

*Natural resource management problems in agriculture often transcend field or farm boundaries. What happens in one part of a landscape depends on management practices in another. Pest and disease problems in crops, soil erosion, problems related to quantity and quality of water are all examples of this temporal and spacial interdependency. Some form of collective action among landscape users is needed to coordinate how different landscape patches are managed in time and space. CIAT is working to enhance such collective action in the Andean hillsides of southern Colombia, using stakeholder analysis.*



## Stakeholder analysis in natural resource management

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As many other rural landscapes around the world, the Andean hillsides are managed by numerous individual landholders. Most own small patches of land which together with other natural resources and perhaps day-labouring on neighbouring farms, provide the major part of livelihood. Decisions on how to manage land, water and other natural resources tend to be taken individually and to be governed by concerns related to securing household livelihood rather than with a view to the landscape and other landscape users. This means that landscape users lose sight of important landscape properties, such as water flows, soil organic matter movements and landscape diversity, which can best be managed in common.

### Coordinated efforts are needed

In 1996, CIAT's hillsides project started working with landscape users in two small watersheds in southern Colombia: *Los Zanjones*, a 44 hectare, multi-ethnic watershed, and *La Recuperacion*, a 300 hectare area recuperated by a group of Paez Indians about 10 years ago. *Los Zanjones*, situated at about 1,600 meters asl, is intensively cultivated. Main crops are coffee shaded by plantain and cassava. Farmers experience a range of pest problems such as chiza (*Mactrodactylus ovaicollis*) and ants. Some of these pests are related to the lack of crop rotation, the spatial organization of crops in the landscape (i.e. continu-

ous patches of e.g. cassava), and the decline in soil fertility. Others are related to the temporal management of the crop. Common is that for solving them, farmers have to coordinate effort. In *La Recuperacion* the situation is different. Altitudes range from 1,675-2,100 meters asl, and the 300 hectare area only supports about 30 families. *La Recuperacion* contains a number of water springs that are important not only to the people living there but also for supplying drinking water to surrounding communities. It also contains important forest resources that are presently being exploited in an individual and uncoordinated manner. This is perceived as a problem by a number of people in the area who foresee problems with firewood and building materials in a near future.

### Issues that need common action

The objective of CIAT's work in these two areas is to find ways to foster collective or concerted action among landscape users in their day-to-day resource management and thereby make it possible for landscape users to deal with the natural resource management problems which cannot be solved effectively on an individual basis. So far, we have identified three issues that are important in this context:

1. The importance of working with small enough groups of landscape users for mutual trust and understanding to develop;
2. the importance of collective landscape monitoring; and

3. the importance of stakeholder analysis, i.e. of identifying the totality of landscape users - or direct stakeholders - and eliciting their concerns, views, interests, etc.

In this article, we shall only deal with the issue of stakeholder analysis and describe some of the methodological lessons that we have learned so far.

### Why is it important?

Collective action in landscape management is likely to take place in the context of diversity. Andean hillsides typically contain a multitude of common and privately owned resources as well as open access resources. Each resource carries an associated complex of often conflicting interests held by stakeholders inside as well as outside the watershed. As an illustration, the 20 families using the 44 hectare watershed, *Los Zanjones*, comprise four ethnic groups, two religious groups, commercial as well as subsistence farmers, land renters and land owners, etc. Due to the bio-physical interdependency that exists between the resources within the landscape, successful landscape management depends on the identification and understanding of different stakeholders and their resource use.

### Beyond conventional analysis

Scaling up from crops to natural resources and thereby from plot to landscape implies that characterizing users according to dimensions conventionally used in farming systems research, is no longer sufficient.

Many more aspects are likely to be in play such as non-agricultural uses of landscape; the particular position of a plot, a crop or a practice within the landscape; the degree of attachment to the land; religion; ethnicity; etc.

Methodologically, the problem is that the specific factors shaping the existence of different stakeholder groups are likely to vary between landscapes and may depend on the particular issue within landscape management. This precludes or at least complicates *a priori* stakeholder identification based on a predetermined checklist of possible factors.

### Methods for stakeholder analysis

In looking for ways to deal with this problem, we got inspired by Guba and Lincoln (1989). In their book, *Fourth Generation Evaluation*, they propose that stakeholder analysis should take place as an "open-ended constructivist inquiry". In the context of landscape management, this means a process through which landscape users are invited to relate their concerns, ideas, values, and issues related to the landscape and the management of resources taking place within it.

A crucial feature of successful stakeholder identification is to base it on *individuals* interviews and to depart from the individual user's *personal concerns*, etc. Claims of homogeneity and agreement made by landscape users during various group sessions, turned out to cover various types of disagreements and disapproval of others' resource use, such as clearing and burning of river banks or excessive use of agricultural chemicals. Raising the existence of different interests or conflicts in a group session implies distancing oneself from neighbours in their presence - something which is often socially unacceptable.

#### Questions for initial stakeholder analysis in natural resource management

1. How do you and your family use the natural resources in this area?
2. Which are the problems that you and your family have experienced with respect to the natural resources?
3. From working in other areas, we have seen that conflicts can be very common between people living in the same area about the use of natural resources. Could you perhaps give some examples of such conflicts in this area?
4. What do you think would be needed to solve these conflicts?
5. Thank you for telling me all this. That is very useful. However, I am sure that there are other people in this area who see things differently from how you have just described. Could you, please, give us the name of a person who would be likely to have a different viewpoint?

### Identifying contrasting perceptions

To facilitate individual interviews in La Recuperacion, we developed a format consisting of 2 pages and 5 questions (see box). The last question serves to ensure that *all* stakeholders are identified. Each respondent is asked to nominate another landscape user who would be likely to hold a different perception to his or her own. By subsequently interviewing the nominated person, landscape users end up being "sampled" according to what could be called "contrast" or "maximum variation" sampling. The process of interviewing and soliciting nominations for new respondents is repeated until the information being received either becomes redundant or falls into two or more *constructions* that remain at odds in some way. Following each interview, central themes, concepts, ideas, values, concerns, and issues proposed by the respondent are analyzed by the inquirer and put into an initial formulation of the respondents *construction*. After the following respondent has volunteered his or her perception, the themes suggested by the preceding respondent(s) are introduced and the respondent is invited to comment on those themes. The constant comparison and contrasting of divergent views is a salient feature of constructivist inquiry and seems essential to any attempt to meaningfully identify and appreciate the existence of conflicting interests.

### Constructing overview

The greatest problem encountered in using this format related to the term *natural resources*. Either our respondents would not have a very clear idea about the meaning of natural resources (resources tend to be understood as *economic resources*) or they would perceive natural resources as solely comprising water and trees while excluding resources such as soil, plants, animals, insects, etc. To overcome this problem, we started interviews by talking about what natural resources mean. Various techniques were used. In some cases, we found a nearby spot that provided a good view of the landscape and asked the respondent to mention all the natural resources that he or she could see. In other cases, we used drawings.

After conducting eight interviews using this format, and making our own constructions along the way, with new issues raised, we felt we had a good overview of the concerns and conflicts in the area. These related to the use of forest resources; land allocations - important given the large variation in altitude and agro-ecological conditions in the area; and domestic water supply, including sabotage on water pipes. Respondents mainly related these problems to a lack of effective organization among landscape users.

### Identification of internal conflicts

We then invited the entire group of users of La Recuperacion for a meeting. The aim of

the meeting was to develop a *joint construction* of the natural resource management problems in the area and to explore the felt need for some form of collective action. At the meeting we presented the themes that we had discovered during the interviews and asked each of the participants in the meeting to select the theme that concerned them most. In this way, sub-groups were formed and asked to elaborate on: the problem; the reasons for the problem; previously attempts to solve the problem; and possible solutions.

Despite details given in individual interviews on internal conflicts over specific sub-problems, none were raised in the sub-group context. Instead, problems were presented as conflicts between the people of La Recuperacion *versus* some external agents, be they middlemen buying wood, the municipality, responsible for the water supply, or those upstream of the area polluting the water through processing of sisal. This indicates the difficulty socially of making direct criticism of neighbours.

Over the next few months, work will continue to elaborate on the joint constructions of the identified problems and gradually building in more detail about the conflicts surrounding the problems. Alongside this work, action plans will be developed with landscape users for how to solve the problems and how to monitor progress.

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#### Reference

Guba, Egon and Yvonne Lincoln. 1989. *Fourth Generation Evaluation*. Sage Publications.