

Inalí River and Tapacalí River Sub-watersheds: Ideal Territorial Units to Implement Disaster Risk Reduction, Climate Change Adaptation, and Ecosystem Management and Restoration Processes



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In the Madriz Department, the Partners for Resilience (PFR) Partnership is working in 28 vulnerable communities in four municipalities (Somoto, San Lucas, Las Sabanas, and San José de Cusmapa) of the Inalí and Tapacalí rivers sub-watersheds, tributaries of the Coco River. A total of approximately 20,000 people live in both territories. Inhabitants face typical problems of the Central American Dry Corridor: their livelihoods depend largely on the rains, which are increasingly unpredictable due to climate variability and climate change, and they face a recurrent and severe risk of drought.

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Farming and cattle-raising are the main productive activities generating economic income for local inhabitants. Most families produce staple foods (beans and maize); other families grow coffee, which has been affected by disease. Several communities are also exposed to risks like landslides, water erosion, forest fires, lack of communication due to overflowing rivers and brooks and flooding.

The degradation of natural resources in the sub-watersheds is due to the prevailing type of subsistence agriculture and extensive cattle farming. The changes in land use, deforestation, and the lack of adoption of good farming and environmental practices have increased vulnerability to disaster risk, increased by climate change.

As a result of the awareness-raising process, residents recognize that there has been damage to ecosystems, as we can see in the following testimonial. *"I am sorry and sad because when I arrived in the community more than 40 years ago, it was all forest with very leafy trees, and I was the one who, chainsaw in hand, depleted these forest areas."*

Reflection from a community member who participated in the Environmental Awareness and Motivation Workshop in La Fuente community, Tapacalí river sub-watershed.



Panoramic view of the Inalí River Sub-watershed from the road leading to Las Sabanas
 Photo credit: Nicaraguan Red Cross

As of 2007, Nicaragua has a National Water Law (Law 620), which establishes the principles for the administration and protection of water resources and has facilitated the institutionalization of Watershed Management Plans and their administration and management structures.

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The PfR Program believes that focusing on watershed administration and management is a way to integrate the three main topics of this Program (disaster risk management, climate change adaptation, and ecosystems management and restoration), in addition to integrating the important issue of land use management.

In this context, the Program supports the creation of comprehensive, integrated administration and management plans for the Inalí and Tapacalí rivers sub-watersheds, in order to provide local stakeholders with a planning instrument that will allow them to make the appropriate decisions related to the sustainable use and exploitation of the natural capital that the two water units offer, and improve the level and quality of life of the population who live in both territories.

“A well-managed watershed is a source of natural resources that generate life.”

Comments from a group of community members of the Inalí river sub-watershed who participated in the 2nd Encounter of the Community Diploma.



Community diploma participants
Photo credit: Nicaraguan Red Cross

Involvement of local stakeholders in the process of drafting integrated administration and management plans for the sub-watersheds

In order to begin with the program's intervention, two academic diplomas for representatives of mayoral offices, institutions, NGOs, and cooperatives were developed with the purpose of providing them with the necessary knowledge and tools to actively participate in the development and implementation of management plans for the sub-watersheds where they live and/or work. The academic institutions that implemented the diplomas were the Regional Multidisciplinary Faculty of the National Autonomous University of Nicaragua (UNAN-FAREM) and the Centroamerican University (UCA), which developed academic programs linking watershed management, disaster risk management, and climate change adaptation. Moreover, at community level, a community diploma was organized for the management committees of both sub-watersheds.

Meetings to present the plan drafting process were held at municipal level to obtain approval by the Municipal Councils of San José de Cusmapa, Las Sabanas, San Lucas and San Marcos de Colón-Honduras. At institutional level, the authorization for the drafting of Watershed Plans was received from the National Water Authority (ANA) and the initiative was presented to the Ministry of Environment and Natural Resources (MARENA).



Higher Diploma participants (UCA-NRC agreement)
Photo credit: Nicaraguan Red Cross



Participation and involvement of local actors are essential to draft a good, integrated administration and management plan for a watershed. Starting with this premise, a gap analysis and mapping of actors who have a presence in the territory were facilitated in the Tapacalí river sub-watershed. The 30 participants of the higher academic diploma given by Universidad Centroamericana facilitated a series of three workshops in each one of the 20 communities of the sub-watershed on environmental considerations and motivation, mapping and participatory analysis of natural resources, and socio-environmental assessments. More than 1,000 residents of the sub-watershed were reached through these workshops. Jaime Antonio Vílchez Escalante, a farmer in the community of Miramar in the municipality of Las Sabanas, explained that this was the first time that many communities were involved in environmental education.



Community members from El Espino, municipality of San Lucas, Tapacalí River sub-watershed
Photo credit: Nicaraguan Red Cross

For the drafting of the Inalí river sub-watershed management plan, a study of Socially- and Environmentally-Sensitive Areas (ASAS, acronym in Spanish) was carried out, and links are being established with government institutions (Ministry of Health, Ministry of Environment and Natural Resources) and the mayoral offices of San Lucas and Las Sabanas in order to obtain secondary information about the territory. The creation of the plan entails the following activities:

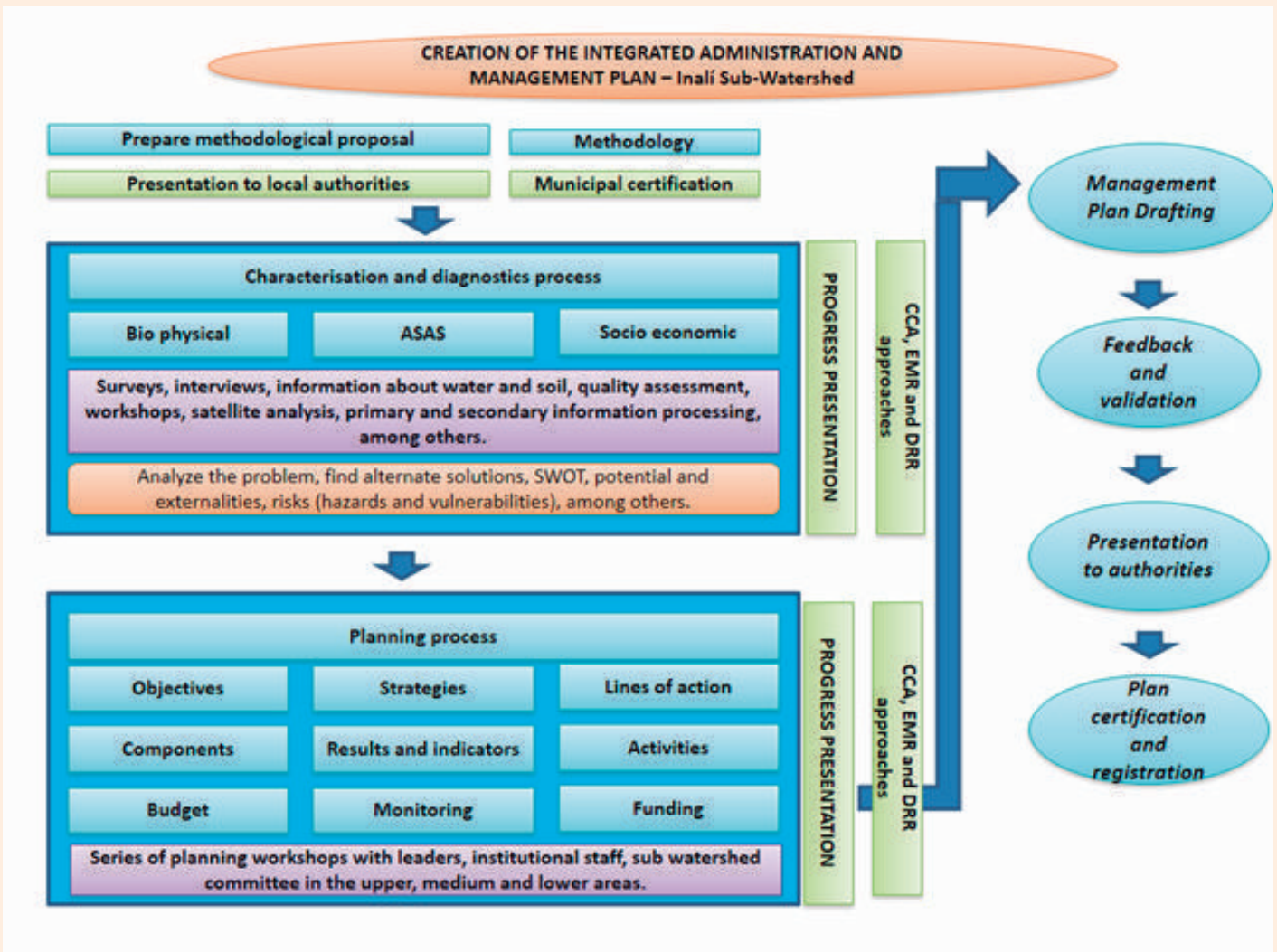


Figure 2. Methodology used to draft the Integrated Administration and Management Plan of the Inalí river Sub-watershed



Results of the Planning Process

The Nicaraguan Red Cross and CARE-Nicaragua, accompanying the municipal governments of San Lucas, Las Sabanas and San José de Cusmapa, are supporting the drafting of the integrated administration and management plans of the Inalí River and Tapacalí River sub-watersheds, providing a planning instrument for local stakeholders present in the territories.



Participants of the higher academic diploma using one of the training tools
Photo credit: Nicaraguan Red Cross

The higher academic diplomas with UNAN-FAREM and UCA strengthened the technical knowledge of mayoral offices, representatives of institutions, cooperatives, and NGOs carrying out actions in the territories of the sub-watersheds. They will play a key role in the validation and implementation of management plans. These actions are aligned with three resilience principles defined by the PfR Partnership: strengthen institutional resilience, promote the learning, and integration of disciplines and approaches.

Technical staff from Wetlands International, the Nicaraguan Red Cross, CARE, INPRHU, and AMMA, in coordination with the Centroamericana University also facilitated a community diploma aimed at 34 community leaders and members of the Committees of both sub-watersheds with the purpose of encouraging community learning and self-management. This allowed the strengthening of local capacities for community stakeholders in order to guide the implementation process of the plans. A total of 20 user-friendly brochures were drafted for the teaching-learning process in the community diploma, which may be used at schools located in both sub-watersheds and institutions that wish to resume the awareness-raising campaign to promote solidarity in environmental issues in all communities.



Community member from Quebrada Honda, Municipality of Las Sabanas, Community diploma
Photo credit: Nicaraguan Red Cross

⁵PfR Principles: Strengthen institutional resilience, stimulate learning, integration of disciplines and focuses. Source: A New Vision for Community Resilience: <http://www.climatecentre.org/downloads/File/PfR/PfR%20Resilience%20vision.pdf>

The participation of stakeholders in community workshops to establish socio-environmental assessments contributed to the development of sub-watershed management plans that are customized to the reality of each territory. These workshops provided moreover the opportunity to create democratic participation spaces in the decision-making process and local level empowerment.

A strategic planning workshop was held with the committees of both sub-watersheds with the purpose of drafting their corresponding Annual Operating Plan 2014 and internal regulations for their structure and operations. Through these actions, committees now possess basic tools to lead the implementation process of both plans, and have strengthened their community self-management capacities⁶.

In 2013, nine technical studies were conducted in the Tapacalí river sub-watershed: exposure to disaster risks (floods, drought, erosion, landslides), soil quality, water resource inventory and characterization, water quality in the Tapacalí river and its tributaries, water balance (water supply and demand), and an agro-climatic study with a climate change adaptation approach. In addition, biophysical, socio-economic, institutional, and legal assessments were carried out, and a thematic mapping of the sub-watershed was developed, which allowed the drafting of the sub-watershed atlas. This information has its own database, which will be donated to the municipalities sharing this territory. The integrated sub-watershed administration and management plan will be drafted for the short, medium and long terms. In order to facilitate dissemination at community level, the plan will be designed in a popular version after the planning instrument has the technical approval of the National Water Authority (ANA) and has been disseminated among institutions and recognized at the local level by municipal governments through municipal ordinances.



Participants of the higher diploma participated in the information gathering process of the Tapacalí River sub-watershed studies.
Photo credit: Nicaraguan Red Cross

The development of a baseline in both sub-watersheds with their corresponding indicators (water monitoring, reforested areas, adoption of soil and water conservation actions) will be useful to monitor and assess the impact of the actions in the integrated administration and management plans for both sub-watersheds.

Lessons Learned

The facilitation of higher academic diplomas aimed at technical staff of mayoral offices, institutions, and non-governmental organizations of the sub-watersheds and of the community diploma for the management committees in both sub-watersheds raised the awareness and provided training to those who will play a significant role in the drafting and implementation of management plans.

The facilitation of a community diploma program by PfR partners, in coordination with UCA, was very successful. Reyna Isabel Baez Muñoz, who represented the indigenous people of Cusmapa in the community diploma program, said that this was her first opportunity to participate in this type of environmental education and praised the practical side of the diploma.



Community diploma participants during their practice sessions.
Photo credit: Nicaraguan Red Cross

⁶PfR Principle: promoting community self-management. Source: A new vision for community resilience http://www.preventionweb.net/files/29835_pfrresiliencevision.pdf

⁷PfR Principles: working at different times, recognizing comprehensive geographic scales.

For example, participants visited protected areas, and witnessed the difference in the health of wildlife and vegetation in protected areas compared to areas without protection. Thus, the effects of deforestation and water pollution became tangible for them. Another important result of the program was the establishment of leader networks with environmental awareness in sub-watershed territories. Jaime Antonio Vilchez Escalante, farmer from the Miramar community, felt good about sharing experiences with others from the sub-watershed territory, since almost all participants share the same goal: to manage the sub-watershed more sustainably.



The confluence of the Comalí and Tapacalí streams gives birth to the Coco River.
Photo credit: Nicaraguan Red Cross

The support provided by PfR partners (CARE and the Nicaraguan Red Cross) and UCA to develop planning instruments at watershed level by using a participatory planning process makes sub-watershed management plans for Tapacalí and Inalí rivers consistent with the objectives, purposes, and prospective vision that local actors have for the sustainable human development of both sub-watersheds.

The dissemination of the participatory environmental methodology to local authorities (Municipal Councils) before the development of the planning process in the territories allowed Municipal Governments to learn about the entire process and encouraged them to participate in it. In addition, respect for Municipal Autonomy was promoted.

The facilitation of the participatory environmental planning process used to elaborate the sub-watershed integrated administration and management plans allowed the integration of the PfR Program principles into said process and highlighted the importance of linking Disaster Risk management, Climate Change Adaptation, and Ecosystem Management and Restoration.

This experience can be replicated in other sub-watersheds of the country by establishing strategic alliances at institutional level as well as consensus and co-management processes.



Mrs. María Elena Díaz, Municipal Mayor of San José de Cusmapa
President of the Tapacalí River Sub-watershed Committee
Photo credit: Nicaraguan Red Cross

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