



Participation in upland development and conservation

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A case study of Bella Vista community in the upper reaches of Piray River in Santa Cruz, Bolivia.

[A view of the high catchment of Piray River, Bolivia](#)

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The following case study forms part of FAO Project GCP/INT/542/ITA - Interregional Project for Participatory Upland Conservation and Development (FAO/Italian Government programme) - a project based on the principles set out in Chapter 13 of the Rio Earth Summit's Agenda 21 (1992) on the management and sustainable development of mountain ecosystems. Bolivia, Nepal and Tunisia are participating in this pilot project, designed to identify and evaluate strategies, methods and techniques for promoting and strengthening people's participation in upland watershed conservation and development.

The project area in Bolivia, located in the mountainous upper reaches of Piray River (Department of Santa Cruz), extends over 140 000 ha (the total area covered by the Piray watershed is 10 000 km²). The topography of this area is fairly rugged, rising from 600 to 2 400 m above sea level; annual precipitation ranges from 700 to 1 200 mm, with a marked rainy season from October to April. The watershed is home to 24 rural communities, each comprising 30 to 60 households, forming a population of some 10 000 inhabitants (this includes Samaipata, with 2 500 inhabitants). About 25 percent of the total area is under native forests which are diminishing every year as a result of traditional slash-and-burn practices.

In early 1993, six of the watershed's rural communities began a participatory programme aimed at improving natural resource use and management. In 1996, the programme was extended to a further eight communities. This article deals, in particular, with the experiences and results of the Bella Vista community, the subject of a case study (Delnoye, 1997).

The project was implemented in conjunction with the Servicio de Encauzamiento y Regulación de Aguas del Río Piraí (SEARPI - Piray River flood channelling and control service), a decentralized Bolivian institution run by the Santa Cruz Prefecture, the body responsible for managing the Piray River watershed. The project is known nationally as the SEARPI-FAO project.

STRATEGIES

The project's main aim is to encourage community participation in integrated watershed

management. The working strategy is based on a gradual, flexible approach, designed to involve the population, and includes socio-economic and biophysical assessments of local conditions, problems and potential, and the identification, implementation and evaluation of local activities and initiatives. Numerous participatory methods and tools were tried and tested in the various stages of the project. They included rural problem analysis, assessment and planning workshops, cost-benefit analysis, socio-economic stratification, regular meetings with grassroots organizations and interest groups, research, extension and a number of soil conservation techniques designed to improve production systems and generate income.

The constant presence in the communities of an extension agent, backed by a multidisciplinary team (agriculture and livestock, forestry, social promotion and communication) and a training programme have been instrumental in strengthening local technical and organizational skills. Community plans and the sustainable municipal development plan form the basis for work proposals. Institutional coordination with non-governmental organizations (NGOs) and with the Samaipata local authorities are factors which help in the implementation of activities.

[A farmer shows his mixed plantation of Pinus patula and native species](#)

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[Project participants have taken apiculture as a way to increase household income](#)

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BELLA VISTA COMMUNITY

Socio-economic and biophysical characteristics

Bella Vista is one of 12 communities located in the project area and one of the three where participation in watershed management is strongest.

The community consists of 30 families whose origin dates back to the beginning of the century following migrations from the mesothermal valleys (mainly Valle Grande). It occupies an area of 2 600 ha, which includes the whole of the El Fraile microwatershed. Dwellings are dispersed along 7 km of road, from the headwaters of the microwatershed right up to Escuela (from 1 600 to 1 300 m in altitude). It is worth noting that about 30 percent of the population profess the evangelical faith - a very unusual situation as this is a minority religion in other communities.

The rugged terrain is very representative of this upland watershed, with forests, cropland/fallow and grazing land accounting for 54, 28 and 18 percent of the area, respectively.

A study using International Forestry Resources and Institutions (IFRI) methodology provided data on forest products, logging methods, vegetation characteristics and the population's socio-economic situation (Sandoval, 1994). The households in the area use some 25 forest products (trees, shrubs, herbaceous plants and forest wildlife), the most important of which in order of consumption are fuelwood, fodder, timber, medicinal plants and plants for household roofing. Insignificant quantities of other products such as manure, honey, fruit, bark, palmito, meat and ornamental plants are used. The use made of these forest products and the tools employed to harvest them are traditional. For example, chainsaws are used to fell trees and produce sawn timber planks. There is a small carpentry workshop in the community.

On average, 19 percent of household income is derived from forest products, 66 percent from crop production, 9 percent from livestock production and 6 percent from other activities. Given the rational use made of forest products in Bella Vista, it can be said that there is a "forest

culture" in the community.

The Organización Territorial de Base (OTB), established in 1995 under the People's Participation Act, is the most important organization in the community which also boasts a heads of household committee, a sports committee and farmers' groups formed and backed by the project (the most important of these being the beekeepers' group). The evangelists are an unofficial, but very active, group in the community. In addition to the backing of the SEARPI-FAO project, the community receives support from time to time from the hospital and the Samaipata local authorities.

Each household has about 10 to 20 ha of land. Almost all the households own their land, but do not hold title deeds. Farms are individually operated; there is no community farmland. The cropping systems are based on annual crops (maize, potatoes and beans), fruits (citrus and peaches) and sugar cane. Livestock farming (mainly cattle) is extensive, with each household having 10 to 30 head on average.

Community participation

When the project activities first got under way in 1993, Bella Vista was not one of the communities earmarked for top priority. However, when it was decided to hold a participatory planning workshop in a nearby community, the Bella Vista community leaders came to the project asking to participate in that workshop. Following these initial contacts and given the considerable interest expressed by the people, the community was included in the project. The first step was to establish a cohesive group to run a seed potato reserve fund, whose activities included a number of conservation techniques (live and dead fences and soil covers) and the building of a silo for seed potato storage.

Data on the community were collected using IFRI forms and a natural resources management plan (Carmona, 1994), including water and forest utilization, was proposed. In 1994, implementation of the plan began with the building of a stone mill and two demonstration fish culture tanks, and the establishment of a beekeepers' group. The first evaluation and planning workshop was also held the same year. Work continued over the next few years with additional activities (fodder strips, improved slash-and-burn techniques and reforestation), new households and the establishment of a women's group (vegetable gardens). At the same time, grassroots organizations and groups interested in managing and monitoring their funds were strengthened. Teachers and pupils started an environmental education programme and a school garden. Since 1996, these activities have been strengthened and more widely disseminated. Agroforestry plots were set up for participatory research and several farms improved their cropping systems. Early in 1998, Bella Vista and three other-communities were chosen as "training communities", whose aim is to disseminate and share their experiences with other farmers.

Project impact

Five years on, significant changes have taken place in the Bella Vista community, especially in the way the people think and work. Several farms have improved their cropping systems which can now be said to be sustainable, community organization has been strengthened, the revolving funds are managed by fund members and there is no doubt that natural resource management has improved. Indeed, community and internal project evaluations have shown that project objectives are being met (see Box).

In the three consecutive years of internal project evaluation of the level of participation and the rate of adoption of cropping improvement techniques by all the watershed communities, Bella Vista was one of those with the highest rate of participation and use of participatory techniques in natural resource management (see Figure 1).

In addition to the project's social and environmental impact, household income in the community has clearly improved as a direct result of the beekeeping, fish culture and vegetable gardening activities. Figure 2 clearly shows how beekeeping has improved the incomes of the Bella Vista families over the past few years.

CONCLUSIONS

It is clear that major technical and socio-economic changes have occurred in the Bella Vista community. These are summarized below.

On the technical front, Bella Vista's farmers have developed and improved their farming systems in recent years. They have diversified their agriculture by introducing new crops, and have adopted soil conservation and new slash-and-bum techniques; small-scale irrigation infrastructures have been improved and fruit-tree pruning and grafting techniques put into practice; the road infrastructure has been enhanced to facilitate the marketing of agricultural products; community credit systems have been established; and income-generating activities, such as beekeeping, vegetable cultivation and fish culture, silvipastoral and afforestation practices and agroforestry systems have been implemented. Plans for the utilization of wood products have also been put forward and their implementation is being considered.

[FIGURE 1 - Participation in conservation activities by community \(1996-97\)](#)

[FIGURE 2 - Gross income generated by beekeeping in Bella Vista community \(1996-98\)](#)

The major socio-economic changes for the population include: an enhanced awareness of the problems of natural resource degradation, increased self-esteem, enhanced self-determination and self-assessment, improved organizational and financial skills, improved ability to resolve internal conflicts, greater participation at meetings and training events, better knowledge of other communities, institutions and projects, better resource management skills and territorial identity, increased household incomes and better management of household funds.

The conditions in the Bella Vista community clearly suggest that the participatory process will succeed in a relatively short period. The above-mentioned changes, which represent the objectives and expected results of the project, further confirm the view that sustainable resource management by the people can be achieved.

Significant technical and social changes are also taking place in other communities in the project area, in some more than others, even though the participatory process has not been strengthened. This only goes to show that this is a long-term process, depending largely on the dynamism and special characteristics of each community.

In all the communities covered by the project, techniques to make better use of natural resources and to improve production systems, income-generating activities and participatory analysis, planning, evaluation and cost/benefit tools, participatory economic stratification methods and incentive schemes have been tried and tested with the participation of the people, and may now be disseminated and replicated at the regional and national levels.

The encouraging results obtained with participatory management of the upper watersheds have helped invigorate and expand the scope of SEARPI's work, including activities in the lowlands (especially flood control work) and in the upper catchment areas. The "institutionalization" of participatory concepts and approaches has begun at the local and regional levels; this is where the focus of our efforts should concentrate in the coming years.

[Leguminous species \(Glicine sp.\) planted under fruit-trees to control erosion and help maintain soil fertility](#)

Participation of Bella Vista community

A survey conducted in 1997, based mainly on a number of statements by villagers, reveals several facts about the social and technical impact of community participation. Some of these statements are reproduced below:

We now use a different slash-and-burn method. Before, we did not know what we know today. We used to burn everything; the people felled the trees and did a lot of slashing and burning... there was no respect for nature... but now we know what consequences this can have.

We now understand that without burning, the land produces more and stays fertile longer.

... before, without conservation practices, the land suffered the consequences of slash and burn and there were serious landslides. Things are different today, now that we have terraces and forest plantations. The terraces help prevent landslides.

Before, the trees had to be felled for the people to collect the honey, but now, with beekeeping, we can produce honey without destroying the forest.

We have to protect trees and timber such as cedar, because if we don't they will disappear and we won't have them for ourselves and our children. This is why we have to think about different ways of working.

We must take care of our land, so that our children and our children's children may reap the benefit of my work and look forward to better times here.

Before, Bella Vista had no future. Now we see that we can improve our lifestyle.

There are more opportunities for us today. We have new activities, such as beekeeping, which we didn't have before.

We had been thinking about buying plots elsewhere so that we could work with machines... now, we are happy to work here.

Before, we worked as we had always done, but now, we know how to manage our work, we have control over what we do.

The people aren't shy anymore; they aren't shy to go out; we have more confidence in ourselves. We go to Samaipata and Santa Cruz to do our business... when we need something, we go and ask. We now know the people who work in the institutions and we are not afraid to walk into their offices.

The best way to cooperate in the community is to attend the meetings. Alone we are powerless, but if we can attend the meetings and work together... because by working together we become strong... together we stand, divided we fall.

The major change is that we can now meet and, decide democratically about what we want for ourselves and the community.

Before, we used to hold meetings about the school and the road, but we never talked about land and forest management as we do now.

If it is very important... [referring to environmental education]. When they leave school, our children will be farmers, so we have to teach them how to farm the land without destroying it...

These words, spoken by community members, show that they have developed a strong feeling for resource conservation and forest resource conservation in particular. They now have respect and love for nature and for their community, and a more optimistic view of the future.

One group of community members does not participate in the project. Some of these families are tenant farmers and have a short-term view of things; others are very individualistic and do not take an active part in the community's social life; still others are waiting to see the results of project participants' work. Nevertheless, they all identify to some extent with the message the project is putting across and do exchange experiences to some degree with project participants.

As one participant put it: "I think they will gradually follow in our footsteps." It is interesting to

note that without any prompting by the project, one participating farmer rented out some of his land on the understanding that the tenant would use soil conservation practices.

The survey also highlighted some other interesting comments, the substance of which could be used for the future improvement of the participatory process. Some villagers had this to say:

We need to know a lot about woodlands, forests and their resources. We need to know how to make better use of them and how we can get more benefit from them.

...as I see it, yes, we might participate, but we haven't made up our minds yet.

Today, we are the project's top participants, but if we do not work hard enough other communities will overtake us.

It is like a teacher and pupil situation, where the teachers [i.e. the project] notice the pupils who are most interested in their studies; these are the ones they are most concerned about, the ones they take into account; in other words, the ones [the community] to whom they give the best marks.

I have a lot to learn, but practice makes perfect and we know that today's pupils can become tomorrow's teachers.

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