

A Way of Life Not Gone Yet

Uncover how four decades of working rural development in the Andes is serving today as a platform for enhancing the livelihoods of mountain communities, through the responsible management of our most valued natural resources.



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Abstract

Andean farmers have a holistic view of development. Watershed management projects promote this view by controlling erosion, conserving biodiversity, restoring water regulator ecosystems, increasing farm income, and helping to mitigate climate change. Unfortunately, few Andean agencies are successful at promoting watershed management efforts, as they face many challenges. Based on four decades of work in the Andean Region, this document presents a watershed management framework and lessons learned that deal with these challenges. Although formulated for the Andean Region, many recommendations presented here may have potential applications in other mountains regions of the world.

Key words. Andean, holistic, watershed, participation, communities, framework and lessons.

I. Introduction

The Andean region, is a rugged mountainous area with countless streams and rivers that descend rapidly through thousands watersheds towards the Pacific Ocean and Amazon Basin. Improper agricultural, forestry, grazing, mining, and water management practices coupled with climate change have seriously degraded many these watersheds. This has resulted in loss of native forests and wetlands, the destruction of arable soils and grasslands, the disruption of water flows, and the reduction of biodiversity.

This situation has also affected the livelihoods of thousands of farm families that depend on these watersheds for their livelihood, forcing many of them to migrate to the cities to find work. In a 2017 study, the Food and Agricultural Organization (FAO) concluded that watershed management projects help mountain communities to prosper by balancing the social, economic, and environmental dimensions of sustainability. Adhering to the holistic development vision of rural communities, these projects can stop erosion of arable soils, restore water regulator ecosystems, improve biodiversity, increase farm income, and help adapt to climate change.¹

Despite their effectiveness, few Andean public or private development agencies (national corporations, local governments, water regulatory entities and organizations, and Non-Governmental Organizations (NGOs) are successful at implementing watershed management projects. The consensus appears to be that watershed management projects face serious challenges. Some of these include:

- Lack of profitability of watershed projects, and their failure to frontally attack subsistence problems.

¹ FAO. (2017). Watershed Management in Action: Lessons learned from FAO Field Projects. FAO, Rome. Retrieved from <http://www.fao.org/3/a-i8087e.pdf>

- Lack of knowledge of the potential benefits of watershed management, and the failure to integrate them into long-term rural development goals.
- Lack of clear national and local policies and regulations for the management, use, and distribution of water and other natural resources.
- Lack of collaboration and understanding between the environmental and productive sectors.
- Lack of credit and sustained investments and understanding of markets and value chains.
- Lack research on environmental and production best practices and the use of participatory planning, monitoring, and evaluation methodologies.
- Weak institutions, inappropriate management of social conflicts, loss of traditional community values and knowledge, institutional corruption, and criminal activities.

Based on lessons learned in four decades of rural development work carried out in Bolivia, Colombia, Ecuador and Peru by national and international development agencies, this document presents a Watershed Management Framework aimed at increasing the success of watershed management efforts in the Andean Region.²

II. A Watershed Management Framework for the Andes

Income, clean water, food, wood, medicines, recreation, culture traits, and protection from the damaging effects of climate change are some of the most important needs of Andean rural communities. To succeed, watershed management endeavors must solve these holistic development needs. Watershed management efforts that do not achieved this goal, considering the differentiated needs and traditional knowledge of men and women farmers involved, usually fail.

All up and down stream people, public institutions, and private organizations that benefit from the watershed, are responsible for its management. Uniting these stakeholders around a combination of scientific and traditional sustainable land management practices that are gender sensitive and consider the environmental, livelihoods, and social aspects of people's lives is a winning strategy.

The Watershed Management Framework below presents key elements for the effective planning, management, and evaluation of watershed management efforts. Although meant for application in the Andes, it is felt that some recommendations given here may have potential applications in other mountains regions throughout the world.

Figure 1: Project Framework for Watershed Management in the Andes.

² Kenny Jordan, C. (2017). Legado de los Programas de Desarrollo Ambiental Participativo en los Andes. Revista de Glaciares y Ecosistemas de Montaña no. 2 p. 51-64. Huaraz, Perú. Retrieved from https://issuu.com/inaigem/docs/versi_n_final_revista_no._2

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|-------------------------------------|--|--|--|--|
| Objective | To improve the quality of living of the inhabitants of the watershed, through the responsible management of its natural resources. | | | |
| Stakeholders | Farm families, community organizations, public and private development organizations and businesses. | | | |
| Principal Execution Strategy | Unite stakeholders in the application of sustainable land management practices that produce significant social, environmental and economic benefits. | | | |
| Components | 1. Awareness Raising and Productivity | 2. Sustainability and Expansion | 3. Adversities and Solutions | 4. Monitoring and Evaluation (M&E) |
| Activities | <p>Promote multiple benefits of watershed management</p> <p>Provide technical assistance for improving production and conserving ecosystems</p> <p>Support Action Research</p> | <p>Apply national and local watershed management policies</p> <p>Install Watershed Management Committee</p> <p>Implement a Watershed Management Plan</p> <p>Set up Water Fund</p> <p>Promote partnerships and collaborative agreements</p> | <p>Promote institutional strengthening</p> <p>Manage conflicts, contamination, waste, crime and corruption</p> | <p>Apply a M&E system, based on development indicators</p> |

III. Project Framework Components and Lessons Learned

a. Project Component 1: Awareness and Profitability

Awareness and technical assistance programs help farmers and other key stockholders understand and reap the benefits of watershed management efforts.

Awareness programs that highlight the many benefits of effective watershed management programs will increase the buy in and participation of rural communities and people in watershed management activities. Awareness campaigns, therefore, should stress all possible benefits some of which are food security, healthy and productive ecosystems, jobs and income, mitigation of floods and droughts cycles, prevention of contaminated waterways and aquifers,

provision of large and small hydroelectric plants, and the unification of people and institutions in caring for their land.³

Modern technical assistance programs should be comprehensive, decentralized, multidisciplinary, market-oriented, made up of dedicated and trained people, and oriented to consider the cultural values, knowledge, problems and opportunities encountered by farm families. A comprehensive extension service unifies all actors through formal agreements. A decentralized service, as opposed to that directed at the central level, is more democratic. A multidisciplinary service takes advantage of all potential development opportunities, and focuses on the market demands and the value chain.⁴

Action Research effectively enhances technology, productivity and income of farm families. Through Action Research, farmers are responsible for designing and executing on-the-farm research programs. This self-management fosters confidence and responsibility among those farmers that participate, and promotes the use of traditional knowledge and skills. Other benefits include social articulation and information exchange, anticipation of needs before they crystallize into urgent demands or protests, and consensus building through open and knowledgeable discussions.⁵

b. Project Component 2: Sustainability and Expansion

Effective national and local level policies, structures, plans, finances, and partnerships are key to the consolidation and expansion of watershed management in the Andes.

Water Governance mechanisms. To reduce tensions and effectively managing water resources at the national and local levels, it is necessary to elaborate and implement policies, laws, and water regulations that are effective, efficient, and promote trust and participation. To be effective is to define policies in a participatory manner, assigning roles and responsibilities at different levels. To be efficient is to maximize the benefits of water management at the lowest possible cost. To promote trust and participation is to elaborate agreed policies and implement a transparent monitoring and evaluation system of laws and regulations.⁶

Watershed Management Committees (WMCs) are made up of representatives of key stakeholders. Their job is to facilitate the understanding, planning,

³ Kenny, J, Herz, C, Añasco, M., Andrade, M. (2002). Construyendo Cambios: Desarrollo Forestal Comunitario en los Andes. Lima, Peru. Retrieved from <http://www.asocam.org/node/52570>

⁴ FAO-BID. (1916). Reformas e Inversiones de los Sistemas de Extensión Rural y Asistencia Técnica en América del Sur. Lima, Peru. Retrieved from <http://www.fao.org/3/a-i6055s.pdf>

⁵ Martín P, Basagoiti. (2000). La Investigación-Acción Participativa como Metodología de Mediación e Integración Socio-Comunitaria. Retrieved from http://www.pacap.net/es/publicaciones/pdf/comunidad/6/documentos_investigacion.pdf

⁶ OCED. (2015). Principios de Gobernanza del Agua. Retrieved from <https://www.oecd.org/cfe/regional-policy/OECD-Principles-Water-spanish.pdf>

implementation, and use of watershed management tools and techniques. Under the guidance of an effective local development agency, these committees promote the well-being of participating rural communities, ensure improved water hygiene and reduce costs and conflicts. Enhanced participation, group deliberation, transfer of information, and the development of collaborative agreements are other of the benefits generated by WMCs.⁷

Water Funds are semi-autonomous organizations that design and enhance financial and governance watershed management mechanisms. Their purpose is to unite public, private and civil society stakeholders around a common goal which is to assure water security for towns and cities. Water Funds contribute to the better governance of water resources by generating continuous dialogue and by building bridges between the different sectors that impact upon the management and use of water resources. Water Funds are organized to channel long-term investments that maximize water storage and controlled distribution.⁸

Effective Watershed Management Plans (WMPs) consist of two major programs: 1) the application of best practices in agriculture, forestry, water, cattle and forest management, etc., and 2) the restoration or conservation of water regulatory ecosystems such as native forests, wetlands, grasslands, and banks of rivers and streams. The use of drought resistant crops, crop diversification, changes in cropping patterns, controlled grazing, slow forming terracing to conserve soil moisture, improving irrigation efficiency, and the application of afforestation, agroforestry forest management and the conservation water regulatory ecosystems are some of the validated practices generating important gains in the Andes today. Financial programs that support some these activities are present in many parts of the Andes today.

Institutional partnerships and collaborations are key for the success of WMPs. Here it is important that watershed management be understood as a holistic effort that brings together environmental, economic, and social actors. Shared ownership and benefits can also be enhanced through open, frank and direct discussions that identify realistic shared goals, assigns individual and shared responsibilities and weaves participation and accountability across the effort. Partnerships and collaborative agreements are written documents that provide answers to important questions. What are the goals, benefits, division of work, financial responsibilities, and how disputes are settled are a few of the things that must be written down?

c. Project Component 3: Adversities and Solutions

⁷WIKIWATER. 2019. C6 -The management committees and user's associations of water resources: role, operation, tools, advantages and disadvantages. Retrieved from <https://wikiwater.fr/c6-the-management-committees-and>

⁸Latin American Water Fund Partnership. 2019. The Water Fund. Retrieved from <https://www.fondosdeagua.org/en/the-water-funds/>

Weak institutions, personal and institutional conflicts, ineffective waste and water contamination, and crime hamper watershed management. A strong Institutional capacity building program can counter these adversities.

Effective capacity building programs operate at different institutional levels (central and local government, universities, rural community organizations, and farm families) and engage stakeholders at all levels. Contrarily, those entities that do not participate sometimes oppose the ideas being presented. Harmonizing administrative processes with field work, building on existing capabilities, managing clear objectives, applying validated methodologies, treating key groups or individuals with special care, and training trainers are additional ideas to help conduct effective institutional building programs.⁹

Extension workers and community promoters are essential parts of any awareness raising or technical assistance program. The selection of these individuals must be done carefully, since not everyone has the skills needed to communicate properly with farmers and community leaders and/or national level stakeholders. To function properly they need to be trained and provided with proper salaries, mobility, and educational materials needed to promote best practices and conservation of important ecosystems.

Waste Management plays an extremely important role in health, the conservation of natural resources and the sustainability of the watershed. Dumping garbage and other pollutants along the roadside, in streams or lakes is a crime and should be punished by law. Properly managed waste can benefit the community socially and economically by recycling and reusing waste. Source reduction, recycling and composting, waste transportation and landfilling are four major activities of good waste management programs. These activities can be undertaken either individually or by institutions and organizations. To ease the pressure on stakeholders, privately-managed companies now exist that do a good job at managing waste, if properly supervised.

Conflicts over land tenure, leadership, water distribution, and mining concessions are common in the Andes. Avoiding, defeating, compromising, accommodating, and collaborating are five strategies frequently used to manage these conflicts. A “win-win” approach, however, is probably the best. This means to negotiate agreements that are mutually beneficial, mutually satisfying. This approach helps people understand each other’s needs and desires, mend or enhance relationships, and to devise new solutions to old problems.¹⁰

Crime and corruption. Although most rural development projects are not designed to fight these deterrents, they can take actions to contribute to their defeat. Openly

⁹ UNEP. (2015). Ways to Increase Efficiency in Capacity Building for Environmental Programs. Retrieved from <https://www.unpei.org/sites/default/files/PDF/institutioncapacity/Ways-to-increase-effectiveness-SD.pdf>

¹⁰ Pfeifer, E. (2018). Eight steps to a win-win strategy. Retrieved from <https://www.linkedin.com/pulse/negotiate-passion-8-steps-win-win-ervin-pfeifer/>

embracing key principles and commitments such as transparency, honesty, rule of law and actively collaborating with local crime fighting institutions can help combat these ills. Hiring honest people, dealing only respected institutions or partners, reporting acts of corruption to proper authorities, helping cleanup of parks, organizing recreation and sporting events, and avoiding high crime areas are other actions that can help deal with these concerns.

d. Project Component 4: Monitoring and Evaluation

Timely monitoring and evaluation (M&E) helps fight off failure, allowing the development effort to adapt, correct errors and take advantage of opportunities that appear during the project execution phase.

A good M&E system consists of four parts: 1) Monitoring that involves the constant review of project activities, products, and results; 2) Evaluation that seeks to determine if project objectives are or will be achieved; 3) Risk management that identifies and eliminates risks that might cause the project to fail; 4) Adaptive management where changes are made in order to guarantee the end success of the intervention.¹¹

A Logical Framework (LF) guides the execution and M&E processes by providing an overview of the project objectives, activities and outputs, outcomes, impacts, timeline, and the resources needed for project execution. Conducting a Theory of Change exercise will help elaborate a more understandable and effective LF by offering a comprehensive description of how and why a desired change will or is expected to happen in a determined context.¹²

IV. Project Indicators

Indicators are the foundation of a M&E system. They are clues, signs or markers that evaluate one or more aspects of a project and to show how close it is to its desired development path and outcomes. Project indicators that are formulated according to SMART criteria (Specific, Measurable, Achievable, Relevant, and Time-bound) work best. Indicators that are applied using SPICED principals (Subjective, Participatory, Interpretive, Cross-checked, Empowering to women and majority groups and Diverse) assist in bringing the desired changes sought by the intervention.¹³ When drafting project indicators, it is also necessary to carefully consider the development goals of each major stakeholder. For example,

¹¹García, V. (2015). Fases de Monitoreo y Evaluación de Proyectos. Retrieved from https://www.academia.edu/9593930/Fase_Monitoreo-y-Evaluacion-de-proyectos_Victor-Garcia

¹² Center for the Theory of Change. (2019). What is the Theory of Change? Retrieved from <https://www.theoryofchange.org/what-is-theory-of-change/>

¹³ Bours, D. (2017). From S.M.A.R.T. to cream and S.P.C.I.E.D. indicators. Retrieved from <https://www.linkedin.com/pulse/20141031111752-18927814-from-s-m-a-r-t-indicators-to-cream-and-spiced/>

reciprocity, solidarity, co-responsibility and respect for diversity are life goals shared by many indigenous communities.¹⁴

Figure 2 presents examples of project indicators for components cited in the Watershed Management Framework presented in Figure 1. Comparing these indicators with related baseline data collected at the very beginning of project is the proper way of measuring these indicators.

Figure 2: Examples Development Indicators for Project Components

| Project Component 1: Awareness and Profitability | |
|---|--|
| 1 | At least one local organization permanently conducts watershed awareness and technical assistance programs. |
| 2 | 30% or more of farm families apply at least one best practice and one water regulatory ecosystem conservation scheme. |
| 3 | 50% or more of participating farm families apply Action Research, increasing family income by 100% or more. |
| 4 | 50% of farmers taught teach other farmers Action Research. 50% of the trainers are women and 10 % are from minority groups. |
| Project Component 2: Sustainability and Expansion | |
| 1 | In year 6, at least 7 legal instruments are in place that support the watershed management. |
| 2 | A WMC is consolidated in the second year. The committees produce and initiates a WMP in year 3 of the project, using participatory planning methods. |
| 3 | A Water Fund is created in the fourth year. 100% WMC and WMP is financed by this fund in the fifth year. |
| 4 | 80% of farm families participate in the WMP in the fifth year. In the seventh year, income of participating families increases by 200% or more. |
| 5 | 80% of the water regulating ecosystems are protected in year eight, creating jobs and income for participating farm families. |
| 6 | 5 Partnerships agreements are signed and in operation by year 4. |
| Project Component 3: Adversities and Solutions | |
| 1 | Approval ratings of key stakeholder institutions and organizations have improved by 50% by year 6. |
| 2 | 20 or more extension workers and community promotoros are trained, salaried, well equipped and revered by rural communities. |
| 3 | 90% reduction of personal and institutional conflicts in year 8. |
| 4 | Polluting entities start cleanup operation from year 1. Pollution of lakes, streams y soils is reduced by 50% by year 5. |
| 5 | Crime and corruption has not affected project development to any great extent. |
| Project Component 4: Monitoring and Evaluation | |

¹⁴ Fuentes, S. (2019). Tesis de Grado. **Gestión sustentable de los recursos naturales desde la visión de los pueblos y nacionalidades de Imbabura y Esmeraldas. Universidad Técnica del Norte, Instituto de Postgrado** Maestría en Gestión Sustentable de los Recursos Naturales. Ibarra Ecuador.

| | |
|---|---|
| 1 | M&E system initiated in year one, indicators formulated using SMART criteria and applied considering SPICED principals. |
| 2 | Logical Framework modified periodically considering lessons learned M&E |
| 3 | 90% of project goals reached in year 10. |

USAID, FAO, IUCN, UNDP and others have developed compendium of natural resource management and sustainable development indicators. Before formulating indicators for your watershed management effort, these sources should be consulted.

V. Conclusions

While in office Mr. Ban Ki-moon, former Executive Secretary of the United Nations proposed “To Save our planet, get people out of poverty, promote their growth ... is one and the same struggle. To win this fight, we must connect the dots between climate change, water scarcity, lack of energy, health, food security, biodiversity, and the empowerment of women.” António Guterres, the present Secretary-General of the United Nations, writes “We must prioritize sustainable consumption and production—a way of life that enables economic growth, while ensuring planetary protection.” As shown, watershed management projects are in line with both of these proposals.