

# Measuring the livelihood impact of farmer-to-farmer extension services in the Andes

Hellin, J.<sup>1\*</sup>, Rodriguez, D.<sup>2</sup> and Coello, J.<sup>2</sup>

<sup>1</sup> ITDG, United Kingdom, <sup>2</sup> ITDG, Peru

**\*Corresponding author and address:**

Dr Jon Hellin  
Intermediate Technology Development Group  
Bourton Hall, Bourton-on-Dunsmore  
Warwickshire, CV23 9QZ

Tel: +44 - 01926 634400, Fax: +44 - 01926 634401, E-mail: jon.hellin@itdg.org.uk

**Abstract**

The Andean region is beset by low endowments of ‘geographic capital’ (natural, social, human and physical capital) and rural poverty is endemic. In recent years structural adjustments have led to a dismemberment of classical agricultural extension and research services to the extent that they are unable (or unwilling) to serve the needs of smallholder farmers.

Since the late-1990s, ITDG, a non-governmental organisation, has been working with farming communities in the Andes to improve livelihood security. The work has included the training of farmer-to-farmer extension agents who in turn are able to address the veterinary and agriculture needs of smallholder farmers. Extension agents have supplied appropriate medicines and vaccinations for farm animals and have worked with farmers on improving agricultural practices. Local farmers pay the extension agents for their services in cash or in kind.

The provision of unsubsidised farmer-to-farmer extension services has been a success. Farmers who have paid for advice and technical assistance have reported an increase in family income through increased production and sales of animals and crops. Due to the lack of a participatory impact monitoring system, however, ITDG failed to measure systematically some of the other benefits perceived by the farmers themselves. These include an increase in social and human capital.

Guided by the sustainable livelihoods framework, ITDG and local farmers are now developing a three-stepped and easily replicable approach to measuring the impact of the farmer-to-farmer extension process on local people's livelihoods. The approach involves comparing achievements to the work plan and logical framework, identifying the likely impact of the project in terms of the five livelihood assets, and lastly using a combination of qualitative and quantitative research tools to measure changes in these assets.

## ***Farmer-to-farmer extension in Peru***

### **The decline of government extension services**

An estimated 70 to 75 per cent of the world's poorest people live in rural areas where their livelihoods are largely dependent on agriculture. Resource-poor farmers need technical advice and training in order to reduce their vulnerability to a range of environmental risks. This is particularly the case in mountainous regions, such as the Andes, where smallholder farmers' struggle to secure some degree of livelihood security is accentuated by seasonal variations in climate, which can bring drought, floods, frost or hail within one growing season (Hellin and Higman, 2003).

In the past governments were largely responsible for the provision of extension services. During the 1990s, however, cuts in fiscal deficits as part of structural adjustments have led to a dismemberment of classical agricultural extension services to the extent that these services are now unable to serve the needs of smallholder farmers (Hellin and Higman, 2002). For example in Peru in 1986 the government-funded agricultural extension programme run by the *Instituto de Investigación y Promoción Agropecuaria* (INIPA) employed 1400 extension officers; by 1992 there were fewer than 100 officers.

Faced with a decline in government extension services, there are examples throughout the world where private extension provision has grown. The problem has been that few resource-poor farmers are able to pay for this private extension. As a result it has generally been directed at larger commercial farmers (Chapman and Tripp, 2003). There are also, however, a small but growing number of extension approaches that better complement smallholder farmers' needs and ability to pay. The defining characteristic of these initiatives is the training of farmer-to-farmer extension agents. These trained farmers subsequently provide services to neighbouring farmers and are paid accordingly. The extension service is, therefore, largely unsubsidised. An example of one such initiative is the *Kamayoq* in Peru.

### **The *Kamayoq* in the Peruvian highlands**

Since the late-1990s, ITDG, a non-governmental development organisation, has been working in farming communities in the Peruvian Andes to improve their livelihood security. The communities are located at over 3,500 metres above sea level and the most common crops are maize, potatoes and beans. Many families also have one or two head of cattle, some sheep and a number of guinea pigs (a food staple in the Andes). These communities are poorly served by government extension services and ITDG's work has included the training of farmer-to-farmer extension agents. They are known locally as *Kamayoq*, a name associated with the Inca empire: in the 16<sup>th</sup> century.

ITDG provides training at a *Kamayoq* School that was established in 1996. Instructors at the School include ITDG staff, previously trained *Kamayoq* and experts from regional universities. Training takes place in a classroom and at different field locations. The course covers a number of subjects including: identification and treatment of pest and diseases of the main agricultural crops; identification and treatment of diseases of animals; improved irrigation via the use of a network of drainage channels; and breeding and rearing of guinea pigs.

Since the School opened over 140 *Kamayoq* have been trained of whom 20 per cent are women. The trainees' mother tongue is Quechua, the local language, and they both come from and are selected by the communities where ITDG is working. The *Kamayoq* are subsequently able to address the veterinary and agricultural needs of local smallholder farmers. Farmers pay the *Kamayoq* in cash or in kind. They are able and willing to do so because the advice and technical assistance they receive has led to an increase in family income through increased production and sales of animals and crops. It is farmers' willingness to pay that makes the *Kamayoq* model so interesting. It is essentially an unsubsidised farmer-to-farmer extension service with ITDG only covering the cost of the training provided at the *Kamayoq* School.

### **The *Kamayoq* and farmer experimentation**

Agro-ecological, social and economic conditions change and farmers, therefore, need to be able to adapt to these changing circumstances (Bunch, 1982). This is particularly so in the Peruvian Andes where farming conditions are so complex and diverse that it would be difficult to find a ready-to-use technology or approach that needs no further adaptation. Furthermore, active farmer participation is widely recognized as one of the critical components of rural development. The confidence that comes from participation means that, suitably empowered, farmers are better able to gain access to potentially useful skills, information and research products.

A successful extension program is, therefore, more likely to involve active farmer participation and to be characterized by joint problem solving rather than standardized solutions (Bunch and López, 1999). In this context, the *Kamayoq* not only provide technical advice and assistance, they also work with local farmers to find solutions to agricultural and veterinary problems. Good examples of this process of joint problem solving include the treatment of a fungus disease of maize; the control of mildew on onions; and the discovery of a natural medicine to treat *Fasciola hepatica*, a parasitic disease of animals.

### ***Livelihood impact of the Kamayoq***

#### **Lack of a livelihood impact monitoring system**

ITDG's experience in the Peruvian highlands demonstrates that in the context of debilitated or non-existent government extension programmes it is possible to establish an unsubsidised farmer-to-farmer extension service that better complements resource-poor farmers' needs. The results have been very encouraging.

- farm households who have adopted improved guinea pig breeding techniques, now obtain bigger and heavier animals for their own consumption as well as for sale.
- technical advice that farmers have received on irrigation, improved pasture and treatment of animal diseases has led to increases in milk production of up to 50 per cent.

While these results are impressive they do not comprehensively capture the impact of the *Kamayoq*'s work on the livelihoods of smallholder farmers. Impact assessment has largely been in

the area of changes in income; these were identified through individual and group interviews. The problem is that impact in terms of income conceals other benefits, in particular farmers' own views in terms of the qualitative changes in their attitude, self-esteem and confidence. These changes can be far-reaching both for the *Kamayoq* and the farmers who are on the receiving end of technical advice, especially the women.

In August 2003 several *Kamayoq* referred to being a 'nobody' before they received training. They said that as soon as they started providing technical advice and being paid for it, they suddenly felt that they were important members of the community. Meanwhile many women who received technical advice from the *Kamayoq* have increased their income as a result of breeding guinea pigs and pigs, producing improved cheese and sowing bio-vegetable gardens. The women who become financially independent also gained more autonomy and decision-making powers.

### **The obstacles to and importance of assessing livelihood impact**

The livelihood impact of the *Kamayoq* as perceived by the farmers was not comprehensively recorded due to the lack of a participatory impact monitoring system (La Cruz and Coello, 2002). This is hardly unique to ITDG's work in the highlands of Peru and is characteristic of many development initiatives throughout the world. There are many reasons why project staff find the idea of assessing livelihood impact a daunting one and why they avoid this exercise:

- **Time** - Project staff are often under great pressure to implement activities and ensure that outputs are achieved within the lifetime of a project. They have little time to monitor the livelihood impact of the project's activities.
- **How?** -. Firstly, there is confusion over what is meant by a 'livelihood'. Secondly, even if there is broad agreement on the definition of a livelihood, it is seldom clear what ought to be measured or assessed. Thirdly there are few guidelines on what practical tools project staff should use to assess the impact.
- **Why bother?** - While donors are now demanding evidence of impact (see below), to date the emphasis has been on demonstrating that activities are being carried out as envisaged in the logical framework. The carrying out of activities *per se* seldom reveals much about the impact on the livelihoods of the beneficiaries.

Despite these obstacles, an assessment of the livelihood impact of development work is becoming increasingly important. Firstly, the conventional approach of many non-governmental organisations and research organisations is to secure funding from different organisations in order to implement projects (and programmes). Donor organisations are demanding more evidence that work funded by them is indeed having a positive impact. This perhaps stems from the realisation that the objectively verifiable indicators used in logical frameworks seldom measure the livelihood impact of a project. Secondly, organisations themselves are making strenuous efforts to improve the quality of their work; an assessment of the impact of their work on the livelihoods of the rural and urban poor is part of the quality insurance process. As assessment of this impact also enables organisations to amend field activities in order to make them more effective.

There is clearly a need for a user-friendly and not too costly approach, as part of a monitoring and evaluation system, to assess the livelihood impact of development work. Although at an early stage of development, ITDG is developing a three-stepped and easily replicable approach to assessing the impact of the organisation's work. The approach moves beyond the project focused indicators that appear in logical frameworks:

**Step one** - compares achievements to the work plan and logical framework.

**Step two** - interprets expected achievements in terms of the Sustainable Livelihoods Framework (SLF) and the five assets (natural, financial, social, human and physical impact) of the SLF.

**Step three** - outlines qualitative and quantitative research tools that can be used to measure/assess livelihood impact in the context of the five assets of the SLF.

### ***A three-stepped approach to assessing livelihood impact***

#### **Reporting procedures and the logical framework**

Almost all project proposals now require a logical framework otherwise known as a logframe. The second column of the logical framework is for the *Objectively Verifiable Indicators*. Indicators are used to show the extent to which the objectives of the project are being met. They are quantitative and qualitative criteria that are used to check whether proposed changes have taken place.

For each output there are also a number of activities that the project is supposed to carry out in order for the output to be achieved. These appear in the first column of the logical framework. These activities often have indicators attached to them (either in the logical framework and/or in a work plan) to make it easier to determine if the project is progressing as planned.

There are, in turn, different types of indicators. Type 1 indicators demonstrate that a particular activity has been carried out or completed, for example that a training course has been held by a predetermined time. Type 2 indicators go beyond whether an activity has been carried out and start to address the consequences of a particular activity, for example that as a result of a training course resource-poor farmers are now better able to process and market their agricultural products.

Organisations such as ITDG clearly want to know the impact of their work on the livelihoods of the rural and urban poor. In the absence of any clear alternatives and guided by project documents, such as the logical framework, there has been a tendency to use Type 1 and Type 2 indicators to measure this impact. This is step one of the three-stepped approach.

#### **Step one - what we normally measure**

Clearly an organisation needs to know the extent to which work is taking place as envisaged in project documents such as the logical framework. This progress is often included in monthly, quarterly and annual reports. More often than not these reports tend to focus on factual information, on whether the activities leading to a particular output have been carried out and, to a

lesser degree, on the extent to which the outputs of a project are contributing to the project purpose (and goal).

The problem is that the assessment process does not go far enough; the indicators used to measure progress very seldom measure livelihood impact *per se*. This is especially the case with Type 1 logical framework indicators. More information on impact is revealed by Type 2 indicators but again because of the way that logical frameworks are generally written, Type 2 indicators tend to focus on only one component of livelihoods such as income rather than exploring the other facets of livelihoods (see below).

A hypothetical example is a project in which one of the activities is to construct grain banks. Understandably and as required by the project documents, staff will report that the grain bank has been constructed – a typical Type 1 indicator. This reveals very little about the impact on people's livelihood of the construction of the grain bank. It may be the case that the subsequent impact on peoples' lives is a positive one, but there is a danger that the impact will be negative (see Box 1).

**Box 1 Hypothetical livelihood impact of the construction of a grain bank in a farming community**

**Positive livelihood impact**

The grain bank is designed to promote food security in the area. Food security is enhanced by farmers being able to store grain and sell some of it when the post-harvest glut has ended and the market price for grain has increased. Storage also enables farmers to have a reserve of food for lean months.

**Negative livelihood impact**

Instead of farmers selling their grain immediately farmers store the harvest in the new grain bank in the hope of selling it later at a higher price. A few weeks later a beetle appears and starts eating the stored grain. Farmers do not realise immediately what is happening and by the time they do, they have lost almost all of the stored grain. They have little to sell and few supplies to eat in the lean months.

**Step two - expected achievements and the sustainable livelihoods framework**

Many field staff are confused about what is meant by a 'livelihood'. A useful definition is that provided by Chambers and Conway (1992). *'A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base'*.

Building on this definition, a very useful conceptual tool for measuring the impact on peoples' livelihoods is the Sustainable Livelihoods Framework (SLF) and particularly the livelihood assets. The Sustainable Livelihoods approach is a way of looking at development in a way that is concerned principally with people. The approach seeks to understand people's strengths, including their skills and possessions, and how they use these assets to improve the quality of their lives. The SLF identifies five classes of assets: human, social, natural, physical and financial capital (see Box 2). In this context, capital does not mean capital stocks in the strict economic sense of the term. The five capitals can be seen as livelihood building blocks.

**Box 2 Sustainable Livelihoods Framework and the five livelihood building blocks.**

**Based on [http://www.livelihoods.org/info/info\\_guidancesheets.html](http://www.livelihoods.org/info/info_guidancesheets.html)**

**Natural capital** - is the term used for the natural resource stocks from which resource flows and services (e.g. nutrient cycling, erosion protection etc.) useful for livelihoods are derived. Natural capital includes vegetation, land, water and air.

**Social capital** - reflects the patterns and systems of social organisation that facilitate or constrain co-operative enterprise, inter-household relations and individual entitlements. Includes formal and informal organisations and networks from community based organisations to religious groups to neighbours who help each other out by sharing food, money and child care *etc.*

**Human capital** - equates broadly with levels of education, knowledge and health that enable people to pursue different livelihood strategies.

**Physical capital** - comprises the basic infrastructure and equipment and property needed to support livelihoods. The following components of infrastructure are usually essential for sustainable livelihoods: affordable transport; secure shelter and buildings; adequate water supply and sanitation; and clean, affordable energy.

**Financial capital** - is the financial resources that people use to achieve their livelihood objectives and include access to credit, loans, savings and remittances.

Sustainable livelihood development depends not on advances in access to just one of the capitals but on systematic cross-sectoral approaches to achieve an appropriate balance between these essential assets. All too often the emphasis in development work is on increasing financial capital. While this is important, development practitioners should not lose sight of the need to work with local people to increase their other assets (social, physical, natural and human). These other assets support the accumulation of financial capital. In fact for many resource-poor people, the reality is that they may be unable to increase their financial capital without these assets.

The SLF provides us with a useful tool for measuring the livelihood impact of our work. The second step of the three-stepped approach involves field staff identifying the likely impact of their work in terms of the five capitals (see box 3)

**Box 3 Identifying the likely livelihood impact of the *Kamayaq's* work on improved irrigation the highlands of Peru**

- **Financial capital** via the sale of agricultural products from the increases in production
- **Social capital** by virtue of the community having worked together in the construction of the irrigation channels. Also with more water available there are likely to be fewer conflicts over scarce water resources.
- **Physical capital** in terms of the irrigation channels.
- **Human capital** in terms of the skills and knowledge farmers develop from working on the construction of the irrigation channels and engaging more actively in the marketplace
- **Natural capital** through better use of resources such as water.

It is also important to remember that they may be 'unexpected' negative livelihood impacts such as the hypothetical example of the grain bank (see Box 1). Furthermore, the identification of livelihood impacts should not necessarily be confined to the immediate beneficiaries. There are likely to be knock-on effects of any development intervention. These can be referred to as 'indirect impacts' and in any impact assessment they should be considered along with the direct impact.

The SLF provides an understanding of what a livelihood means in terms of the five assets. It facilitates the identification of the likely livelihood impact of a project or programme (both positive and negative). The third and final step is to measure/assess the impact in terms of the five assets.

**Step three - measuring livelihood impact**

Intuitively it makes sense to ask these resource-poor people what they believe the impact has been. What changes (both good and bad) have resulted from farmers' contact with the *Kamayaq*. There is a role for both qualitative and quantitative research on livelihood impact. The former is often (unfairly) seen as inferior to the latter (Chambers, 1997:39) despite the fact that in some case qualitative data are more useful than quantitative data especially when it comes to capturing some of the nuances surrounding changes in social and human capital (Miles and Huberman, 1994:40-41). Indeed often the full diversity and richness of livelihoods can best be understood only by qualitative and participatory analysis at a local level.

There is a range of commonplace qualitative and quantitative tools available and a plethora of literature on the most effective ways of using these tools (e.g. Miles and Huberman, 1994). These tools include observation, focus groups, semi-structured interviews and questionnaires. One of the most effective ways to gather evidence of livelihood impact is through a series of semi-structured interviews or informal discussions. Semi-structured interviews have been defined as a *guided conversation in which only the topics are predetermined and new questions and insights arise as a*



result of the discussion and visualised analyses (Pretty *et al.*, 1995:73). Another way is through every day observations (Silverman, 1993).

In the case of the Kamayaq in Peru, having identified in Step Two the likely livelihood impact of work on improved irrigation the highlands of Peru (see Box 3), project managers have a much better idea what sort of information to gather. They can subsequently use one or more qualitative or quantitative research tools to collect the relevant data (see Box 4).

**Box 4 Assessing the livelihood impact of controlling the parasitic disease *fasciola hepatica* in the Peruvian highlands**

The common name of this parasite is the 'sheep liver fluke'. This is a somewhat misleading name since the parasite is found in sheep along with cattle. Although it seldom kills animals it does debilitate them: sick animals often weigh a third less than healthy ones and in the case of cattle, there is a reduction of 50 per cent in milk production from affected animals. Over a three-year period, the *Kamayoq* and local villagers experimented with a range of natural medicines until they discovered a particularly effective treatment that is also cheaper than conventional medicines.

Over 3,000 families now use the natural medicine for controlling the parasite and to date the villagers have treated approximately 30,000 cattle, 7,000 sheep and 500 guinea pig. Step two of the impact assessment approach involves identifying the likely impact of the work in terms of the five assets of the SLF. In this case, the impact of treating *Fasciola hepatica* may include increased:

- **Financial capital** from the sale of better quality and increased quantity of milk along with cheese and yoghurt (production skills spread by the *Kamayoq*)
- **Human capital** from the increased consumption of cheese and yoghurt and milk.
- **Social capital** and greater self-esteem from the farmers themselves having worked with the *Kamayoq* to discover a treatment for the parasitic disease.

In step three, project staff can use a combination of qualitative and quantitative tools to assess the actual impact. There are no hard and fast rules on which tools to use in different situations. Furthermore, it is up to project staffs' discretion to decide which communities to focus on and how many farmers to interview in each community.

Changes in social capital can be readily assessed during semi-structured interviews. In the Peruvian highlands farmers often refer to the self-esteem they feel by virtue of having worked with the *Kamayoq*. Improvements in farmers' diet through increased consumption of dairy products and increased income can be captured in a questionnaire and/or during semi-structured interviews.

Project staff are also being encouraged to document and report negative impacts. The reporting of negative impacts is essential because often these 'failures' can be turned into a 'successes' if projects learn from the experience and subsequently either rectify the situation and/or ensure that the similar mistakes are avoided in the future.

### ***An iterative process***

The three-stepped approach to measuring the impact of development initiatives on local people's livelihoods is being tested in Peru in the context of the impact of the *Kamayoq*. The approach is unashamedly 'quick and dirty' as opposed to one involving much in-depth research. In the context of many rural development projects such an approach is needed because an impact assessment entails costs and, therefore, diverts resources from other project activities.

It is clear from the Peru experience that there is a huge amount of information on livelihood impact that project staff come across on a regular basis but do not always 'see'. The work in Peru is demonstrating that if project staff know what to look for - in this case changes in social, natural, financial, physical and human capital - then assessing the livelihood impact of development work need not be an onerous task.

The three-stepped approach is undoubtedly best suited to practical development projects as opposed to research projects. It also needs further testing in other situations and will subsequently need to be refined. Furthermore, in Peru decisions also have to be made on what sort of information will be recorded, how often it will be recorded, and how frequently and in what format it will be reported. Further work also has to be carried out on how the results will be analysed and fed back into project management.

### ***References***

- Bunch, R. 1982. *Two ears of corn: A guide to people-centred agriculture*. World Neighbors, Oklahoma.
- Bunch, R. and López, G. 1999. 'Soil recuperation in Central America: How innovation was sustained after project intervention'. In: Hinchcliffe, F., Thompson, J., Pretty, J., Guijt, I. and Shah, P. (eds.). *Fertile ground: The impacts of participatory watershed management*. Intermediate Publications, London, pp. 32-41.
- Chambers, R. 1997. *Whose reality counts? Putting the first last*. Intermediate Technology Publications, London.
- Chambers, R. and Conway, G. 1992. 'Sustainable rural livelihoods: practical concepts for the 21<sup>st</sup> Century'. IDS Discussion Paper, 296. IDS, Brighton.
- Chapman, R. and Tripp, R. 2003. 'Changing incentives for agricultural extension - a review of privatised extension in practice'. *Agriculture Research & Extension Network Paper*, No. 132. Overseas Development Institute, London.
- Hellin, J. and Higman, S. 2002. 'Smallholders and niche markets: Lessons from the Andes'. *Agriculture Research & Extension Network Paper*, No. 118. Overseas Development Institute, London.
- Hellin, J. and Higman, S. 2003. *Feeding the market: South American farmers, trade and globalization*. ITDG Publishing and Latin America Bureau, London.

- La Cruz, G. and Coello, J. 2002. Strengthening the Food Production of Peasant Farmers in the Andean Sierra. ITDG report to the Department for International Development.
- Miles, M. and Huberman A. 1994. *Qualitative data analysis: An expanded sourcebook*. Sage Publications, California.
- Pretty, J.N. Guijt, I., Thompson, J. and Scoones, I. 1995. *A trainer's guide to Participatory learning and action*. IIED Participatory Methodology Series. International Institute for Environment and Development, London.
- Silverman, D. 1993. *Interpreting qualitative data: Methods for analysing talk, text and interaction*. Sage Publications, London.