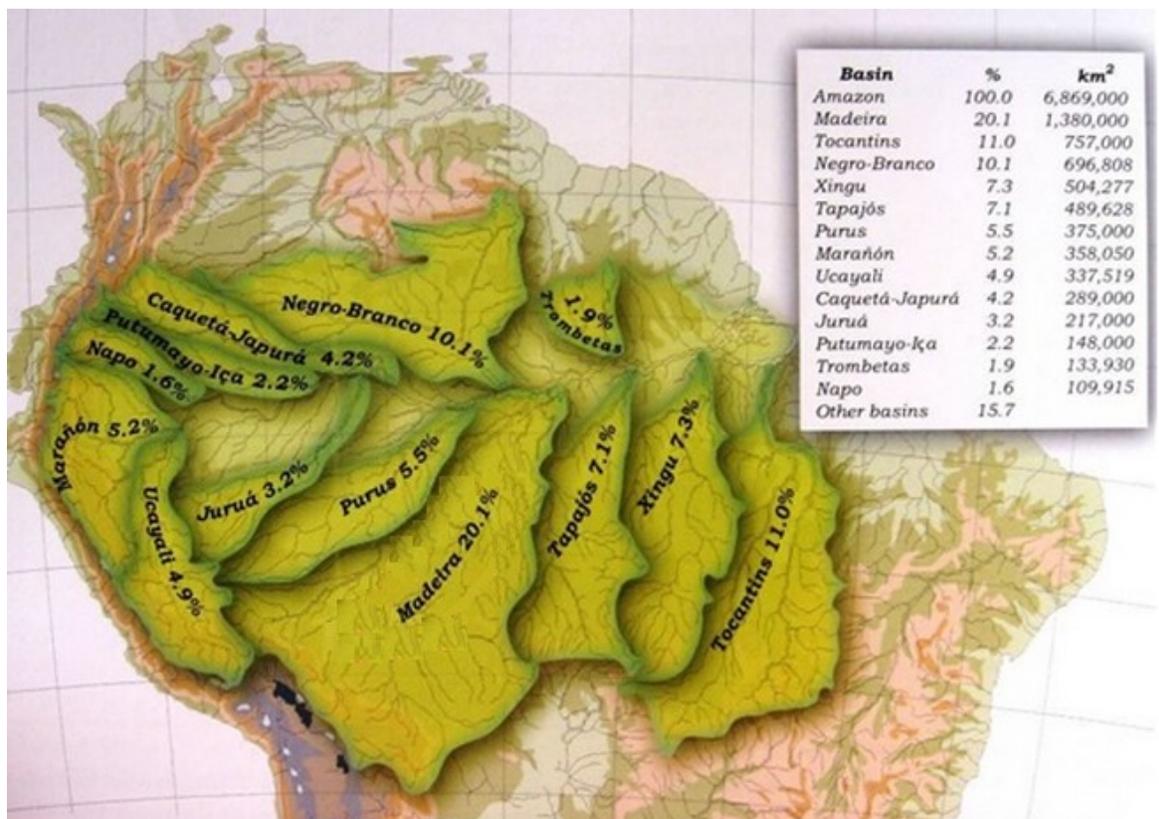
The tropical Andes hydrological dynamics

The hydrological dynamics of the tropical Andes regulate both the access upland rural communities have for irrigating their farms and other productive activities, but also for domestic and industrial consumption in both downstream urban and rural areas.

Mountain ecosystems are particularly fragile. Therefore, water management and watershed protection have an enormous importance because of the differing demands it places on water use.

Climate change is definitely affecting the region's hydrological cycle. Mainstreaming climate change adaptation together with the sustainable management of land and water resources is therefore of utmost importance for the Tropical Andean region as a whole.

To achieve this end we need to adopt appropriate policy solutions both at different river basin scales, and at the whole river basin as well. This is why a watershed perspective is needed. Ours is, however, a call for an Integrated Watershed Perspective (IWP) which takes into consideration not only the physical (hydrological) dynamics of each basin, but also considers the complex physical and human interactions covering its whole landscape.



Where does an Integrated Watershed Perspective operate?

The IWP we are proposing aims to demonstrate that the sustainable restoration and management of the hydrological cycle is everyone's responsibility: from the top of the Andes to the Pacific and Atlantic coastal areas. And, at each watershed, from the upland's water recharging zones, through its middle part where frequently extensive agriculture and livestock productions takes place, to its lower altitudes where most urban centres are located.

Raising awareness about this interconnectedness is a key challenge. The IWP recommended here is of strategic importance because it represents the participatory institutionalization of NRM.

Because watershed boundaries seldom coincide with political boundaries, the environmental point of view that favours watershed boundaries often conflicts with an institutionally-oriented point of view. The forces of nature ignore political boundaries. Water flows, land-slides, erosion, and water pollution take place paying no heed to political boundaries. The challenge is to move toward greater integration of these two points of view.

Planning with multiple stakeholders and involving local municipal and regional governments in watershed management can be institutionalised linking watershed committees (*comisiones de cuencas* in Spanish) and inter-municipal commissions (*mancomunidades de municipios* also in Spanish) with an integrated watershed perspective.



Management of local watershed basins

At the local level watersheds should be managed by inter-municipal commissions, thereby creating a chain of municipalities which follow the flow of water, going beyond a narrowly-conceived hydrological perspective.

In the tropical Andes, the involvement of rural dwellers in Watershed Users' Organizations (WUOs) and Payment for environmental services (PES) in watersheds by city dwellers and industries are some of the institutional arrangements that have been recently attempted. These good practices provide valuable lessons for the design and implementation of the management of other local watershed basins elsewhere in the region.

Watershed management at Las Piedras river in Colombia

The '*Planes de Ordenación y Manejo de Cuencas Hidrográficas*' (POMCH) implemented by the Río Piedras Foundation are an excellent example of a public agency which manages watersheds in a participatory manner. The Foundation is a mixed public-private entity associating eleven organizations, which designed the first management plan, favouring the discussion of issues such as environmental protection, education and conservation, as well as the long-term production plans. It is worth noting that the municipal government, the local aqueduct corporation, and the regional Cauca Autonomous Corporation, participated in this

Context and Problems

The case study in which this BP is based deals with watershed management at Las Piedras River sub-basin, located in the municipalities *Totoró* and *Popayán*, department of Cauca in Colombia. It covers an area of 6,626 ha, with elevations ranging between 1,980 and 3,820 m above sea level, and includes barren plateau (*páramo*) ecosystems and high-Andean forests. The sub-basin accounts for 90% of all drinking water in the city of Popayán, and it has been declared buffer zone of the Puracé National Park. Additionally, the Las Piedras River is a tributary of the Cauca River, which originates in the Colombian Massif along with Caquetá and Patia rivers, the first flowing into the Amazon, and the latter flowing into the Pacific Ocean. The basin has a network of 64 reservoirs, covering a total area of 1,380 ha. In 2007, the area of this sub-basin was the home of about 448 families among peasants and ethnic communities belonging to the indigenous reserves of Puracé and Quintana.

In the early 1990s, the newly created Regional Indigenous Council of Cauca (CRIC) began a process of social mobilization to recover the territories of indigenous groups, which took shape with the creation of the indigenous reserve of Quintana, and Puracé thereafter. In that decade, the main problem identified by all local stakeholders was the unresolved issues concerning land ownership among the three main social sectors of the region: indigenous groups, farmers and ranchers.

Description

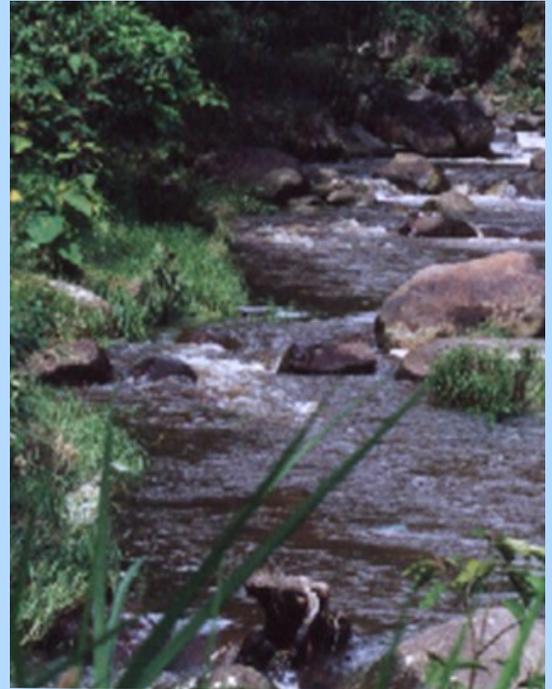
In 1990, the City of Popayán and its aqueduct established the Las Piedras River Foundation, in order to design and implement a Watershed Management Plan (POMCH) for the sub-basin. It is also worth mentioning the role played in this task by a UNDP / FAO joint program for the Colombian Massif, which conducted socio-economic studies and evaluations of environmental and social vulnerabilities. This program also involved other institutions like the University of Cauca, the Agricultural Extension Service (SENA), the National Park Agency, the Fund for Environmental Action and Childhood, and the Presidency's Social Action Program.

Also in 1990, after the creation of the Las Piedras River Foundation, peasants and indigenous producers formed an alliance resulting in the creation of conservation areas, and subsequently the formation of a reserve network, which includes forestry and agro-pastoral production areas. In 2001, the network —covering about 64 reservoirs and 1,380 ha— was officially recognized by the Ministry of Environment.

In 1995, one of the first projects implemented by the Foundation was the "Green Exchange." The program's objective was to fight paternalism and encourage the producers' commitment in response to the granting of financial support, for which they undertook local ecosystem restoring activities (e.g. reforestation, isolation of the sources of water, seed collection and propagation of native species, etc). In 2002, through a regional government decree, a pact of coexistence was made official. This settlement included the commitment of all social actors to resolve land ownership conflicts, and still continues in force.

In 2006, pursuant to the 2002 decree, the Cauca Autonomous Corporation began implementing the POMCH, which comprises three main components: (a) the Covenant of Coexistence and Community Involvement, with the objective to resolve land tenure conflicts in the territory of the basin; (b) the Protection Plan, which aims at the sustainability of ecosystems of the basin and includes actions related to the conservation of water sources, management of protected areas and forest reserves, wetlands conservation, and the recovery of native species; and, (c) the Sustainable Productive Development Program, including work for the management of grassland with silvopastoral systems, pasture rotation, manure production, nurseries and fodder banks, promoting agricultural activities in general.

The plan was designed with the participation of two indigenous organizations (Puracé and Quintana reserves), an agricultural producer association (Asoproquintana), a peasant association (Asocampo) and the Foundation. Also, the Municipality of Popayán, the city aqueduct, and the Regional Autonomous Corporation of Cauca were active participants in the design of this plan. Designing this plan made possible a broad debate on the relationship between protection, education and environmental conservation, on the one hand; and, sustainable development and production on the other.





Policy Recommendations

- Our main recommendation is that Watershed Commissions and the inter-municipal commissions (*Mancomunidades de Municipios*) should be linked following a IWP to sustainable natural resource management including all stakeholders in a participatory manner. This means that communities at all altitudinal levels should be involved in the management of the whole hydrological cycle.
- In water-recharging zones, users are the first people who must be included in the institutionalization of NRM, as their livelihoods and productive practices have the most direct impact on the watershed hydrologic systems. In the middle part of the watersheds, where frequently extensive agriculture and livestock production is located, producer organizations must be involved in the correct management of hydrologic resources, especially by controlling and limiting water contamination. Last but not least, in all urban centres, and especially in the wealthiest ones situated at the low altitudes of watersheds (for example Lima), citizens must be made aware of where their water comes from, how it is generated and especially who is responsible for the provision of such valuable resource.
- Therefore, the watershed perspective within an inter-municipal context promotes the collective responsibility for sustainable NRM. This shared responsibility could be institutionalized through a watershed PES or a Watershed Compensation for Environmental Services scheme.

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<http://www.fao.org/climatechange/55804/en>

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Photos:

Page 1: Goulding et al, 2003. “Atlas of the Amazon”

Page 2: Paul Alvarez

Page 3: Programa Conjunto Macizo Colombiano UNJP/COL/SPA/032

Page 4: CAN, 2010 “El Agua de los Andes”