

**Working Paper 153**

**Extension, Poverty and Vulnerability  
in Bolivia and Colombia  
Country Studies for the Neuchâtel Initiative**

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November 2001

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## Acknowledgements

The authors are indebted to the Rural Livelihoods Department of the UK Department for International Development and to the Natural Resources Department of the Swedish International Development Co-operation Agency for funding for this study, although the views expressed here do not necessarily correspond with those of either of these organisations.

The study was conducted under the auspices of the Neuchâtel Group of donor organisations, an informal group established to consider options for support to agricultural extension.

English and French copies of the 'Common Framework of the Neuchâtel Group' and of the 'Guide for Monitoring, Evaluation and Joint Analyses of Pluralistic Extension Support' can be obtained by contacting Elisabeth Katz (eza@lbl.ch)

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ISBN 0 85003 558 9

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## Acronyms

ADE	Aide à la Décision Economique, Economic Decision Support (Belgium)
BTAM	British Tropical Agriculture Mission
CDF	Common Development Framework
CDR	Centro de Desarrollo Rural, Rural Development Centre (Bolivia)
CGIAR	Consultative Group on International Agricultural Research, USA
CIAC	Centro de Investigación Agrícola Communal, Community-based Agricultural Research Centres (Bolivia)
CIAL	Comités de Investigación Agrícola Local, Local Agricultural Research Committee (Colombia and Bolivia)
CIAT	Centro Internacional de Agricultura Tropical (CGIAR), International Center for Tropical Agriculture (Colombia)
CIAT	Centro de Investigación Agrícola Tropical, Tropical Agriculture Research Centre (Bolivia)
CID	Centro de Información para el Desarrollo (PROINPA), (Bolivia) Centre for Development Information
CORPOICA	Corporación Colombiana de Investigación Agropecuaria, Colombian Corporation of Agricultural Research (Colombia)
COSUDE	Agencia Suiza para el Desarrollo y la Cooperación, Swiss agency for development and cooperation (Switzerland)
CRECED	Centro Regional de Capacitación, Extensión y Difusión, Regional Centre for Training, Extension, and Technology Diffusion (Colombia)
CRI	Centro Regional de Investigación, Local Experimental Units (Bolivia)
DEA–SAC	Departamento de Estadísticas Agrarias – Sociedad de Agricultores de Colombia (Colombia) Agrarian Statistics – Colombian Agriculturists' Society
DFID	Department for International Development (UK)
DTC	Departamento de Transferencia y Comunicación, Department of Transfer and Communication (Bolivia)
DTT	Departamento de Transferencia de Tecnología, Technology Transfer Department (Bolivia)
ESAS–LAC	Investigación en extensión y servicios de apoyo: Hacia una agricultura sostenible en América Latina y el Caribe (Proyecto ESAS/LAC) Research into extension and support services: towards sustainable agriculture in Latin America
EU	European Union
FDTA	Fundación para el Desarrollo de Tecnología Agrícola, Foundation for the Development of Agricultural Technology (Bolivia)
GDP	gross domestic product
HIPC	highly indebted poor country
IBTA	Instituto Boliviano de Tecnología Agropecuaria, Bolivian Institute of Agricultural Technology (Bolivia)
ICA	Instituto Colombiano Agropecuario (CORPOICA), (Research and Extension Institute) (Colombia)
IDB	Inter-American Development Bank (USA)
IICA	Instituto Interamericano de Cooperación para la Agricultura,

INIA	Interamerican Institute for Cooperation in Agriculture (Costa Rica) Instituto Nacional de Investigación Agrícola National Agricultural Research Institute (Bolivia)
ISNAR	International Service for National Agricultural Research (The Netherlands)
IU	Intermediate Users (BTAM)
MADR	Ministerio de Agricultura y Desarrollo Rural Ministry of Agriculture and Rural Development. (Colombia)
MAGDR	Ministerio de Agricultura, Ganadería y Desarrollo Rural Ministry of Agriculture, Livestock and Rural Development (Bolivia)
MBAT	Misión Británica en Agricultura Tropical British Tropical Agriculture Mission (BTAM) (Bolivia)
NGO	non-governmental organisation
ODI	Overseas Development Institute
OTB	Organización Territorial de Base, Territorial-based Organisation (Bolivia)
PPL	Ley de Participación Popular, Popular Participation Law (Bolivia)
PRONATTA	Programa Nacional de Transferencia de Tecnología Agropecuaria, National Programme of Technology Transfer in Agriculture (Colombia)
PROINPA	Fundación Boliviana para la Investigación y Promoción de los Cultivos Andinos, Foundation for Research and Promotion of Andean Crops (Bolivia)
RELU	Research–Extension Liaison Unit (DTT) (Bolivia)
SAI	Servicio de Agricultura Interamericano, Inter-American Agricultural Service (Costa Rica)
SIBTA	Sistema Boliviano de Tecnología Agrícola, Bolivian Agricultural Technology System (Bolivia)
SIPRI	Stockholm International Peace Research Institute (Sweden)
SINTAP	Sistema Nacional de Transferencia de Tecnología Agrícola, National System of Technology Transfer in Agriculture (Colombia)
SNCTA	Sistema Nacional de Ciencia y de Tecnología Agropecuaria National System of Agricultural Technology (Colombia)
SNPP	Secretariado Nacional de Participación Popular National Secretariat of Popular Participation (Bolivia)
UMATAs	Unidades Municipales de Asistencia Técnica Agrícola, Municipal Agricultural Technical Assistance Units (Colombia)

## Summary

Bolivia has experimented with different extension models, from the statist institute with research and extension departments through the intermediate users model with a bridging role, to the current proposal of free-market allocation of extension projects to the best bidders. As a result of their past history and their past poor performances, currently there is no national extension system in place in Bolivia. Most extension initiatives depend on non-governmental organisations (NGOs), producers associations, and two para-statal: the Foundation for Research and Promotion of Andean Crops (Fundación Boliviana para la Investigación y Promoción de los Cultivos Andinos, PROINPA), and the Tropical Agriculture Research Centre (Centro de Investigación Agrícola Tropical, CIAT). Municipalisation (popular participation) has not yet been adopted by extension services and very few municipalities have introduced agricultural technical assistance components to their operational structure. Municipalities' budgets are oriented towards visible (civil) works rather than to upgrading knowledge systems. The extension component is a major missing mechanism of rural development strategies missing from the municipalisation process launched by the Popular Participation Law.

The extension system of Colombia was reviewed in order to draw lessons and observe how decentralisation and other institutional changes have impacted on the provision of these services, particularly to the rural poor. It was noted that radical changes have taken place as a result of the transition from a classical system based on the national research and extension institute into more decentralised schemes controlled either by municipalities or by private organisations. Despite several problems, including the state of belligerence, national insecurity, and an economic recession, the new model that is based on articulation of different organisations on several levels is proving able to reach more farmers and among them, the poor. The main constraints that need to be addressed or adjusted are: better coordination among actors, particularly the extension services provided by the municipalities, (the Municipal Agricultural Technical Assistance Units – Unidades Municipales de Asistencia Técnica Agrícola, UMATAs, Colombia) and the research centres; a reduction in the instability of public entities; better means and tools (both conceptual and physical) for extension services particularly those working with the poor; and better education for all.



# Extension, Poverty and Vulnerability in Bolivia

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## **Introduction**

This paper presents the current situation of extension services in Bolivia, in the light of the new role of municipalities conferred by the Popular Participation Law. The main objective is to observe the degree to which the new financial capacity of the municipalities has been used to implement extension services, and whether they are having any impact on the rural poor.

The current policy context is presented and popular participation the process briefly described. Extension services in Bolivia and the different models that have been tried out are described. The analysis is focused on the most innovative experiences in the country in an attempt to derive lessons for other circumstances (the CIAT–Santa Cruz case). Finally, the way by which municipalities (under the Popular Participation Law) have introduced extension schemes into their working plans is elaborated, with an examination of the extent to which their institutional arrangements are used for pro-poor agricultural extension.

# 1. National context, policy framework and local governments (municipalities)

## 1.1 National context and agricultural policies

Bolivia's population is estimated to be around 8 million, of whom nearly two-thirds live in the highlands (*Altiplano* and inter-Andean valleys) and one-third in the lowlands. By 1997 nearly 59 per cent of the population was considered urban, compared to 40 per cent in 1976 (Pacheco, 1998). Both rural-rural and rural-urban migration patterns are still taking place as they provide an escape route from poverty in the rural highlands. At 2.2 per cent per annum, the population growth rate can be considered high, particularly in relation to other lower-middle income countries (1.2 per cent per annum). Compared with other South American countries Bolivia still has the largest rural population and the highest percentage of people living below the poverty line (66 per cent in 1997, Morales, 2000). In rural areas, poverty levels can be as high as 90 per cent. This also holds true for other social indicators.

In eco-geographical terms, Bolivia is divided into three large eco-regions. These make up a total of 1,098,581 km<sup>2</sup>, an area almost twice the size of France (Montes de Oca, 1997):

- high plateau or *Altiplano* (surface area 246,254 km<sup>2</sup>)
- inter-Andean valleys (168,320 km<sup>2</sup>)
- tropical and subtropical lowlands (684,007 km<sup>2</sup>)

The wide ecological diversity of the country is mirrored by its cultural and farming diversity. In Bolivia there are more than 40 indigenous groups who maintain strong cultural identities and still use their own language, customs and traditions. According to the Bolivian Institute of Ethnology, more than 70 per cent of the Bolivian people are considered to be indigenous in origin, the highest percentage among Latin American countries. The same holds true for farming systems. At least ten different types of land-use systems can be differentiated (Bojanic and Hussein, 2000):

- smallholders in the highlands (*Altiplano*)
- smallholders in the inter-Andean valleys
- large/medium-scale modern commercial farmers (>100 ha under production per annum) in the Santa Cruz lowlands
- local and foreign smallholders in the lowlands (colonists from the highlands and local farmers)
- indigenous lowland groups
- large-scale cattle ranchers in the Beni and Chaco regions
- forest users
- forest concessionaires
- northern Bolivian owners of forest estates
- forest dwellers

The agricultural sector still maintains a high 15 per cent contribution to gross domestic product (GDP) and accounts for nearly 35 per cent of all exports. Most agricultural exports are primary products, particularly soybean grains, cotton, sugar and coffee. Imports of foodstuffs are high, particularly wheat and dairy products. Agriculture has expanded in the lowlands, encouraged by the high returns for soybeans, but little expansion has occurred in the valleys or *Altiplano*. Agricultural yields remain among the lowest in Latin American, particularly for staple crops.

The main problems/constraints facing the agricultural sector are:

- fragmentation of land holdings and land-tenure schemes (*minifundio*)
- harsh climatic conditions
- low productivity
- poor access infrastructure and long distances to markets
- soil erosion and pastureland degradation
- lack of agricultural credit schemes

The main agricultural policy objectives address:

- the need to achieve greater competitiveness in international markets (by increasing export earnings)
- encouraging the use of sustainable farming practices
- increasing food security
- substitution of coca plantations
- creation of larger opportunities for disadvantaged groups (indigenous, women, rural poor)
- promotion of wider social participation

(Ministerio de Agricultura, Ganadería y Desarrollo Rural, 1999)

The Bolivian Agricultural Technology System (Sistema Boliviano de Tecnología Agrícola, SIBTA) is the instrument designed to promote and implement technological change. SIBTA includes research and extension activities and is geared towards improving the productivity of export crops and food security.

## 1.2 Anti-poverty policies in Bolivia

The current administration of Bolivia bases its development strategy on four pillars:

- opportunity (production-related issues);
- equity (poverty alleviation and provision of social services such as education and health);
- dignity (fight against cocaine production); and
- institutions (decentralisation and popular participation).

The promotion of rural development and the reduction of poverty in rural areas fall under the pillar of equity. Within the Common Development Framework (CDF), coordinated by the World Bank and donors interested in supporting rural development, efforts were made to develop a common strategy and to coordinate the use of financial resources. An additional way the Government envisages financing the implementation of anti-poverty programmes was to link the highly indebted poor countries (HIPC) II<sup>1</sup> Initiative to channel funds from debt relief to reduce poverty. The total external debt of Bolivia is approximately US\$ 4.4 billion and it is estimated that up to 30 per cent of this (US\$ 1.3 billion) could be released for poverty reduction projects (US\$ 100 million per annum over 13 years). A process of consultation has started in which most actors in the public sector have agreed to an agenda for spending such resources. Among the very many demands promulgated are:

- natural resources management
- incentives to production
- infrastructure
- support to micro firms

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<sup>1</sup> The HIPC II is a G7 countries' initiative aimed to alleviate the debt of developing countries by using the funds in poverty reduction programmes.

- fiscal policies
- human development, etc.

### **1.3 The Popular Participation Law (PPL), municipalisation and productivity issues**

In April 1994 the Popular Participation Law (*Ley de Participación Popular*, PPL) was enacted by the administration of the former President G. Sanchez de Lozada. This law represented one of the largest changes in decentralisation in the history of Bolivia. Its main features were:

- The creation of 314 municipalities throughout the country, based on the territories of existing sections of a province as the basic administrative unit for public investment. The PPL awarded a high degree of autonomy to municipalities and radically changed investment priorities. Under this new regime the administration of Health and Education services were transferred to municipalities.
- The strengthening of local democracy by legally recognising grass-root organisations and traditional/indigenous authorities (Territorially Based Organisations, known as *Organizaciones Teritorial de Base*, OTBs), and the free election of municipal authorities such as mayors and municipal councils. In addition, surveillance committees (*Comités de Vigilancia*) were established to control municipal budgets and to look after the implementation of public works. In other words, the PPL has transferred decision-making power to local governments so they can allocate their own funds. It has broadened the participation of local actors in deciding on the use of such funds, and it has also established social control mechanisms for the correct use of such money.
- A large transfer of funds (20 per cent of public expenditure) from the central administration budget to the municipalities. In the former system, most transfers were at the departmental level (within nine departments). In 1992, just before the PPL was passed, 72 per cent of public investments were made by central government, and only 0.4 per cent by municipal governments. By 1998 the central government was only responsible for 29.4 per cent of public investment, while municipal governments were responsible for 25 per cent (Ministerio de Finanzas 1999). This change has strengthened rural municipalities in relation to those in the large cities, which before the PPL was passed used to get 92 per cent of the general revenue transfer. Currently, rural provinces receive some 60 per cent of it. According to the PPL, 90 per cent of the municipalities budget should be allocated to public investment (mostly to civil works).

In the first 4 years of PPL implementation (1994–8), most funds were spent on the construction or rehabilitation of basic infrastructure, such as repairing municipal buildings, schools, churches, the construction of small roads, or paving main streets. In subsequent years more funds are being allocated to productive infrastructure, such as small irrigation facilities, silos, slaughterhouses, tractors, etc. However, little money has gone either to technical assistance or training. Very few municipalities presently have an agricultural department to assist farmers with their technical problems. One of the few exceptions is the Municipality of Yapacany in Santa Cruz, where a professional has been hired to coordinate technical assistance activities with NGOs working in the municipality. In most cases, when professionals have been hired they are given the responsibility of writing up project proposals to tap financial resources or administrative tasks, the equivalent of being independent fund managers.

To date, the results of the PPL implementation process are mixed. On the one hand, the law has enhanced the capacity of local/rural governments to plan and execute larger budgets and to mobilise

additional resources. It has improved the mechanisms of democracy by allowing citizens active participation, particularly those in rural areas. However, it has achieved relatively little in terms of improving the incomes of the rural poor. Most of the investments in productive infrastructure have yielded hardly any economic returns. Success cases of sound economic agricultural projects financed by funds are rare (Anderson, 1999; Roca, 1999).

There has been negligible investment in agricultural extension services (Ministerio de Finanzas, 2000), particularly considering the small budgets that municipalities have to manage, and the high demands of alternative activities. What is even more worrying is that the issue is hardly ranked among the priorities of Municipal Development plans (Promoción al Desarrollo Economico Rural (PADER) Cosude, 1999). This can largely be attributed to a lack of clear orientation or human resources and the ambiguity of municipal functions (PADER Cosude, 1999).

The PPL did create some conditions conducive to the improvement of the functioning of agricultural extension services at municipal level, but for the reasons mentioned above they have failed to materialise. The municipalisation<sup>2</sup> of technical assistance through broad extension services one of the missing mechanisms in the new rural development efforts.

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<sup>2</sup> In Bolivia, 'Municipalisation' is understood as the process of strengthening the functions of a municipality to conduct development efforts.

## 2. Extension and agricultural technology transfer services

Bolivia is one of many Latin American countries where different extension service models have been tried. For instance, the specialised extension centre within the National Agricultural Research Institute (Instituto Nacional de Investigación Agrícola, INIA), is separate from agricultural research function; the ‘intermediate users’ model whose main function is coordinating or ‘bridging’ between researchers and the technical assistants of organisations working with farmers (NGOs, commercial firms, provincial governments, etc.) and lately the Local (farmers) Agricultural Research Committees (Comités de Investigación Agrícola Local, CIAL). This section provides a national perspective on the evolution of the institutional framework of agricultural research and extension in Bolivia, followed by specific reference to the Santa Cruz region where the most innovative schemes have been tried out.

### 2.1 The ‘classic’ extension service model: The institute with two departments – research and extension

During much of the 1950s and 1960s, highly supported by US funding, Bolivia implemented what can be labelled the ‘classic’ research and extension scheme. This was based on a semi-autonomous institution where research was conducted in experimental stations and sub-stations, and extensionists had the role of delivering the message to the farmers about new varieties, pesticides, or soil management practices, etc. Extensionists, besides being technical assistants, also performed other roles such as leadership training, promoting organisations, helping farmers to plan, and supporting other activities beyond those of assisting in improving crops or livestock yields. This model is usually referred to in Bolivia as the Inter-American Agricultural Service (Servicio de Agricultura Interamericano, SAI) period. It ended in the mid-1960s when agricultural research and extension services were left out of public funding, resulting a sharp drop in their efficiency and efficacy. Most of the best-qualified researchers left and infrastructure began to deteriorate (Zuvekas, 1977; Godoy et al., 1993).

In 1975 the Bolivian Institute of Agricultural Technology (Instituto Boliviano de Tecnología Agropecuaria, IBTA) was established to provide extension and research services for the whole of Bolivia, except the Santa Cruz region, where a different and independent agricultural research centre, the Centro de Agricultura Tropical (CIAT)<sup>3</sup> was created. The creation of these two centres, albeit with limited funding, boosted agricultural research and extension in Bolivia. Their methods of working and approaches were quite similar to those of the SAI period but their operations were mainly conducted by junior researchers and extensionists placed in key farming areas.

During the mid-1980s, IBTA realised that the extension service constituted a large burden on the budget and it was decided to reduce this by maintaining only a small number of extensionists and a single unit at IBTA headquarters in La Paz. Although for different reasons, the same thing happened simultaneously at CIAT. The main funding body of CIAT (the Regional Development Corporation for Santa Cruz Province) decided to cut CIAT extension funds and created a separate, independent extension centre, the Rural Development Centre (Centro de Desarrollo Rural, CDR). This centre never became fully operational and had to close in 1987 because of budgetary pressures, leaving the Santa Cruz region with no public extension service (Thiele et al., 1998).

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<sup>3</sup> In this document, unless specifically referred to, CIAT refers to the Bolivian agricultural research centre for the lowlands, and not to the CIAT based in Cali, Colombia, the International Tropical Agricultural Centre (Centro Internacional de Agricultura Tropical), of the Consultative Group on International Agricultural Research (CGIAR).

## **2.2 Exhaustion of the institute model and the World Bank Agricultural Technology Project**

In 1991 a US\$ 21 million World Bank project was approved, which aimed to strengthen IBTA's research capacity, but little of the funding was allocated to extension. In fact, all IBTA's extension offices were closed and their personnel dismissed. The new scheme was based on the idea of introducing a supply of technologies and expecting farmers to search for and adopt them. Although IBTA tried to emulate CIAT by implementing a technology transfer model based on the intermediate users system, the idea was never established or implemented. The poor adoption rates of improved practices and a lack of public funding precipitated the final closure of IBTA in 1997. The only IBTA commodity programme that remained strong in terms of technology generation and extension was that of potatoes (the Foundation for Research and Promotion of Andean Crops/Fundación Boliviana para la Investigación y Promoción de los Cultivos Andinos, PROINPA). This was because of financial support provided by the Swiss aid organisation, the Swiss agency for development and cooperation (Agencia Suiza para el Desarrollo y la Cooperación, COSUDE) and its being restructured into an independent foundation (Fundación PROINPA). Together with CIAT, today this foundation leads extension efforts in the country by trying new methods and approaches.

To disseminate its technologies PROINPA has formed Local Agricultural Research Committees (CIALs) with farmers to conduct on-farm and participatory evaluation trials, and farmers' tours (horizontal extension). PROINPA also produces leaflets and technical bulletins, and provides video shows and training for farmers. The foundation's social and economic impact is regarded as one of the greatest in Bolivia (Fundación PROINPA 2000).

## **2.3 The Bolivian Agricultural Technology System (Sistema Boliviano de Tecnología Agrícola, SIBTA)**

Since the closure of IBTA in 1997, the Ministry of Agriculture, Livestock and Rural Development (Ministero de Agricultura, Ganadería y Desarrollo Rural, MAGDR) has been pushing a new agricultural research and extension model, the Bolivian Agricultural Technology System (Sistema Boliviano de Tecnología Agrícola, SIBTA). This is based on four Foundations for the Development of Agricultural Technology (Fundación para el Desarrollo de Tecnología Agrícola, FDTA): one for each of Bolivia's main agro-ecological regions; the highlands, valleys, tropical semi-arid region (Chacos), and humid tropics. Currently, the Inter-American Development Bank (IDB) has adopted the concept and is financing a project to support SIBTA to the extent of US\$ 30 million.

Under this new model, producers are expected to demand technologies based on the principle of free market mechanisms (bidding). Agricultural research centres are also expected to compete in the bidding process through research and technology transfer projects submitted to the FDTA. The project envisions that the private sector will participate extensively, by placing demands and financing the research and extension projects (IDB, 1998). To date (2001), only one foundation, PROINPA, has been set up with the support of Swiss funding, but others are in advanced stages of formation.



### 3. Intermediate Users model in CIAT (Eastern lowlands)

CIAT is an agricultural centre responsible for the generation and transfer of technology for the Santa Cruz region (a department of some 370,000 km<sup>2</sup>); it is a para-statal organisation involving both public and private participation. Most of its funding comes from government regional development funds (Prefecture) and it has enjoyed more independence from political interference than most other para-statal organisations in the country. It has also benefited from international, aid particularly from a long-term Department for International Development (DFID) project, the British Tropical Agriculture Mission (BTAM), which supports its research and extension efforts.

#### 3.1 Evolution of the model

After closing CIAT's extension department and the CDR's extension centre, CIAT executives, launched the Intermediate Users (IU) extension model, with support from BTAM. Agricultural research has been decentralised from the main experimental extension into Local Experimental Units (Centro Regional de Investigación, CRI) in order to better replicate and be closer to the conditions of farmers in different ecological regions of Santa Cruz.

The IU approach draws on the informal contacts that CIAT researchers have established with extensionists of NGOs, producers associations, and agricultural inputs suppliers, to establish a formal two-way technical information flow with the producers via these Intermediate Users. This idea received the full support of the board of CIAT, the staff, the RDC, and DFID, who provided additional financial support. From there emerged the Technology Transfer Department (Departamento de Transferencia de Tecnología, DTT or RELU<sup>4</sup>). One of its initial tasks was to conduct a survey of all IUs to assess their capacity in human and physical terms (Thiele et al., 1998). This found that more than 120 extensionists were in contact with producers and had significant logistic capacity. The findings of this study were published by Velasco et al. (1988).

The DTT's new main role was to establish these linkages with the IUs and to strengthen the publication capacity of the existing communication unit. The main mechanisms devised to formalise linkages included:

- periodic seminars
- a circulated list of technical publications
- field days in the local experimental units, promoted and coordinated with IUs
- communications training for IUs (e.g. how to give technical talks)
- participation of IUs in CIAT planning events

In the early 1990s, the World Bank launched a lowland project that included a component to strengthen CIAT research and extension capacity. This project also helped to boost the newly formed DTT, as it adopted a working structure based on three roles: (a) linking subject matter researchers with farmers, producers, and technical advisors (by commodity); (b) regional coordination, implying the building of links between researchers of different disciplines and the IUs working in specific regional settings; and (c) production and dissemination of technical information through various means of communication. In addition to the definitive responsibilities of the DTT, an increased effort was made to bring researchers out of the central experimental extension unit (Saavedra) and to conduct more trials in the local experimental units and on farmers' fields.

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<sup>4</sup> Thiele et al. (1998) refer to it as the Research-Extension Liaison Unit or RELU.

Thiele et al. (1998) identified four phases connected with dominant functions in the evolution of the extension unit within CIAT, after which the IU model was adopted:

- bridging
- adjustor (joint trials with IUs and farmers, zonal meetings, building databases)
- training for extensionists and forming zonal committees
- facilitator (feedback from farmers, on field trials, discussing recommendations, guides, etc.)

Thiele et al. stressed that the IU model increased CIAT's sensitivity to farmers' technology demands; that it has markedly increased the availability and accessibility of technologies generated by CIAT to IUs, and that operational linkage mechanisms should be tailored according to the specific functions of an extension unit.

Considering that the PPL was enacted in 1994 during the function phase of the DTC, there has been little or no connection to municipalities, and most of the work is conducted directly with groups of farmers.

### **3.2 CIAT's current extension approach: Participatory research and municipalisation – the experiences of the *El Torno* and *Mairana* municipalities**

In recent years (1999–2001) the emphasis of CIAT–DTC's<sup>5</sup> strategy has been oriented to increasing farmers' participation in the planning, design, execution and evaluation of on-farm trials, while maintaining its communications and coordinating role with the IUs. However, due to the ending of the World Bank lowland project, the number of subject matter specialists was reduced, as was funding for extensionist training. The DTC has therefore tended to concentrate on a few municipalities, by applying the participatory and action approach that represents a renewed effort to improve capturing the farmers' demands by the centre.

The DTC selected a sample of municipalities (El Torno, Villa Florida and Mairana) with whom to conduct participatory approaches to technology transfer. In these municipalities, rapid rural appraisals were carried out. These involved considerable interaction between researchers based in the central experimental station, technical assistants, and the farmers themselves. After an analysis of the data, a list of priorities was elucidated and formed the basis for discussion of the experiments that need to be established.

The second step taken was to form Community-based Agricultural Research Centres (Centros de Investigación Agrícola Communal CIACs), using the same approach for the CIALs of CIAT (in Colombia) or the ones in PROINPA. The main duties of these centres are to:

- decide on the variables to be tested
- help researchers to set the experiments
- record data and evaluate the results with the researchers

Under this scheme several experiments have been conducted in farmers' fields, on, for instance, new potato varieties, organic and biological pest control, silage methods, new pastures, vegetable

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<sup>5</sup> This department was first named the Technology Transfer Department (Departamento de Transferencia de Tecnología, DTT) but was changed to Department of Transfer and Communication (Departamento de Transferencia y Comunicación, DTC) to stress its diffusion function.

growing, small livestock, and by farming practices for maize. Throughout this process special attention has been paid to the participation of women and respect of cultural values.

CIAT expects that as a result of these opportunities the farmers themselves will show the results to other farmers and will informally communicate the recommendations. Until now, the farmers in the sample municipalities are enthusiastic and show a strong commitment to continue working under this scheme. CIAT has increasingly been working with some of the recently established municipalities, connecting its resources to replicate the examples in the municipality of Mairana, where the farmers' research committee (CIAC) submitted a project to the municipal council for counterpart funds that was accepted by the council but unfortunately not by the external donor. However, this example represents an innovative way of linking the CIAC experience with the new institutional municipalisation scheme.

This approach of working within the structures of municipalities is still unproven, either because most municipalities are not organised in such a way as to deal with agricultural extension, or because of the limited resources that CIAT can allocate to work with many municipalities.

## 4. Implications and lessons from the CIAT experience

Four extension models can be distinguished in the CIAT–Santa Cruz experience:

- a) the conventional institute with researchers and extensionists
- b) coordination between researchers and intermediate users
- c) training and making use of mass communication
- d) participatory research involving farmers

Models b) and c) have had a strong demand–pull component and a low-cost/far-reaching relationship from which several lessons can be learned and applied in other circumstances. Improving linkages with other extension organisations is an appropriate way of coping with limited resources and synergising efforts. The main pitfall is the relative lack of contact with the original producers that can lead to misinterpretation of their needs and strategies. Training intermediate users and producing extension publications is an inexpensive way of reaching the farmers, but again it fails to establish the necessary contact with the producers that would enable them to be able to orient research to the best-bet opportunities for making technical and socio-economic breakthroughs. Finally, with model d), CIAT made a greater effort to ‘listen’ to the farmers’ demands and certainly this is an approach that deserves credit. However, CIAT confronts the difficult trade-off between an intensive approach a great deal of focusing on few farmers (at a relative high per capita cost) and the extensive far-reaching, low-cost approach with little contact. This dilemma has yet to be resolved, and there is need for a more comprehensive approach that can be more demand-oriented but is within the financial possibilities of a developing country research organisation.

An important message from this experience is the need to balance low-cost, far-reaching approaches with intensive demand–pull, close-to-farmer schemes.

## **5. Municipalisation and agricultural extension**

### **5.1 Inclusion of productive issues in municipal plans and delivery services**

Considering that a large proportion of any municipality's income is spent on non-productive activities, the National Secretariat of Popular Participation (SNPP) and several NGOs have been encouraging municipalities to orient their expenditure pattern towards agriculture or other such productive sectors as small enterprises. Results have been modest and shown little in terms of increased productive skills.

The PPL provides municipalities with larger budgets, and depends on them to allocate them to the most urgent or important needs. Experience has shown that most of the funds transferred by the central government have been invested in physical infrastructure and public works, and that very little has been allocated to accruing agricultural knowledge, or to improving extension services. This activity is still regarded by mayors or municipal authorities as a central/meso-government responsibility. In addition, nobody has assumed responsibility for promoting the importance of the issue or the need to develop appropriate schemes to deal with extension services. By closing down the extension service at a national level, technology transfer activities have been reduced to a minimum, and the municipalisation process has not been able to replace such functions. Currently extension services are confined to a few NGOs and to the limited activities of the DTC or CIAT in Santa Cruz. Apart from a few exceptions, municipalities have not developed an alternative scheme because:

- financial resources are limited and compete with several other important needs (health, education, roads, sanitation, etc.);
- physical infrastructure is more visible for political aims, easy to administer, and complies with the regulation that only 15 per cent can be spend on running costs.

However, it is frequently observed that funds currently being used are having a negligible economic impact on poor peoples' livelihoods and that they can be better used or re-directed to best-bet productive schemes. The lack of investment in knowledge systems and budget orientation is not expected to change in the near future.

### **5.2 Constraints and potentialities of the municipalisation for extension purposes**

In order to ensure that a significant percentage of the budget be allocated to agricultural technical assistance, Colombian law states that at least 5 per cent of the municipality budget must be assigned to the UMATAs and to hiring professionals. In Bolivia there are no major regulations to enforce such an expenditure, or provide such services: everything depends on the mayors or municipal authorities. This can be regarded as a constraint to extension activities, particularly in the poorest municipalities. Another important constraint is the lack of knowledge, not just of the importance of extension but of its methods, approaches, and linkages with the sources of 'know how'. Again, any initiative is conditioned by the leadership (or lack of leadership) of the mayor or influential local authorities.

The PPL's great potential for extension is that it allows and induces participation. Organisations formed under the framework of this law (surveillance committees, OTBs, municipal councils, etc. can be used as an important forum for exchange of experiences, to build linkages with sources of technical knowledge, or as lobbying groups for such purposes. However, the catalysts that could make use of existing institutional arrangements are missing.

### **5.3 Can extension services be institutionalised in the municipalities?**

The low implementation of extension units (or agricultural departments) in Bolivian municipalities leads to the prediction that in the short term at least, it is quite unlikely that municipalities will strengthen their capacity to provide this service although some of them might improve their coordinating role with NGOs or other intermediate users working the area. The critical factor is believed to be the lack of state initiative to regulate and promote pro-poor extension activities. There is a need for both state organisations and for NGOs to be more pro-active and to re-establish the importance of the issue in the broader context of municipal and productive development.

### **5.4 Conclusion**

There are only a few Bolivian examples of pro-poor extension schemes. The PPL has so far failed to provide this service in a nation-wide context; however, the PPL does provide an important platform that could be tapped for this purpose if the catalytic policy mechanisms are instituted and activated.

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# Extension, Poverty and Vulnerability in Colombia

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# 1. Background: country setting and the agricultural sector

Colombia is the fourth largest country in South America and the only one with coasts on both the Pacific and Atlantic Oceans. Covering a total area of about 1,138,910 km<sup>2</sup> its territories include the San Andres and Providencia island groups in the Caribbean Sea. It has an estimated population of 41.5 million, a quarter of whom live in rural areas. The population density is 31 inhabitants per km<sup>2</sup>. The ethnic groups include 58 per cent of mestizo origin, 20 per cent white, 14 per cent mulato, 3 per cent mixed black-Amerindian and 1 per cent Amerindian. Spanish is Colombia's official language, although 75 Indian languages are still in use. The country comprises four distinct eco-regions:

- coastal lowlands
- eastern lowland plains
- central highlands
- high Andes mountains

The central-western part of the country is mountainous terrain, home to three separate Andean chains that join together to form the Andean Cordillera, stretching throughout the length of South America. East of the Andes are lowlands, parts of which are covered in dense rainforest or savannahs and straddled with rivers. Because of its range of altitudes, the country has variations in climate and ecosystems. In fact, Colombia claims to have the highest number of species of plants and animals per unit area of any country in the world. It has an abundance of natural resources, but its mountainous terrain makes internal transportation difficult, and acts as a barrier to physical and social integration (MAG, 2000).

Colombia's economy is based on oil and coffee exports. Its gross domestic product (GDP) for 1999 was estimated at US\$ 64.3 billion (per capita GDP of US\$ 1,813). In recent years the inflation rate has been around 10 per cent. Economic growth was considered moderate until 1999 and 2000 when it dropped to a -5 per cent low, pushing the country into a serious recession that was characterised by a high unemployment rate, estimated at around 20 per cent.

Colombia is regarded as a Latin American country with extreme inequality in income distribution. Levels of extreme poverty increased by 20 per cent in 1998, rising steadily in rural areas, and reversing gains made during the 1980s. The poorest sections of the population have been the most affected, particularly women and young people, and this has led to a widening of the gap between rich and poor (Psacharououlos et al., 1997).

Among the major causes for current recession are: the sharp fall in coffee prices, the decline in oil production and prices, fiscal deficit and external debt payments (a total debt in 1999 of US\$ 35 billion). The lack of public security and constant road blockades or takeovers of regions by insurgents constitute major disincentives for investors. The main industrial goods produced in Colombia are textiles, processed foods, oil derivatives, clothing and footwear, beverages, gold, and emeralds. The total export value (fob) in 1999 was estimated in US\$ 11.5 billion, mainly from petroleum, coffee, coal, gold, bananas and cut flowers. Agricultural exports represent nearly 70 per cent of all exports (DEA-SAC, 1999).

The agricultural sector contribution to the GDP is around 16 per cent and nearly 30 per cent of the workforce is employed in activities related to agriculture. This contribution has declined from 22 per cent in 1979. The average annual growth of agricultural GDP in the last 5 years was -0.2 per cent (World Bank, 2000). Only 6 per cent of the land is cultivated, with both temperate and tropical crops and pastures. The agricultural sector involves two clearly differentiated activities: food-crop farming carried out by small-scale farmers, and commercial farming of export-oriented crops.

Coffee has been, and it is still, the most important crop, with about 300,000 coffee-growing farms of different sizes, producing 654,000 tons of high-quality coffee on 1 million ha.

Other commercial crops include cut flowers, bananas, sugarcane, cocoa beans, and cotton. The food crops are mainly for domestic consumption and include rice, maize, oilseeds, sorghum, manioc, and vegetables. Timber and shrimp production also constitute important sources of revenue for a large number of rural inhabitants.

Animal production also ranks high in terms of export value and the numbers of farms involved. In 1999, 24 million cattle, 2.7 million sheep, 2.5 million pigs and nearly 2 million horses were raised.

Cultivation of illegal crops (coca, marihuana, and opium poppies) is on the increase. Their derivatives and commercialisation generate an estimated US\$ 5 billion per annum. Such activities form part of the delinquency–insurgency spiral.

Agricultural yields vary considerably according to the degree of capital investment and the market-orientation of the produce. Although yields are lower than in most industrialised countries, they tend to be higher than most Latin American countries except for Chile, Argentina, and some areas of Brazil. Colombian agriculture is typified by a large gradient of farms from the very traditional peasant small-holding to the high-technology, export-oriented commercial farms (IICA–CONSULTPLAN–MADGR, 1996).

The high dependence of the Colombian economy on agricultural exports also constitutes a source of instability as it is linked to the fall in the world coffee price in 1998, which had a profound impact on the Colombian economy.

A major problem confronting both Colombian society and its economy is the political instability and political violence that claim thousands of lives each year. The civil war is the oldest and bloodiest in South America; the guerrilla groups control many areas of the country and many others are affected by their strikes. This not only creates a negative environment for production, but also forces rural labour to move to the cities, resulting in labour shortages in the rural areas. Surprisingly, however, in spite of this highly intensive conflict many farming and commercial activities still take place. State services still continue to provide technical assistance or credit, together with the help of many NGOs.

## 2. Decentralisation and agricultural policies

The desire to modernise agriculture in Colombia can be seen as part of a broader development strategy aimed at reducing poverty, and rooted in the principles of competition, decentralisation and participation. Specifically, this has led to a re-definition of the role of the Colombian State and civil society. In 1991 a new constitution (The Reform) was issued, giving civil society a greater role in the decision-making process (decentralisation). The capacity of municipalities to undertake major development responsibilities was strengthened, more funding was provided, and mayors were freely elected in 1070 municipal districts. Thus far, the Reform has provided municipalities and departments with extra resources to meet their development agenda, although these resources seem insufficient, and the conflicts of competence between national organisations and local entities have not been adequately resolved.

There is still a blurred interface between national and local governments. Responsibilities for different agricultural services are partly in the hands of the central government and partly in those of the municipalities. Although most social services including agricultural technical assistance, have been transferred to the municipalities, the central government still performs a key role in promoting agricultural production and productivity in the fields of agricultural credit, commercialisation, irrigation, and research. It is worth stressing that this division of responsibilities is more balanced in Colombia than in many other Latin American countries. The private sector, for example, the Coffee Producers Federation, also plays an important role in the provision of certain services such as training, research and technical assistance (Alarcon et al., 1997).

A major constraint in this configuration of responsibilities is the excessive politicisation of decision-making by municipal governments and in many cases their low managerial capacity. The poor coordination between municipal and departmental government is always noted as an additional burden.

### 2.1 The UMATAs

Municipal Agricultural Technical Assistance Units (Unidades Municipales de Asistencia Técnica Agrícola, UMATAs) constitute a type of agricultural secretariat to municipal governments. By law (Law 101, Republica de Colombia, 1993), every municipality must have a UMATA, and at least 5 per cent of the municipal budget must be allocated to the UMATAs. Every UMATA (and there are more than 1,000 in Colombia) must employ a professional agriculturalist and normally 1–3 assistants. In some municipalities they are provided with motorcycles or new means of transport. All UMATAs complain that their budgets for recurrent costs are very small. The UMATAs' mission is to provide technical assistance to farmers within their municipalities. Some UMATAs, besides dealing with technical aspects of crop or animal husbandry, have concentrated on commercialisation or farmer organisation issues.

The Director of an UMATA is directly dependent on the mayor. UMATAs have no formal links with any of the state research institutions and only weak links with the agriculture secretariats of departmental government. This has led to what many label 'free-wheeling' units within the National System of Agricultural Technology (Sistema Nacional de Ciencia y de Tecnología Agropecuaria, SNCTA).

Other criticisms of the UMATAs are:

- that the law forces municipalities without or with little agriculture to spend on technical assistance
- high turnover for political reasons
- high personnel costs in relation to running costs
- lack of means and working tools
- lack of extension methodologies (related to the lack of training)

The absence of a central unit that can provide coordination and support services has definitely resulted in freewheeling (CONSULTPLAN, 1996; Alarcon et al., 1997; Cano, 2000).

### **3. Institutional context: the other components of the technology system**

A major goal of the Colombian agricultural policy is to strengthen SNCTA by substituting the old agricultural institutions with systems that would allow most actors to participate and coordinate. The government has therefore adopted a series of measures aimed at introducing a new system of coordinating and financing scientific and technological development within the agricultural sector. This has been developed in line with achieving other strategic goals, including:

- consolidating innovative partnerships for scientific and technological development through the creation of public–private corporations
- decentralisation and co-financing of these activities
- development of human capital
- integration of national and international science and technology networks

To implement these policy goals, three mechanisms have been devised:

- a competitive fund for research projects
- para-fiscal funds administrated by producers' organisations
- strong coordination with the Ministry of the Environment to manage the environmental impact of agricultural activities

SNCTA is a complex web of many public and private organisations; for simplicity's sake only, its most important factors are referenced in this brief description of its mandate.

#### **3.1 National System of Technology Transfer in Agriculture (Sistema Nacional de Transferencia de Tecnología Agrícola, SINTAP)**

The introduction of modernisation policies in the agricultural sector has led to a number of important changes in the institutional framework that regulates the development of science and technology. In this sector, reforming SINTAP was identified as a key priority by successive governments. SINTAP was created in 1989 to provide a way to enhance levels of production in non-traded staples (for food self-sufficiency) through the transfer of appropriate technologies, with the goal of improving the social and economic performance of the rural sector.

Under new policy guidelines, restructuring SINTAP required a set of new multi-institutional and transparent systemic arrangements. It also meant that SINTAP had to adopt an approach to farming and technological development that is not only compatible with the twin aims of improving the competitiveness and efficiency of the rural sector – particularly that of the small-scale farmer (including peasant communities and minority ethnic groups) – but also with the goals of sustainability and equity. The main operational bodies that constitute the backbone of this system are: Corporación Colombiana de Investigación Agropecuaria (Colombian Corporation of Agricultural Research, CORPOICA) (mainly research) and Programa Nacional de Transferencia de Tecnología Agropecuaria (National Programme of Technology Transfer in Agriculture, PRONATTA) (extension). Besides these two organisations there are other entities that form part of the national system, including producers' organisations, private institutes, credit organisations, UMATAs, and the Ministry of Agriculture as the organiser and rector of the system. Only CORPOICA and PRONATTA (Ministerio de Agricultura y Desarrollo Rural, 1999) are described here.

## 3.2 CORPOICA

The former research and extension institute (Instituto Colombiano Agropecuario, ICA) has been modernised and privatised. As a result, in 1994 two organisations emerged: the ICA which was retained by the state to provide sanitary services, registering of inputs and agricultural products; and the Colombian Corporation of Agricultural Research (Corporación Colombiana de Investigación Agropecuaria, CORPOICA), a private non-profit corporation responsible for agricultural research and technology transfer. CORPOICA operates at both central and regional levels, it has 10 strategic programmes managed at central level and 8 at regional level based on farming systems. At the central level, it conducts strategic research and human resources development. It also provides general guidelines for research policy. At the regional level, CORPOICA carries out applied research for the 10 ago-ecological regions of the country. It administers 21 research centres and laboratories, and 58 Regional Centres for Training, Extension, and Technology Diffusion (Centros Regional de Capacitación, Extensión y Difusión, CRECED). CORPOICA uses participatory approaches to form Local Agricultural Research Committees (Comités de Investigación Agrícola Local, CIALs) with farmers to develop and promote new technologies (CORPOICA, 2001).

Although the UMATAs form part of the boards of directors of the research centres and of CRECED and some joint activities take place, the links are weak and not fully operational.

## 3.3 PRONATTA

In order to promote extension services, the Colombian government launched the National Programme of Technology Transfer in Agriculture (Programa Nacional de Transferencia de Tecnología Agropecuaria, PRONATTA), as the main arm through which to finance the extension operations of SINTAP. Funds were obtained from a World Bank loan<sup>3</sup>. Although this initiative may appear to be government-led, the difference lies in the fact that participators' institutions and formal organisations determine the priorities for technology transfer, whether it is public, private, or combined. The progress of SINTAP is therefore contingent on the active participation of civil society. This programme mainly operates through a bidding mechanism by which research and technology transfer organisations submit proposals and compete for funding.

The formalisation of the new processes of participation, rationalisation, and decentralisation constitute the three main pillars of governance that guide Colombian extension services. PRONATTA has adopted the following objectives that constitute its mandate to:

- strengthen the capacity-building processes among the various civil society actors engaged in the production and dissemination of knowledge;
- ensure the efficiency and effectiveness of SINTAP institutions;
- cultivate networks at the regional and local levels.

Emphasis is given to institutions rather than actors, since institutional participation is seen as the key to developing appropriate and effective farming technology (PRONATTA, 2000).

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<sup>1</sup> The World Bank's US\$ 1.928 billion portfolio in Colombia includes 23 ongoing projects. It has committed US\$ 1.4 billion for 2000–2 to a programme expected to contribute US\$ 4.2 billion to help ease the social and economic impacts of recession in Colombia.



## **4. The new institutional arrangements**

Implicit in the process of institutional change is the new conception of the roles and responsibilities for institutions and formal organisations. SINTAP–PRONATTA are not hierarchical entities, rather ones that comprise a complex web of institutional relations. The participation of organisations that understand the regional dynamics of the farming sector is important, since they are best placed to identify the strengths and weaknesses of existing systems.

The current challenge for SINTAP–PRONATTA is to respond directly to institutional and organisational enterprises in the farming sector, and ensure that greater efficiency is achieved through the services it provides. It also needs to be accountable to autonomous decision-making and managerial responsibility at the regional level, and to users of farming technology. One of the key objectives for PRONATTA is to ensure that demands for technological development originate at the local level so that they reflect the priorities of that region. Equally, SINTAP–PRONATTA is committed to guaranteeing the high quality of transferred technology and its compatibility with the principles of sustainability, equity, and competition.

The overriding objective of institutional reform is to instil cultural change in the development of farming technology in Colombia. It is expected that in the long term, this will address such wider political objectives as reduced poverty and increased rural employment, and will improve the conditions of small-scale farmers. Research efforts need to develop appropriate technological solutions for small-scale farmers, and to examine how they can be adapted to the particular socio-economic, cultural, and agro-ecological circumstances in which such technologies will be used.

## 5. Constraints and challenges for extension services

The main constraints and opportunities for improving extension systems in Colombia, (to render them more effective in terms of alleviating poverty) detected during this mission, include:

- Considering the large diversity that exists in terms of its population, type of farms, size of landholdings, and geographical and regional characteristics, SINTAP needs to be more cognisant of these specifics in a general strategic plan that would tackle extension problems in the wider context of rural development. It is important that such a plan be developed at the regional/local level in order to set specific objectives within development models that prioritise poverty alleviation and improvement of the living conditions of the least-favoured groups (women, indigenous groups, landless labourers).
- Although strong emphasis has been placed by the Colombian government on moving away from role of state executor, much of the funding and implementation of research and extension projects still are in the hands of the state. This limits their efficacy. The state should focus on creating an enabling environment that would encourage and support private initiatives at the local level.
- The process of decentralising research and extension services has proved to be more effective than the former scheme. However, some problems still persist, for instance, the implementation of national policies by autonomous services that may have different approaches or priorities:
  - the free-wheeling discussed earlier
  - the conflicts between organisations with distinct mandates
  - the dispersion of funding between many actors
- In many municipalities, politicians (municipal authorities) tend to give higher priority to ‘visible’ services that can attract more votes while disregarding long-term investments in knowledge. This represents an important constraint to extension that can only be addressed by structural measures at the central level.
- Considering that all the new institutional arrangements for extension services must be implemented during a civil war, and within a deteriorated economy,<sup>4</sup> one of the most important challenges for the Colombian government in general, and for the agricultural sector in particular, is how to promote development in rural areas with high levels of conflict, and how to secure the participation and support of insurgent groups, not to mention those of presently excluded peasant communities.

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<sup>2</sup> According to the Instituto Internacional de Investigación Sobre Paz (Stockholm International Peace Research Institute, SIPRI), the internal situation in Colombia is one of the ten most violent in the world. Peace talks with the guerrillas have been suspended indefinitely.

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## Appendix 1. The main differences between Bolivia and Colombia

<b>Subject</b>	<b>Bolivia</b>	<b>Colombia</b>
The system	After the closure of IBTA the country lacks a system. The new scheme (SIBTA) is still not fully implemented	A system is fully conceptualised (SINTAP) and mechanisms have been created (PRONATTA) but it is fragmented and UMATAs is free-wheeling
Funding	Funding for pro-poor extension activities is mainly dependent on NGO and some special cases (e.g. CIAT, PROIMPA)	Large financing schemes such as PRONATTA, the DRI fund and SENA (for training)
Obligation to provide the service	Municipalities are not obliged either to have technical assistance units or to spend on extension	All municipalities must have an UMATA (municipal technical assistance unit) and spend at least 5 per cent of their budget on it
Supporting services for pro-poor extension	Hardly any besides the work of NGOs. No agricultural credit is available for small producers	Credit is accessible for small-scale producers (Banco Agrario) and commercialisation schemes
Human resources	Few professionals are trained in extension sciences	Large number of extensionists some of them well-qualified
Donors for extension	High presence	Mostly with public funds
Main constraints	Lack of awareness of the importance of extension and little public investment in pro-poor extension schemes. The municipalities do not put funds into the service	Social conflicts and the state of violence that hampers free movement throughout the country