

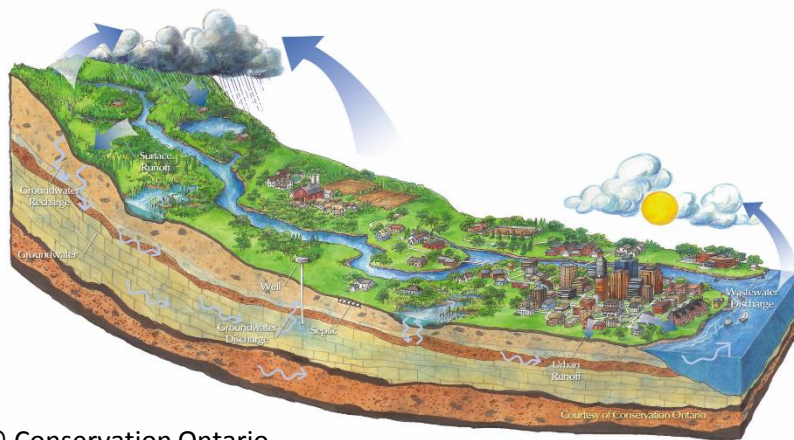


EbA in the agricultural sectors: Watershed management case study Chimborazo (Ecuador)

Petra Wolter and Luca Fè d'Ostiani
Water and Mountains Team
Forestry Department

Definitions

- The CBD defines the **ecosystem approach** as a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way
- **Watershed management** is defined by FAO as any human action aimed at ensuring a sustainable use of watershed resources
- A **watershed** is the geographical area drained by a watercourse.





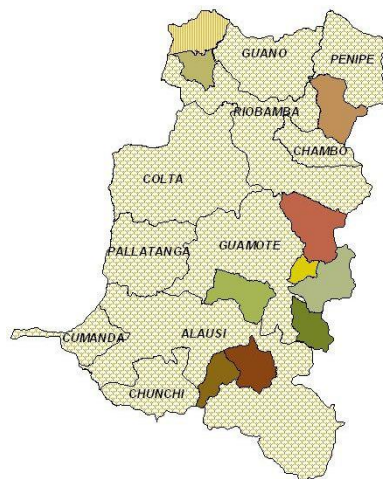
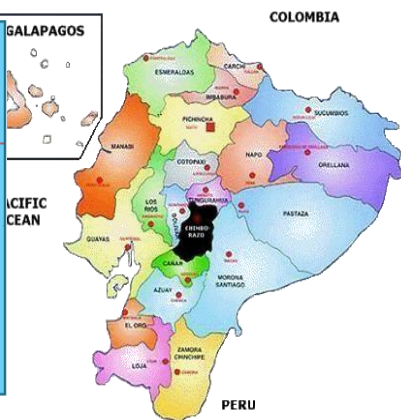
Key principles of watershed management

- Applies an integrated approach: multi-sector, multi-stakeholder and multi-scale
- Has an explicit spatial focus and reflects upstream–downstream linkages, processes, interactions and effects on-site and off-site
- Combines local traditional knowledge and scientific knowledge through action research and joint learning
- Seeks innovative and low-cost solutions and combines them to obtain multiple benefits for ecosystem conservation and livelihoods improvements
- Promotes a flexible, adaptive long-term perspective to management, planning and financing

Watershed management in Ecuador

Management of Chimborazo's Natural Resources

- GEF-funded project (USD 3,87 Mio), 2011 - 2017
- Full national execution by Provincial Government of Chimborazo
- Integrated watershed management approach is applied across different altitudinal belts, including the high-mountain páramo ecosystem
- Active in 5 watersheds totaling 115,000 ha and 33,000 inhabitants





Watershed management in Ecuador

How are FAO's **watershed management principles** applied ?

- Enhancing holistic/cross-sectoral ecosystem/territorial vision, strengthening planning & implementation capacities at Prov./Local Govts. & users level (community and watershed committees), leading to jointly agreed and validated watershed management plans and localized micro-projects
- Supporting national execution and inter-institutional arrangements combining bottom-up & top-down processes for joint implementation, monitoring and re-orientation
- Reflecting upstream-downstream linkages and supporting design/implementation of mechanisms to compensate for ecosystem services (CES) rendered by upper watershed inhabitants



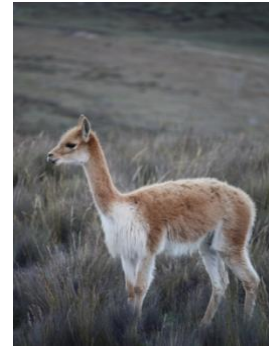
Watershed management in Ecuador

Strong focus on water as key connecting factor

- Watershed-level assessment, planning and implementation
- Protection of headwater areas, springs and watercourses through reforestation with native species to increase water infiltration
- Bio-physical soil and water conservation measures on steep slopes to reduce erosion and increase water infiltration
- Water collection and storage in ponds and hill lakes for improved/regulated water supply
- Drinking water quality analysis & promotion of chlorinated drinking water supply



Watershed management in Ecuador



Other interventions include:

- Cattle and sheep grazing replaced by alpacas, llamas and vicunas (930 ha)
- Forest restoration (431 ha enrichment, 1,382 ha regeneration)
- Organic and conservation agriculture practices to enhance local agrobiodiversity
- Income diversification and value chain development (alpaca/vicuna wool, bio-horticulture, milk, certified potato seeds, handicrafts, agro-tourism...)
- Reduced post-harvest losses through efficient crops/milk storage systems

➔ It's the mix of good practices of sustainable land management (SLM) and sustainable forest management (SFM) within the watershed that helps to reduce pressures on natural resources, to improve local livelihoods and increase resource efficiency



Watershed management in Ecuador

Innovative CES schemes

Developed along 4 main types of funding sources and user groups:

- i. National financial incentives (SocioBosque) to cover trade-off agreements with farmers protecting upper forests/rangelands
 - ii. Local Govts. funds for watershed afforestation, processing facilities (milk, alpaca wool...) & infrastructures
 - iii. Private sector funds for upstream afforestation & tourism infrastructures (e.g. hydro-electric company; flower nurseries)
 - iv. Progressive increase in water charges system negotiated with and paid by irrigation user groups
- + Testing of additional compensations flows involving improved production systems (potato certified seeds and silos) in return for upper areas protection
 - + Exploring potential flows to be generated by new peri-urban irrigation schemes and urban drinking water supply systems



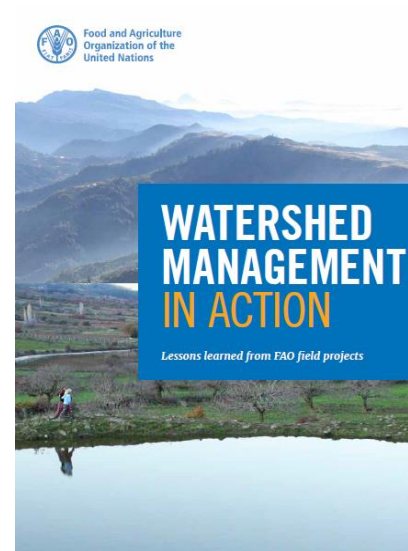
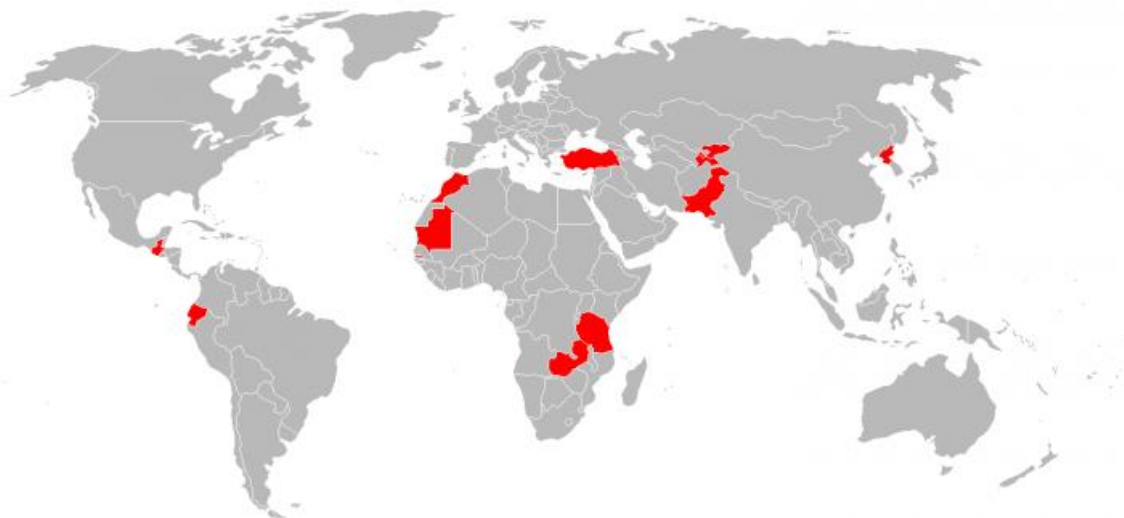
Watershed management in Ecuador

Legal/policy/institutional changes

- Regulation on the conservation and management of vicuna updated (in line with CITES) and preparation of new operational guidelines for vicuna shearing
- Integration of income generating activities in Chimborazo Fauna Reserve mgmt. system (eco-tourism, visitor center, leisure areas, handicrafts shops...)
- Consolidation of multi-stakeholder/inter-sectoral processes at Provincial/Local Govt. level (e.g. on environmental subjects)
- Establishing a multi-stakeholder Provincial Hydro-meteorological Monitoring Network and Surveillance System for Natural Resources, integration of hydrological stations into national meteorological system, incorporation of water quality assessment

The way forward

- FAO recently concluded a review of 12 watershed management projects. These lessons learned are being published, and the publication will be released on 12 December 2017.





The way forward

Watershed management has a great potential to mainstream adaptation, especially ecosystem-based adaptation, by applying a climate lens and incorporating climate-related data, tools and methods in watershed management programme and project design and implementation, e.g.

- When assessing the conditions and trends in a watershed: include assessment of climate vulnerabilities and risks as well as assessment of existing adaptive capacities and needs among stakeholders
- When identifying options: give priority to low-cost nature-based solutions to restore, maintain, or improve ecosystem health and account for adaptation co-benefits
- When formulating watershed management plans: promote adaptive planning and management, long-term perspective, flexibility to deal with uncertainties and change
- When monitoring the changes in the watershed: include indicators to monitor ecosystems services, health and stability.



Main challenges

- Access to climate data and downscaling of global/national models
- Baseline and indicator development for measuring, monitoring and reporting of results and benefits
- Capacity development is needed at all levels, especially analytical capacities for cross-sectoral territorial analysis, systems thinking, scenario development or risk analysis
- Mainstreaming and scaling up good practices and approaches tested at watershed scale requires a long-term integrated planning and investment framework



THANK YOU !

Petra Wolter and Luca Fè d'Ostiani
Water and Mountains Team
Forestry Department