Climate Change Adaptation in the Tropical Andes

The Tropical Andes

The Andean region holds 9.5% of the world's fresh water reserves and plays the pivotal role of providing water for the majority of South American watersheds. The hydrologic stability of the region depends on services provided by micro-ecosystems found around and above 4000 masl (**páramos**, **wetlands** and **glaciers**). These are zones in which water is absorbed and stored in solid and liquid form within the mountains, which is then released regularly throughout the year feeding the majority of the rivers which discharge in the Pacific and Atlantic oceans. These rivers provide water for cities such as La Paz (4000 masl), Bogotá (2000 masl) and Lima (at sea level) and drain human and industrial waste away from urban centres.

The Context

It is from these delicate ecosystems that Andean populations earn their livelihoods through agricultural practices, thereby directly impacting their surrounding environment. Unsustainable practices such as over-grazing in the **water-recharging zones** decrease humidity retention of the soil. In this way, the natural resource base is directly dependant on the land use and agricultural practices adopted in the Tropical Andes.

Within this context, the delicate environmental stability of the region is being seriously threatened by climate Change. According to the IPCC (2007) **extremes in temperature** and an **increase of precipitation and periods of drought** will affect the region as a whole, greatly contributing to the exacerbation of the El Nino phenomenon and the intensity of natural disasters such as floods and droughts. Such meteorological conditions **endanger food security** and disrupt the fragile hydrologic stability of the region, therefore jeopardizing the provision of water for downstream South American populations.

The Objective

TCP/RLA/3112 aims at natural resource management and disaster risk management as an integral strategy towards CCA, food security and development in the Andean plateau. Moreover, it is by linking the issues of natural resource management and agricultural production that coherent solutions can be provided for the serious problems affecting the region. Such solutions must however be backed by an **institutional framework** which is capable of acknowledging the social, economic and political contexts of Andean populations and governments. Thus empowered local communities and their producer organizations, coupled with governmental institutions are the main actors participating in the construction of **institutional arrangements built around the management of natural resources and agricultural production.**

The project proposes a three pronged approach which simultaneously addresses **institutional strengthening, agricultural production and natural resource management**. The aim is to spread among both, government decision-makers and civil society an awareness in the management of the natural resource base which transcends political boundaries, thereby addressing the gravity-determined hydrological dynamics that articulate **South America as a territorial unit**.

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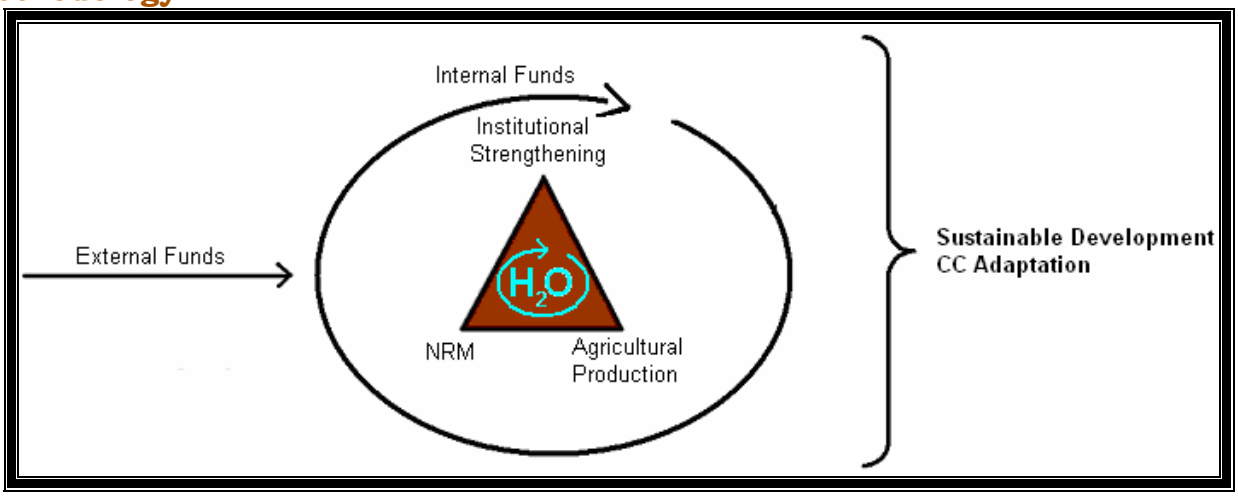
Methodology



A. The central triangle reflects the way in which **institutional arrangements** which are built through the linking of **NRM**, **institutional strengthening** and **agricultural production**. Each side of the triangle corresponds to the dynamics which link one angle of the triangle to another.

1.1. **Institutional Strengthening - Agricultural production**: Through their integration in the market, producer organizations empower farmers over decision making processes within the municipal structure

1.2. **Institutional Strengthening – NRM**: In delicate upstream ecosystems, natural resources are best managed when farmers are directly involved through institutional arrangements in the process

1.3. **NRM - Agricultural production**: When natural resource management practices are productive and sustainable the resilience of livelihoods is enhanced

B. Within the triangle is the inner circle representing water. Water is the linking thread which connects most aspects of Andean reality constituting the main resource which determines the importance of envisioning the South American sub-continent as a territorial unit. This is why the project proposes the **adoption of a watershed perspective** which acknowledges that social, environmental and economic issues are dependent on the flow of water from the mountains to the sea.

C. The external circle ensures the financial viability of institutions. The arrow pointing towards the diagram corresponds to **the role which external funds may play in un-blocking the local inertias** caused by asymmetric power relations within the communities. These would not solely promote the adoption of sustainable agricultural practices and CC adaptation strategies, but would be construed in such a way as to avoid elite capture ensuring the emergence of new community leaders.

D. The external circle represents the long-term goal of fiscal autonomy within local communities. The external funds **set in motion local financial mechanisms** which ensure a stable flow of income and enable the transition towards financially self-sufficient communities. Examples of internal financial mechanisms include **payment for participatory budgets** schemes and **environmental service**.