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## **Citizen participation in managing water**

*Do Conversatorios generate collective action?*

Diana Córdoba

Douglas White

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*Cover photo:* CPWF and WWF - Participants of the CAC, Fuquene, Cundinamarca, Colombia.

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Sustaining Collective Action Linking Economic and Ecological Scales in Upper Watersheds (SCALES/  
PN20).

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# Table of contents

Abbreviations and acronyms	v
Executive summary	vi
<b>Introduction</b>	<b>1</b>
<b>The SCALES project</b>	<b>2</b>
Conceptual framework	4
Conversatorios of Citizen Action (CAC)	6
<b>Evaluation methodology</b>	<b>10</b>
Interviews and social network analysis	11
Participatory video	12
Semi-structured interviews	12
Review of secondary data	13
<b>The Coello watershed</b>	<b>14</b>
Project partners and participants in Coello	18
Overview of the CAC process in Coello	19
<b>Evaluation of outcomes</b>	<b>24</b>
Outcome 1: Increased awareness of water issues	24
- Changed perceptions and attitudes of watershed residents	24
- Improved understanding of environmental externalities	25
Outcome 2: Stronger links amongst community environmental organizations	26
Outcome 3: Enhanced local capacities and relationships with authorities	28
- Committees empowered	29
- Recognition and appreciation of the role of women	30
- Empowerment of a key local NGO ( <i>Semillas de Agua</i> )	31
- Increased public agency participation	32
Outcome 4: New priorities and commitments for environment-friendly land uses	34
- Community commitments	34
- Organizational commitments	35
<b>Discussion</b>	<b>37</b>
Factors influencing the success of the CAC process	37
1. Local leadership	37
2. Prior collaborative experiences on projects	38
3. Effective capacity-building and awareness-raising	38
4. Supportive political and socioeconomic context	40
<b>Conclusions</b>	<b>25</b>
Summary of findings	41
Costs and benefits	43
Generation of international public goods	43
Next steps	44
Lessons	44
Semi-structured interviews (list of participants)	45
References	46
Appendix 1. Most significant change story	48
Appendix 2. Agreements reached during the CAC meeting	50

## Figures

Figure 1.	Conceptual framework: Multi-scale collective action in watershed management	4
Figure 2.	Watershed interactions: Context, action arena, and outcomes	5
Figure 3.	CAC phases, participants and expected outcomes	6
Figure 4.	SCALES impact pathways identified October 2006	9
Figure 5.	Geographic location of Tolima Province and Coello River watershed	14
Figure 6.	Network map of community, watershed and training links	27
Figure 7.	Gender of participants linked together through the SCALES project	31

## Tables

Table 1.	Summary of project information	2
Table 2.	Funding provided, cash and in-kind (US\$)	3
Table 3.	Interview characterization: Participant groups and locations	11
Table 4.	Coello watershed problems	17
Table 5.	Project partners, experience and role in the Coello CAC	18
Table 6.	Coello organizations and CAC participation	23
Table 7.	Summary of project participation	25
Table 8.	Type of social link and relation to project	26
Table 9.	Links formed by the SCALES projects between different parts of the basin	26
Table 10.	SCALES project experience/benefits per participant group	29
Table 11.	Perceived problems at the watershed level	39
Table 12.	Evaluation questions and answers	42

## Boxes

Box 1.	The MSC story	10
Box 2.	Better relationship between communities and organizations	28
Box 3.	Public agency perspectives of the CAC and SCALES project	33
Box 4.	Community perceptions of environment-friendly agricultural production	34
Box 5.	Examples of organizational commitment	36

# Abbreviations and acronyms

ANDI	Asociación Nacional de Empresarios de Colombia
APACRA	Asociación de Productores Agroecológicos del Río Anaime (Association of Producers from the Anaime River Watershed)
ASDES	Corporación Asesorías para el Desarrollo
CAC	Conversatorio of Citizen Action
CEMEX	Cement Factory
CIAT	International Centre for Tropical Agriculture
CONDESAN	Consortium for the Sustainable Development of the Andean Region
CORMAGDALENA	Corporación Autónoma Regional de Magdalena
CORPOICA	Corporación Colombiana de Investigación Agropecuaria (Colombian Agency for Agricultural Research)
CORTOLIMA	Corporación Autónoma Regional del Tolima (the Departmental Development Corporation - Regional Environmental Agency of the Tolima Province)
FARC	Revolutionary Armed Forces of Colombia
ICA	Instituto Colombiano Agropecuario
ICRAF	International Centre for Research in Agroforestry (Kenya)
IDEAM	Institute of Meteorology, Hydrology and Environmental Studies
IFPRI	International Food Policy Research Institute
INCODER	Instituto Colombiano de Desarrollo Rural
INGEOMINAS	Colombian Institute of Mineralogy and Geology
PAT	Three-Year Action Plan
R&D	Research and Development
SENA	National Apprenticeship Service – Colombia
UMATA	Unidad Municipal de Asistencia Técnica Agropecuaria
UNIANDES	Universidad de los Andes
USOCOELLO	Water Users' Association of Coello
WWF	World Wildlife Fund



# Executive summary

A central challenge for effective watershed management is improving the welfare of residents who live in upper catchments while providing adequate environmental goods and services to people and areas downstream. A CPWF project, Sustaining Collective Action Linking Economic and Ecological Scales in Upper Watersheds (SCALES), addressed this challenge in three sites.<sup>1</sup> This document is an evaluation of a project activity that intended to enhance collective action in one site: the Coello watershed of Colombia.

Collective action can influence how people use and manage natural resources. It is a process by which voluntary institutions (e.g., rules and regulations) are created and maintained, often with the aim of improving human and environmental welfare and, especially for water resources, it typically involves a broad range of stakeholders who control, use and benefit from water. Examples of stakeholders include government, private businesses, landowners, farmers, and city dwellers.

The SCALES project researched and fostered collective action. The *Conversatorio of Acción Ciudadana (CAC)* served as the collective action mechanism to promote civil society participation in public policy decisions. Supported by the Colombian constitution, the legal power of CACs enable communities to discuss policies and reach agreements with government authorities.

People in the Coello watershed confront water problems that affect their livelihoods. Contamination and deforestation are two major causes of water resource degradation, in terms of both water quality and flow regulation. Specifically, fertilizer contamination of water supplies and sedimentation of waterways negatively affect downstream communities. The watershed also faces competition for water supplies. Water is extracted from natural waterways for both rural irrigation and urban household consumption.

A CAC is more than a large meeting to talk and make decisions. The CAC is a four-phase process that enhances the effectiveness of local participation: (1) awareness-raising, (2) capacity-building and preparation (3) CAC implementation, and (4) review and planning. The CAC mechanism has brought together diverse actors and fostered collective action across spatial and social scales. Many types of actors have participated, including local NGOs, upstream and downstream community representatives, politically important actors (at municipal, provincial and national levels) and scientific experts in research and development (R&D).

The objective of this review is to evaluate the impact of the CAC process. Evaluation methods included analysis of SCALES project reports and documentation on impact pathways, interviews and social networks. The intended project outcomes, as identified by the project implementers themselves, served as the starting point for the analysis. These expectations were contrasted with identifiable project outcomes. A social network analysis reviewed contextual conditions, mechanisms of intervention, and processes that led to the project outcomes. The evaluation also analyzed interviews with project participants. Some interviews employed techniques of video data collection, where project participants

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<sup>1</sup> Nyando, Kenya; Fuquene, Colombia; Coello, Colombia.



interviewed key actors regarding their perceptions and opinions of project outcomes and likely impacts.

Results of the project evaluation reveal that the CAC process effectively fosters collective action in watersheds communities. Capacity-building activities of the project contributed to communities participating in meetings with multiple organizations and making collective decisions. In addition, dialogue and networking activities increased organizational and political support for communities and local NGOs. This is an example of higher-level organizations (i.e., subnational, national and international) working with lower-level organizations and communities; in other words, cross-scale collaboration.

Key outputs of the CAC process included 27 agreements with government authorities with financial commitments of over US\$2 million. These agreements included projects for conservation, resource management, agricultural production systems and potable water systems.

The project produced four outcomes:

1. *Increased awareness of water issues amongst people in the watershed.* Distinct problems and experiences from the upper, middle and lower areas of the watershed were shared. Better understanding of others' perspectives provided incentives for communities to jointly resolve problems and establish agreements.
2. *Strengthened links amongst community and environmental organizations.* The CAC provided a forum for community-based organizations (CBOs) and nongovernment organizations (NGOs) to communicate and build support for their agendas with both communities and government agencies. Such interactions enabled organizations to establish partnerships and obtain additional public-sector funds.

3. *Enhanced local capacities and relationships with authorities.* New knowledge helped clarify citizen rights, along with roles and responsibilities of organizations. The CAC generated dialogue and, in turn, commitments of government organizations to work on issues raised by communities.
4. *New priorities and commitments for environment-friendly land uses.* The agenda of the CBOs, NGOs and public-sector agencies broadened beyond water to include land uses such as agriculture, power generation and forests. Specific development and conservation practices included organic farming, waste management, forest management and reforestation.

Evaluation results show that the CAC process has the potential to become an international public good/method that can (a) facilitate community access to knowledge, technology and skills, and (b) enable them to participate in decision-making processes in managing water and other natural resources. Given the relatively short time frame between project and evaluation, impacts cannot be realistically assessed. Social change processes and associated impact require years to evolve and grow. Nevertheless, the project activities and outputs have laid important groundwork for longer-term economic, social and environmental impacts.

Although the CAC process benefits from the support of Colombian constitution, similar effective collective action projects could be achieved in other locations despite not receiving such support. Civic organizations (CBOs or NGOs) can influence government decisions. As lobbying pressures and accountability for actions increase, government agencies themselves will have greater incentive to perform. The CAC process connects the people with authorities, thereby improving decisions and actions.



# Introduction

The evaluation of collective action with the project, *Sustaining Collective Action Linking Economic and Ecological Scales in Upper Watersheds* (SCALES), focuses on project activities within the Coello watershed of Colombia. Serving as a means to advance project objectives, conversatorios of citizen action (CAC, the Spanish acronym) were organized and implemented. The CAC is both a discussion forum and legal mechanism through which communities can reach agreements with authorities on specific issues of concern.

This evaluation is one of four commissioned by the 'Adoption and Cost-Benefit Analysis Project' of the Challenge Program on Water and Food (CPWF). From the CPWF's 50 plus projects, management and Theme Leaders selected the four most noteworthy stories of most significant change (MSC). The evaluations reviewed:

- PN10: Coastal Resource Management for Improving Livelihoods
- PN16: Developing a System of Temperate and Tropical Aerobic Rice
- PN20: Sustaining Collective Action Linking Economic and Ecological Scales in Upper Watersheds (SCALES)
- PN28: Multiple Use Systems

The SCALES project researched a process of natural resource management. The objective of this review is to evaluate the impact of the CAC process, the lessons learnt, how the mechanisms worked and in which contexts.

The report contains seven sections.

1. The introduction summarizes the objectives and results of the SCALES project.
2. The second section presents the analytical framework and methodology of the adoption and cost-benefit analysis.
3. Section three presents the biophysical and socio-political context of the study site.
4. The fourth section describes the research and development (R&D) process of the SCALES project.
5. Section five presents the results of the SCALES project evaluation, including the MSC, social network and project influence analysis in the Coello Basin.
6. Section six discusses the contribution of the CAC in the generation of public goods and compares the results of collective action research amongst the two study sites in Colombia.
7. The conclusion identifies the lessons learnt and areas for further research.

The report also includes two appendices.

- Appendix 1 contains the entire MSC story, and
- Appendix 2 summarizes the commitments of public-sector agencies resulting from the CAC meeting.

# The SCALES project

The SCALES project advanced R&D activities. In addition to fostering collective action, the project examined development processes to draw lessons to share with project participants and increase global knowledge.

The project goal, during its 3-year project period, was to contribute to poverty alleviation in the upper watersheds of the tropics through improved collective action for watershed resource management within and across social-spatial scales. Specific objectives were to:

- Understand how collective action can significantly reduce poverty, and identify the best forms of collective action to achieve such beneficial impacts.
- Strengthen the participation of women, the resource poor, and other marginalized groups in the collective management of watershed resources.
- Improve the integration of collective action in natural resource management from local to the watershed levels.
- Contribute to the development of professional capacities that support collective action and poverty analysis within work activities conducted in the watershed.
- Develop applicable policy tools, norms, and recommendations for use within the Coello and Fuquene watersheds and contribute a global literature of collective action experience.

In Table 1 a summary of project information is presented.

Table 1. Summary of project information

Project Number	CPWF PN20
Project name	Sustaining inclusive Collective Action that Links across Economic and Ecological Scales in upper watersheds (SCALES)
Duration of project	3 Years, December 2005 – May 2007
Location of the project	Nile and Andes
Funding body	CPWF
Funding amount from CPWF	US\$785,662
Matching funds from participating institutions	US\$305,400
Related CPWF projects	Theme 2 - 50% Theme 4 - 25% Theme 5 - 25%

Source: CPWF 2005.

The SCALES project was funded through the CPWF-CIAT and the partners of the project. The budget requested from the CPWF-CIAT was US\$238,506, with a further US\$547,157 (cash and in-kind) as matching funds from project partners.

In Table 2 a distribution of the budget by each partner is presented.



Table 2. Funding provided, cash and in-kind (US\$)

	2005	2006	2007	Total
CPWF	144,798	48,347	45,360	238,506
IFPRI	9,975	8,453	10,385	28,812
ICRAF	21,945	18,270	18,900	59,115
UNIANDES	30,577	50,274	36,309	117,160
MASENO	58,687	27,846	14,742	101,275
WWF	27,623	16,128	3,549	47,300
Humedales F., Fuquene NGO	10,000	10,000	5,250	25,250
Semillas de Agua, Coello NGO	30,397	25,000	0	55,397
SANA	12,000	17,000	41,000	70,000
CONDESAN	36,784	6,064	0	42,848
<b>TOTAL</b>	<b>382,786</b>	<b>227,382</b>	<b>175,495</b>	<b>785,662</b>

Note: IFPRI = International Food Policy Research Institute. ICRAF = International Centre for Research in Agroforestry (Kenya). UNIANDES = Universidad de Los Andes. MASENO = Maseno University. WWF = World Wildlife Foundation. SANA = Sustainable Aid in Africa International.. CONDESAN = Consortium for the Sustainable Development of the Andean Region.

Source: CPWF 2005.



La Vieja River, Quindío, Colombia, at the mouth of the Roble River

Source: Wikipedia

The following subsections summarize the conceptual framework of the project and describe the CACs as applied in Colombia.

### Conceptual framework

The conceptual framework of the project proposes that watershed management is an inherently multi-scale effort (Johnson *et al.* 2006). Consequently, collective action around water management occurs simultaneously at multiple scales.

Three types of nodes are used to represent scales (Figure 1). Primary nodes represent physical locations in a watershed. Within primary nodes, local collective

action manages different types of water sources such as springs, wells, potable water systems or small-scale irrigation schemes. Secondary and tertiary nodes represent higher-level social/organizational frameworks of water management (e.g., subnational and national).

Between the primary nodes are upstream-downstream externalities termed “water transitions” of different water characteristics such as quality, quantity and availability. Management of such externalities may be possible via secondary organizational nodes that span two primary nodes, or via tertiary organizational nodes that cover the entire watershed (Swallow *et al.* 2006).

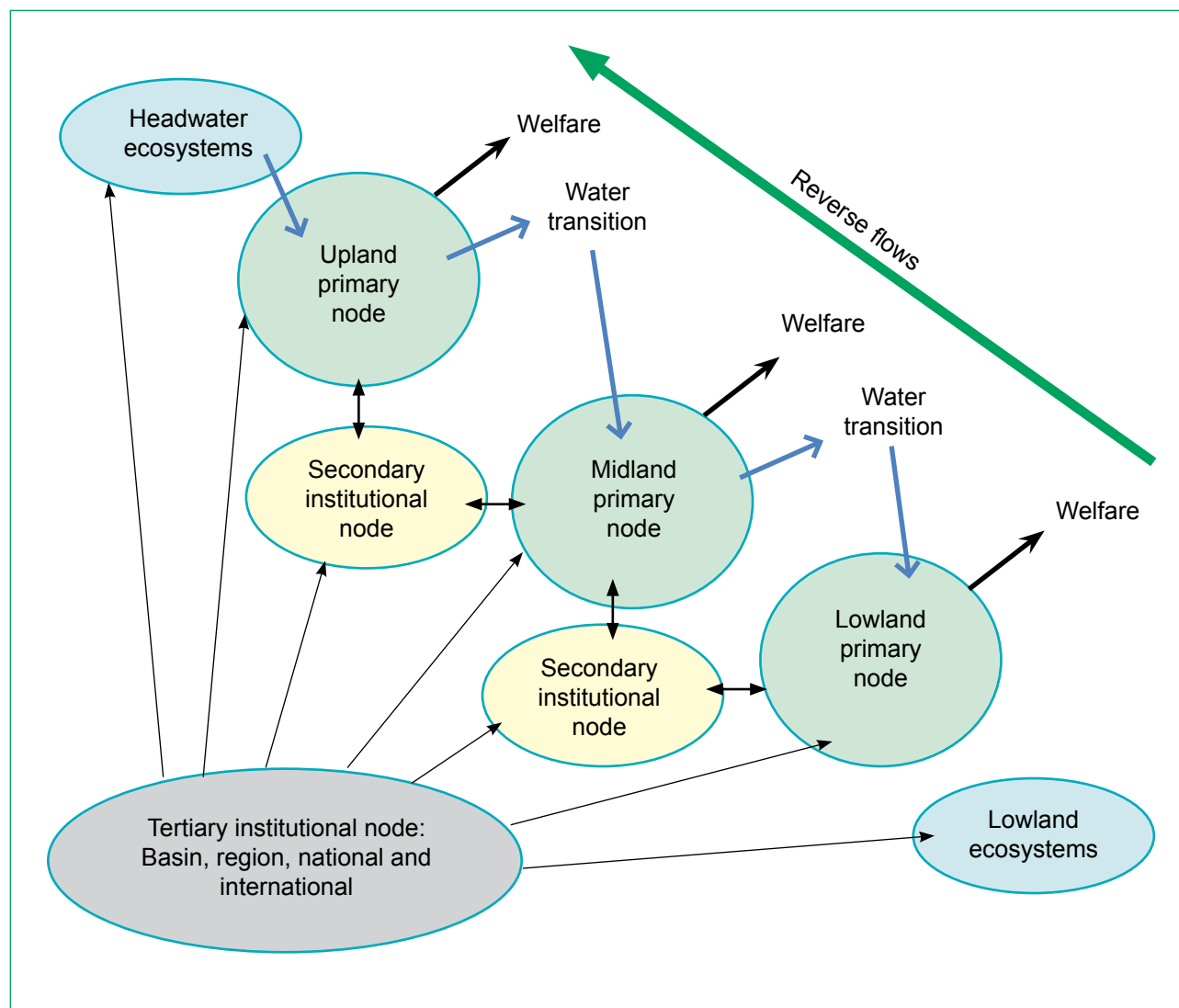


Figure 1. Conceptual framework: Multi-scale collective action in watershed management (Swallow *et al.* 2006)

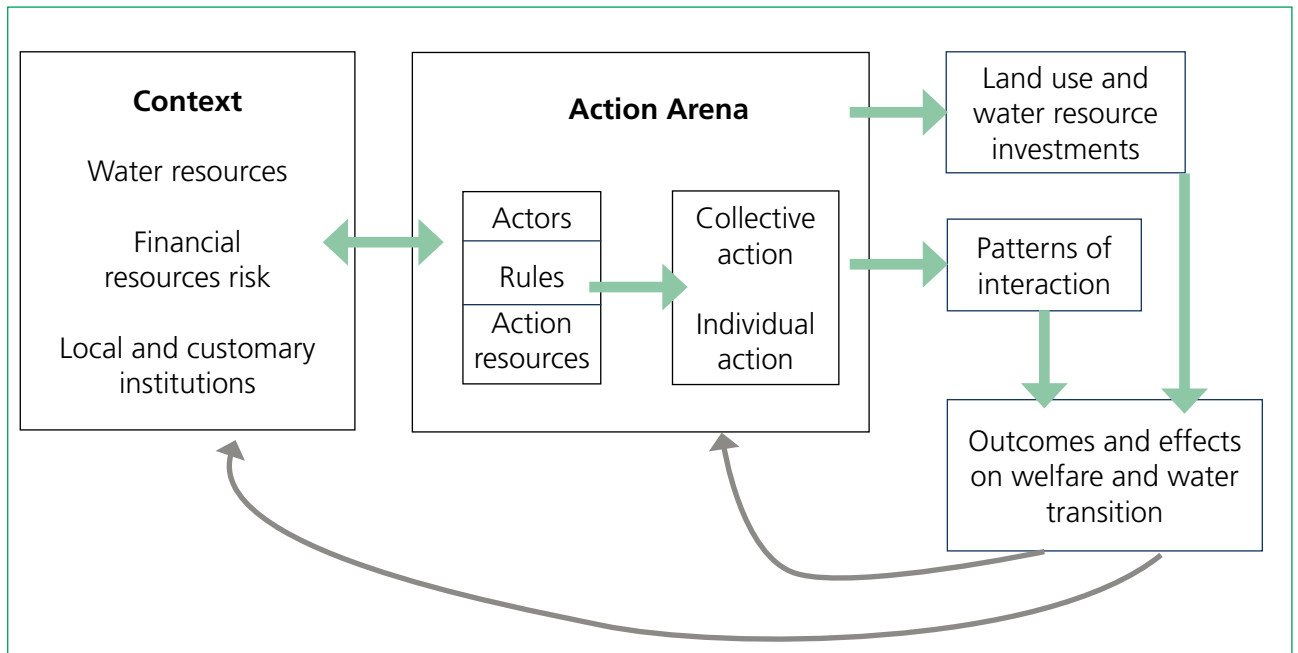


Figure 2. Watershed interactions: Context, action arena, and outcomes (Swallow *et al.* 2006)

In addition to downstream flows of water, economic, social and political resources may flow from downstream to upstream. These “reverse flows” typically correspond to the size and associated welfare impacts of the water transitions. For example, to protect downstream water supplies, downstream water users could use political influence to enact strict regulation of land use in upper catchments. Since this action would likely have a negative effect on upstream dwellers (reducing income or requiring substantial investments), a payment for an environmental services scheme could achieve similar environmental objectives with positive benefits to upstream livelihoods (Swallow *et al.* 2006).

Although Figure 1 identifies important hydrological and socio-political relationships across scales in watersheds, an understanding of how people, individually and collectively, function in such a context remains unclear. Adapted from di Gregorio *et al.* (2004) and Ostrom (2005), Figure 2 presents a framework for analyzing individual and group interactions within a watershed context.

Management decisions are made in an action arena: a socially-defined space composed of social actors,<sup>2</sup> action resources, rules, and actions. Institutions, formal and/or informal, frame the rules that determine which actions are possible. Formal institutions include regulations, laws, and policies whereas informal institutions are customs and traditions. Both types of organizations often operate at multiple, often overlapping, scales. In a given action area, “action resources” influence one’s ability to take actions or influence others. Action resources include assets such as rights to natural, physical and financial capital, as well as the social and human capital that actors are able to draw upon. Personal characteristics such as leadership ability, charisma, ethnic origin, ideology and value systems are related to human and social capital that also enable action (Swallow *et al.* 2006).

<sup>2</sup> Social actors are defined as “individuals or organizations that formulate and carry out decisions, are knowledgeable and capable –within the limits of information, uncertainty and other constraints– and therefore manage available resources to perform strategies to engage in processes of change and pursue their goals”.



**Conversatorios of Citizen Action (CAC)**

An objective of the SCALES project in the Coello River watershed was to foster collective action at different economic and ecological scales. To achieve this, the SCALES project had the implementation of CACs as a principal mechanism. CACs are a legal-political mechanism that allow communities to convene meetings with public and private organizations with the purpose of: (a) solving social, political, economic, educational, cultural and environmental problems, and (b) negotiating conflicts in the three relationships: Community-State, Community-Territory and between villages (Cantillo and Gonzales 2008).

In the CAC process, organizations that can help resolve communities’ problems are invited to the event by means of a formal letter. Legally, no mechanism forces the organizations to attend. Nevertheless, according to the Colombian Constitution, nonattendance by an official implies that the principle

of governability and the people’s sovereignty are not being adequately addressed by the public agency. The CAC process improves the flow of information between communities and government organizations that often restrict the capacity of communities from exercising their constitutional rights to participate and to hold their representatives and agencies accountable.

The 1991 Colombian Constitution is widely perceived to have redefined national government processes by fostering democratic participation, recognizing fundamental rights, creating judicial mechanisms to enforce them, and expanding access to decision-making spaces. Such processes were traditionally the domain of two principal political parties and the wealthy economic classes.

Since 1991, the government has continued this process by creating the legal framework for the realization of a rights-based society. For example, Law 134 of 1994 declares participation in public administration as a right, and commits the State to

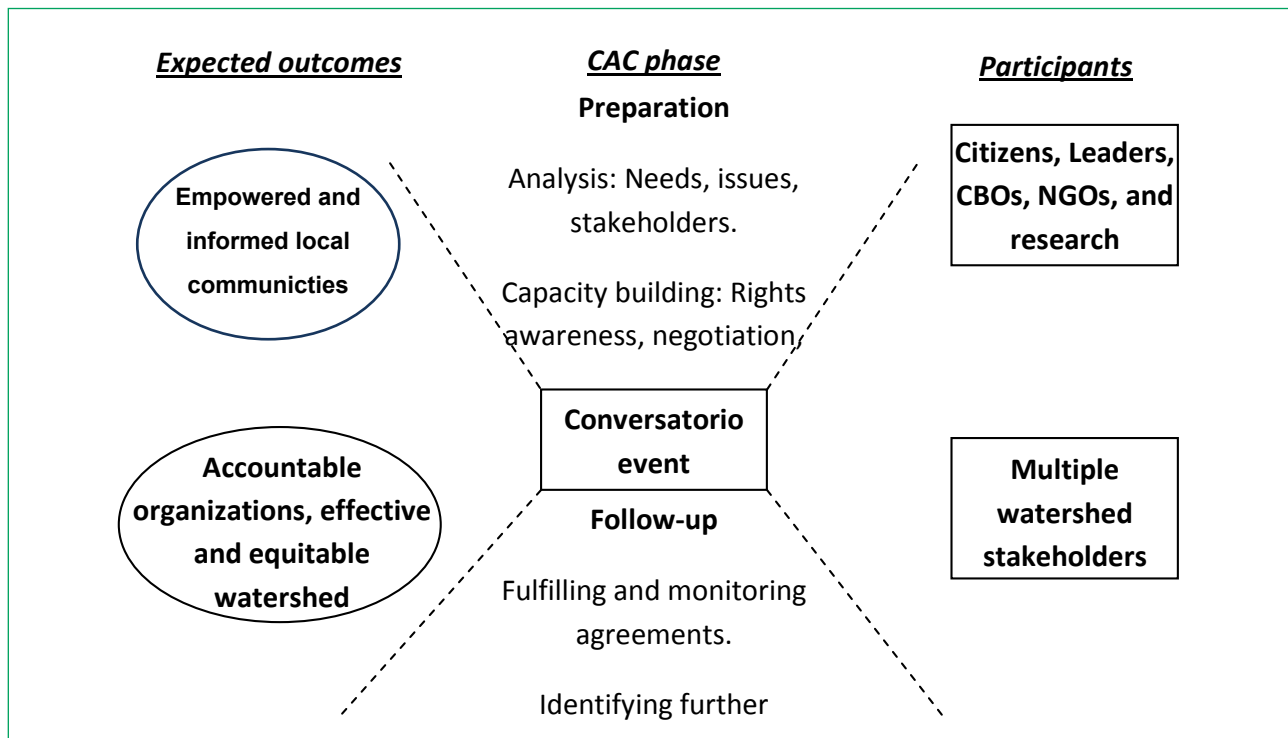


Figure 3. CAC phases, participants and expected outcomes (adapted from Beardon *et al.* 2008)

support the organization, funding and capacity of citizen's committees to monitor the use of public resources and the availability of public services. The law also provides for public engagement in decision-making in order to orient the state toward common interests and social benefits. Mechanisms for individual action were also established, such as the right to tutela under which an immediate court action can be requested by an individual who feels that their constitutional rights are being violated.

The CAC can address inequities in power. CACs were developed by *Corporación Asesorías para el Desarrollo* (ASDES) and first implemented with support from the World Wildlife Foundation (WWF), Colombia in the late 1990s. WWF used a CAC as a participatory mechanism for managing marine resources on the Colombian Pacific Coast (Beardon *et al.* 2008). Adapting this experience, SCALES introduced this component for generating collective action and shared responsibility in the management of water resources. The methodology consists of three phases –preparation, negotiation and follow-up (Beardon *et al.* 2008).

Despite these government and legal changes, the creation of a legal framework and political culture for the full realization of the constitution has been a long and difficult process. Since some traditional political sectors still resist the changes, inequality persists. Powerful commercial, armed and illegal interests continue to influence decision-making, while the majority of people still do not have the capacity to use these mechanisms and influence decision-making without any support (Candelo *et al.* 2008).

The preparation addresses legal, environmental, and social issues. Training in legal instruments helps ordinary individuals obtain information or compel government agencies to fulfill their obligations in a timely manner. Environmental training increases

people's knowledge of their natural resources. While the training activities have an overall emphasis on the community, training courses are also offered for public servants. Many professionals in the public service are also unaware of their roles and responsibilities under the constitution, especially in relation to citizen participation.

The "preparation" phase culminates in a one-day public meeting. Communities invite representatives of public agencies with mandates relevant to the social/ environmental issue. A structured negotiation leads to a signed agreement by representatives of agencies to undertake specific actions that improve social welfare and natural resource management. In the "follow-up" phase of the CAC, community representatives ensure that organizations comply with their commitments.

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Participants of the CAC, Fuquene, Cundinamarca, Colombia

## Evaluation methods

### Analytical Approach

The evaluation framework was heavily influenced by the impact pathways generated by project implementers<sup>3</sup> during the Participatory Impact Pathways Analysis (PIPA) workshop carried out within the SCALES Project in October 2006 (For more details of the PIPA workshop in PN20 see: <http://ipandes.pbwiki.com>). PIPA is a project planning monitoring and evaluation approach. The approach draws from program theory evaluation, social network analysis and research to understand and foster innovation. PIPA helps the people involved in a project, program or organization clarify their hypotheses of change; in other words, how they see themselves achieving their goals and creating expected impacts (Douthwaite *et al.* 2007). This model seeks to identify what actors are expected to change, what changes in stakeholders' practices (behavior) are needed to achieve the project's goals, what changes

in knowledge, attitudes and skills (KAS) are required to support this change in behavior, and what "project strategies" (e.g., capacity-building, communication strategies for dissemination, research processes, etc.) facilitate these changes in KAS and, subsequently, affect behavior.

Figure 4 summarizes the impact pathways of the SCALES implementation team. The starting point for this evaluation was the expected goals that the project implementers themselves believed the project would contribute to, as described in Figure 4 (Boxes 10 through 19). The evaluation contrasts these expectations with actual project outcomes and changes identified in the field. As the evaluation traces the process from CAC preparation to implementation, different actors are taken into account. These actors are in charge of the facilitation, training and integration among partners and project components. Hence, the analysis describes how the collaboration was structured and implemented. Using the impact pathway defined by the implementer team, this evaluation gives importance not only to assess the expected and unexpected changes but also focus on the process and strategies implemented during the CAC process.

<sup>3</sup> Nancy Johnson (Project Leader, CIAT), Elias Claros (CIAT), Carmen Candelo (WWF), Julio Andres Ospina (WWF), Harvey Rodriguez (Semillas de Agua), Jorge Rubiano (Semillas de Agua).

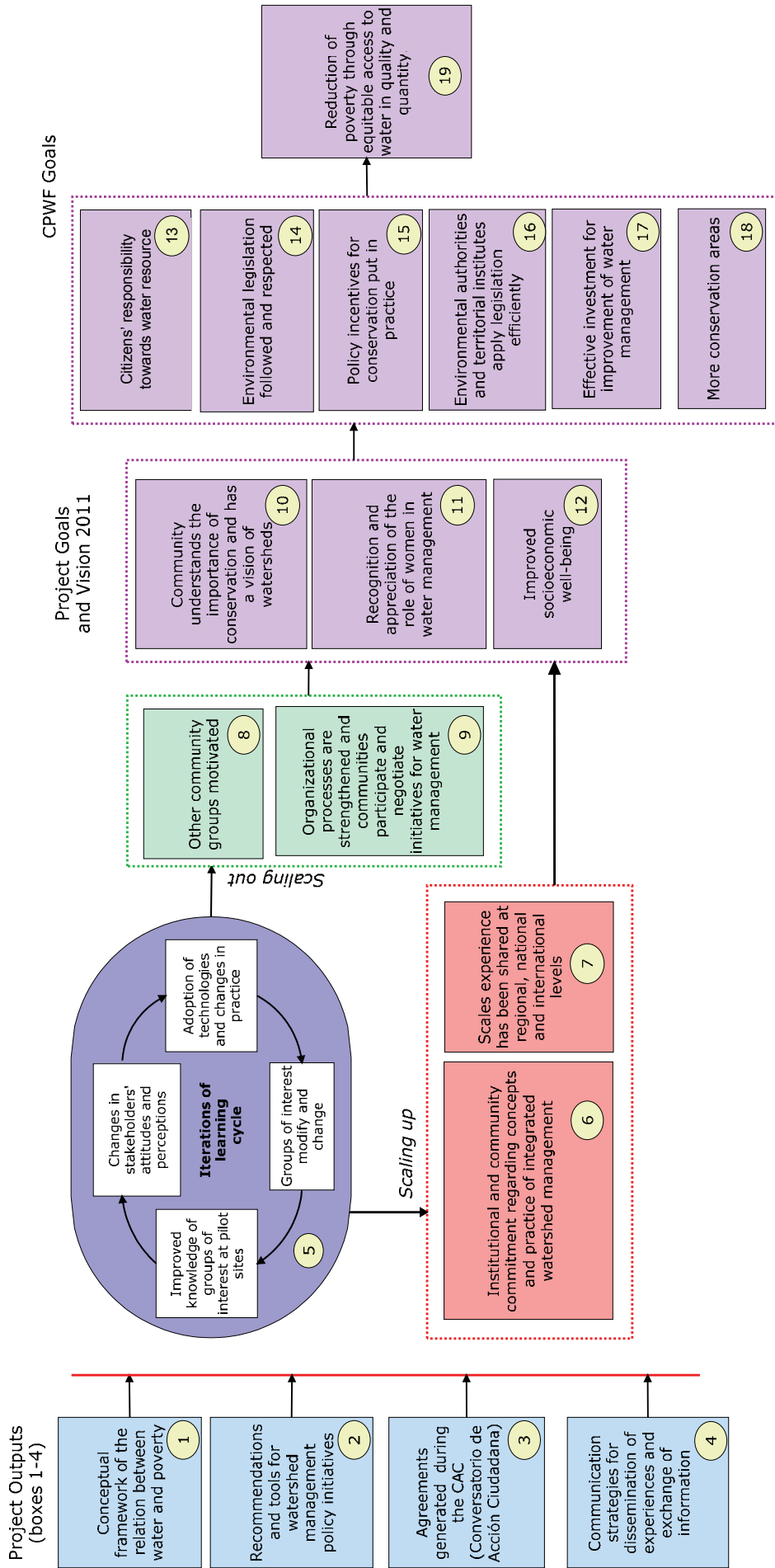


Figure 4. SCALES impact pathways identified, October, 2006

# Evaluation methodology

Most Significant Change (MSC) is a project evaluation methodology that involves systematic collection and participatory interpretation of stories of change. Unlike conventional approaches, MSC

does not employ quantitative indicators. It is a qualitative approach based on stories to facilitate program improvement. Box 1 is the MSC story of the SCALES project.

## **Box 1. The MSC story**

The main project intervention was the conversatorio, which is a legal mechanism through which communities hold authorities accountable. The success of conversatorios depends on the extent to which the community is united, technically prepared, and capable of interacting with representatives of the organizations. The project is adapting a process for preparation of local communities on all of these fronts in order to address watershed issues.

In Coello, Colombia, there was very little contact between the upper and the lower parts of the basin. Through this project and the intervention of CIAT's rice project, a contact was made. Someone from the rice growers' association participated in a "watershed expedition" that involved about 30 persons from different parts of the watershed visiting it together. As a result, they became aware of the threats to their water supply due to upstream land use practices, and are now active participants in the basin dialogues coordinated by the NGO.

### **Why is the story significant?**

It shows new relationships and changes in attitudes that should continue beyond the life of the project.

### **What were the critical factors that led to the change?**

Opportunity to focus on something beyond their original geographical and technical areas of expertise.

### **What were the constraints?**

The two local NGOs competed for time and attention from the national one. In some ways this brought them closer since but the national NGO does favor one over the other which is always a problem.

### **What are the future implications for action (e.g., future research), if any?**

Presumably both will continue to use a watershed perspective within their work. One thing I wonder about is how the communities will feel about the linkages they discovered. For example, the fishers see that their problems will be solved upstream. But will they support drastic upstream solutions like banning all agriculture at the expense of upstream welfare? It will be interesting to watch how the alliances among stakeholder groups play out over time.

Table 3. Interview characterization: Participant groups and locations

Participant group	Location of interviewees within the basin			Total
	Upper	Middle	Lower	
Follow-up committee members	2	4	3	9
Participants of the CAC process	3	4	5	12
Nonparticipants	2	5	4	11
<b>Total</b>	<b>7</b>	<b>13</b>	<b>12</b>	<b>32</b>

This document is an evaluation of the changes claimed in the MSC story, not of the entire SCALES project. The MSC story claims that the CAC was the main intervention of the project to generate collective action. The objective of this paper is to evaluate the impact of the CAC process in the Coello Basin in order to understand the factors of success and failure in generating collective action and across social-spatial scale. As part of the evaluation, the following questions were addressed:

1. What changed due to the implementation of the CAC in the Coello watershed?
2. What are the scope and extent of the changes?
3. What were the causes of the changes?
  - a. What was the contribution of the project?
  - b. What were the other drivers?
  - c. What was the role of research?
4. What are the benefits and costs of the changes both now, and potentially in the future?
  - a. What were the project investments?
  - b. Where could similar changes be realized?
5. Did the project follow the expected impact pathways?
6. What international public goods did the project generate, related to the change?

The same research questions were addressed in the other three outcome evaluations. The evaluation process reviewed information from diverse sources and

employed different analytic methods, including the following:

- Interviews and social network analysis (Fujisaka and Claros 2007).
- Participatory video (de Leon and Douthwaite 2007).
- Open and semi-structured interviews (Cordoba 2008).
- Review of secondary data.

### Interviews and social network analysis

A causal pathway identified in the original MSC story that frames this evaluation is that the project has linked upstream and downstream people, who as a result have better understanding of their interdependencies and take collaborative actions with these in mind. Network analysis, which studies how people are linked, was conducted to examine understandings, interdependencies and actions, as well as to verify how the Scales Project had contributed to collective action.

Interviews were conducted with project participants and nonparticipants regarding how the project had influenced their knowledge and attitudes to watershed conservation and community action. Nine of the follow-up committee members, 12 training participants, and 11 nonparticipants were



first interviewed about their perceptions of problems and solutions related to watershed and community development, as well as recent changes in the basin, and the contributions of SCALES project. Besides type of participation, the sample of 32 was classified by location within the basin (Table 3).

Interview data were also analyzed via social network analysis software to identify, represent, analyze, visualize, or simulate nodes (e.g., agents, organizations) and relationships amongst them. Network analysis helped to understand and verify how the SCALES project has contributed to increased connectedness and collective action, especially between upstream and downstream people. Interviewees were asked to name their most important contacts 'at the watershed level' and determined:

1. Where in the watershed these contacts lived.
2. What type of links they were.
3. How long they had had them.
4. Whether the SCALES project had been involved in forming them.

### Participatory video

A committee was established to follow up on the agreements generated during the CAC. To better define the main outcomes from the project from the perspective of the follow-up committee, nine of its members documented their own video about the most significant changes the SCALES project helped generate. The video can be seen with English subtitles at: <http://video.google.com/videoplay?docid=9135912979154571082&chl=en>.

Participatory video consists of documenting comments and stories of project participants and beneficiaries. Steps of the participatory video were:

1. *Training*: Through lectures and hands on

exercises, the workshop participants learned about communication for development, audiovisual language, participatory video, the MSC approach and the use of the camera. Before filming in the communities, the group planned their research about the MSC generated by the SCALES project.

2. *Filming*: Using various participatory tools such as mapping, transect walks and interviews, the participants recorded testimonies from various members of the communities and local government officials. The group also mapped their vision of the future of the Coello River Basin. At the end of each day's filming, segments of unedited footage were shown to various members of the communities to generate discussion and elicit feedback.
3. *Editing*: The group organized the video into thematic segments. For each theme, the group selected corresponding testimonies and developed editing decision criteria. A draft of the video was edited with the group.
4. *Showback of the edited video to the communities*: The edited footage was first shown to the community members of Anaime and then to those of Coello-Cocora. People were invited to react to the issues discussed in the film and to discuss any other related issues they had in mind.
5. *Evaluation of the process*: At the end of the workshop the participants evaluated the process. A final version of the video was edited outside the communities to clarify the things but the basic structure and content, which the group chose, were retained.

### Semi-structured interviews

In-depth interviews with the six participants of the communities were conducted in parallel with the development of the participatory video. At a later time,



six project implementers were interviewed. Interviews required about 20-40 minutes and were tape-recorded. Interviewees were encouraged to talk openly and to discuss problems and failures, as well as successes. The first part of the interview addressed topics of successful, failed and unexpected outcomes of the SCALES project that had arisen during the narrations in the participatory video. Next, the participants discussed the facilitation process used by the project.

Questioning on specific topics elicited details of issues mentioned and unmentioned previously.

**Review of Secondary Data**

Secondary sources (publications and papers of the project) provided a broader vision of the project process. Secondary data included project reports, workshop reports and documentation of project activities.



Cauca River, Colombia

Source: Wikipedia

# The Coello watershed

## Project context and scope of the evaluation

This evaluation focused on the processes and outcomes of the CAC as a mechanism to generate collective action. While the SCALES project also generated numerous research outputs, only those related to the CAC process were evaluated. The geographical limits to this study were the Coello watershed along with collection of field data, interviews and network analysis.

## The Coello watershed

The Coello watershed is located in a mountainous region of central Colombia (Figure 5). The watershed covers approximately 195,000 ha, ranging in altitude from 240 to 5,300 masl. Annual rainfall ranges from below 1,000 mm to more than 4,000 mm. The watershed includes ecosystems ranging from dry forest to *páramo* (upper region) to snow-capped peaks, and is home to national parks and private reserves.

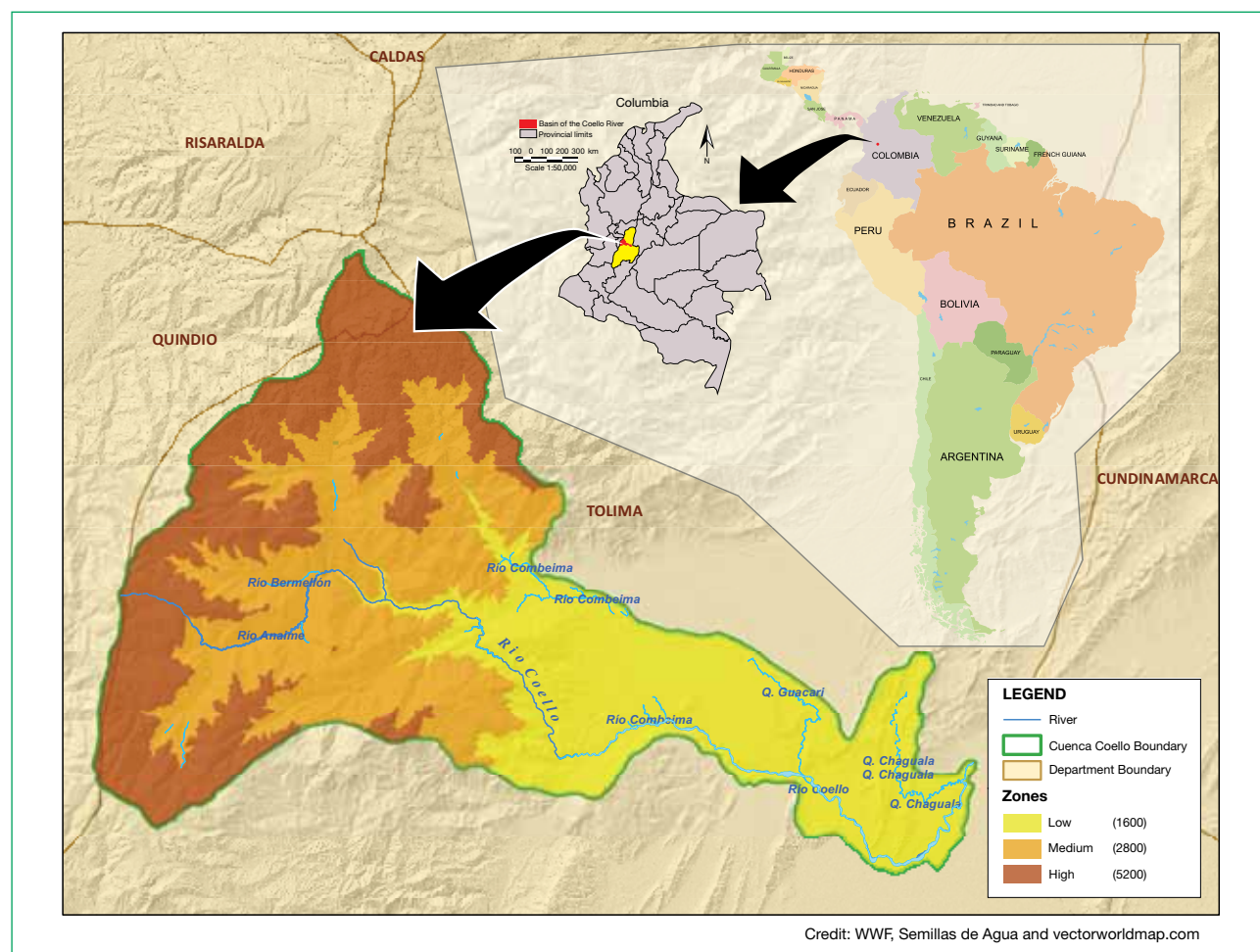


Figure 5. Geographic location of Tolima Province and the Coello River watershed  
Source: Corporación Autónoma Regional de Tolima (the Departmental Development Corporation, CORTOLIMA)





Source: Wikipedia

Nevado del Ruiz, also known as La Mesa de Herveo, a volcano located on the border of the departments of Caldas and Tolima in Colombia.



Source: Diana Córdoba

Páramo de Guargua. 2.400 a.s.l. Carmen de Carupa Municipality, Cundinamarca, Colombia

The watershed is the principal water network in Tolima Province. The Rio Coello flows east into the River Magdalena. Tributaries of the Coello River include the Combeima, Toche, Cocora, Anaime, and Bermellon rivers. Nearly 625,000 people live in the Coello watershed (DANE 2007). About 80% live in urban zones and 20% in rural areas. (Peralta *et al.* 2006; Rodríguez and Rubiano 2005).

The watershed contains some or all of the eight municipalities with a population of 622,395 in 2005, including the city of Ibagué (pop. 425,770). In addition to Ibagué, it comprises the municipalities of San Luis, Rovira, Cajamarca, Espinal, Flandes and Coello. Only 16% of the population is rural and even without Ibagué, urbanization rates are above 50%. The life condition index for municipalities in the Coello watershed ranges from “medium low” to “medium high” with urban municipalities scoring higher than rural ones (Sarmiento *et al.* 2006).

Land uses differ according to elevation. The páramos, form part of a buffer zone of the Parque de los Nevados, one of the principal protected areas in Colombia. Although the Pan-American Highway passes through the watershed, generating economic benefits, environmental costs such as soil erosion and air pollution are accompanied by favorable market access. Agriculture and livestock are principal economic activities. The upper part of the watershed is mainly forested; however, these lands are increasingly being converted for livestock and coffee and horticultural crops. In the mid-altitude areas, sugarcane and fruit trees are common. The region accounts for 30% of Colombia’s fruit and vegetable production. The lower part of the watershed includes 30,000 ha of large-scale irrigated rice, cotton, and sorghum as well as beef cattle farms. Rice production requires the largest share (500 million m<sup>3</sup>) of water channeled through the rivers and irrigation systems. In

comparison, fruit production uses 41 million m<sup>3</sup> and coffee only 1.5 million m<sup>3</sup> Fujisaka and Claros 2007; WWF 2007.

Water has traditionally been ample in Coello. Nevertheless, more people are becoming aware that inappropriate land use in the upper watershed combined with growing demand for irrigation, domestic water and hydroelectric power in the lower areas are creating problems of inadequate water supply.

Water quality is also an issue. Agrochemical use and domestic and industrial wastes are contaminating rivers and water supplies. In addition, high sediment loads from soil erosion throughout much of the watershed, are not only threatening irrigation, but also possibly affecting the Rio Magdalena, Colombia’s major and navigable river. Sedimentation has been identified as a national problem, and one that may now be affecting ports in many Latin American countries (Fujisaka and Claros 2007).

Various conflicts affect the livelihoods of Coello inhabitants. Conflicts occur predominantly in hillside farming and cattle-raising areas, where deforestation and water contamination occur (Peralta *et al.* 2006). These hillside areas suffer from deteriorated soils and biodiversity loss (Cantillo and González 2008) and affect the availability and quality of water. Competition for water is exacerbated by high extractions for irrigation and human consumption.

Conditions of poverty and conflict in remote areas are also attributable to few links to markets, inadequate organizational support and land shortages (Peralta *et al.* 2006). Furthermore, Colombia’s internal conflict negatively impacts Coello. Guerrilla groups are present in the upper parts of the watershed. As a result, many families have had to flee the zone.

Table 4. Coello watershed problems

<p><b>Social equity:</b></p> <ul style="list-style-type: none"> <li>• Poverty, especially of remote and marginal groups.</li> <li>• High and inequitable water use by rice growers.</li> </ul> <p><b>Water:</b></p> <ul style="list-style-type: none"> <li>• Water contamination from untreated sewage drained into river courses.</li> <li>• Lack of adequate systems to supply clean domestic water.</li> <li>• Reduced water flows of the River Coello and its tributaries.</li> <li>• Agrochemical contamination of waters from cropping.</li> </ul> <p><b>Land and water:</b></p> <ul style="list-style-type: none"> <li>• Soil erosion, especially in the steep slopes of the upper watershed, from relatively high tillage and repeated cropping – especially of arracacha (<i>Arracacha xanthorrhize</i>, grown on ~ 4,000 ha in the upper watershed) and from the extensive pasture areas.</li> <li>• High sediment loads – from soil erosion throughout the watershed – reaching the River Magdalena (Colombia’s major and navigable river) and beyond.</li> <li>• Higher-elevation agricultural zones currently face high soil degradation due to excessive land preparation, inadequate farming practices and loss of soil ground cover, increased by deforestation and expansion of the agricultural frontier (CORTOLIMA 2003).</li> </ul> <p><b>Deforestation and mining:</b></p> <ul style="list-style-type: none"> <li>• Potential negative impacts of unskilled extraction of sand and gravel from riverbeds for construction purposes.</li> <li>• Air and water pollution and land degradation caused by the cement plant near the community of Payande.</li> </ul>
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The governmental environmental authority responsible for the Coello watershed is the (CORTOLIMA) (<http://www.cortolima.gov.co>). Progress on a comprehensive environmental management plan has been slow. Although the environment can be considered a driver for change, the process is “top-down” in the biophysical sense. Conserving upper parts of the watershed is emphasized. For example, the World Wildlife Fund (WWF), Semillas de Agua (a local NGO) and other NGOs are working to preserve the páramos. Recent initiatives seek to link with downstream stakeholders who could benefit from the environmental services that the páramos provide.

Problem analyses conducted in different locations within the watershed have generated similar findings. Table 4 summarizes field observations, informal interviews<sup>4</sup> and reported outputs of the CAC regarding the problems facing the Coello watershed.

<sup>4</sup> Fujisaka and Claros 2007.

Diverse socioeconomic and policy factors hinder management processes of conserving the watershed:

- Few economic incentives. No formal program exists for granting incentives or stimuli for farm owners who conserve their natural resources, or for those who have declared their land as nature reserves on their own initiative.
- Inadequate agriculture policy. Few extension activities or policies in the agriculture sector promote recommended farming activities in the watershed (Semillas de Agua 2007). For example, a CORTOLIMA project for Conserving Waters and Soils (PROCAS<sup>5</sup> - Spanish acronym) recommends practices such as minimum tillage, direct planting and green manures for recovering the organic matter.<sup>6</sup>

<sup>5</sup> PROCAS is an agreement between German Technical Cooperation (GTZ) – CORTOLIMA and Ibagué municipality that aims to avoid activities, which cause negative environmental impact in 40 villages (between 900 and 1,900 masl) of the rural sector (for more details see: [www.alcaldiadeibague.gov.co](http://www.alcaldiadeibague.gov.co)).

<sup>6</sup> The project also recommends the use of herbicides and chemical fertilizers, which can be detrimental to the life and quality of the soil, as well as to the groundwater.

- Little organizational and political support. Especially in the páramo zones, regional development plans rarely address the management of natural resources.
- Insecurity. Armed conflict occurs in the upper parts of the páramo. Without security, substantial investments with longer-term payoffs are unlikely.
- Low level of collective organization. Actors that form part of this watershed do not have a shared vision of its future. Consequently, low probabilities exist for impacting policy and creating more effective alliances for watershed management.

### Project partners and participants in Coello

The International Centre of Tropical Agriculture (CIAT) was the proponent and coordinator of the project. It brought together the key actors in the

zone and experts in R&D processes related to natural resources management (Table 5).

Since it was not clear what tools would be used to promote the processes of collective action with the communities in the watershed it was at the project inception workshop in October, 2004 that the decision was made to use the CAC.

The WWF, CIAT, ASDES and the University of the Andes all recognized there was a need for adapting the CAC to the regional context of the Coello River watershed. Thus they decided to invite Semillas de Agua, which had a record of interventions in the watershed in alliance with the WWF, to broker between them and the communities. In the upper zone of Cajamarca Coello, WWF worked with Semillas de Agua in conservation projects in the páramo of Anaime and with political education of citizens, strengthening productive communities before

Table 5. Project partners, experience and role in the Coello CAC

Organization	Experience and role
The University of the Andes-Bogotá	Participated in the planning of the SCALES research process, conducted decision-making analyses using economic games with the communities' participation.
WWF	Strengthened participatory processes and the communities' capacities for negotiating and influencing policy formulation For almost 10 years, WWF has been working on these efforts in the Coello watershed. WWF's role was to provide the project's institutional and technical support to Semillas de Agua in methodological and conceptual aspects of the CAC and in coordination with various stakeholders in the basin.
Semillas de Agua	Since 1991, an NGO has advanced development work in Cajamarca (Tolima), Cali (Cauca Valley) and Guapi (Cauca). Semillas de Agua was WWF's local partner in Coello, with whom they have had almost 10 years' experience in processes of agricultural production and conservation education. Semillas de Agua also worked with CIAT on the implementation of poverty analysis in Coello.  Semillas de Agua worked in announcing, facilitating and supporting various activities for the preparation of the CAC. Its mission was to strengthen the contact between different stakeholders within the watershed.
Corporacion Asesorias para el Desarrollo (ASDES)	ASDES is an NGO based in Cali, with more than 20 years of experience in educating communities in citizen political action.



beginning the project, more than 10 years ago. For this reason, Semillas de Agua was considered to be a good local partner (Candelo, C pers. comm. 2008).

Semillas de Agua was formed in Tolima 15 years ago to help conserve the páramo. This NGO began by working with small farmers on conservation and sustainable production projects in the Anaime watershed, part of the larger Coello watershed. Nine years ago, Semillas de Agua helped set up Asociación de Productores Agroecológicos del Río Anaime (APACRA) to overcome the lack of local organizations in the communities. Semillas de Agua managed financial resources to fund small productive projects in APACRA, especially to link the producers to the market and provide training. Producers learned about better crop management practices, as well as how to use plants to control pests and diseases since farmers began to use large amounts of agrochemicals. The CAC preparations helped Semillas de Agua strengthen APACRA's organizational capabilities and leadership in order to foster active participation and increase the bargaining power of the community leaders during the CAC event. The SCALES project helped Semillas de Agua to expand its work and influence other areas. For example, their work includes a 40-farmer project in the town of Roncesvalles to develop farming and livestock systems. Independently, the NGO has established links with the University of Tolima through the exchange of intern students in conservation and management of páramo ecosystems.

The watershed municipalities linked to the project were Cajamarca, Ibagué, Rovira, San Luis, Coello, and Espinal y Flandes. In these municipalities the project worked mainly with the following actors: a) mini-irrigation boards, b) APACRA, c) Communal Action Board (JAC, acronym in Spanish), d) women's associations, e) sand extractor groups of the Coello River, and f) small farmers. Miners,

larger and medium farmers, urban populations, the industrial sector and educational institutions were underrepresented in the process.

## Overview of the CAC process in Coello

The SCALES project supported the CAC in the three main phases (1) preparation (October, 2004 to April 2007), (2) the CAC meeting (May 2007), and (3) follow-up (June 2007).

### Preparation

A review of secondary data from the project showed that the preparation of the CAC included five interventions: a) Motivation, b) Participatory research in water issues and poverty in the watershed, c) Enable linkage of different actors in the watershed, d) Strengthened leadership, and e) Training processes.

#### *a) Motivation*

The first step the project undertook was motivation through "awareness-building workshops." These workshops sought the participation of all actors of the watershed. The implementers made efforts to engage community leaders and powerful actors in the six municipalities of the watershed (Coello, Cajamarca, Rovira, San Luis, Ibagué and Espinal) as well as public actors in these municipalities.

#### *b) Participatory research*

Participatory research activities included poverty and socioeconomic analysis with the support of the partner organizations.

Analysis was conducted to identify competent organizations in different parts of the basin, as well as the legal context that supports them. This was



followed by a participatory diagnosis and planning of the future of the watershed. Organizational roles were examined in order to identify and prioritize community requests/demands from organizations, and develop negotiating strategies during the upcoming CAC. Analysis also included identifying the watershed management responsibilities and budgets of public- and private-sector organizations, and existing policies and agreements. Such information was used to inform participants of their rights, and thus enhance capacity for citizen action. Economic games were held to sensitize the community about the effects of individual decisions on collective goods in a basin, and to analyze the level of community cooperation in conservation.

### *c) Linking of different actors in the watershed*

The project intervened to strengthen the linkages between different actors in the watershed through the following activities:

1. Water forum: This space was not included in the initial work plan of the project. After the project started, participants suggested the forum as an opportunity to articulate their needs to the National Campaign of Water run by Ecofondo Corporation (Corporation to Finance Environmental Projects) (June 2006).
2. An exchange workshop, the *Piangueras* was organized with women from the Pacific coast of Colombia who had already been through a CAC process. These women harvest small marine bivalve molluscs in the mangroves at low tide, which are used to make a typical dish (July, 2006). Another exchange workshop was organized with another CAC, de Fuquene (February, 2007).
3. A follow-up and participatory evaluation workshop that addressed water treatment, use and conservation (November 2006).
4. The Coello Basin Expedition organized in February, 2007 and led by Semillas de Agua. It was

a 4-day car caravan trip from the point where the River Coello empties into the Magdalena to the upper páramo area of the watershed. Some sixty people participated, including representatives of seven government entities. Participants were able to interact with each other along the way and were able to see parts of the watershed they had not previously known. This expedition allowed the participants to gain greater knowledge and understanding of the problems facing the watershed, and to begin discussing alternatives. This event was co-funded by the municipalities of Cajamarca, Ibagué and Coello, as well as by the provincial government and CORTOLIMA.

### *d) Strengthened leadership*

The intervention was oriented to set up two committees – the technical committee and the follow-up committee – to be the formal mechanisms to facilitate exchange between the different stakeholders and foster cross-scale participation. The technical committee was formed from staff of WWF and Semillas de Agua, meeting monthly to plan and review activity progress. The participants of the follow-up committee were mostly farmers but also included several miners. Some of the farmers were members of APACRA. The two committees were important in needs identification and training communities in citizen participation. They also carried out institutional analysis with communities and then trained them in the use of negotiating techniques.

### *e) Training activities*

Training workshops were held to enhance political skills and participation of citizens. The workshops were open to anyone and were well attended, especially by the leaders of the grassroots groups that had been involved in previous watershed management

and community initiatives. Workshops sought to strengthen the legal knowledge of participants so that they could become active citizens, capable of influencing policies that affect them. Participants were informed about the right to petition, including information requests from public-sector organizations. Afterwards, meetings were held in each of the communities to establish networks and inform the community. In addition, some of the participants used this tool to solve other types of personal and community problems. In general, the project aimed to develop political awareness of citizens and the capacity on issues related to the environment and the sustainable use of natural resources.

Among the training activities the following were highlighted.

1. Workshops about the CAC as a mechanism for community participation in watershed decision-making.
2. Workshops about policy tools: 'tutela or the right to petition.'
3. Workshops on sustainable water management, quality indicators, diseases, water cycle and efficient use of water, elaboration of sand water filters and biodigester.
4. Workshop on Participatory Monitoring and Evaluation facilitated for the CIAT team.
5. Workshop on power and social network analysis.

### **Negotiation of a watershed agenda for the CAC meeting**

The agenda for the CAC was set by the communities concerned through negotiations in various meetings. These meetings included:

1. Workshops for the preparation of the CAC: In these spaces participants of the CAC process

discussed the problems and topics they were to present during the CAC, as well as their advances in the preparation of the requests to be made to the invited individuals and organizations.

2. Simulation of the CAC. Altogether four dry-runs were carried out in the same number of communities for the communities to become familiarized with the methodology and preparation of their requests and questions.

This process resulted in a wish-list of commitments the communities requested of organizations, and vice versa. An outline of a subsequent phase of participatory follow-up and evaluation was also produced. In the CAC agenda, the communities, Semillas de Agua and WWF identified a map of responsibilities and roles of the organizations and actors that manage water. This exercise enabled communities to obtain a better understanding of how to correctly direct their demands. Furthermore, four topics on water management were selected by the participants in order to prioritize the problems in each one of them: (1) conservation and protection, (2) use and transference, (3) supply, maintenance and recuperation, and (4) socioeconomic aspects.

Some of the interventions arose during the process of reflection and according to the requirements and gaps found by the implementing team. For example, during interactions, the technical committee learned that communities were interested in influencing the formulation of the provincial regional development plan led by CORTOLIMA. Community objectives were to include topics such as environmental restoration, incentives for conservation, reforestation, improvement of the network for distributing water, technical assistance in educational and environmental conservation processes, and improvement of production systems. Consequently, the SCALES project facilitated meetings towards the inclusion

of representatives from a regional environmental agency CORTOLIMA and the national training and research organizations (Servicio Nacional de Aprendizaje, SENA; and Corporación Colombiana de Investigación Agropecuaria [Colombian Agency for Agricultural Research], CORPOICA) working within the Coello River Basin.

### **Meeting**

The CAC was held in May 2007 and was attended by important groups of people from the watershed communities, Semillas de Agua, WWF, CIAT, representatives of the six municipalities of the watershed (Cajamarca, Coello, Ibagué, San Luis, Rovira and Espinal), the provincial government of Tolima, councils from San Luis and Cajamarca, Provincial Department of Health, Instituto Colombiano de Desarrollo Rural (INCODER), CORTOLIMA, Instituto Colombiano Agropecuario (ICA), Corporación Autónoma Regional de Magdalena (CORMAGDALENA), Water Users' Association of Coello (USOCOELLO) and University of Tolima.

During the CAC, altogether 27 agreements were signed with the participating organizations (Appendix 2). The value of projects promised and other commitments was US\$665,000. A complete list of the agreements is given in Appendix 2.

### **Follow-up**

A follow-up phase began at the end of the CAC. A follow-up committee was formed with the leaders of the communities who had been active in the two previous phases. This committee meets periodically to manage and assess the progress of the signed agreements. In July 2008, the follow-up committee had 12 members representing the 12 project communities.

The follow-up committee is responsible for bringing knowledge and information back to local communities and with following up on the agreements reached in the CAC. It meets every 2 months with a consultant from Semillas de Agua. According to Fernando Pérez, a member of this committee, 'the activities conducted are evaluated; tasks are assigned for visiting the entities with which agreements were signed in the CAC. This is always done, sponsored by WWF and Semillas de Agua; they contribute to helping with our locale, the food and half the transportation costs' (Pérez, F. pers. comm. 2008).

The follow-up phase is an opportunity for community leaders to generate new initiatives from the 'cloud' of knowledge and skills gathered during the CAC process. The committee is a resource available to them to continue with the empowerment process initiated by the CAC, and often necessary when launching new initiatives.

The project and the CAC process strengthened relationships among and between participating communities, the project implementing organizations and the public and private organizations present in the watershed (see page 27 for a network analysis in a later section of evidence). One successful project activity was the Coello-Cocora expedition, in which 20 stakeholder representatives traveled from the mouth of the river to its source in the Anaimé páramo.

The participants of the CAC have increased their knowledge of watershed management issues with the support of Semillas de Agua and WWF through workshops and simulations sessions of the CAC (see page 29 for the knowledge-attitude study for evidence). These simulations allowed the communities to learn about the CAC, its advantages and potential to solve local and regional problems.

Table 6. Coello organizations and CAC participation

Attended	Absent
CORTOLIMA	CORPOICA
CORMAGDALENA	Institute of Meteorology, Hydrology and Environmental Studies (IDEAM)
INCODER	Colombian Institute of Mineralogy and Geology (INGEOMINAS)
ICA	Cement factory (CEMEX)
Provincial Department of Health	Superintendent of Public Services
Office of the Governor, Province of Tolima	Public Services Enterprises
Mayors from Coello, Cajamarca, Ibagué and Rovira	Municipal councils of El Espinal, Rovira and Coello
Municipal councils of San Luís and Cajamarca	Local Committees for Attention and Prevention of Disasters
University of Tolima	Provincial Committee
USOCOELLO	
INCORA	



Training in citizen rights, Fuquene, Cundinamarca, Colombia

Source: CPWF

# Evaluation of outcomes

The CAC was selected by the SCALES project as a mechanism to promote the processes of collective action and participation of the marginalized communities in watershed management. The main assumption of the SCALES project is that collective action can generate benefits for improved natural resources management. According to the project proposal (2004), involving local stakeholders is critical to ensuring that the project produces both tangible development impacts and relevant research results.

An analysis of project documentation, the social network surveys, and the interviews (further informed by the participatory video made by the members of the follow-up committee) shows that the project had most impact in: 1) increasing awareness of water issues, 2) strengthening links amongst community and environmental organizations, 3) enhancing local capacities and relationships with authorities, and 4) setting new priorities and commitments for environment-friendly land use activities.

Outcomes were achieved through various mechanisms, including increasing knowledge, attitudes and skills, for instance through the creation of a common agenda, and empowerment of the communities and a key local partner, supported by a process of capacity-building. Most of the outcomes identified by the project implementers in the form of their impact pathways were fully or partly achieved (see boxes 6 through 12 in Figure 4). The evaluation showed that the project implementers accurately

predicted project outcomes. There were no significant differences between the outcomes identified in the impact pathway and outcomes identified by participants from the communities of the watershed and implementers at the end of the project (empirical evidence collected through participatory video and interviews, mainly). However, there were no impacts of this experience on socioeconomic well-being (box 12) as 3 years of project implementation is too short to ensure impacts in poverty alleviation. Advances in the agreements are expected to have a future impact in achieving the project goals and vision for 2011 (see boxes 13 through 18) and in turn it will have an impact in poverty reduction through improving the quality and quantity of available water in the watershed, support of farmer organizations, better management strategies for water resources and more conservation areas to assure the provision of water in the watershed.

## **Outcome 1: Increased awareness of water issues**

### *Changed perceptions and attitudes of watershed residents*

Prior to the SCALES project, development initiatives aimed at integration and collective action of communities in the Coello Basin did not produce the expected results. For instance, CORTOLIMA attempted a process of organization with communities in 2004 that, according to one of the representatives of Semillas de Agua, failed because *'the communities do not believe in the organizations and the people did not*



*attend the workshops and other spaces due to a lack of motivation'* (Rubiano, J. pers. comm. 2008).

A first objective of the SCALES project was to break with the initial images people had about citizen participation and community work through raising awareness of local- and regional-level actors and to stimulate them to participate in watershed management activities organized by the project. During the first year of the project, Semillas de Agua and WWF conducted a systematic process of motivation with local communities.

A review of workshop reports showed that 15 communities of the basin in six municipalities were trained through ten workshops on concepts related to environmental issues and skills for sustainable use of natural resources. On average, 30 persons participated consistently through the full training cycle. These participants repeated the training workshops in their communities in which about 300 people participated. These workshops sought to generate participatory analysis of the social situation within different parts of the watershed, political formation, negotiation of the CAC agreements amongst communities and disseminate the progress of the project (Table 7).

Table 7. Summary of project participation

Participant municipalities	6
Participant communities	15
No. of persons involved in the process(training)	30
Beneficiaries of the duplicate workshops in the communities	300
Officials of public and private organizations	5
<i>Source:</i> Project reports.	

The project implementers prioritized efforts to demonstrate potential value to communities of the CAC concept, its objectives and expected outputs. WWF recognized that the idea of the CAC is not easy to sell to communities since 'the process does not give tangible things.' To substantiate such positive claims, the project (led by WWF) conducted an analysis of the organizations and legislation which could potentially support water management in Coello. Semillas de Agua and WWF also conducted similar motivational work with regional and local authorities and with those more powerful actors from the private sector such as rice growers and enterprises (i.e., CEMEX, a cement factory).

#### *Improved understanding of environmental externalities*

The CAC training process generated changes in knowledge and attitude, specifically with regard to the environment. A change in environmental awareness of Fernando Perez serves as an example: *I have worked with APACRA for five years. We have become able to develop environment-friendly agricultural activities like organic products, especially vegetables, as well as different conservation practices. Before we were not aware of the effects of agrochemicals, deforestation and conservation activities. I was a person that threw all my garbage into the river; had one of my cows died, I would have thrown the dead animal away.*

Similarly, the members of the follow-up committee recognize that, as a result of this educational process, they became more informed, have a better attitude toward participating and are aware of their role in the solution of their problems.<sup>7</sup> Capacity-building influenced participant skills in recognizing their environmental problems. The participatory analyses of the environmental problems in the watershed played

<sup>7</sup> Two members of the Follow-up Committee are taking a diploma course on the mechanisms of political participation at the Javeriana University in Cali, Colombia.

an important role. Activities included analyzing the use of agrochemicals and the existing productive systems, degradation of the soils and water resources, mapping of actors, and biophysical characterization of the watershed amongst others.

Comments of the watershed expedition also reflected a new understanding of externalities. For example, Amparo Gutiérrez, a community leader from Hato de la Virgen stated: *What most impressed us was the washing of the trucks, all that grease went into the Coello River, as well as the draining of sewage water that falls directly into the river (...). We commented about when we were going to see the Coello watershed uncontaminated. After this process we realized that we had to work very hard in order to decontaminate the watershed.*

People directly involved in the workshops improved their ability to understand the environmental and social problems of the Coello Basin. However, the process of preparing the CAC focused mainly on political empowerment of participants. Training on available technologies for the management of natural resources was limited. These issues were somewhat addressed in the Water Forum and through the development of sand filters and the biodigester. However, these technologies were being spread by Semillas de Agua through previous projects and not through the SCALES project.

### Outcome 2: Stronger links amongst community environmental organizations

Through project activities, the SCALES project facilitated numerous interactions. Project participants and nonparticipants were linked to the project in different ways: friendship, community development, watershed development and training (Table 8). Interviews identified 837 links. Most of these links,

591, were generated from the activities developed by the SCALES project.

Table 9 shows that, of the 591 links, which respondents attributed to the SCALES project, 78% were between people in different parts of the basins, or project implementers from outside the basin. This result corresponds with the project objective to “improve the integration of collective action in resource management from local to the watershed levels.” Most of the links are between people in the lower basin and the middle (160) and the upper (30). In contrast, few

Table 8. Type of social link and relation to project

Type of link	Location	Frequency	Total
Friendship	96	201	297
Community development	98	202	300
Watershed development	32	74	106
Training	20	114	134
<b>Total</b>	<b>246</b>	<b>591</b>	<b>837</b>

Source: Social Networks Interviews (Fujisaka and Claros 2008)

Table 9. Links formed by the SCALES projects between different parts of the basin

	Location	Frequency	%
<b>Total scale links</b>		<b>591</b>	<b>100</b>
Total scale links within basin		461	78
Lower	Middle	160	35
	Outside	100	22
	Upper	30	7
<b>Lower total</b>		<b>290</b>	<b>63</b>
Middle	Lower	27	6
	Outside	48	10
	Upper	24	5
<b>Middle total</b>		<b>99</b>	<b>21</b>
Upper	Lower	8	2
	Middle	10	2
	Outside	54	12
<b>Upper total</b>		<b>72</b>	<b>16</b>

Source: Social Networks Interviews (Fujisaka and Claros 2008)



people in the upper basin appeared interested in linking to people downstream. This pattern is consistent with people in the lower basin who are experiencing the effects of upstream pollution and mismanagement, and who are eager to link with upstream to resolve the issues. Less motivation exists for upstream people to actively link with others downstream. Compensation schemes for changes in land management practices, through environmental service payments for example, can provide sufficient motivation.

The survey participants and links are plotted in Figure 6. The black nodes are the members of the follow-up committee, the pink nodes represent people trained or who have worked with the follow-up committee and are considered participants in the SCALES project. The red nodes represent nonparticipants. Node shapes indicate whether the person is located in the watershed – and if so, in the upper, middle or lower. This is because one of the main objectives of the SCALES project was to link people

from different parts of the watershed in watershed development.

The network map shows a core-periphery network where the core is made up of the follow-up committee and the WWF and Semillas de Agua project implementers (green nodes). The former are indicated by round nodes since WWF personnel were based outside the basin, mostly in Cali. Square nodes represent local participants such as Semillas de Agua based in Ibagué in the middle of the Coello watershed. Four SCALES project participants (those trained by the follow-up committee) and one person from CORTOLIMA were also part of the core network. The nonparticipants were on the periphery.

Instead of a core-periphery network, a clumpy network structure could have been identified if the survey respondents pertained to two or more cliques and weakly connected to each other. Core-periphery networks are the most efficient spreaders

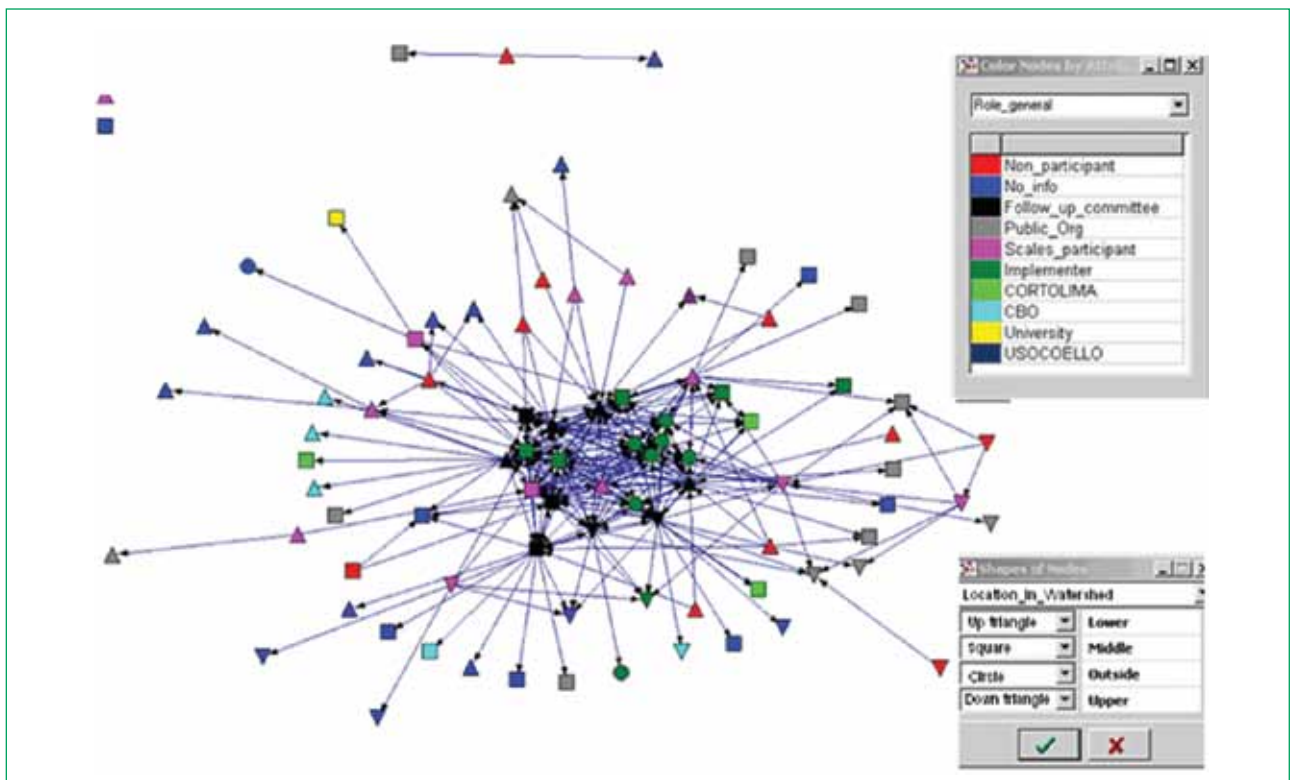


Figure 6. Network map of community, watershed and training links

## Box 2. Better relationship between communities and organizations

*Fernando Perez*

*Community Leader, Anaimé District, Cajamarca-Tolima*

Thanks to a new administration, we can tell our story to this organization. I am happy that they want to listen to us and learn more about environmental problems while letting us participate in finding solutions and the development plan. Suggestions from different representatives of this region are now being heard, such as those through Semillas de Agua and the committee.

*Alejandro Villamil*

*Technical Director of Unidad Municipal de Asistencia Técnica Agropecuaria (UMATA), Cajamarca*

One change is that the community is now more receptive to our programs, such as fish culture, the clean village program that the Asociación Nacional de Empresarios de Colombia (ANDI) has with ICA and CORTOLIMA and mainly basin management.

*Source:* Semi-structured interviews.

of information. In such networks, while the average number of links connecting any two people is lower, information can spread more easily with less chance for messages to become corrupted (Borgatti and Everett 1999). This dominant core contains the follow-up committee and project implementers, and a core group can advance efforts to increase knowledge, change attitudes and mobilize community- and watershed-development.

Box 2 provides two personal perspectives of how links have improved.

### **Outcome 3: Enhanced local capacities and relationships with authorities**

Prior to the CAC, the project conducted a series of training workshops to fill community knowledge gaps about policy tools, citizen rights and water management. These workshops enhanced skills and confidence amongst individuals to empower them to demand a voice for their communities in the joint definition and search for solutions to watershed problems. The training workshops were used to identify and involve community leaders who subsequently became part of the technical and follow-up committees.

Project implementers estimated only 6 months to prepare for the CAC. However, Carmen Candelo from WWF stated that this process took more time due to the lack of political education of the watershed residents that hampered the ability of understanding some issues. This had, as a consequence, an adjustment of the budget, using some resources intended for the follow-up stage.

Local committees, women and a local NGO were highlights of the capacity-building efforts from the different participating actors. Martínez, B. (pers. comm. 2008) from the La Osera community, pointed out that many times she and her colleagues in the training process did not have enough financial resources and time to attend the training. In her specific case, she had to invest more than 5 hours each time to attend workshops and meetings.

Semillas de Agua and WWF also highlighted the value of learning processes during the CAC preparation that resulted from the interaction among multiple actors with different knowledge and capabilities. Application of previously-learned tools contributed to the flow of knowledge. As (Candelo, C. pers. comm. 2008.) of WWF says: “Through the experience of the CAC in the SCALES project, the

Table 10. SCALES project experiences/benefits per participant group

	Project committee members	Project trainees	Non-participants
Learned about my rights	100	92	0
Learned about problems and people in watershed	100	92	9
Learned new management skills	89	50	0
Built relationships with local agencies	89	33	0
Community organization skills have increased	67	17	0
The conversatorio	67	33	0
Personal capacity	67	25	0
Better water management	44	42	18
Foros del agua	44	25	0

Source: Social Networks Interviews (Fujisaka and Claros 2008).

learning tools were perfected. This forms part of organizational growth, and we have improved many things. For our first ‘Piangueras’ CAC years ago on the Pacific coast, we had to invent a lot of things, here no. We brought the Piangueras here so that they could tell about their experience. With this reference, we adjusted it to the conditions of the Coello watershed.”

The training links, and the networking in general are reflected by what the same respondents said had been their experience with the SCALES project (Table 10). When coupled with the analysis of type of links (Table 8), a positive correlation becomes apparent between the number of links reported and the level of participation in the SCALES project. This result is consistent with the idea that the more the number of people exposed to the project, the more they have come into contact with other people concerned with the same issues.

#### *Committees empowered*

During the first phase the project, implementers worked on encouraging the participation of organizations. The main strategy was to set up two

committees – the technical committee and the follow-up committee – to be the formal mechanisms to facilitate exchange between the different stakeholders and foster cross-scale participation. The two committees were important in needs identification and training communities in citizens’ participation. They also conducted organizational analysis with communities and then trained them in the use of negotiating techniques. One outcome of this training was that individuals trained in the approach were able to influence the prioritization of their communities’ problems in the Coello River regional development plan.

Members of the follow-up committee were leaders in their communities and certain social resources. This gave them credibility as representatives of their communities in the process of negotiations carried out by the CAC. The follow-up committee has become an organization recognized at the provincial level for its role in the social management of water. The committee follows up the CAC agreements, participates in the policy discussion and convenes debates on topics related to water conservation and

management.<sup>8</sup> Nevertheless, one of the challenges of this committee is its sustainability. Currently, Semillas de Agua and WWF contribute 50% of costs and community members contribute the remaining 50%. Although fieldwork observation found out that people in the committee were trained to participate actively to agency their projects, the idea that community members taking full responsibility of the follow-up without remuneration places an extra burden on communities that lack the resources. In order to strengthen and motivate the members of this commitment to follow-up CAC agreements, an incentive system that recognizes their contribution is necessary. The CAC process helped participating communities in the watershed in enhancing the knowledge and influencing attitudes of relevant public- and private-sector organizations regarding water management problems (see Box 1 for evidence).

### ***Recognition and appreciation of the role of women***

One of the project objectives was to strengthen the participation of women in the collective management of watershed resources. One-third of the follow-up committee and nearly one-half of the project implementers were women. An analysis of the interviews revealed that four female members of the follow-up committee showed a process of empowerment.<sup>9</sup> All answered positively that they were socially and politically more aware and independent than before and have more recognition and standing in society. After accessing the CAC process, these women

<sup>8</sup> An example of this was the Regional Environmental Forum: "The Natural Areas, the Generation of Environmental Goods and Services and their Importance for the Development of the Province of Tolima," held on 12 May 2008. This forum convened by the CAC Follow-up Committee was supported by the provincial authorities and attended by different actors from the public sector.

<sup>9</sup> Empowerment is here related with three perspectives: - personal, that is, developing a sense of oneself and self-confidence; relational, that is, the capacity to negotiate, bargain and affect the nature of relations; and collective, that is, working with others to achieve some good objectives (Rowlands in Eade 1996:87).

communicate more effectively, are more respectful to others, are more aware about watershed problems, are recognized by others, and feel proud of being part of the follow-up committee.

Deicy Fracica, who was skilled during the CAC, explained her actual situation in her community: "The CAC gave me recognition within my community; now I present petitions for rights, *tutelas*" and mentor other neighbors to demand their rights. This allowed me to lead in resolving problems related to women's well-being that politicians rarely address. For example, in health services, I led a petition before the provincial government for the delivery of services and medication to women. I feel like a real leader and with power decision in my community" (Gutierrez, A. pers. comm. 2008).

Nevertheless, these findings cannot be generalized to all women participants. Increasing women's participation takes time as Amparo Gutierrez, a member of the Follow-up committee, explains: *In the first phase of the CAC, a major thrust was to improve our skills to communicate our ideas. First, I participated in the Water Forum in Coello-Cocora, next I attended a workshop in mechanisms of participation, and then I went on the Coello Expedition. When I started this work with Semillas de Agua in 2005, I also started to have problems with my family because of the time that I was out of my house. Moreover, mistrust in my capabilities to work with communities from my husband and my sons were high. When they saw that my work began to have an effect, improving the well-being of the communities, I also gained credibility from my family. Now, I can be out of my house for 4-5 days without a problem* (Gutierrez, A. pers. comm. 2008)

Gendered social network analysis of SCALES project links (Figure 7) shows that men had nearly twice as many links as women (19 versus 10). This

result suggests that despite the facts that the women have gained ground, the men continue to have more social resources and participate more.

***Empowerment of a key local NGO (Semillas de Agua)***

For 9 years, Semillas de Agua worked with farmers in APACRA to help them farm more sustainably. The Anaime River flows into the Coello and APACRA operates in the municipality of Cajamarca. Some of APACRA’s members became involved the CAC process. Four of the members of the follow-up committee come from this organization. The training and motivation that APACRA’s members received helped strengthen APACRA itself. Through the CAC, APACRA gained recognition from the municipality and now it has a shop to sell organic produce in the main square of Cajamarca. According to Jorge Rubiano of Semillas de Agua, APACRA is now one of the strongest organizations in micro-watershed

activities. Rubiano attributes APACRA’s success to the fact that by working together APACRA’s members have improved their productive systems. Some of these changes were identified in the participatory video made by the follow-up committee and include the establishment of a biodigester to make methane, improvements in the quality of drinking water and reductions in the use of pesticides. Although these technologies were not developed by the project, they were disseminated to the participants during the CAC process.

Although the CAC was able to empower the actions of APACRA in Cajamarca, the existence of community organizations participating in watershed management initiatives in other areas is scarce. This is in part because social organization is difficult due to the ongoing conflict between rebels of the Revolutionary Armed Forces of Colombia (FARC) and the government of Colombia. Indeed, Semillas de Agua’s zone of influence was restricted, at least until the CAC, to Cajamarca, Coello and Ibaguè.

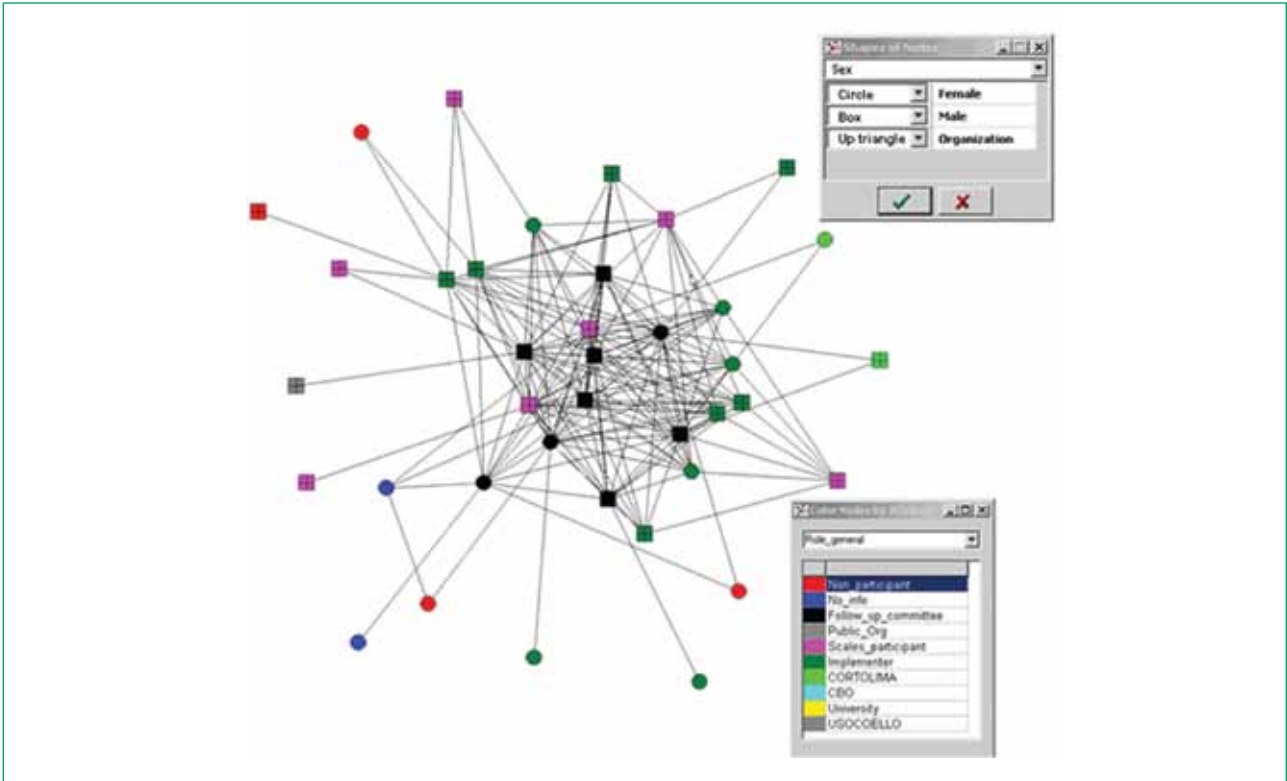


Figure 7. Gender of participants linked together through the SCALES project



The CAC provided a platform and resources for the NGO to champion and build support for its conservation agenda. Semillas de Agua adapted ideas and opportunities from the SCALES project to expand its influence and profile. The CAC process not only permitted Semillas de Agua generate new activities in the upper watershed but also helped to engage with new partners beyond the upper part of the watershed. According to Jorge Rubiano, biologist of Semillas de Agua, the CAC has provided a space that *has made it possible to conduct work at the watershed level that had not existed in the province, through an organization with actors from different municipalities that work for a common purpose, addressing the issue of water resource around the watershed* (Rubiano, J. pers. comm. 2008). As a result of the CAC, CORTOLIMA approved three páramo conservation projects of the NGO.



### ***Increased public agency participation***

The CAC motivated the interest and participation of the local and regional authorities in environmental management. According to Candelo of WWF (Op., Cit, 2008), the province of the Tolima has become more interested in protected areas: *This province [Tolima] had not been participating actively in the conservation process...We are now working with them, and we feel that there is greater involvement, and I believe that this is driven by the CAC as it motivates the public sector to take a leading role.* In addition, according to Ospina, J. (pers. comm. 2008) *the CAC helped to increase interest by mayors and councilmen, which in turn led to the Semillas de Agua working on protecting areas with municipal support.* Other perspectives are detailed in Box 3.

Through the establishment of spaces for community participation such as the CAC, better exchanges were generated between communities and organizations. Among the most important changes recognized by the participants in the CAC is the fact that it has permitted the communities to break down barriers and stimulate their participation in political decision making. This is reflected in a comment made by a community leader from the village of Hormas in Cajamarca: *“One of the advantages that I have seen is that now I can go to the mayor’s office without any problem and there is conversation, we share with the authorities that are involved in environmental issues, which has been something really great. We have also noted that there are changes at the regional level; the organizations have begun to take interest in the problems of the watershed, in the conservation of the strategic ecosystems. Of course these are things that are there, but they are promoted as a result of this type of process”* (Pérez pers. comm. 2008).



### Box 3. Public agency perspectives of the CAC and SCALES project

**Guillermo Rodriguez**

*Mayor, Cajamarca-Tolima*

What you are doing is interesting. It is an important alternative, farmers working in harmony with the environment.

**Rafael Prieto**

*Forest Engineer, Secretary of Rural Development and Environment, Ibaguè-Tolima*

This project provided tools to learn more about the problems, to develop water use and its relevance to the community.

**Camilo Téllez**

*Councilman, Cajamarca-Tolima*

Since the council participated in the Conversatorio, we've seen substantial changes in the ties between the community and the follow-up committee. This project changed the way we relate to our natural resources. They are beautiful and we have to protect them. Now there is more consciousness about environmental protection.

**Source:** Semi-structured interviews.

Knowledge acquired with respect to their citizens' rights and the role of the public and private sectors in environmental and community management has helped change community relationships with local and regional authorities. Political contact and petitions, made by the participants of the CAC through the agreements, have altered the power relations between politicians and communities.

The CAC process has motivated the communities to participate more actively in processes of citizen action and obtain greater scaling up of their actions. For example, in Cajamarca, the mayor has attempted to motivate other mayors in the region to make future alliances; while in Ibaguè, the community of Hato de la Virgen has been able to improve their roads and the public lighting in this community through a petition. SCALES helped them learn how to make the petition that has led to the installation of community alarms and installation of bridges resulting in improved safety of inhabitants: *"We wanted to reduce the insecurity, the community met, we called the police in the community, and they recommended that we install community*

*alarms in case there was a crime. Also through our negotiation 4 bridges were installed in the sector. For us this has been an accomplishment; with the CAC we have learned that the community itself can negotiate. Before that we just waited for things to come"* (Gutierrez, A. pers. comm. 2008).

Leaders and implementers of the project reported that not all CAC agreements are being fulfilled. The main reason is that the CAC was held prior to elections so the contacts established with the local and regional authorities have been lost because they lost their seats. This process has had both negative and positive consequences, as described by Pérez, F. (pers. comm. 2008): *"Where we were well received; now they will not meet us. (On the other hand,) in some municipalities we had reached a level of trust with the public officials; but with the change in administration they changed and now we have to get to know the new official. In Cajamarca with the last mayor, everything was negative, he only received his political allies so we could not approach him; but with the mayor elect we have made great progress."*

#### **Box 4. Community perceptions of environment-friendly agricultural production**

*Martha Leonel*

*Community Leader, Cajamarca-Tolima*

Since we came here we have not used chemicals because I joined Semillas de Agua in November and I learned a lot from them. Look at the coffee we've had. We will have more a year from now.

*Ever Cacerez*

*Anaime River Basin's Farmers' Association*

Initially I shared this experience with my family because we are conscious of environmental protection. We think twice before cutting a tree, for example. We think about managing our solid residues in the farm. Still, in our farm we are using pesticides because unfortunately in big-scale farming... It is hard to convince some workers about these things...they reject you. [Describing a greenhouse] Purely organic. We have green beans here. We take them to APACRA market in Ibague. We grew these with zero chemicals, using the fungicides and insecticides that Semillas de Agua taught us to prepare..

*Alvaro Rodriguez*

*Community Leader, Coello-Cocora, Tolima*

With the progress we've made, now I have organic fertilizer from my worm culture. I leave the worms for about a month and a half and once the material has turned into earth I put it around the fruit trees.

*Source:* Semi-structured interviews.

Communities have also had success in making petitions to private-sector organizations. Amparo Gutiérrez, describes how they approached Unilever who had already supported educational programs in the area: *"The Department of Development encouraged us to include more businesses so that was why we contacted Unilever, and now they are supporting us with the educational processes of [environmental] sensitization, especially in the schools, where they collaborate by giving workshops on social aspects, making the community more aware of the environment"* (Gutiérrez, A. pers. comm. 2008).

Candelo *et al.* (2008) note benefits from another area of research: *In both SCALES communities, economic games were conducted both as a research activity to better understand the factors that support or inhibit collective action in watersheds, and as a development activity in which watershed residents participate as "players" in "games" or scenarios designed*

*to reflect the actual incentives people face when deciding how to use resources that have both individual and social costs and benefits.*<sup>10</sup> In sum, the process developed through the SCALES project facilitated the participants to know their rights and helped transform their attitude towards their environment and their relationship with others.

#### **Outcome 4: New priorities and commitments for environment-friendly land uses**

##### *Community commitments*

The different interventions by the SCALES project in the Coello River Basin have raised consciousness regarding the use of agrochemicals and environment-friendly production options. The work of the SCALES

<sup>10</sup> Although the games made explicit some of the reasons behind an observed lack of cooperation and generated discussion on how to address the problem, the consensus from the communities was that they could have been better articulated into the CAC process.

project facilitated the integration and the joint work of the community leaders as well as the sharing of problems and experiences of communities from the upper, intermediate and lower parts of the watershed. Both the implementers and the communities now recognize better communication and relations amongst these communities.

Through the creation of the follow-up committee and the Coello-Cocora expedition, the communities had an opportunity to learn about the different problems that inhabitants face and recognize an interdependency exists among them, whereby actions can affect other parts of the watershed

### ***Organizational commitments***

The SCALES project helped develop the CAC as a tool to solicit the commitment of government organizations to work on environment-related themes. Public-sector organizations participated in the CAC at the regional and municipal levels.

Despite the process of convocation, important decision-making actors did not attend (see Table 6). Moreover, some mayors sent representatives with no decision-making power, which limited the results of the political agreements produced in the CAC.

Interviews of the follow-up committee members and implementing team identified the most important advances on fulfilling CAC agreements:

- *Constitution of protected areas in the municipalities of Cajamarca, San Luis and Coello.*<sup>11</sup> These municipalities have included projects for purchasing land within their municipal and

<sup>11</sup> The system of protected areas responds to a need to integrate areas for protecting natural zones of water supply, according to article 111 of the Law 99, 1993. Municipal and Provincial governments are to include these areas in their development and territorial plans.

provincial development plans. Moreover, CORTOLIMA and USOCOELLO have purchased 3,000 ha in the páramo ecosystem.

- *Program for managing and using agrottoxins.* While the program already existed and was implemented by ICA and the Department of Health, the CAC motivated these organizations to become more involved in its supervision and development. For example, in Cajamarca, inspection of agrochemical sellers was renewed, follow-up by the Department of Health of people at risk of being contaminated was implemented, and ICA has committed to continuing this process in the municipalities of Rovira, San Luis and Coello.
- *Regional environmental agency support.*
  - CORTOLIMA dedicated resources for process support of protecting areas within its Three-Year Action Plan (PAT, Spanish acronym).
  - CORTOLIMA incorporated a project for pasture management in its current 3-year action plan.
- *Páramo conservation.* The Mayor's Office in Cajamarca has increased support to conservation and the development of sustainable production systems in the municipal development plan.
- *Fishery plan for the Coello watershed.* In a first phase, ICA is holding meetings to support the communities in the upper part of Cajamarca in the formulation of sustainable fish-farming projects.
- *Two multi-organizational fora on strategic zones.* In alliance with the provincial Department of Rural Development, WWF, Semillas de Agua and the follow-up committee invited the mayors and councilmen of the municipalities in the watershed.

The fora have provided an opportunity for establishing work agreements between the follow-up committee and the other participating actors. Participants from 15 communities in six towns also participated. On average, 30 members of these communities and five representatives of the

public sector participated in each forum (Semillas de Agua 2007).

Transcript highlights of the video interviews also reveal organizational commitments (Box 5)

### **Box 5. Examples of organizational commitment**

#### ***Guillermo Rodriguez***

*Mayor, Cajamarca-Tolima*

I would like to ask my colleagues, with whom we share this mountain range and the responsibility of water use, such as the mayor of Espinal and the other towns downriver... We have to find strategies and work with the community and researchers to move forward. We are worried for example, about the la Linea tunnel decreasing the volume of the Bermellon River, affecting the Coello River. We have to work together. The fields are contaminated, the pests are resistant to pesticides and there are health problems and the only winners are the ones selling agricultural inputs.

I want to ask my colleagues, that between all of us we have to look after plants and animals, the water resources and all the agronomic activities in each of our municipalities because we are all definitely farming communities..

#### ***Camilo Téllez***

*Councilman, Cajamarca-Tolima*

More than a commitment, I see it as a responsibility. One commitment was to set up the municipal protected area system. Another commitment is to involve the community in developing proposals and ideas with the council for a better future.

#### ***Rafael Prieto***

*Forest Engineer, Secretary of Rural Development and Environment, Ibaguè-Tolima*

We observed a serious environmental problem in the Hato de la Virgen stream through participating in the SCALES project. The water is contaminated by septic waste. Now the community is receiving training and they have opportunities to approach organizations about their problems. Unlike before, it is the organizations which initiate proposals to solve problems..

#### ***Alejandro Villamil***

*Technical Director of UMATA, Cajamarca*

We have been with the municipal counselors in the SIMAPS constitutional forum and we are working to establish our municipal protected area system

*Source:* Participatory video.

# Discussion

## Study Limitations

A review of the training evaluations indicated that logistical difficulties limited the participation of people in some watershed communities. This was mainly due to the size of the area, large distances among communities and the lack of roads to access to them. The document review also revealed that awareness-building activities with the most powerful actors in the watershed, especially the industrial sectors, were almost nonexistent. Cantillo et al. (2008) also support this finding, arguing that implementers spent much time in the capacity-building of marginalized actors and neglected to lobby with powerful actors. The lack of effort to motivate these actors and change their attitudes and perceptions on water issues reduced their participation in the CAC meeting. There was only one activity during the preparation of the CAC in which community members had direct contact with these actors (CEMEX mine), whereby social and environmental agendas were shared.

The questionnaire and network analysis presented numerous implementation problems. One, a lack of network baseline data of the watershed communities before SCALES started prevented an explicit “before-after” comparison. Two, a limited review by the watershed contexts was not always fully taken into account. For example, social actors were divided into three groups, and there was no further analysis or sample of the nonparticipants that included powerful actors such industrial sectors, miners and policy makers. This would shed light on the current social networks of the powerful actors and explain, in part,

the lack of motivation of these actors to participate in the CAC process. Three, although a random selection was made of the interviewees in the follow-up committee, this was not true for nonparticipants and participants of the CAC. These groups were chosen by ‘snowballing,’ making sample selection of nonparticipants an issue.

Given that the evaluation goal was to identify general findings of network strengthening, the social network analysis, despite the abovementioned limitations, was useful. It was possible to informally assess the impact of the project on strengthening social networks not only in a section of the watershed, but also between these different parts.

Discussions also influenced evaluation methods. In agreement with the WWF, the NGO that was the local leader of the SCALES project in Colombia, evaluators proposed the implementation of a participatory video with the participation of community representatives from different parts of watershed.

## Factors Influencing the Success of the CAC Process

There are four conditions that influenced the success of the CAC process in the Coello Basin.

### 1. Local leadership

Douthwaite (2002) argues that changes require a ‘champion’ and innovative partners who are able to assume risks. The empirical analysis showed that in the CAC process local partners at the level of project



implementation have an important influence on the results. WWF has a good relationship with Semillas de Agua, which in turn has been working with the local communities for a long time and is interested in continuing to work in this region. In Fuquene, neither *Fundación Humedales* nor WWF has an established network in the area. Thus, it took time to formulate strategies, coordinate, and build trust before the project was implemented. Equally, it was very important to find well-motivated and dynamic local champions at the community level.

## 2. Prior collaborative experiences on projects

The CAC in Fuquene was considered less successful than that of Coello (Candelo et al. 2008). Despite achieving 25 agreements with ten organizations in Fuquene, a low level of collective action resulted in little follow-up on the agreements. One reason for the relative malfunction in Fuquene was a new collaboration between WWF and the local NGO counterpart, *Fundación Humedales*. Differences between the two organizations were difficult to overcome. According to Candelo, *We did not know Humedales, their way or pace of work*. In contrast, WWF and Semillas de Agua had worked together in the region of Cajamarca and Coello Cocora for approximately 10 years. Besides working together, WWF and Semillas de Agua knew others in Coello. In addition, Semillas de Agua had worked on strengthening community leadership. A process started 5 years ago helped establish important local capacities and relationships with local authorities.

Comparing the two watersheds highlights the importance of establishing working relationships and community leadership capacities before attempting to foster collective action. Candelo *et al.* (2008) identify reasons for difficulties in Fuquene:

- *Insufficient financial resources and project coverage*. In Fuquene, budget constraints prevented inclusion of more communities in the CAC process. While Coello covered six municipalities, Fuquene focused on only three and with fewer meetings of the entire group.
- *Lack of trust*. Limited prior interaction with the organizations in Fuquene led some to feel that they were “put against the wall” during the CAC. Fuquene organizations were also criticized more than Coello. One representative acknowledged that some of this was due to a perception of organizations being ineffective and not transparent. Some organizations felt threatened by community insistence that comply with their responsibilities.
- *Lack of inclusion within research*. Although the SCALES project partners had experience in both Fuquene and Coello prior to the initiation of the SCALES project, research activities in Fuquene generated more information on the environmental and socioeconomic issues in the watershed. In contrast, previous Coello experience had both research and community development components that together appear to have provided a stronger base for the CAC.

## 3. Effective capacity building and awareness-raising

WWF and Semillas de Agua were very active with the follow-up committee and participating farmers, particularly through an intense capacity-building process. The evaluation revealed that: (1) interview responses during the participatory video generate changes in environmental awareness of the watershed, and (2) the follow-up committee and participating farmers share similar knowledge and attitudes, likely a result of capacity-building. While both project

participants and the follow-up committee have similar perceptions of the main watershed problems (Table 11), their perception differed from those of the nonparticipants. In general, nonparticipants identified fewer problems within the watershed.

The network analysis together with assessment of knowledge and attitudes provides evidence to support the following findings:

The central positions of the project implementers (see Figure 6 and Figure 7), in particular staff from WWF and Semillas de Agua, are consistent with their capacity-building role, particularly of the follow-up committee. The greater the people's participation in the project, the more the links they have with other people regarding community and environmental development.

- Nonparticipants have sparse relationships with environmental and community development, and most of them are with project participants.
- This greater exposure to the project and its ideas has led to similarities in how the three groups see the problems in the watershed (Fujisaka and Claros 2008).
- The exposure to the project came mainly through capacity-building and organizing for the CAF.
- The SCALES project has worked to achieve objectives relating to the inclusion of women (Figure 7) and linking between upstream and downstream users (Table 6).
- The follow-up committee is active in reaching out to other members of their communities but the changes are in knowledge (Figure 6).

Table 11. Perceived problems at the watershed level

Problem	Project committee	Project trainees	Non-participants
River contamination	100	100	82
Lack of community awareness	100	33	0
Lack of organization	100	17	18
Damaging crop management	78	75	27
Lack of policy enforcement	78	75	0
Burning	67	50	0
Deforestation	55	75	18
USOCOELLO excessive water use	55	42	0
Extraction of stone, sand and gravel	55	42	0
Lack of domestic water	45	42	0
Disappearance of fish	44	42	0
Landslides along river	33	0	36
Loss of springs	22	8	0
Poverty	22	0	9
The cement factory	0	17	0

#### 4. Supportive political and socioeconomic context

Constitutional support is potentially very important to the success of the CACs. Although considerable work on the ground was needed, the

existence of a government document substantiated the CAC process. In addition, the likelihood of public agency participation increased with principles of governability and people's sovereignty.



Source: CPWF

Participants of the CAC, Colombia

## 8. Conclusions

This evaluation is focused on the CAC as a mechanism to generate collective action amongst marginalized actors for natural resources management. The CAC was the main intervention of the SCALES project in Colombia. Designed on the basis of previous experiences of WWF in natural resources management, the CAC of the SCALES project emphasized both implementation and reflection of its usefulness for collective action in Coello and Fuquene watersheds in Colombia.

Collective action fostered by the project enabled development of human capacity, changed attitudes towards the effectiveness of citizen participation, constructed a collective agenda through a negotiation process, facilitated organizational and community spaces to take action, dialogue and learn. Weaknesses have been found in the motivation of powerful actors and in the generation of trust between powerful and marginalized actors. This was reflected in the low participation of these actors in the CAC meeting and in the low support of public actors in the entire process. Moreover, overall public-sector contribution to the

projects fell short of expectations. Only 5 persons from the public-sector related to water issues participate in the CAC process. These persons had little experience in negotiation with communities and as a consequence there was lack of leadership in pooling resources and better results in the CAC meeting.

### Summary of Findings

An analysis of project documentation, social network survey, and interviews, with the support of the participatory video made by the members of the follow-up committee show that the project had most impact in capacity-building, in forging links, in eliciting institutional commitment, and in enabling people to participate in decision making on themes related to water and the environment. This was achieved through various mechanisms, including increasing knowledge, attitudes and skills, creation of a common agenda, and empowerment of the communities and a local partner. Most of the outcomes identified by the project implementers in the impact pathways workshop were fully or partly achieved.





Table 12. Evaluation questions and answers

<p>1. What changed due to the implementation of the CAC in the Coello watershed?</p>	<ul style="list-style-type: none"> <li>• Increasing environmental awareness.</li> <li>• Eliciting institutional commitment.</li> <li>• Fostering links.</li> <li>• Improving knowledge and skills on rights and responsibilities with respect to water issues.</li> <li>• Encouraging collective action.</li> </ul>
<p>2. What is the scope and extent of the changes??</p>	<ul style="list-style-type: none"> <li>• Communities, through petitions, were able to influence decision making on problems related to watermanagement and other issues.</li> <li>• The CAC process has motivated the communities to participate more actively in processes of citizen action and obtain greater scaling up of their actions.</li> <li>• Government institutions have committed to work on environmental-related themes.</li> <li>• Thirty agreements with the public and private sector were signed to solve issues on potable water, conservation, production systems, and resource management.</li> <li>• Communities were given opportunities to learn about the different problems in the watershed through the Coello Expedition and through the creation of the follow-up committee.</li> <li>• Women participated in the project as evidenced by the network links in the network analysis of the project and the presence of female representatives in the follow-up committee.</li> <li>• The process of training carried out by SCALES to prepare the CAC has been directed at generating changes in practices through changes in knowledge and attitude and has motivated the environmental conscience of the community leaders.</li> </ul>
<p>3a. What were the causes of the changes?</p>	<ul style="list-style-type: none"> <li>• Changing attitudes towards the effectiveness of citizen participation.</li> <li>• Constructing a collective agenda through a negotiation process.</li> <li>• Generation of organizational and community spaces.</li> <li>• The creation of committees empowered to take action, dialogue and learn.</li> <li>• Strengthening of participants' knowledge and skills through various capacity-building exercises.</li> <li>• Empowerment of a key local actor (Semillas de Agua).</li> </ul>
<p>3b. What was the contribution of the project?</p>	<p>The project's financial support made the training of participants possible, created spaces for interaction between communities and institutions, and helped its local partner facilitate projects at the community level.</p>
<p>3c. What were the other drivers?</p>	<ul style="list-style-type: none"> <li>• Poverty.</li> <li>• Land degradation, air pollution and water contamination from various sources.</li> <li>• Lack of adequate systems to supply clean domestic water.</li> <li>• Conflict over water use.</li> <li>• Reduced flows of the Coello River and its tributaries.</li> </ul>
<p>3d. What was the role of research?</p>	<ul style="list-style-type: none"> <li>• Contribute to awareness-raising about environmental degradation in the watershed and help connect it with the causal factors.</li> <li>• Help generate incentives to generate cross-scale links and the need of the communities to participate in the CAC.</li> <li>• Give elements for negotiation with watershed actors and government.</li> <li>• Refine and evaluate the CAC methodology.</li> </ul>





Source: Diana Córdoba

Participants of the CAC, Fuquene, Cundinamarca, Colombia

### Costs and benefits

The total SCALES project investment in the two CACs was approximately US\$150,000. An accounting of costs would also include estimate of the partner contributions and the time invested by the communities.

Estimating the benefits of the CAC process is too early an endeavor. While the return on investment could comprise factors such as the funds committed on the day of the CAC and the nonmonetary commitments to implement policies and programs, the efforts to build capacity in watershed communities could generate the greatest social, environmental and economic payoffs. The CAC process produced 27 agreements with government authorities containing financial commitments of over US\$600,000.

### Generation of international public goods

The CAC process has the potential to become an international public good that could enable communities to gain access to knowledge and technology, and in turn help them manage their water

and other natural resources. Knowledge of the CAC process is also a public good.

Two criteria are used to define a public good: nonrival and nonexcludable (Samuelson 1954). Nonrival implies that the use of a good or service by one person does not diminish benefits from use by another person. With respect to CAC knowledge, use by one watershed or country does affect others outside such areas. The criteria of nonexcludability imply that use of the good or service cannot be excluded amongst users. With respect to knowledge of the CAC process, documentation is potentially available to all people.

The CAC process helped democratize access to knowledge and technology, which in turn helped local communities to better manage their water and other natural resources. Hence, the CAC itself helps knowledge to fulfill the criterion of being a public good. Since the CAC can be applied outside Colombia, it is potentially an international public good. Originally developed by the Colombian NGO ASDES, CAC application by WWF and later the SCALES project have expanded its use.

The SCALES research project documented the CAC process, developed a conceptual framework, and identified key success factors for use by a wider audience of practitioners.

## Lessons

The CAC experience in the Coello Basin produced the following lessons:

1. Investment in strategic research topics was crucial to improve the effectiveness of the CAC process. Complementary studies were conducted to provide inputs for existing processes of knowledge and information transfer, and tools to identify and address power imbalances between communities, authorities and other actors.
2. Participants stated that more time should be allocated in the preparation of the CAC in order to attract stakeholders' attention and participation. Securing the cooperation/inclusion of key players from the industrial sector would likely benefit the process.
3. Promoting transfer of knowledge, skills and active participation in the CAC required the development of skills among the participants, such as active listening and effective communication, as well as a better understanding of the CAC process itself. During the process, direct interaction among partners (e.g., workshops, the Expedition and visit) was noted as the most useful methods for learning, skills development and capacity-building. Nevertheless, relatively few stakeholders could participate. A scaling-out mechanism coordinated with activities/training at various stages of the process could enable the project to reach a larger percentage of community members.
4. Enhancing the profile of the local NGO (i.e., Semillas de Agua) generated important local

capacity to extend influence in the watershed and social networks. New tools to generate collective action and participation in the communities were also adapted and applied.

5. Explicit explanation of the importance and benefits that organizational and collective action motivates participation of different stakeholders.
6. Although all the likely participants of the CAC have an interest in water management, specific interests are driven by diverse economic, environmental and social factors. Clarity of such different interests enables the CAC process to respond accordingly. Otherwise, stakeholders who do not feel that their concerns are being recognized will lose their interest to participate.
7. The CAC is a potentially effective mechanism for generating multi-stakeholder participation. Nevertheless, a challenge remains in making the process sustainable, whereby advances continue without the project. Emphasis on project development skills and agreed participation in follow-up activities help ensure continuity.

## Next steps

Although the CAC process benefits from support of the Colombian constitution, similar projects could advance collective action in other locations without such support. Training civic organizations (community-based or nongovernment) can better influence decisions through new knowledge, technology and skills.

As civic organizations increase lobbying pressures while government agencies face greater demands for accountability of action, both capacities and incentives to perform can generate effective collective action. The CAC is an important process to connect the people with authorities in order to improve decisions and actions.

**Semi-structured interviews** (Personal communications)

Cacerez, E.	3 July 2008
Candelo, C.	6 July 2008
Gutierrez, A.	5 July 2008
Leonel, M.	3 July 2008
Martinez, B.	5 July 2008
Ospina, J.	6 July 2008
Pérez, F.	4 July 2008
Prieto, R.	5 July 2008
Rodriguez, G.	7 July 2008
Rodriguez, A.	5 July 2008
Rubiano, J.	5 July 2008
Tellez, C.	5 July 2008
Villamil, A.	7 July 2008

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# Appendix 1. Most Significant Change Story

**Source:** De Leon, M.C.; Douthwaite, B. 2007. Most significant change stories from the Challenge Program on Water and Food (CPWF). CPWF Working Paper 03. The CGIAR, Challenge Program on Water and Food, Colombo, Sri Lanka. Pp. 26-27

**Classification:** Partnership

**Project / Theme / Basin:** PN20 / Theme 2 / Andes

**Date when the change occurred:** 2006

**Place where the change occurred:** Andes Basin

## The Story

The main intervention in the two sites in Colombia is the “conversatorio,” which is a legal mechanism through which communities hold authorities accountable. Its success depends on the extent to which the community is united, technically prepared, and capable of interacting with representatives of the organizations. The project is adapting a process for preparation of local communities on all of these fronts in order to address watershed issues.

The process is led in each of the two sites by local NGOs, supported by a national NGO and the research organizations. In one watershed, the NGO mainly focused on the lake at the bottom of the watershed, while in the other watershed an NGO from the páramo of the uppermost part. Bringing these two together, through the support of the national NGO, has led to a strong collaboration and to new perspectives on the importance of linking upper and lower parts of watersheds. In addition to their links with each other, the wetland NGO now works in upper areas and the páramo NGO now has contacts with the irrigation districts of the lower part of its watershed.

At least in Fúquene, this is also reflected in changes in the way communities see things. In a prioritization exercise to determine what topics would be addressed in the “conversatorio,” fisher communities gave priority to problems faced by upstream communities because they recognized that by working with these communities to solve their problems of unsustainable agricultural expansion, they would be indirectly solving their own problems of water contamination. This is in spite of the fact that a fisheries biologist with whom they worked closely was pushing them to give priority to downstream fish and water-quality monitoring systems!

The realization that upstream issues were important also spurred the downstream NGO to try to influence policymakers to take action in upstream areas. One area of issues is land use regulations in parámos. The NGO is supporting the idea of environmental service payments for adopting sustainable practices in appropriate areas. Another area of issues is water treatment. None of the water treatment plants in the rural communities is working and this is a major source of pollution downstream.

In another site in Coello, Tolima, there was very little contact between the upper and the lower parts. Through this project and the intervention of CIAT's rice project, a contact was made. Someone from the rice growers' association participated in a "watershed expedition" that involved about 30 persons from different parts of the watershed visiting it together. As a result, they became aware of the threats to their water supply due to upstream land use practices, and are now active participants in the basin dialogues coordinated by the NGO.

**Why is the story significant?**

It shows new relationships and changes in attitudes that should continue beyond the life of the project.

**What were the critical factors that led to the change?**

Opportunity to focus on something beyond their original geographical and technical areas of expertise.

**What were the constraints?**

The two local NGOs competed for time and attention from the national one. In some ways this brought them closer since but the national NGO does favor one over the other which is always a problem.

**What are the future implications for action (e.g., future research), if any?**

Presumably, both will continue to use a watershed perspective within their work. One thing I wonder about is how the communities will feel about the linkages they discovered. For example, the fishers see that their problems will be solved upstream. But will they support drastic upstream solutions like banning all agriculture at the expense of upstream welfare? It will be interesting to watch how the alliances among stakeholder groups will play out over time.

## Appendix 2. Agreements reached during the CAC meeting

No.	Organizations involved	Type of agreement	Summary of the agreement
01	CORTOLIMA	Conservation	<p>Prioritization of the Coello watershed in the Plan for Regional Development.</p> <p>Support 'clean production' projects in the watershed.</p> <p>Purchase of land for conservation and support to projects of soil conservation.</p> <p>Communities can participate in the watershed council which will be regulated by MAVDT and included in the PAT.</p> <p>A research agreement for the establishment of an observatory of the watershed.</p> <p>A project proposal of incentives for conservation in the region.</p> <p>Reforestation of the local protected areas and their inclusion in the national system of protected areas.</p>
02	CORTOLIMA	Resource management concessions	<p>Concessions for exploitation of construction materials from the river (sand and stone).</p> <p>Projects oriented to water conservation, management of soil erosion and better practices for soil conservation.</p> <p>Meet with INGEOMINAS to revise and plan visits to the extraction sites of construction materials in the watershed.</p>
03	CORTOLIMA	Resource management concessions	<p>Make progress in the process of monitoring of the current irrigation concessions, giving priority to water for human consumption above other uses of water.</p> <p>Verify if USOCOELLO has a legal concession in the Gualanday stream.</p> <p>Supervise if USOCOELLO changed the course of the Gualanday stream.</p>
04	CORTOLIMA	Resource management concessions	<p>Revise the management plan for fishing in the watershed in coordination with USOCOELLO, INCODER and the CAC follow-up committee.</p>
05	CORTOLIMA	Resource management concessions	<p>Hand in the report of the final process to CEMEX and the strategies of monitoring of the environmental problems caused by this enterprise.</p>
06	CORTOLIMA	Systems of production	<p>Support and facilitate the participation of the communities in different projects of 'clean' production.</p> <p>Include as a task the reduction of the use of agrochemicals in the Coello watershed and articulate this task in the PAT.</p>

No.	Organizations involved	Type of agreement	Summary of the agreement
07	CORMAGDALENA		<p>Agreement with the Institute of Meteorology, Hydrology and Environmental Studies (IDEAM) to implement a monitoring network of the Magdalena River to know the quality of water in this river and its tributaries.</p> <p>Agreement with the Tolima Provincial Government to develop reforestation projects along the Magdalena River.</p> <p>Support for the development of an effective strategy to train productive sectors in achieving clean production.</p>
08	Provincial Government, Agriculture Secretary of Tolima	Conservation	<p>Assign resources for purchase of land for conservation.</p> <p>Oversee the different legal and administrative processes for land purchase in coordination with the municipalities and CORTOLIMA.</p>
09	Provincial Government	Production systems	<p>In agreement with the APACRA association of agroecological producers, commercialization needs will be supported, as long as the stipulated conditions are met. There will be a meeting on Monday, May 14 at 2.00 p.m. for this purpose.</p> <p>Ratify the agreement of the food safety plan by the end of May in the Coello municipality.</p> <p>Continue support for the rural food safety program with the provision of 150 million pesos.</p>
10	Provincial Government	Conservation	<p>The office of agricultural development is committed to channel resources to the purchase of areas of conservation interest, assigning 50 million pesos for land purchases in the Coello River Basin.</p> <p>Oversee the legal procedures for the purchase of areas of conservation interest, and come to agreements with Cortolima to purchase these lands.</p>
11	Provincial Government	Conservation	<p>Meeting with the follow-up committee on Friday, May 18 to define strengthening mechanisms for the Conversatorio agreements.</p>
12	USOCOELLO	Conservation	<p>Look for advice from Cortolima and Semillas de Agua for the management of the purchased lands, future land purchasing and participatory management; the suggestions should be implemented.</p> <p>Development of a study of timber species in the Coello River Basin with Agrobursátil and Semillas de Agua.</p>
13	USOCOELLO	Resource management concessions	<p>Monitoring of the assigned water flow by the concession and define whether the 30% of protected flow is being respected.</p> <p>Visit the Gualanday creek to observe the estuary and determine whether there are irregularities, with Cortolima, the Coello Local government and the CAC.</p> <p>Preventive management of floodgates, as long as the schemes are supported with real-time monitoring, with the cooperation of the Dindalito community leaders, to avoid flooding in the rainy season.</p> <p>Visit the conservation office of Usocoello with representatives of the Dindalito community to plan dredging and maintenance of drainage channels affecting the community during rainy season.</p> <p>Continue dredging and maintenance works in accordance with the conservation and budget plans of USOCOELLO.</p>

No.	Organizations involved	Type of agreement	Summary of the agreement
14	USOCOELLO	Systems of production	<p>Revise the technical viability of the dam redesign, attending to the CORTOLIMA suggestions regarding the technical adequacy.</p> <p>Review of the flow reestablishment viability in accordance with the INCODER technical proposal.</p> <p>Leave 30% of water free for the flow, as established by the concession.</p>
15	Municipality Coello	Conservation	<p>Negotiate land purchases in the micro-basin areas of Gualanday and Chagualá, in agreement with the community and Semillas de Agua to identify these lands and, through JAC, hire for their maintenance.</p> <p>Allocate 100 million pesos for land purchases and management (equivalent to 1% of the budget).</p> <p>May 17 -18: meeting with the JACs to draft the “forest guarding” proposal.</p>
16	Coello Municipality	Potable water	<p>Study of, and investment for, permanent water analysis, and to implement a chlorine gas or other system of improvement of the urban water quality.</p> <p>Contract for buying and installing water tanks for the Chagualá zone and socialization meetings with the community.</p> <p>Make the headwaters water consumable and build treatment plants in the rural areas.</p> <p>Review of the water scarcity in the abovementioned areas to optimize the functioning of existing water tanks.</p> <p>Work on the concession of the ECOPETROL treatment plant to make available regional plants and headwaters to the community of Gualanday.</p> <p>Open a space for community participation in the design proposal for the slow filtering treatment plant in the areas without water treatment plants.</p>
17	Cajamarca Municipality	Conservation	<p>Make available 1% of the municipal budget for land purchases in the Anaime upriver basin and negotiate the availability of further resources.</p>
18	Cajamarca Municipality	Systems of production	<p>Implement the pesticide- and agrochemical-free integrated management agreement in Cajamarca, especially for La Cucuana.</p> <p>Adequately implement the integrated plant management agreement and continue with the Semillas de Agua and ICA agreement regarding clean management and cultivation of arracacha (<i>Arracacia xanthorrhiza</i>).</p> <p>Co-develop a plan of clean production based on the APACRA experience; transportation subsidies and the necessary guarantees will be offered to ensure the promulgation of clean production mechanisms.</p>
19	Ibague Municipality	Conservation	<p>Financial and technical support for processes of reforestation in this municipality.</p>
20	Municipal Council of San Luis	Potable water	<p>Project of drinking water for this municipality with the participation of the communitarian groups.</p>



No.	Organizations involved	Type of agreement	Summary of the agreement
21	Municipal Council of San Luis	Conservation	<p>Agreement Project to create the Cajamarca Municipal System of Protected Areas (SIMA, acronym in Spanish).</p> <p>May and June - presented the Agreement Project to create the SIMAP, taking into account the community's participation in the management and administration of natural resources, looking for management alternatives.</p> <p>The municipality is registered in the Departmental Water Plan and through this mechanism will promote natural resource management.</p> <p>Remain in observance of Art. 65 de la ley 99 de 1993.</p>
22	Municipal Council of Cajamarca	Conservation	Creation of the SIMA.
23	Municipal Council of Cajamarca	Potable water	<p>Communitarian meetings to discuss and prioritize different projects.</p> <p>Make political control to the development of projects for the improvement of the quality of water in Cajamarca and generate spaces of civil society participation.</p>
24	INCODER	Conservation and systems of production	<p>Elaborate the baseline for the fishing management plan and the general guides of this plan.</p> <p>Restock fish according to the necessities and technical concepts.</p> <p>Organize a technical committee in which USOCOELLO, CORTOLIMA and the follow-up committee can participate.</p>
25	ICA	Systems of production	<p>Supervision and control on the distribution and selling of agrochemical products in the towns of the watershed.</p> <p>Training activities in the use of pesticides and practices of management of agrochemicals.</p> <p>Confiscate agrochemical products that cannot be sold, are out of date and/or illegal.</p>
26	University of Tolima	Systems of production	<p>Articulate the communities that participated in the CAC in the consolidation of a proposal of the Farmers' University, within the project 'Proyección Social' of this university.</p> <p>Conduct a meeting of the Program 'Proyección Social' with the participation of the communities of the watershed.</p>
27	Provincial Health Secretary	Systems of production	<p>Epidemiological watch in use and management of agrochemicals.</p> <p>Support the ICA control that is part of the work package in agrochemicals.</p>



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- IA 08      Strengthening CPWF project evaluations: Assessing research-for-development impact.  
John Mayne  
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- IA 09      Strengthening CPWF project evaluations: Review of the CPWF small grants initiative.  
Jonathan Woolley  
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- IA 10      Resilience of small farm households through research partnership: A review of evidence from CPWF projects.  
Jonathan Woolley and Boru Douthwaite  
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## About CPWF

The Challenge Program on Water and Food was launched in 2002 as a reform initiative of the CGIAR, the Consultative Group on International Agricultural Research. CPWF aims to increase the resilience of social and ecological systems through better water management for food production (crops, fisheries and livestock). CPWF does this through an innovative research and development approach that brings together a broad range of scientists, development specialists, policy makers and communities to address the challenges of food security, poverty and water scarcity. CPWF is currently working in six river basins globally: Andes, Ganges, Limpopo, Mekong, Nile and Volta.

## About this Impact Assessment

A central challenge for effective watershed management is improving the welfare of residents who live in upper catchments while providing adequate environmental goods and services to people and areas downstream. A CPWF project, Sustaining Collective Action Linking Economic and Ecological Scales in Upper Watersheds (SCALES), addressed this challenge in three sites: Nyando, Kenya; Fuquene, Colombia; and, Coello, Colombia. The objective of this review was to evaluate the impact of The Conversatorio of Acción Ciudadana (CAC) process. The Conversatorio of Acción Ciudadana (CAC) served as the collective action mechanism to promote civil society participation in public policy decisions. Evaluation results show that the CAC process has the potential to become an international public good/method that can (a) facilitate community access to knowledge, technology and skills, and (b) enable them to participate in decision-making processes in managing water and other natural resources.

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