

# 12 **STIMULATING LOCALLY INITIATED AND SUSTAINABLE LIVELIHOOD CHANGE – New Relationships between Local Professionals and Rural Communities in the Central Andes<sup>1</sup>**

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## Abstract

*We examine ways in which locally initiated and sustainable changes in household natural resource use strategies were developed over a three-year period through an initial partnership with three communities and a small team of local professionals. This has led to work with a further six communities. Evidence suggests that this partnership may lead to longer-term continuation and further independent development of these strategies. This will enable households in the future to manage their livelihoods and their environment with minimum external intervention. If such work evidently offers sustained and productive change, it may establish a better foundation on which more conventional development programmes can be built. Our experience shows both pitfalls and potential for this type of change of approach in a specific geographical context, but it also suggests the extent to which this is relevant in a much wider context. We conclude by suggesting that meso-level institutional actors may become involved in enabling these approaches to be applied over much wider areas, in particular small farmers' unions and municipalities, once they realise the benefits of investing in productive actions.*

## Introduction

Rapid social and economic change that affects most rural Andean communities creates specific needs in relation to their use of existing natural resources. The needs of people living in such communities are not obvious to urban-based professionals, they are complex and vary according to the social and economic configuration of the individual, community, and region. To help such communities, the policies of governments and non-government organisations (NGOs) need to be based on knowledge of what people and communities want, on understanding the complexity of household livelihood strategies, on consulting and listening to the poor, and on recognising that community participation should be active rather than passive.

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There are frequently differences between community needs, as expressed by community members freely out of the context of any agency offering assistance, and what outside agencies offer. This is equally true for NGOs sympathetic to the need to discover community priorities, and national and regional governments. All arrive with a particular set of organisational priorities, often influenced by those of overseas donors. Such livelihood change, driven from above, is likely to be unsustainable, because little local impetus has been developed, except among the chosen beneficiaries, and local ownership of the work is limited.

The adoption of livelihoods as a concept by many international agencies should ensure recognition that rural household survival is frequently dependent on both farming and non-farm work as well as on work in far distant places, often foreign countries. Farmers prioritise farming activities that can best be fitted into livelihoods that include migration. In Central Andean communities, migration to cities and areas of commercial farming has long been an important part of life for men and women (Hinojosa et al. 2000; Preston 2002). To households in such areas, labour input minimisation of rural natural resource management is frequently just as important a goal as risk minimisation or production maximisation. For example, previous research by one of the authors (Preston 1998) presented evidence of a shift in emphasis in livelihood strategies from sheep (needing daily attention) to cattle (left to graze high mountain pastures unattended) during the course of the twentieth century. This could reflect the increasing importance of largely male migration and the use of cattle for banking some of the migrant earnings.

The focus on poverty reduction by both national government and donor agencies has caused more development action to be directed towards poor regions or localities. Identifying and targeting the poor communities within poor regions as well as the poorest people within communities is more difficult. A further challenge is therefore how best to communicate with those most marginalised within and by communities – and discriminated against by reason of age, gender, and location (reported in Preston 2003).

The now widespread belief in the value of participative methods to identify needs and ensure more local involvement in actions has created awareness of the need to listen to village people. But the listening is often superficial, largely because such an approach is alien to the background and experience of many local, national, and international professionals. In addition, the poorest people do not necessarily attend community meetings, at which new initiatives are introduced and discussed: they cannot afford to leave their work to attend. Such meetings are dominated by those with most voice – the better off, male, and articulate. As the growing literature critical of participative methods demonstrates (White 1996; Cleaver 2001), there are many ways in which the role of the facilitator may become dominant and the extent to which all sectors of communities can take part in consultations is often uncertain. Therefore, there is a need to develop new ways of working with communities that allow those in all sectors (socially, culturally, and geographically defined) of communities to talk, listen, and discuss effective ways of working together and separately to strengthen household livelihoods.

Recent writing by social scientists on ways of improving collaboration with rural communities has tended to focus on international, national, and regional organisations<sup>4</sup> (de Janvry et al. 1993; Bebbington 1996; and others). Much of this literature concentrates on the use of existing structures at a regional and national level to initiate changes at a community level. In the Central Andes, communities are real and long-lasting social institutions although they are often modified by migration to form transnational communities (Portes 1996; Roberts et al. 1999; Appendini et al. 2001; Preston 2002). This chapter proposes that grass roots changes on sustainable natural resource use can be effectively developed at household and community level and extended to other households and communities and beyond. This involves the use of existing organisational structures, specifically municipalities and small farmers' unions, to enable local professionals (LPs) to link more effectively with rural people.

In this chapter we examine ways in which the facilitation of locally initiated and sustainable changes in household natural resource use strategies were developed over a three-year period through an initial partnership with three communities and a small team of LPs. This has led to similar work with a further six communities. We also identify evidence that suggests that this partnership may lead to longer-term continuation and further independent development of these strategies. This will enable households in the future to manage their livelihoods and their environment with minimum external intervention. If such work evidently offers sustained and productive change, it may establish a better foundation on which more conventional development programmes can be built. Our experience shows both pitfalls and potential for this type of change of approach in a specific geographical context, but also suggests the extent to which this is relevant in a much wider context. We conclude by suggesting how meso-level institutional actors may become involved in enabling these approaches to be applied over much wider areas.

## Resource Use in South-West Tarija

The work that stimulated the writing of this chapter, focused initially on three communities in the south-western part of Tarija, southern Bolivia, close to the border with Argentina. This is an area of temperate valleys at 2000-2600 metres above sea level (masl), bordered at the west by a high plateau (3700 masl), structurally and ecologically similar to the altiplano that extends from north-west Argentina through Bolivia to southern Peru. Two of the communities are situated in the valleys and the third is on the altiplano. Previous research in these areas between 1992 and 2000 had examined the natural resource use strategies and their incorporation into household livelihoods (Preston and Punch 1996; Beck et al. 2001). Research methods used during the earlier research included monthly monitoring of a series of poor, middle-income, and better-off households over the whole of this period. This allowed an exceptionally high level of understanding of the dynamics of these livelihoods and, in particular, of the ways in which migration (frequently to Argentina) is incorporated into everyday life. It also allowed the identification of frequently expressed needs of rural households that might

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<sup>4</sup> In this paper the term 'organisation' is preferred rather than the frequently used 'institution'. Institution is used to refer to societal shared belief or practice such that religion is an institution while the Church of Christ is an organisation.

be satisfied by collaboration with LPs from the city of Tarija. It was this work that laid the foundation for this research.

In the majority of the rural communities in south-western Tarija, household livelihoods are maintained by farming, livestock, and waged work in Argentina and in lowland Bolivia. Both crops and livestock provide basic subsistence for households. They are used for domestic consumption, but also for sale in urban markets or for exchange of products from a different ecological zone at one of the seasonal regional fairs that are still important trading occasions throughout the area. Local domestic production is largely subsistence oriented and cash income to enable the acquisition of manufactured goods (including clothes, radios, and cooking oil) is the result of seasonal migration. At times of crisis, after droughts, floods, or damaging hail or frosts, even more people migrate and their earnings provide the necessary income to make up for temporary shortfalls in domestic production.

In the valleys, whether in the main valleys around Tarija or in the valley of the Río San Juan del Oro on the western border of Tarija department (Figure 12.1), most households have fruit trees (quinces, peaches, and grape vines) and fields (sometimes irrigated) growing maize, potatoes, and beans, and most keep cattle, sheep, and/or goats. The poorest households have no irrigated land, but often have a few goats and maybe sheep. The better off (in the Tarija valleys) have more than 15 cattle as well as sheep and irrigated land. On the altiplano, all households have sheep, some as many 350-400 (2 households have 700-900), and a small number of cattle, goats, and donkeys. Small areas on the lower hillsides, which are less frost prone and near springs, are cultivated for potatoes and beans.

Grazing throughout the valleys and altiplano involves the use of multiple ecological zones. Livestock move horizontally and vertically within the communities, depending on the season, using communal pasture resources (Figure 12.2). In addition, in the dry season those with more than about 15 head of cattle take them on foot to the eastern slopes of the hills where rainfall is higher and ample pasture exists. This land is either owned by Tarija valley households or, more commonly, pasturage is paid for and local people look after the cattle. Tarija valley households with small numbers of cattle take them during the dry season to the upper Andean mountainsides to which they have customary access. Sheep from communities in the Río San Juan valley are taken to the adjacent altiplano communities to be cared for during the wet season when there is pasture available and crops are growing in the valleys.

Our earlier research suggests that, in the Tarija valleys, the number of sheep has decreased and the number of cattle increased during the past century (Preston 1998) and that, on the altiplano, sheep numbers have not increased during the period following the agrarian reform of 1953 (Preston et al. 2003). There is, similarly, little evidence of current environmental deterioration associated with grazing. In the Tarija valleys, our research on soil erosion and changing soil quality suggested that areas of active erosion are very limited in extent and that much erosion is ancient (Warburton et al. 1998; Maas et al. 2000). There is evidence that the areas under cultivation have

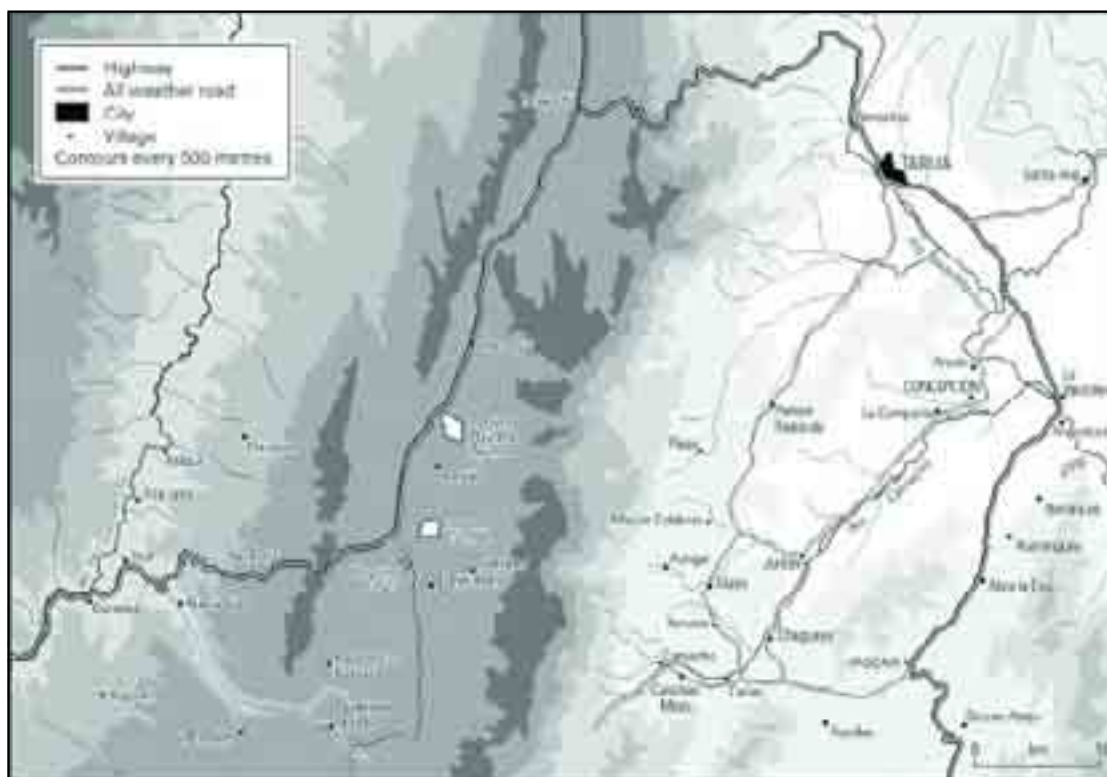


Figure 12.1: South-west Tarija

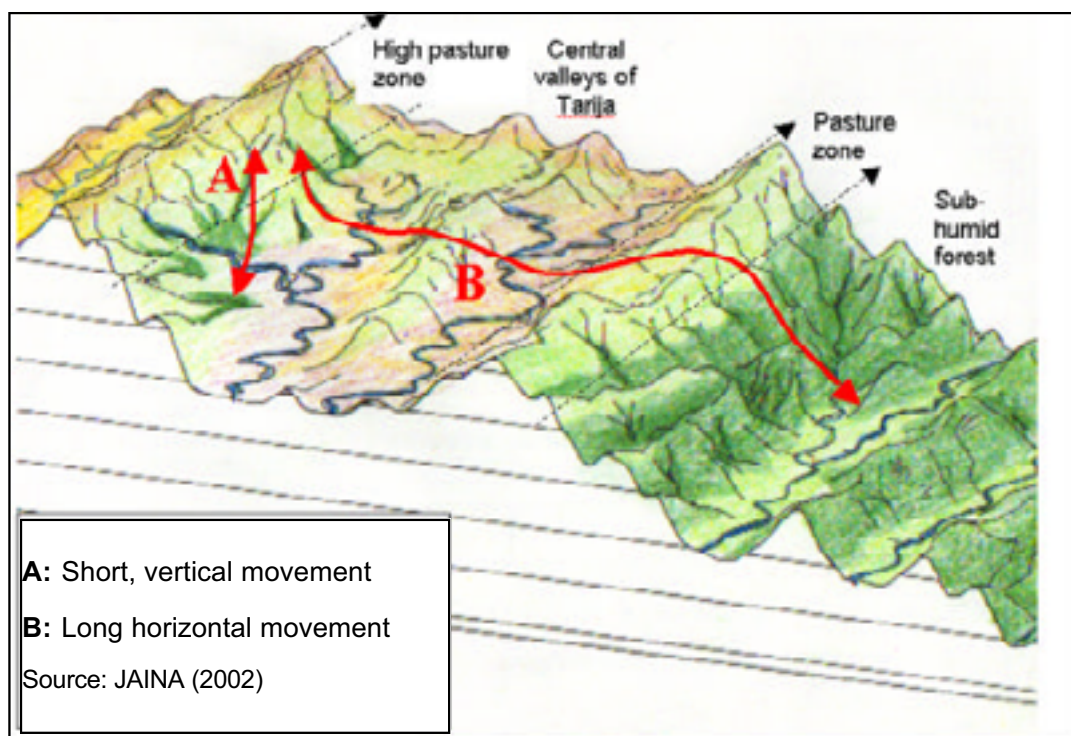


Figure 12.2: Livestock movements

decreased in recent decades and former cultivated areas have been colonised by churqui (*Acacia caven*) under which grazing is possible and soils in such areas are better than those currently cultivated (Salm 1996).

The current research focuses on the links between communities and LPs and the ways in which these links can best be used to enhance management of natural resources to sustain household livelihoods. The work with communities was carried out by two to three LPs working in association with a major Tarija NGO, Protección del Medio Ambiente Tarija (PROMETA), that manages protected areas (similar to national parks). PROMETA manages the Sama protected area, which includes the altiplano community with which we collaborated. PROMETA engages in small projects aimed to improve livelihoods and enhance the natural environment, such as introducing camelids as grazing livestock and attempting to introduce vegetable growing on the altiplano. In such activities there was synergy with our research. In addition we were associated with Radio Tarija, the local radio station popular with farmers, which is managed by a separate NGO, Fundación Acción Cultural Loyola (ACLO).

## Methods of Work

Initial contact with the two valley communities was facilitated by their previous collaboration with the UK research staff. There had been no previous contact with the third altiplano community, although the ecological zone was well known from previous work. These differences and the nature of the communities resulted in different interactions between the LPs and the community. Both valley communities engaged vigorously in workshops and resulting actions. In the altiplano community people were more reserved and interactions were best in smaller groups. Women in valley communities took an active part in community meetings: in the altiplano they responded best to personal and small group discussion. In each community half-day workshops were held at which groups discussed and recorded the major issues with regard to natural resource use, that needed attention, as well as the potential and specific problems of each locality within the community.

Community priorities were established after the LPs attended a normal monthly community meeting, where the ways in which they could be helped in improving natural resource management were discussed; then workshops were organised, usually immediately after the following monthly meeting. At this workshop community members took part in a series of activities to enable them to identify individual and group priorities that were then further discussed and conflated into priority actions representing the interests of the community as a whole. Reflecting the particular skills of the two LPs (a fruit and vegetable expert and a veterinarian), actions to reduce loss of revenue from diseases to fruit and livestock figured prominently on the list of priorities. However, both LPs stressed the need to hold workshops to discuss more general issues relating to any crops or livestock.

Following the discussion about strategies to involve as many people as possible in the different localities in the community, farmers readily identified areas where actions could

be carried out collectively. Each group nominated one person to lead when LPs were organising the workshops (at a community level or by group) and to be held responsible for any leaflets produced, and instruments loaned (knapsack spray, syringes for de-worming) and for recording group members who were absent or otherwise unable to take part in collective and household-level actions. Group representatives reported their progress and evaluated the results of past actions at the monthly community meetings to maintain a regular dialogue.

Further workshops were held to introduce specific actions, such as treating fruit tree pests and internal and external animal parasites. At the workshops descriptions of the pests and diagnostic symptoms developed by farmers were used in their own vocabulary, and reflections were invited on the best action for local people. A crucial element in the work was linking farmer knowledge to scientific knowledge, to identify particular plant and animal diseases. Farmers joined in designing small experiments, such as collecting insect larvae believed to cause abortion in order to catch the insect on hatching for scientific identification. Walking with groups of farmers through fields and orchards was a very productive way of learning about local preoccupations and explaining disease cycles and transmission paths and the value of collective action. Initially, knowledge about traditional methods of treating some crop and livestock diseases was gathered, but most rural people felt that the use of such knowledge was now limited and they had no confidence that its use would be effective<sup>5</sup>.

Further meetings, as well as discussing actions in the fields, reiterated the need to evaluate the results of the first actions: How many pests remained, Where and Why? and make decisions on further action. The necessity of collective action was easily recognised as many diseases spread more rapidly when entire localities are not treated at the same time. The philosophy of this work, that knowledge should be banked, reflected upon, and related to one's personal situation and acted upon by individuals seeking changes from which they may benefit individually and/or through collective action (influenced by the writing of Paulo Freire and others) was summarised in a document that was circulated among agencies and other professionals in Tarija (Preston et al. 2002).

Each of the communities started trials of a number of new practices (different varieties of potatoes, maize, broad beans, and potential fodder crops) on the land of one group member (see Table 12.1) with the resulting crop (if judged successful) shared between group members for their subsequent planting. The success of groups varied according to a range of personal factors, but all groups succeeded in demonstrating new crops or varieties that might be grown locally.

In some communities, schools were involved with the development of nurseries for growing trees, vines, and vegetables. Teachers and children joined community members

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<sup>5</sup> Separate research is needed to verify the effectiveness of local knowledge, however few the number of people who still remember 'old people's' remedies. Similarly a wide range of human illnesses used to be treated with local plants. Advertising and the attitude in other projects have eroded confidence in local knowledge.

Table 12.1: Community gardens			
Community	Winter	Summer	Participants
Chorcuya	Broad beans, potatoes, oats		Each community group
Atacama	Lettuce, cabbage, broccoli, onions, radishes, broad beans	Tomatoes, melon, small squash, cucumber	Parents, teacher, school children
Buenavista		Tomatoes, melon, small squash, maize, cabbage	Parents, teacher, school children
Rupaska	Lettuce, cabbage, onions, radishes, broad beans		Parents, teacher, school children
Tacuarita	Lettuce, cabbage, onions, radishes, broad beans	Maize, tomatoes	Community

in short workshops about best practice in maintaining the nursery and garden. In addition, LPs taught classes on environmental principles in each of the community schools at the request of the teachers. Trees will be used in various ways, to plant on river sides as part of improvements of flood protection, for timber and fuelwood in places not suitable for crops, and fruit trees will be used to replace trees in established orchards and for others wishing to start new orchards. The basic principles of planting and care, including grafting for fruit trees and vines, were explained in workshops and at regular field meetings to monitor the development of the plants. Table 12.2 shows the number of trees planted. In the altiplano community two native tree species (*queñua* (*Polylepis*) and *kishuara* (*Buddleia*)) have been planted in a small area where stone walls have been built to see whether crops can be grown in an area containing prehistoric terraces.

Table 12.2: Trees planted in community nurseries		
Community	Tree type	Number of seedlings
Juntas	Peaches	1300
	<i>Eucalyptus</i>	1500
Armaos	Peaches	300
Tacuarita	Peaches	1000
Rupaska	Peaches	300
Atacama	Grapes	300
Chorcuya	Kishuara	25
	<i>Polylepis</i>	25
Ñoquera	Peaches	100
Tojo	Peaches	915
	<i>Eucalyptus</i>	1500
	<i>Chacatea</i>	900

As part of the programme to use local knowledge and to build on it for community-wide use, Fairbairn and Morales Arlando (2001) mapped the soils of the altiplano community, Chorcuya, in consultation with farmers and graziers from the different localities in the community. Soils were described using local terms as well as the results of laboratory analysis.

## Broadcasting work

The purpose of being associate with Radio Tarija from the outset was to report to people in rural communities the work being done in the initial three locations. During the first

18 months of the project, monthly broadcasts were recorded that included informal talks about the priorities identified by the communities and the work done with them to experiment with new natural resource management strategies. Use was made of visits to Tarija by people from communities for them to talk about the work.

This was a very effective way of announcing the nature of the work being undertaken to a broader public. People regularly visited the project office in Tarija and sent letters asking whether the LPs could visit their community. In most cases this was impossible but people not too far away from one of the initial communities were invited to visit and to take part in workshops. Each of the communities was very willing to welcome people from nearby communities to take part in the work and this enabled visitors to consider whether there was enough popular support for such work that a collective invitation could be sent to ask for the work to be extended to include them. This was the basis on which work was extended to five of the communities with which we collaborated (Table 12.3).

<b>Table 12.3: Collaborating communities</b>		
<b>Community</b>	<b>Collaboration started</b>	<b>Remarks</b>
Juntas	3/00	
Armaos	7/02	
Tacuarita	1/02	
Chorcuya	3/00	
Ñoquera	4/02	
Tojo	3/00	
Atacama	7/00	
Buenavista	8/00	Visits only possible during dry season
Rupaska	11/01	Visits only possible during dry season

Another effective method of informing a wider rural audience of the work in progress was through participating in some of the seasonal fairs that are attended by over 1,000 people. These seasonal fairs are primarily a way of engaging in exchange and monetary transactions but some NGOs publicise their work and we organised with our participating communities to have a stand with produce and display panels, with farmers and LPs on hand to demonstrate produce and talk about the work. Both LPs and farmers managing the displays were impressed by the level of interest; produce was sold out within hours and groups from different communities talked about ways of starting similar work.

### Reaching the excluded

During the initial work with the communities, it was recognised clearly that some households were not represented at meetings or came but took little part. These included people who lived far away or who were too busy to attend meetings (because they are wage labourers or single parents with small children or have several household members absent working elsewhere). Some are, or feel, excluded because they are poor, are of little account, or are just not listened to. Specific strategies were devised to try to include these people.

We visited households that community leaders had identified as having the fewest resources. In the evening or free moments during the day, the project staff visited them individually to chat, ask where they farmed, what work they did for money, and in what ways they thought they might improve their livelihood. After several such visits, the LPs felt more welcome and it became easier to discuss their household needs and whether the workshops had identified priority areas potentially useful to them. Some children from these households did come to the workshops to learn a particular skill, pruning peach trees, that could be useful either to practise on their own trees (although few of the poor had fruit trees) or to enable them to work for others and be paid. As we established personal relations with some households they sought advice and sometimes they joined groups for specific action.

A consultant psychiatrist visited one community to spend time with individuals and groups of people who have few resources and to discuss with them (individually and in groups) what being poor meant, in particular with respect to being looked down on by others in the community (Romero 2002). This work used a skilled professional from outside the LP team to investigate in greater depth the self-perception of such people and the sorts of barriers that might exist to prevent them benefiting from the collaborative work. The report identified categories of people who felt marginalised (for example, older widows) and some of the handicaps that such people face. A young man imaginatively described “not daring to dream” of a better life. Changes in attitudes in all social strata in the community are a necessary precondition to initiate change. For this reason a summary of this report was presented at a community meeting, which led to a lively discussion about how to encourage more widespread recognition of the ways in which the community itself needs to act to reduce social exclusion. Some of the most personal comments, supportive of the approach, were made to the LPs after the meeting, indicating both the depth of feeling and the difficulty of listening to those with fewest resources other than in a more separate context.

Two actions were initiated as a direct result of discussions with those people who had the least resources. In both cases groups of such people were encouraged to discuss how they might collectively experiment with a new strategy that could initially provide more food for the household and, later, offer a source of income. In Tojo, after considering possibilities outlined by one of the LPs, a group of women from 12 different households drew up a plan to use 100 laying hens as a basis for food for the household, selling eggs in the community, and selling eggs in woven rush baskets to travellers passing on the highway. It was understood that the hens would need special care (a leaflet was produced by the LPs for guidance) and that some of the chicks reared from the eggs would be given to others wanting to continue the experiment. Although the cost of the hens was borne by the project, the group drew up their own formal request. After eight months, over 75% of the hens had survived and two-thirds of the eggs sold, locally and in the nearest (frontier) town. In the second action Anglo-Nubian goats were given to a group of five households of an isolated part of one community, Juntas, with the intention of experimenting with partly stall-fed goats and ultimately with improving milk production so cheese can be made. This action has only recently started.

## Gender action

In the valley communities, women are active both in community actions and in forming groups that propose activities that specifically include women. In the altiplano community, women are more reticent and speak little in community meetings. Because it is they who customarily care for the principal livestock (sheep), they are participating fully in relevant livestock-based actions. One of the team of professionals is a woman and she is regularly consulted about women's affairs, whether or not they relate to project actions. This facilitates women being drawn into debates at general meetings about proposals and whether they adequately meet the needs of women. Even so, issues relating to domestic conflicts, often involving some of the poorest households, are discussed, particularly in the valley communities and LPs are regularly consulted about possible action that the community might take to help resolve such problems.

## Links Back to NGOs and LPs

An important part of the strategy, to ensure that the acquired experience was available and used by other organisations and individuals, was the preparation and diffusion of technical reports. These reports were distributed among municipal offices, NGOs, in particular those who attended meetings that we organised (see below), and other projects working in similar areas. All reports and instructive literature for farmers are also freely available on the project website (<http://www.geog.leeds.ac.uk/groups/andes/fragenv.htm>). No evidence of their use in the town was collected but farmers in all communities have commented on the instructive sheets and often asked questions based on having studied them. We organised three meetings of government organisations and NGOs working in Tarija through their coordinating organisation United Nations Institute for Training and Research (UNITAR), where the results of the work were exchanged and issues of common interest addressed. Such meetings offer an opportunity of getting to know the project staff, questioning methods and actions, and learning about other work. The exact impact of such meetings is difficult to assess but some of the attendants remarked on the high value of such meetings, which are not often organised in Tarija.

The links with our main partner NGO (PROMETA) strengthened during the course of the project. Their work is conservation-led but small projects have developed within that framework to bring benefits to communities within the protected areas. While their professional staff are well trained and versed in conservation needs, their approach to community work is strongly top-down and community participation is seen as a probable outcome rather than a necessary precondition of actions. As field staff recognised the esteem with which rural people regarded our work in the communities, they consulted our LPs on strategies and for technical advice and requested visits from them during our routine work in the protected area. This resulted in our staff being asked by PROMETA to run workshops to explain our participatory methods and on best practice in facilitating community collaboration.

In a small urban centre, such as Tarija, much inter-personal communication between professionals takes place informally. Our Bolivian coordinator (Montaño) is well known

and widely respected in the region and word-of-mouth contact has undoubtedly been the most effective way of both spreading information and learning how our work is viewed in the local 'aid' community.

## Results After Three Years

The aim of the work reported here was to help people in poor rural communities to find ways to improve the use of natural resources by developing stronger links with local professionals (LPs). We can readily observe the consequences of different natural resource use strategies. The actions undertaken with the initial three communities during a period of three years have resulted in increases in production and active engagement in collective experimentation to find new possibilities for strengthening livelihoods.

The most striking results of community actions have been larger (5-15 fold) crops of peaches and grapes (Table 12.4). While individual estimates of pre-2000 harvests were made, estimates of current harvests are based on reports of the community groups. The yields in 2002 were similar to those in 2003.

<b>Table 12.4: Changes in fruit harvested (kilograms of fruit harvested per tree/vine)</b>				
<b>Community</b>	<b>Fruit</b>	<b>Before 2000</b>	<b>2003</b>	<b>Percentage Increase</b>
Juntas	Peaches	2.35	30	128
Tojo	Peaches	4.62	30	649
	Grapes (on tree)	10.0	150	1500
	Grapes (on trellis)	1.0	5	500
Source: Data from community working groups				

Veterinary work, following the identification of the range of livestock diseases affecting animals in communities, has focused on reduction of parasites. The programme of de-worming, which included initial sampling of faeces to determine the parasite load, was applied to a large proportion of livestock, mainly by the households owning them. Livestock are perceived in the communities as much healthier (better weight gain, lower mortality during the dry season) and there is recognition that this is the consequence of both individual and collective action to control disease (Table 12.5). There are no quantitative data to support this perception. Lower rates of de-worming in some communities are attributable to animals being absent for periods, grazing pasture in other communities, and therefore being less accessible for treatment.

<b>Table 12.5: Proportion of livestock de-wormed 2003</b>						
<b>Community</b>	<b>Cattle</b>	<b>Percentage de-wormed</b>	<b>Sheep</b>	<b>Percentage de-wormed</b>	<b>Goats</b>	<b>Percentage de-wormed</b>
Juntas	458	79	40	88	559	77
Tojo	6	100	616	94	152	100
Chorcuya	293	100	14,991	51	0	
Atacama	59	93	74	59	202	89
Tacuarita	603	84	570	71	499	72
Rupaska			1962	70	633	56
Ñoquera	135	96				
Data from reports to veterinarian at community and group meetings						

We developed farmer experimentation, for example, with fruit trees grown without irrigation and vegetables grown on the altiplano without greenhouses (invernaderos) that previous projects felt necessary as well as with collecting seeds from native pasture grasses (on the altiplano) to be sown in protected areas to improve forage availability during the dry season. Broad beans were successfully grown on the altiplano through sowing seeds at a greater distance apart than usual to maximise sunlight reaching the plants (see Montaña 2002)

Future research agendas have also been identified to engage problems that were identified to which there is no ready solution. Certain important livestock diseases, *Haematobia irritans* (probably linked to bracken eaten in the eastern forest pasture) and *Muyu muyu* (larvae of an insect causing spontaneous abortion when eaten inadvertently) – affect animals in all the communities to varying degrees, and strategies for disease avoidance are uncertain and unproven.

An important component of the work with every community was the incorporation into the debate and resultant actions of some of the households with fewest resources. In addition we tried to ensure that women as well as men and younger people as well as older people were part of debates about desirable changes. Some of the methods employed have been described. The assessment of the impact of changed natural resource use strategies cannot be seen adequately in one or two years and the impact on households with different levels of access to resources can only be judged on the basis of detailed household information covering the period before, during, and after the adoption of changed natural resource strategies. The ways in which the more powerful in communities dominate debate and ensure that they derive most benefit from changes cannot be overcome without fundamental changes in social relations. However, participation in de-worming of livestock in three communities for which we have good household data does not show consistent differences between households with very few or very many animals, suggesting an uptake that did not discriminate against the poor.

Actions with relation to households with few resources and communities as a whole have attracted the participation of women and men, although the balance reflects in part traditional divisions of labour. Because a number of men are absent, working elsewhere, women's roles in the valley communities are more important than they might otherwise be. In Tojo, women have held important posts in the community administration during the past three years and women's attendance at and participation in community meetings and workshops in other valley communities is noteworthy. Specific actions intended to help poorer households have included women, in particular single-parent households.

A principal objective of the research was to find ways of diversifying and strengthening the links between communities and LPs. The methods used have succeeded in creating a range of links with LPs. Firstly, personal links were established with the initial three communities. Many households are known by name and during visits, when passing along a road or a path people come to talk and discuss a range of topics, many of which

have little relation to the work programme. This is a function of the feeling of friendship and quite different from contact designed to extract information or services. Contact on the basis of friendship and familiarity is a good basis for facilitating consultation on a range of issues and LPs are accustomed to being consulted as acquaintances as much as professionals.

A second level of linkages has been established through community members visiting the LPs' office in Tarija with less hesitation. Farmers come to the city infrequently but regularly. We have a record of 35 visits by rural people to our offices during 2002. This makes it easier for contacts with LPs to be proactive in response to farmer need rather than the farmer responding to a visit to their community by an LP.

A third level of link between farmers and LPs is through farmer experiments. Here the action is initiated in conjunction with the LP, but management of the action is largely in the hands of the farmer. Thus experiments in community (or group) gardens or nurseries are supervised by local farmers, and occasional visits by LPs serve as guidance or consultation rather than as a spur to action (Table 12.1). Clearly different levels of ownership of the experiments exist, reflecting the personalities involved in the work. The coming and going of people from the community working away sometimes make continuity of management difficult. The gardens in two valley communities (Tojo and Atacama) are notable for showing plenty of signs of independent community action between our visits. Plants are taken for planting elsewhere, some other seeds have been sown, and gardens are well maintained.

A fourth level of linkage for mutual support and encouragement is horizontal, between communities, independent from LPs. It is this level that demonstrates best the potential for an on-going process of extending knowledge to other households and communities as a sustainable action. In both Juntas and Tojo, partly on account of their location on roads with traffic, farmers come as a matter of course on business and to see what is happening in the fields and the gardens as well as for socialising. Evidence of inter-community consultation is fragmentary but it does occur, to borrow a sprayer, to check the dosage for de-worming small animals and to look at the new chickens and discover what their owners think about them. Inter-community meetings, such as for small farmers' union sub-centrales, and workshops organised by this project occur regularly and, although they are often for specific purposes, those attending observe new crops and other evidence of change and learn about new ideas and practices. It is necessary, therefore, to consider other channels that can be used to respond to the needs of rural households and communities and enable them to use the technical skills of LPs. Two such channels are the municipalities and the small farmers' union organisations.

## Municipal Involvement in Development

In the past decade, municipalities have been given more power and a budget that can allow them to assist in realising at least some of the aspirations of their inhabitants. The chief executive officer of a municipality is the mayor. They are elected and candidates are selected by political parties. Although some municipalities have an

excellent record of helping the development of projects for the benefit of the population and of obtaining further external funding, there is no cadre of professional public servants (even though such people now exist at national government level) and appointments to most posts in the mayor's office are political. Unless the same party remains in power for several terms, there is limited opportunity for the accumulation of experience by office holders who change after each election. Contracts for work and for relevant fact finding are awarded as much on the basis of friendship and political affiliation as the probability that the work will be well done. Even so, the municipality does have a development function and through its links with the departmental government it can participate in concerted actions.

Each municipality has to present an annual operation plan (AOP) that responds to the priorities expressed by communities in the municipality. Research to determine what communities want is carried out by social scientists and the reports are public documents. Nevertheless they are not necessarily the principal basis on which investment decisions are made (Hinojosa 2003). Infrastructural works far outnumber productive projects because they are more visible and more rapidly completed. New school buildings (with the mayor's name on a plaque on the wall recording his wise act in proposing it) are more common than school gardens or a project providing better quality breeding stock for sheep herders. Technical staff work for the mayor for short periods, usually linked to specific projects. Support staff are mostly for secretarial, accounting, and planning work, but some mayors appoint technical staff. Their role is to establish links with the rural communities and our LPs were invited to accompany a municipal professional in the field in order to discuss our methods of engagement with communities.

Community leaders do request assistance from the municipality to satisfy local needs but there is no clearly recognised way in which such requests are received and processed. Municipal responses do not even necessarily take account of the priorities in the AOP (Hinojosa 2003). The absence of a cadre of LPs working for the municipality limits its potential for linking communities.

## Alternatives to Municipalities

Bolivia has one long-standing and politically powerful rural institution, the small farmers' union, established as part of the '1952 Revolution and Land Reform' throughout the highland and valleys. In the communities with which we collaborated, the monthly community meeting also served as the meeting of the small farmers' union (*sindicato*). Here reports on workshops and plans for future meetings were always discussed, as were other similar activities. The next level of the hierarchy of unions is the sub-central, where representatives of 15-20 communities report on national and regional union activities and discuss matters of common concern. Few NGOs use the sub-central as a means of communicating simultaneously with all the *sindicatos* in one area and only limited use has been made in Tarija of sub-centrales as intermediate organisations that can play a positive role in stimulating positive economic and environmental change. As Bebbington (1996) has noted, the general tendency in Latin

America is to focus on “community-level grassroots groups rather than regional organisations”. A focus on sub-regional groupings, which sub-centrales are, is unusual. Discussions about the sindicatos actively stimulating actions to meet community needs were held at successive meetings of the sub-central for the Río San Juan communities but active cooperation seems difficult to achieve. This is mainly because communities are not accustomed to being consulted and asked to generate their own wish list for changes or problems that need to be overcome. They are more used to professionals arriving with their own list of actions than seeking an open discussion about community needs.

We believe that there is potential to use both small farmers’ unions and municipalities, as administrative organisations in touch with communities in different ways, to assist in meeting their development needs. Discussions both with municipal staff and with leaders of small farmers’ unions have suggested that this potential is recognised, but in the absence of prior experience of such a role, a stimulant such as a policy initiative from national government to encourage experimenting with such actions is unlikely.

## Ways for LPs to Facilitate Change

Our work has demonstrated that changes in the use of natural resources can be facilitated and encouraged as a result of collaboration between people in rural communities and LPs. Such changes can help to make household livelihood strategies more sustainable and take into account the role of migration for causing labour shortages. Changes are also stimulated by the creation of good relationships between people in communities and LPs. The experience in south-west Tarija suggests that a series of elements may be key to such changes and provide ways by which other people and communities can also experiment on the basis of a sound link with LPs. These elements are described below.

### Apply a bottom-up basic philosophy applicable and relevant to rural people, their livelihoods, and farmer experimentation

Acceptance of the primacy of local experience and farmer perception of issues relating to their use of natural resources by LPs is necessary in order to encourage people to be receptive to seek better ways of managing their resources. This bottom-up approach must also make available modern scientific knowledge as a basis for experimentation and not promote acceptance of practices proven elsewhere until it has been convincingly demonstrated that they are locally applicable.

The criteria used by rural people to evaluate new practices necessarily include the extent to which new practices can fit into the range of activities that comprise a household livelihood that incorporates work away from the community by men and women, in particular the young. Thus an apparently perverse avoidance of labour-intensive activities makes sense in the context of prolonged absence of many people from the community.

Participative workshops facilitated by sensitive LPs are still capable of producing priorities for changes in natural resource use but they may represent the views of only

part of the community consulted. During the process of experimentation and continuous learning, it is important to visit households in different parts of the community to involve them in the exploration of alternative natural resource use strategies. This is an attempt for a bottom-up approach to truly represent the interests of all sectors and strata. Non-attendance at meetings and workshops does not necessarily indicate lack of interest. It may rather reflect social exclusion. It is undesirable to create a privileged group of innovators in the hope that their use of new practices will be imitated by others.

### Use existing structures, NGOs, municipalities, and sindicatos in the context of work from the bottom up

An important principle that was adopted with some success was to use existing structures at a community level. The regular community meeting, usually organised by a group of leaders representing different organisations, is a natural forum to initiate debate and obtain feedback on community evaluation of project progress. Attendance at such meetings also reveals a wide range of community preoccupations.

The use of higher-level groups such as the sub-central of the small farmers' union and the municipality has been explored with less success. Not all small farmers' unions are accustomed to being proactive with regard to possible resource use change, but all, to a varying extent, are well linked to their grass roots membership. Municipalities are more highly politicised and regular changes of leadership and the arrival of a small new management team, which occur whenever a different party wins an election, make long-term continuity difficult. LPs were deeply sceptical of the ability of the newly organised regional structures to help the majority of small- and medium-scale producers (Hinojosa 2003). Even so such groups should always receive reports of community-level work and be invited to consider its relevance at a municipality level.

### Scale up through local and regional fairs and radio broadcasts

By locating project work at a community level, for it to have a more widespread impact, it must reach other areas on the basis of propinquity and shared needs. In areas where inter- and intra-regional seasonal trade fairs remain an important economic and social institution, they can be used to spread knowledge about new practices. Broadcasting reports of community-level work also enables people from other communities to attend meetings and workshops in other communities. This helps rural people learn from each other's experience.

### Potential Roles for LPs

The potential role of LPs such as agronomists, veterinarians, and entomologists, is much more varied than that which most professionals currently occupy. While rural teachers, perhaps by virtue of residing in rural communities, often fill a variety of roles in their community, LPs usually live in the city or at least on an agricultural experimental station and travel to communities for clearly defined purposes that are not usually open ended. They often come to perform a specific task set by the organisation of which they are part. Their capacity to respond to individual or community needs is thereby circumscribed.

Some LPs have a deep commitment to working for communities and are good at listening to local people's views and needs. Many act in response to community needs irrespective of their organisationally defined task. They are willing to learn from community or individual experience and compare the experiences of the many areas in which they have worked. The value of such human resources needs to be more explicitly recognised. It is highly desirable that, from a rural community point of view, such professionals can be willing to act outside their organisational role in order to work even more effectively with local people.

Employers of LPs can gain from them having varied roles. NGOs, municipal departments, and national government organisations can enable and even encourage LPs to fulfil their primary roles effectively, but also to recognise that it is possible to achieve even more by being willing to act in a wider variety of ways, using both professional and personal skills.

The LPs themselves can also help to strengthen their links with rural communities by understanding that the esteem in which they are held by both rural people and the organisations that employ them can be maximised by being willing to listen to and act with rural people. The responsibility for realising these potential roles lies equally with the professionals themselves, who should promote their ability to fill a broader role, and with the organisations that employ them: they should recognise the benefits of having a cadre of skilled professionals, able to fill a variety of roles and thereby capable of adapting to the specific needs of each new task or project to which they are assigned.

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