

**WORKING PAPER**

NO. 10

**ENHANCING THE LIVELIHOODS OF  
THE RURAL POOR THROUGH ICT:  
A KNOWLEDGE MAP**

Argentina Country Study

June 2008

**WORKING PAPER NO. 10, 2008***About infoDev's working papers series:*

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Information and communication technologies (ICTs), appropriately adapted, help improve the livelihoods of poor individuals, families and communities in rural areas and increase their income opportunities, thereby improving their chances of escaping from persistent poverty. This Knowledge Map helps understand what we know, both from research and from experience in the field, and what do donor staff and their country counterparts most urgently need to know about these issues. In addition, it provides recommendations on the use and role of ICT in enhancing the livelihoods of the rural poor.

The logo for infoDev, featuring the word "infoDev" in a white, lowercase, serif font. Above the letters "i", "n", "o", and "D" are several small white dots of varying sizes, arranged in a slightly curved pattern.

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June 2008

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## Acronyms and Abbreviations

ADSL	Asymmetric digital subscriber line
ALER	Asociación Latinoamericana de Educación Radiofónica (Latin American Association for Radiophonic Education)
AMARC	Asociación Mundial de Radios Comunitarias (World Association of Community Radio Broadcasters)
CDI	Comité para la Democratización de la Informática (Committee for Democracy in Information Technology)
CIPPEC	Centro de Implementación de Políticas Públicas para la Equidad y el Crecimiento (Center for the Implementation of Public Policies Promoting Equity and Growth)
CSO	Civil society organisation
CNC	Comisión Nacional de Comunicaciones (National Communications Commission)
COMFER	Comité Federal de Radiodifusión (Federal Broadcasting Committee)
CoTelBe	Cooperativa Telefónica de Provisión de Obras y Servicios Públicos, Sociales, Asistenciales, de Consumo y de Vivienda de Belén Ltda (Telephony Cooperative for the Provision of Public, Social, Welfare, Consumer and Housing Services)
CTC	Community technology centre
DOI	Digital Opportunity Index
EIU	Economist Intelligence Unit
EnTel	Empresa Nacional de Telecomunicaciones (National Telecommunications Company)
FARCO	Federación Argentina de Radios Comunitarias (Argentina Community Radio Federation)
Fecosur	Federación de Cooperativas del Servicio Telefónico de la Zona Sur (Federation of Cooperatives of Telephone Services of the Southern Zone)
Fecotel	Federación de Cooperativas de Telecomunicaciones (Federation of Telecom Cooperatives)
GDP	Gross domestic product
HDI	Human Development Index
ICT	Information and communication technology
IERAL	Instituto de Estudios Económicos sobre la Realidad Argentina y Latinoamericana (Institute for the Study of the Argentine and Latin American Reality)
INTA	Instituto Nacional de Tecnología Agropecuaria (National Institute for Agricultural Technology)
IROL	International Research Online
ITU	International Telecommunication Union
INDEC	Instituto Nacional de Estadística y Censos (National Institute of Statistics and Censuses)
MoCaSE	Movimiento Campesino de Santiago del Estero (Peasant Movement of Santiago de Estero)
NBI	Necesidades básicas insatisfechas (Unmet basic needs)
OECD	Organisation for Economic Co-operation and Development
ONTI	Oficina Nacional de Tecnologías de Información (Office of Information Technology)
PC	Personal computer
PSI	Programa para la Sociedad de la Información (Program for the Information Society)
RCI	Red de Comunicación Indígena (Indigenous Communication Network)
SAGPyA	Secretaría de Agricultura, Ganadería, Pesca y Alimentos (Ministry of Agriculture and Fisheries)
SME	Small and medium enterprises
Tedel	Teletrabajo y Nuevas Formas de Trabajo para el Desarrollo Local (Telework and New Working Methods for Local Development)
UNDP	UN Development Program

# Rural ICTs in Argentina: Country Report

Information and communication technologies (ICTs) represent a valuable tool in the effort to overcome a wide range of obstacles to economic and social progress in the developing world. However, the lack of appropriate basic infrastructure remains a major hindrance to ICT diffusion. The main obstacles to building that infrastructure are as follows: (i) low population density; (ii) inadequate regulation; and (iii) the high cost of technologies that have been designed for urbanised areas.

The major findings of this research are as follows:

- Although all stakeholders acknowledge the positive impact of ICTs on the livelihoods of the rural poor, there are certain necessary parameters with which such initiatives must comply in order to be successful;
- Projects must work within a reasonable timeframe, and be sustainable and offer the potential for self-management;
- Most successful experiences are those which come out of bottom-up (i.e. community-generated) initiatives, rather than top-down projects that are imposed on communities. Bottom-up initiatives help in gearing toward local appropriation and adaptation of technologies involved;
- Key policy issues which deserve attention include implementation of a universal access fund and responses to basic infrastructure needs, such as the need for accessible roads and provision of energy in the areas involved.

## II. Introduction

### II.1 Background to ICTs for livelihoods in Argentina

By international standards, Argentina is a middle-income developing country, with high human development. Argentina stood at 0.86 on UNDP's Human Development Index (HDI) for 2005.<sup>1</sup> Argentina experienced a macro-economic crisis in 2001-2, which led to a recession in which GDP decreased by 11%. Recent years have shown sound recovery, with an average rise in economic activity of 9% over the period 2003-5. Other social indicators, such as levels of unemployment and poverty, have followed this favourable trend.

Nevertheless, official numbers show that 20% of the population is still living in poverty, and 11% in extreme poverty. Moreover, it is worth noting the huge disparity that exists among and within Argentinean provinces. For example, over 30% of the population suffers from unmet basic needs<sup>2</sup> (NBI) in the northwest and northeast regions,<sup>3</sup> whereas some provinces see an average NBI below 12%.<sup>4</sup> This is one of the main reasons for choosing case study locations in the province of Catamarca, in the northwest region. In 2001, 32% of the population living in La Puerta de San José and 34% of the population of Pozo de Piedra, saw their basic needs unmet.

The size of the 'rural' population is a controversial issue in Argentina. According to the National Institute of Statistics and Censuses (INDEC), in 2005 Argentina's rural population represented 11% of the total population (i.e. 3.8 million people). INDEC defines the rural population as those living in localities with at most 2,000 inhabitants, or those in the open countryside. OECD defines the rural population as those localities with a demographic density below 150 inhabitants per square meter, at a distance of over one hour from urban areas. According to the latter definition, 45% of the Argentinean population is rural.

According to Sili (2005), one of the main consequences of rural transformation in Argentina has been the exodus toward urban areas due to the loss of jobs and opportunities in rural areas, and the consequent local and regional restructuring of human settlements. That said, Sili also identifies an incipient reverse migration process. The key factors behind the latter seem to be linked to two factors: (i) the desire for a better quality of life, e.g. environment, time availability and safety; and (ii) the search for better work prospects. The arrival of newcomers has apparently generated interesting and innovative local developments in rural communities over the past decade. These developments have been made possible by the use of new technologies for transportation and communication. This trend has contributed to the development of rural areas, by opening up the possibility of local, regional and national coordination among relevant actors.

So far, most rural development in Argentina seems to have been geared toward big rural producers, to the detriment of the rural poor. Sili argues that a strategy of rural development with a territorial base implies a different institutional structure, which involves innovative and flexible processes and actions. Broadly speaking, this is the model followed by *sociedades de fomento*<sup>6</sup> and local governments.

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<sup>1</sup> Over 0.8 is classified as 'high human development'. According to the 2005 HDI, Argentina shares this ranking with Chile, Uruguay, Costa Rica, Cuba and Mexico; other Latin American countries were classified as 'medium'.

<sup>2</sup> Over three people per room, and/or inconvenient living conditions (i.e. any home which is not a house, flat or farm), and/or no toilet, and/or at least one child (between 6 and 12 years old) not going to school.

<sup>3</sup> With the exception of two provinces, Salta and Corrientes.

<sup>4</sup> These were, as of 2001, Buenos Aires, Córdoba, La Pampa, Santa Cruz and Santa Fe.

<sup>5</sup> The 2001 Census was the most recently published at the time of writing.

<sup>6</sup> Among other things, the *sociedades de fomento* work to improve infrastructure and organise artistic, sporting and educational events. In a sense, they work as community organisations.

Telephony cooperatives are a long-established model for microtelcos in Latin America (Galperín and Girard, 2005). They are found mainly in rural areas. In Argentina, these cooperatives emerged in the 1960s to operate in areas considered non-profitable by the then state-owned operator EnTel. There are currently over 350 telephony cooperatives in the country, with two-thirds operating in communities with less than 10,000 inhabitants. Galperín and Girard (2005) suggest that 'telephony cooperatives have played a key role in extending basic as well as advanced ICT services outside the main urban areas, [accounting] for about 8% of the Argentine fixed telephony', with a much larger share in poor and more isolated provinces. The authors also point to significant involvement in ICT training and dissemination activities, together with local content development in association with civil society and local government. The two national federations representing the majority of the telephony cooperatives are: (i) the Federation of Telecom Cooperatives (Fecotel); and (ii) the Federation of Cooperatives of Telephone Services of the Southern Zone (Fecosur). These cooperatives have started to explore the legalities surrounding the provision of mobile phone services (Frost & Sullivan, 2006).

Unlike other Latin American countries, such as Uruguay, Argentinean ICT indicators are not updated regularly on a national basis.<sup>7</sup> The penetration of fixed-lines grew by only one percentage point in two years: from 23% in 2003 to 24% in 2005. Moreover, in 2005, only Buenos Aires and Gran Buenos Aires, Tierra del Fuego, Neuquén, Córdoba and Santa Cruz reached (or exceeded) the national average. Over the same period, the number of mobile phone lines per 100 inhabitants almost tripled, going from 20.7% to 57.4%. By 2004, mobile teledensity had exceeded fixed-line teledensity, and had reached 63.0% by the beginning of 2006. It was estimated that, by the end of 2006, the penetration of mobile phones had already reached 70% (Telecom).

Regarding internet usage, a first interesting point to note is that there are many users but very few residential connections. This reflects the high level of shared access – the fact that most people use the Internet in telecenters or at work. According to D'Alessio International Research Online (IROL), the last figures available (June 2006) indicated 10.32 million Internet users in Argentina, representing 28% of the total population. However, social disparity is evident: from a survey of 1,500 cases, D'Alessio IROL found that the poorest sectors of society (i.e. the so-called 'bottom of the pyramid') were dependent on shared-access locations (especially in telecenters) for their Internet use.

In 2004, there were 8.2 PCs per 100 inhabitants. The number of Internet users almost doubled from 2004 to 2005, leaping from 13.7 to 25.7 users per 100 inhabitants. The Economist Intelligence Unit (EIU) publishes an annual 'e-readiness' ranking of the 68 world's largest economies.<sup>8</sup> With an index of 5.27 in 2006, Argentina occupied 42<sup>nd</sup> place, and has been showing a positive trend over the past few years.<sup>9</sup> Argentina's Internet penetration by number of users in 2005 was among the highest in the region, at 26.4% – behind only Chile, at 35.7% (Digiworld, 2006).

According to the International Telecommunication Union (ITU) in its latest annual World Information Society Report, Argentina's Digital Opportunity Index (DOI) for 2004-5 is 0.47. This index has three components: opportunity (0.96); infrastructure (0.30); and utilisation (0.15). Ratings for both the overall DOI and its components are higher than the world average and the average in the Americas. This places Argentina 51<sup>st</sup> out of 180 countries worldwide, and sixth out of 35 countries in the Americas. It is only below Chile in Latin America. Moreover, the ITU estimates that Argentina has 19.6 Internet users and 35.3 mobile subscribers per 100 inhabitants, and shows a

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<sup>7</sup> This is, in fact, one of the key needs identified by interviewees (see later sections).

<sup>8</sup> This index is a measure of the country's e-business environment, i.e. it indicates how amenable a market is to internet-based opportunities. It considers areas such as broadband access and mobile penetration, and has latterly introduced aspects of innovation and penetration of public-access wireless 'hotspots'.

<sup>9</sup> See [http://store.eiu.com/index.asp?layout=pr\\_story&press\\_id=1060001906&ref=pr\\_list](http://store.eiu.com/index.asp?layout=pr_story&press_id=1060001906&ref=pr_list) for more details.

quite high affordability index (0.95 out of 1). As expected, the great disparity existing across the Argentinean territory is also evident in terms of the infrastructure available in rural areas. In fact, experts in the area recognise that although Argentina is, on average, well positioned within the Latin American context, it is also one of the countries that has contributed the least to rural ICTs, from both the public and private sectors.

## I.2 Research questions and methodology

This study was undertaken to answer the following three key research questions:

- i. Can the policies implemented help to improve the livelihoods of poor individuals, families and communities in rural areas – can these policies increase people’s income opportunities (and other livelihoods principles), thereby improving people’s chances of escaping from persistent poverty? How?
- ii. Regarding livelihoods in rural areas, what lessons are there to be learned, both from research and from experience in the field?
- iii. What elements most urgently require further research and analysis, in order to lay the foundation for informed policy and investment by donors, governments and others?

The methodology combined a set of qualitative methods. These included: (i) a literature review; (ii) personal interviews; (iii) a focus group; (iv) face-to-face discussions with diverse stakeholders; and (v) field observation. This approach produced the following three inputs:

- i. **A country report** on Argentinean ICT experiences in rural areas that deals with a selection of target projects. The report is based mainly on a literature review and personal interviews – it incorporates some of the conclusions from the workshop and the case study (see below). Personal interviews were conducted with at least three representatives from each of the following five stakeholder groups: donors, policymakers, technology providers, media and content providers, and civil society organisations (see Annex 2). Interviews were based on a guideline questionnaire (see Annex 1), which was adapted slightly to fit each group. The questionnaire had the main goal of collecting qualitative data on implementation, management and operational issues from those directly involved in the process. The principal focus of the interviews was to draw out descriptive examples of successes or failures from projects that had already been implemented. Due to time constraints, the initiatives surveyed by no means represented a comprehensive list of all ICT projects implemented in rural Argentina.
- ii. **A national workshop** to discuss the report with key stakeholders – donors, policymakers and practitioners – in order to validate results found by the country report and identifying further requirements. For more details on the workshop, see Annex 3.
- iii. **A case study** on the impact of a local telephony cooperative and a local radio station, in order to incorporate lessons from past experience. The focus was on one particular community in order to come up with specific policy recommendations relevant to the population under study. The case study was based on one field visit that was made to different rural areas (see the case study report). It was based on personal interviews and focus group discussions. Interviewees included the different actors involved in the various technologies, as well as service beneficiaries. A detailed description of the trip is included in Annex 4.

## I.3 Brief note about CIPPEC

CIPPEC (Center for the Implementation of Public Policies Promoting Equity and Growth) is an independent non-profit organization working to create a just, democratic and efficient state that

will provide a better quality of life for all Argentinean citizens. It concentrates on analyzing and promoting public policies that foster equity and growth in Argentina. Its challenge is to turn into concrete actions, the best ideas emerging from the areas of social development, economic development and strengthening of institutions, by promoting programs on Education, Health, Fiscal Policy, Justice, Transparency, Political Institutions, Local Management, Civil Society Influence and Training for Political Leaders for Democracy.

CIPPEC has diverse strategies of action. These include: (i) analysis; (ii) advising and implementation; (iii) promotion and impact; and (iv) monitoring and evaluation.

- **Analysis of public policies:** CIPPEC studies and analyzes current education, health, fiscal, political, judicial and public management systems, in order to determine needs, opportunities and obstacles when implementing effective public policies.
- **Providing advice and helping implement public policies:** CIPPEC provides thoughtful and well-researched advice to officials at different government levels to promote the best practices for governing. CIPPEC also participates directly in the design and implementation of new public policies that contribute to a more just and democratic state.
- **Promotion and impact of public policies:** CIPPEC gathers and disseminates clear and accurate information about the performance of the state. It also facilitates citizens' access to public information, enabling them to familiarize themselves with all aspects of public policies in order to understand and evaluate the three branches of government.
- **Monitoring and evaluation of public policies:** CIPPEC monitors and evaluates the performance of state institutions with the intention of fostering a culture of accountability of government representatives to their constituents. It trains members of civil society and provides them with practical tools to monitor the behavior of the state.

## I.4 Layout

Section 2 of this report examines the roles and needs of the various stakeholders, including: (i) donors; (ii) national-level policymakers; (iii) technology providers; (iv) CSOs and media; and (v) service beneficiaries. Section 3 describes general findings and findings by key topic, including: (i) scale issues; (ii) management and funding; (iii) technology and local appropriation; (iv) impact of key institutions; (v) and impediments and incentives. Section 4 presents conclusions. Annexes include the main findings of a national workshop organised in Buenos Aires on December 19, 2006 (the second output of the research). A separate report presents the case study and the results from a focus group (constituting the third - and last - output).

## II. Priority Roles and Needs of Key Stakeholder Groups

The initiatives surveyed in this report involved various ICTs and activities: (i) community radio stations; (ii) telephony cooperatives; (iii) internet connectivity; (iv) a service portal for small and medium enterprises (SMEs); and (v) mobile telephones. Most of these projects are funded using national sources. The particular infrastructures in place tended to determine which technologies were adapted and which ICT projects were implemented. Most rural ICT projects are still at the pilot stage, which involves, micro and meso-level efforts. Many projects include the participation of a variety of different stakeholders from civil society, government, and the private sector. In general, it is quite rare to find formally established ways to evaluate impact. Finally, although most initiatives intend to become more integral projects, some are sector-specific, e.g. focused specifically on education, agriculture and livestock, microcredit, or health.

Based on interviews surrounding these projects and feedback gathered during the national workshop, the study has identified the following sets of needs and roles, for the various stakeholder groups:

### II.1 Donors

Most of the donors interviewed, including Microsoft, Ledesma, Intel and Telecom, are getting involved in rural ICT issues as a result of their social responsibility initiatives. These companies have contributed to projects by making donations through links with CSOs (Microsoft) or through the provision of training programs (Ledesma and Intel). However, a recent trend is seeing the private sector looking at the 'bottom of the pyramid' as a business in itself. For example, the telephony industry is initiating a project in conjunction with local CSOs, that tries to activate this currently neglected market by offering services at lower costs.

All of the donors recognized sustainability as a key priority when considering funding projects. They do not want to fund projects that only act as charity (i.e. top-down) programs. Donors have been looking more closely at projects where the community is engaged, both in the identification of local real needs and in the implementation of activities. For example, Microsoft is currently monitoring the community impact of its school connectivity projects, in order to ensure that such initiatives grow and become sustainable in time.

Funding initiatives that are generated by and for the community, are becoming one of the key donor priorities. In addition, some donors are concerned with ensuring equitable access. For example, Ledesma provides training to marginalized groups.

Another important aspect is the need for better and more fluent coordination with government, especially at the local level, either as a direct co-financing source or simply as a facilitator in the identification of the community's local needs. Donors are requiring more and better indicators to assess the impact of their investments. This allows them to better identify the real needs of the communities involved, and to set their priorities accordingly.

### II.2 National-level policymakers

Officials from four different government agencies were interviewed for this study. They are: (i) COMFER – National Communications Commission; (ii) Educ.ar; (iii) ONTI – Office of Information Technology; and (iv) CNC – National Communications Commission (see Annex 2). Also interviewed was a consultant working closely with the Ministry of Agriculture and Fisheries –

SAGPyA. The government has taken the initiative in certain projects. Two examples are: (i) installing radios in border schools in conjunction with COMFER; and (ii) providing connectivity to rural schools in conjunction with Educ.ar. In some cases, the government's primary role is to be a facilitator – for example, Telework and New Working Methods for Local Development (Tedel). In other cases the government's role is to accompany and convene – for example, Telefónica Móviles. In some cases (e.g. Equidad), the government has been completely absent.

The Program for the Information Society (PSI) in the Telecommunications Secretariat is considered by some as the main governmental program in planning and promoting ICT diffusion. It was created in 1998<sup>10</sup> to 'design and implement the necessary public policies and projects to spread information, knowledge and interchange through the use of informatics processes'<sup>11</sup>. Among PSI's policies and projects are: (i) the creation of 1,350 community technology centers (CTCs); (ii) a program geared toward disabled people; (iii) a national communications plan for popular libraries;<sup>12</sup> and (iv) the installation of high complexity infrastructure in health-related institutions.

In an evaluation of the functioning of these centers, Proenza (2003) states that between August 1999 and December 2000: (i) the Argentinean government had set up 3,000 connectivity points;<sup>13</sup> and (ii) Argentina had the greatest number of telecenters in Latin America. PSI could have represented a good starting point toward the development of a national ICT plan. However, according to most interviewees, it has recently been truncated. Apparently, most CTCs are not working anymore. According to Rabadán and Bassi (2002), only about 30% of CTCs were working according to PSI goals after two years of operation. The macroeconomic crisis of the early 2000s, and the different priorities set by the new government, left most of these centers under the care of local organizations. This is a good example of the failure of top-down initiatives.

The Telecommunications Secretariat may re-launch PSI in the near future.<sup>14</sup> Nevertheless, policies are still extremely atomised, and there is an urgent need for much more organic and integral policymaking on ICT issues, especially in projects which directly affect the rural population. Since this policy is to be based on and geared toward the communities involved, the active participation of local (mostly municipal) governments is essential at the policymaking level.

Furthermore, there is a need for better coordination among the different state actors working on these issues, and a better coordination of the resources involved. The head of the office responsible for national e-government issues stated that a committee formed by ICT representatives of nine different governmental agencies had been meeting informally for about the past year.<sup>15</sup> Although critics say that these meetings have been too sporadic and informal, this may be a good starting point in avoiding replication by different governmental agencies.

There needs to be greater political will at the government level to focus efforts and resources on ICT issues. Reversing the neglect of rural areas regarding ICT initiatives, will only be possible if there is a strong political will to do so.

## II.3 Technology providers

Three technology providers were interviewed. All three work in telecommunications – two belong to telephony cooperatives, and the third to a major telephone provider (Telecom). Although

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<sup>10</sup> By Decree 1018/98 and modified by Decrees 252/00 and 243/01.

<sup>11</sup> Translation from Article 1, Decree 252/00.

<sup>12</sup> This provided 1,745 popular libraries with informatics resources.

<sup>13</sup> A total of 1,281 CTCs and 1,750 libraries were set up; over 100 CTCs were installed over the second half of 2000.

<sup>14</sup> Unfortunately, despite several attempts, this could not be confirmed.

<sup>15</sup> According to Mr Achiary, there is apparently the will to formalize this committee in the near future.

Microsoft and Intel are also technology providers, they were interviewed from a donor perspective.

The first cooperative is based in the second largest city of the poor province of Jujuy – Perico. In conjunction with the local population, it has installed a telephone in a remote provincial location – Ocloyas. The other cooperative is located in one of the many extremely poor and sidelined localities of the wealthiest Argentinean province of Buenos Aires. This is an example of how a poor and small community has been able to satisfy its own communication needs. These projects were not financially viable for the main telephone companies. Therefore, most telephony cooperatives did not count on any financial help from the local or provincial government.

However, the main technology provider interviewed – Telecom – seems to have been involved in the continuous funding of the CTCs when they were abandoned by the government after the 2001-2 economic crisis.

Despite differing levels of market power, technology providers are demanding better government policymaking. Telephony cooperatives are asking for more support, or at least fewer obstacles, from local, provincial and national governments. Another essential need expressed by technology providers (Telecom, in particular) is the implementation of Universal Service.<sup>16</sup> This was agreed upon among national Argentinean authorities and the two main telecommunication providers (Telecom and Telefónica de Argentina) in 1999. It envisages the creation of a fund aimed at subsidizing basic fixed telephony and Internet access to high-cost areas, with an emphasis on reaching certain clients (e.g. pensioners) and providing certain specific services. The fund would be financed from 1% of the revenue of each telecommunications license holder.

The implementation of the Universal Service would allow funding of initiatives which are not *per se* profitable, e.g. ICTs in rural and isolated areas. Moreover, this 'quality seal' (i.e. endorsement from the state) would, in turn, also help attract more private and international funding for such projects, as has been seen in other Latin American countries (e.g. Chile). In addition, the telecommunications sector has been arguing for quite some time for a more flexible and competitive regulatory framework that would allow for a realistic tariff structure. According to a 2006 report by Regulatel,<sup>17</sup> although most countries in the region have some degree of market liberalization combined with regulatory initiatives, 10 out of 12 have functioning universal access fund programs. Moreover, 13 countries have other financing methods and governmental initiatives, and three use state-mandated (e.g. cross-subsidizing) financing sources.<sup>18</sup> Even though the current frozen tariffs subsidize those who already have a telephone service, they act to the detriment of potential new users. This leaves local government and civil society, with all their financial and scale limitations, in charge of the provision of such services.

## II.4 CSOs and the media

CSOs play a fundamental role in the provision of ICT services to the rural poor. Some are geared toward reducing the digital gap affecting the rural poor. These include: (i) Fundación Era Digital; (ii) Educación Digital of Fundación CDI (Committee for Democracy in Information Technology); and (iii) Fundación Compañía Social Equidad. Others focus on the mobile market. These include: (i) Fundación Escolares; and (ii) Red Argentina de Instituciones de Microcrédito. IERAL (Institute for the Study of the Argentine and Latin American Reality) offers a portal to help SMEs prepare paperwork for credit. Mujeres Warmi deals with daily use of computers to monitor microcredit.

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<sup>16</sup> Resolution 18971/99.

<sup>17</sup> Regulatel is the Latin American Forum of Telecommunication Regulatory Bodies, with 19 member countries. See <http://www.regulatel.org/> for more details.

<sup>18</sup> See <http://www.regulatel.org/miembros/ppiaf2.htm> for more details.

Tedel has an initiative that reflects a much more integral perspective – an initiative that sends five university graduates back to their hometown to implement community ICT projects.<sup>19</sup>

It was CSOs that most strongly emphasized the need to implement integral initiatives involving and generated by the community as a key aspect to guarantee sustainability over time, especially in rural areas. Those CSOs included: (i) Era Digital; (ii) Incupo; (iii) Red de Comunicadores del Gran Chaco; (iv) Warmi; and (v) Tedel. Some CSOs placed a special focus on young or indigenous populations, and respect of certain autonomies. These include: (i) MoCaSE – the Peasant Movement of Santiago de Estero; (ii) FM Alas; and (iii) AMARC – World Association of Community Radio Broadcasters). Other CSOs, such as COMFER, try to solve sovereignty issues.

Funding was defined as a primary need: CSOs have many ideas for ICT projects in rural areas, but most of these never get through pre-implementation. This is especially true in the poorest provinces, i.e. the northwest and northeast. Therefore, the case study focused on an area in the northwest because of the inequality that exists not only among those provinces, but also within them.

A related need is for publicity and exposure aimed at key actors, such as policymakers or donors. Some CSOs were conscious of the need to establish cooperation and learning networks. In addition, it is hard to envisage implementation of any new technologies in rural areas, unless there is a marked improvement in infrastructure.

## II.5 Beneficiaries

Among beneficiaries, there was a general lack of information about some of the CSO and national government initiatives in the field. Some beneficiaries seem unaware of major projects, such as those of Educ.ar, COMFER and Buenos Aires-based CSOs.

Beneficiaries do not always directly recognize the impact of ICTs on their livelihoods. However, they often recognize that they are being hurt by the *lack* of ICT services. Frequent complaints about service provision (e.g. by a telephony cooperative) demonstrate that beneficiaries value this service. That said, it seems that in many places the key need is for better basic infrastructure (see the case study report and the workshop's key findings). Many rural (and sometimes not so rural) localities are still experiencing problems with energy provision. These localities often lack appropriate buildings that would enable them to receive such services as PC donations. Roads are often inaccessible, leaving entire communities isolated and dependent on weather conditions. The team experienced this while carrying out the case study research in Belén, when a powerful storm caused flooding to roads connecting rural localities with the city of Belén.

The need for appropriate basic infrastructure is a major aspect to be taken into account when considering beneficiaries' ICT needs in a rural environment. As the case study report shows, most beneficiaries use the radio for information and social purposes, because it provides practical information (e.g. on doctor's visits, pension payments in the city, solidarity campaigns). People also use the telephone fairly frequently, mainly for personal and emergency matters.

A final and related point, has to do with absorption capacity and utilization. It seems understandable that, under such precarious conditions, the radio (and to a lesser extent, the telephone) continues to be the main means of communication. Nevertheless, beneficiaries do acknowledge the value of having more and better new technology services, especially when this concerns younger generations. Moreover, there are cases, such as the PC training in La Ciénaga or

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<sup>19</sup> See a wider description of Tedel's activity in the case study report.

the rural school in Pozo de Piedra,<sup>20</sup> where people's capacities are being developed. This reinforces the finding that, although there is some way to go in terms of local adaptation and appropriation, the key need of beneficiaries has more to do with the lack of basic and ICT infrastructure.

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<sup>20</sup> See the case study report for more details.

### **III. Priority Knowledge Needs Related to Key Themes**

The key themes detailed below emerged from interviews, and were validated in the national workshop. These are: (i) scale; (ii) management and funding; (iii) technology and local appropriation; (iv) the impact of key institutions and intermediaries; (v) empowerment and voice of the rural poor; and (vi) key impediments and incentives.

#### **III.1 General findings**

There was general agreement and recognition on the positive impact of digital inclusion. The need to work in integral projects that involve stakeholders from the whole community was also highlighted. Social communication is increasingly perceived as a fundamental element in integrating people who live in isolated areas. Another key element is the sustainability and self-management of projects, which is closely linked to a focus on decentralized initiatives that avoid a top-down approach. These, together with promoting strong interaction among different stakeholders through private/civil society/public partnerships, were identified as the most significant factors in achieving the successful application of ICTs in poor rural areas.

The Tedel project is a good example of a bottom-up initiative.<sup>21</sup> As mentioned above, it is mainly based upon the work of graduates who return to their community of origin after finishing their university studies in urban areas. Being local themselves, they are well aware of the particular problems affecting the area. Their task is to involve the community in different ICT projects which can help improve livelihoods. This model seems to be a useful way of generating initiatives that have strong roots in the community, and which in turn facilitate the local appropriation and sustainability of ICTs.

#### **III.2 Scale issues: magnitude of current initiatives**

Most ICT projects directly geared toward rural areas are being carried out as pilot programs. In fact, the very heterogeneity of Argentinean rural regions, emphasized in the national workshop, goes against the scalability of some of the pilot initiatives. That said, most interviewees were confident about the possibilities for replication and scaling up. The main challenges pointed out by the actors involved included how to ensure sustainability of management and how to define the role of local government in the process of scaling up the initiative.

The recent rural exodus implies that the basic needs of the rural poor are not being met. The cause appears to be a low demand for services and lack of basic infrastructure (Sili, 2005). The key aspect in ensuring that ICT initiatives are sustainable and have the anticipated positive impact on rural livelihoods is that they are generated from within the community. This builds the foundation that attracts the appropriation necessary to sustain the initiative over time. It is in this sense that the reverse migration process mentioned earlier can contribute to better absorption of ICT initiatives in the rural environment, especially those concerning new technologies.

Local government has a crucial role to play in helping scale up these initiatives, but most practitioners did not seem to recognize this. That may be a result of the poor record of many local government agencies in interpreting and dealing with the real needs of the communities they represent. A concerted effort from national government, which would require strong political will, might be a good starting point in supporting such initiatives.

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<sup>21</sup> This was one of the reasons behind our selection of a case study area which held Tedel's pilot.

### III.3 Management and funding: models for improving rural livelihoods

Although most of the initiatives reported here were initially generated by one particular stakeholder, their implementation entailed concerted coordination efforts among a number of different actors. Coordination problems can be avoided from the very start, if the implementers have previous knowledge of the community and the local government. Local government can play a primary role in facilitating the association of different stakeholders, and helping with the management of funding aspects. It is worth emphasizing again the importance of articulating the goal of universal service in order to attract financing. In addition, this would provide a 'quality seal' to the initiative that would be useful for obtaining non-governmental national and international funding.

Cooperatives are another interesting model. As mentioned earlier, Argentinean telephony cooperatives are one of the most successful examples of how to generate a project from and for the community. For example, Cooperativa Telefónica Perico has managed not only to provide a service for the whole city of Perico, but also to install a payphone in the remote and isolated locality of Ocloyas. Moreover, some cooperatives are providing training to local communities on the cooperative model of association, which is based on concrete needs and strong solidarity principles (e.g. CoTelBe, see case study report for more details).

Fundación CDI Educación Digital is a good example of connectivity initiatives. Over recent years, 64 centers – called Escuelas CDIs – have been set up to train local communities in various ICT applications. Their sustainability-based model consists of two stages. First, they set up the school and train a team of five instructors, two coordinators and one technician. This is generally accomplished within the first four months. Second, they provide assistance to the team, aiming to create a sustainable center in about three years. They request a minimum contribution of \$10 (around US\$3) per training course.<sup>22</sup> This project emphasizes the need for local technical assistance, that is capable of rapidly solving equipment failures. This need was highlighted by workshop participants. Although it is often not considered by practitioners, the presence of high quality local technical assistance seems to be a key element for success, especially within the context of rural and isolated communities.

### III.4 Technology and local appropriation

Local appropriation is sometimes taken for granted, especially in top-down initiatives. This is an area that needs much more exploration, since most of the projects do not define formal ways of evaluating the impact of technology appropriation and implementation capacity. Without such feedback, it is only possible to infer certain aspects about best practices. Overall, the most successful initiatives indicate that local appropriation of technology happens gradually and according to the needs of the communities.

Topic-specific initiatives can be especially effective, because they can serve as a starting point from which to generate community interest in technology appropriation. In education, there is a significant role for schools in terms of demonstration and of the multiplier effect. Another application is in the area of health, through the broadcasting of prevention campaigns by means of ICTs. The use of ICTs for e-commerce is still underdeveloped in the Argentinean rural poor context. Applications in e-government are being implemented uniformly only at national level.

One of the key findings emphasized at the workshop was that a strategy based on universal *access* is more effective than a strategy based on universal *service*. Working on local capabilities and

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<sup>22</sup> See <http://www.cdi.org.ar/> for more details.

competencies is closely linked with the need to generate value in the place of origination. Appropriation of particular ICT projects by the local population is vital.

The logic behind the various ICT projects implemented in rural schools often differs from the logic behind more global and integrated initiatives for the community as a whole. Furthermore, the high degree of teacher mobility in most rural schools makes it difficult to implement training for the usage and appropriation of ICT technology. A possible solution is to install the ICT technology in the community, and ensure that it is independent from school authorities. That said, many rural schools constitute the integrating center for different isolated communities, and can thereby be used as an incorporating factor. For example, the second call for proposals for connectivity in rural schools (Educ.ar) has prioritized the community roots and integration aims of schools that want to participate.

### **III.5 Impact of key institutions and intermediaries**

The state must guarantee the right to education. According to many of the interviewees and workshop participants, access to and provision of ICTs should be an obligation. Schools can act as an ideal environment in ensuring that this right is realized.

The particular mix and roles of stakeholders depend on the area. In most places, municipalities are in charge of infrastructure (roads and buildings). Sometimes, they are the primary source of labor demand in the area. This was clear in the department of Belén. In La Puerta de San José, for example, the municipality has a division in charge of social action. This involves basic needs, such as food and clothing, as well as more advanced needs, such as communication services.

Moreover, independently from the key institutions and intermediaries that can facilitate the initiative, there is a consensus that initiatives have to be generated from within the community. Social enterprises can be used as models.

It is important to note the evident disconnection between local and national government. This is in part due to the failure to implement universal service (see above), because of the lack of funds for financing ICT projects in the poorest areas of the country. Moreover, the current frozen tariff structure, which benefits existing telephone users, has a negative impact in terms of installation of new equipment to benefit potential users who have fewer resources. This lack of funds complicates the provision of new and better telecommunications and Internet services, especially in isolated rural areas.

### **III.6 The role of ICTs in empowering and giving voice to the rural poor**

It is interesting to analyze community radio in terms of empowering and giving voice to the rural poor. Stations are represented by AMARC,<sup>23</sup> which has set up a range of requirements for a station to be accepted as communitarian. These requirements involve broadcasting content – it should be with and from the community – and some points about non-commercial advertisement.

Most community radio stations have arisen due to the need of certain groups for independent communication media that better represent their voices. One example is the first license given by COMFER to a *mapuche*<sup>24</sup> (indigenous) community radio station in April 2005. This station is based in the community of Linares, which is in the southern province of Neuquén). It covers an area of 80km. It was based on an initiative by the National Institute for Agricultural Technology (INTA).

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<sup>23</sup> See [http://wiki.amarc.org/index2.php?lang=EN&topic=AMARC\\_home&site=amarc&style=amarc](http://wiki.amarc.org/index2.php?lang=EN&topic=AMARC_home&site=amarc&style=amarc) for more details.

<sup>24</sup> Mapuche (Che 'people' + Mapu 'of the land') is the name given to the original Amerindian (or indigenous) inhabitants of central and southern Chile and southern Argentina.

Moreover, FM Alas (from El Bolsón, Neuquén) and MoCaSE have installed radio stations in remote rural locations, with the help of experienced people from FM La Tribu (Buenos Aires) and AMARC. FM Alas has assisted with the set-up of two stations in the province of Neuquén. The first is located in Cuesta del Ternero, which is 35 km from El Bolsón. The second is located in 11 de Octubre, which is 60km from El Bolsón. MoCaSE has two stations in rural localities in the south of Santiago del Estero province: Quimilí and Tintina. These are bottom-up initiatives. They were requested by the community because their communication needs were not being met by national and provincial radio. Locals have contributed in numerous ways, For example, locals built the necessary infrastructure in Neuquén, and carried out operations for MoCaSE.

Another interesting example is the Indigenous Communication Network (RCI). It is currently using satellite services to allow communication among the various indigenous organizations of the network, in order to enforce the group's participation in public opinion, especially on topics concerning the indigenous population. RCI has installed 21 aerials with satellite reception in the Northern provinces of Salta, Jujuy, Formosa, Chaco and Santa Fe.<sup>25</sup> To accomplish that task, RCI articulates with two other satellite networks: (i) the Argentina Community Radio Federation (FARCO); and (ii) the Latin American Association for Radiophonic Education (ALER). FARCO has 20 satellite aerials in South Central Argentina.<sup>26</sup> ALER has over 80 satellite aerials spread throughout Latin America. The network allows for transmission to over 100 radio stations.

All of these examples show that recent successful initiatives are extremely useful in terms of empowering and giving voice to indigenous and peasant communities. They are also good examples of initiatives generated as bottom-up projects, which are appropriated by the communities involved from the very start of operations (e.g. permanent training courses and cooperative decision structures).

### **III.7 Impediments to and incentives for change**

As our case study exemplifies, one of the major impediments to behavioral change is isolation. This is often caused by adverse climate conditions combined with poor basic infrastructure. Another important factor is the lack of information for beneficiaries. There is also a strong need to build more links among the actors involved in the different stages of the projects. The national workshop was a good starting point in generating some of these links.

A solidarity component, which characterizes some of these isolated areas, is one of the most favorable factors contributing to the positive impact of such initiatives.

The COMFER radio project is a good example of how a project can become an impediment to behavioral change. This project involved the installation of 47 radio stations in schools located along the Argentinean border. Its aim was to re-enforce the sovereignty and integration of these isolated locations. Most of the equipment was donated by either government or private benefactors. As soon as it was functioning, COMFER realized that it could not provide the technical support necessary to maintain operation. COMFER does not have a budget line to pay for repair or replacement. The director of a school in Misiones told us that his school had been lucky enough to find a local benefactor – the owner of a private radio station in Posadas – who had helped them with all kinds of technical and logistic support. Most of the radio stations installed by COMFER currently rely upon this kind of help to survive. That said, COMFER acknowledges the problems of such a top-down strategy, and now seems to be more conscious of the need to contemplate aspects of sustainability in generating future initiatives. This example gives strong

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<sup>25</sup> RCI plans to extend this to the provinces of Tucumán, Santiago del Estero and Misiones.

<sup>26</sup> Among others, in Santa Fe, Buenos Aires, Córdoba, Río Negro and Neuquén.

evidence that implementing a successful initiative is closely linked to ensuring that there is local capacity to manage and operate ICTs.

Our case study found evidence of difficulties involved in private-public partnerships, which led to disadvantages for actual beneficiaries. CoTelBe, the telephony cooperative that provides service mainly for the city of Belén, argues that there is no political will from local governments in neighboring localities to help finance the installation of more fixed lines in the area. According to local municipalities in the interior of the department, the cooperative has asked them to fund everything. This is a clear example of problems of coordination that end up having a direct negative impact on the rural poor.

## IV. Conclusions

Before presenting conclusions according to the initial three research questions, it is possible to summarize the main findings in this report as classified into deterrents, facilitating factors and evaluation criteria.

The lack of basic infrastructure (e.g. energy provision), together with installation and maintenance costs, are among the key factors deterring implementation of ICT initiatives in the Argentinean rural context. Regulation and state bureaucracy constitute a second deterrent to the implementation process. Centralization in Buenos Aires constitutes a third deterrent. This is exacerbated by a lack of local capacity and ability. Scarce funding, coordination problems among stakeholders, and inequality in terms of access to technology, constitute a fourth deterrent.

The implementation of successful and sustainable ICT initiatives is strongly facilitated by the well-coordinated involvement of a broad range of stakeholders. Significant community involvement is also crucial, because these initiatives involve the appropriation of local technology and content.

Evaluation and monitoring of current pilot projects should provide valuable information for purposes of replication. Although not perceived as essential by interviewees and workshop participants, government (especially local) can also act as a facilitator, as well as ensuring equitable access to services.

There are different ways of evaluating the success of ICT projects. They can be measured in terms of: (i) the level of community participation; (ii) the degree to which they are replicable; and (iii) the degree of sustainability and self-management. Another measurable indicator would be an increase in local demand for more and better technology, together with evidence that the community tries to influence public policy and the generation of new networks among actors. On the macro level, a good indicator would be an increase in resources channelled toward supporting rural ICT initiatives.

There is a strong need to generate more and better information in order to provide different actors in the private and public sectors with data on the needs to be met through their donations or policies.

To wrap up, we will summarize our answers to the three research questions:

Question 1: Can the policies implemented help to improve the livelihoods of poor individuals, families and communities in rural areas – can these policies increase people’s income opportunities (and other livelihoods principles), thereby improving people’s chances of escaping from persistent poverty? How?

Our findings indicate that most of the policies and projects reviewed can indeed help improve the livelihoods of the rural poor. In particular, they have helped people diversify their economic activity (see the case study report). ICTs help them in their daily lives, especially when it comes to practical matters. Moreover, ICTs have sometimes made a strong contribution in terms of empowering and giving voice to indigenous and peasant communities through the use of community radio.

Question 2: Regarding livelihoods in rural areas, what lessons are there to be learned, both from research and from experience in the field?

One of the key lessons is that it is important to implement projects that are sustainable, self-managed and appropriated by the local community - and that the most effective way of generating these kinds of projects is from the bottom-up. This involves the following: (i) utilizing trained local technical support in the area; and (ii) building a good network of local, national and international stakeholders. Given the range of experiences, it is difficult to form general conclusions regarding the appropriate contribution of the different actors, but it seems that local governments and schools can often act very effectively as facilitators. This is especially relevant in the most isolated rural areas, where these actors can represent the integrating link among community members.

Question 3: What elements most urgently require further research and analysis, in order to lay the foundation for informed policy and investment by donors, governments and others?

Most rural ICT projects in Argentina are atomized - there does not seem to be a coherent national plan grouping them. The implementation of a scheme to ensure more equitable access to ICTs (e.g. Universal Service) is vital in terms of supplying rural areas with a wider and better communication infrastructure. The implementation of such a fund would alleviate pressure on local government funds, thereby allowing the latter to adopt a more efficient facilitating and management role. In addition, it would provide a 'quality seal', that would be useful for obtaining non-governmental national and international funding for rural ICT initiatives. This policy recommendation is, however, interlinked with a more macro-level need for the political will to reduce the wide disparities between Argentinean urban and rural areas. A necessary condition for any ICT project is strong basic infrastructure. This involves accessible roads and the provision of basic services such as energy, which are prerequisites for any ICT project to have the anticipated positive impact on the livelihoods of the rural poor.

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## Annex 1: Interview Questions

- A. General information:
  - A.1. Name
  - A.2. Title/occupation
  - A.3. In what rural ICT projects/ programs is your organization involved?
  - A.4. What is the main economic activity in the implementation area?
  - A.5. What are the main demographic and geographic characteristics of the area involved in the project?
  
- B. Characteristics and description of the project:
  - B.1. Broadly speaking, what is the project about?
  - B.2. What aspects of livelihoods are being supported?
  - B.3. What information opportunity/ desire is being addressed? How was this identified?
  - B.4. What previous alternatives existed before the project implementation?
  - B.5. Who is in charge of the implementation of the project?
  - B.6. How is the project organized and administered?
  - B.7. What was the role for local actors in the project administration and evaluation?
  - B.8. Is the project based on an already existing community project or association?
  
- C. Actors:
  - C.1. Which types of actors are involved and what is the nature of their involvement (benefiting, delivering, intermediaries, partnering)?
  - C.2. Is there equitable access to the services provided? If so, how was this guaranteed? If not, what criteria are applied to select who will receive the service?
  - C.3. What kinds of partnerships are being built, if any?
  - C.4. Are costs shared, and if so, how?
  - C.5. Have you faced any cooperation challenges among the actors? If so, which ones? How did you try to overcome them?
  
- D. Technology and services
  - D.1. Which services are provided?
  - D.2. What is the scale of the initiative?
  - D.3. Are these micro (local), meso (national), or macro (global) level efforts? Is it linked with bigger-scale projects?
  - D.4. Is the service scalable? How?
  - D.5. What type of technology is being employed?
  - D.6. How was the technology chosen?
  - D.7. Does it build on pre-existing systems? Has it comprized local adaptation?
  - D.8. Does it utilize content locally-generated or appropriately localized?
  - D.9. Are there any training requirements, and if so, is training provided to users? Are there any intermediaries or local facilitators?
  
- E. Self-sustaining aspects:
  - E.1. Which livelihoods principles have been applied?
  - E.2. What is the business model? What have been the financial (or livelihood) results obtained?
  - E.3. Is the project self-sustainable? If not, are there any deadlines for making it self-sustainable?
  - E.4. What type of funding has been used?
  - E.5. What is the role of local leadership? Is local capacity being developed? If so, how?

E.6. What has been the involvement of the local government? And of other actors?

F. Concrete results:

F.1. What were the main problems at the start of the project? How did you try to overcome them?

F.2. What was the expected impact before starting the project? Have the basic expectations been accomplished?

F.3. What are the most noticeable changes on the livelihood of the community affected?

F.4. What positive and negative lessons can be learned?

F.5. What aspects of the project would you have implemented differently?

F.6. Who is in charge of the project's evaluation and monitoring?

F.7. What indicators have been used to measure the success or failure of the project?

F.8. Have there been specific efforts to help special or minority groups, such as women, the young, and the elderly?

F.9. What were the challenges found in the stage of early adoption and broadcasting?

F.10. What can be done to improve the long-run impact of the project?

G. Final checklist: Which of the seven policy issues are addressed?

G.1. Sharing costs

G.2. Ensuring equitable access

G.3. Utilizing local or appropriately localized content

G.4. Building on existing systems

G.5. Building capacity at the local level

G.6. Using realistic technologies

G.7. Building knowledge partnerships

## Annex 2: List of Interviewees

Over 30 people were interviewed for this report. The list below distinguishes them according to role, and lists the people contacted for general information and general contacts.

### *Donors*

1. Mariana Maggio, Gerente de Alianza por la Educación, Microsoft, October 30, 2006
2. Marcelo Landó, Responsable del Área de Responsabilidad Social Empresaria, Ledesma SAAI, October 30, 2006
3. Javier Firpo, Gerente Asuntos de Gobierno & Educación, Intel, November 23, 2006
4. Alejandro Lembo, Analista PMO, Telefónica móviles, December 5, 2006

### *National policymakers*

5. Cecilia Sagol, Editora de Contenidos, Educ.ar (Education Ministry), November 1, 2006
6. Sergio Fernández Novoa, Coordinador General, and Silvana Avila, Encargada de Programas Especiales, Comite Federal de Radiodifusion (COMFER), November 2, 2006
7. Alejandro Gamboa, Coordinador Gestión - Responsable Presidencia Regulatel, Comisión Nacional de Comunicaciones (CNC), December 7, 2006
8. Paula Jure, Consultora, Secretaría de Agricultura, Ganadería, Pesca y Alimentos (SAGPyA), November 8, 2006
9. Carlos Achiary, Director Nacional, Oficina Nacional de Tecnologías de Información (ONTI), December 12, 2006

### *Technology providers*

10. Rainer Kunz, President, Cooperativa Telefónica Perico (Jujuy), November 10, 2006
11. Raúl Sabio, Gerente de Relaciones Externas, Telecom, November 13, 2006
12. Martin Chiapparra, President, Cooperativa Telefónica Arroyo Corto (Buenos Aires), completed questionnaire remotely on December 14, 2006

### *Media and content providers*

13. Ernesto Lamas, Coordinador Regional, AMARC and Director, FM La Tribu, October 30, 2006
14. Laura Rodríguez, Capacitación, FM La Tribu and Pablo Vannini, Colectivo La Tribu, November 1, 2006
15. Valeria Belozercovsky, Colectivo, FM Alas (El Bolsón, Neuquén), November 6, 2006
16. Luis Nocenti, Comunicación, Incupo (Resistencia, Chaco), November 7, 2006
17. Miguel Gomez, Servicio de Cultura Popular (SERCUPO)/MoCaSE, November 29, 2006

### *Civil society organisations*

18. Paula Nahirñak, Investigadora, Fundación Mediterránea (IERAL), October 25, 2006
19. Marcelo Petrich, Director Ejecutivo, Fundación Era Digital (Rosario, Santa Fe), November 7, 2006
20. Fernanda, Proyectos, Fundación Escolares, November 13, 2006
21. Rosario Andrada de Quispe, Presidenta, Mujeres Warmi, November 20, 2006
22. Evangelina Petrizza, Directora Ejecutiva, Red Argentina de Instituciones de Microcrédito, November 24, 2006
23. Hugo Castañeda, Director Ejecutivo, Fundación CDI Educación Digital, November 28, 2006
24. Flavio Ruffolo and Mercedes Martín, Investigadores Principales, Teletrabajo y Desarrollo Local (Tedel), November 29, 2006
25. Carolina Añino, Directora Ejecutiva, Fundación Compañía Social Equidad, December 13, 2006

*General information and contacts*

26. Susana Finquelievich, Investigadora Independiente, Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), October 19, 2006
27. Claudia Villamayor, Periodista, November 3, 2006
28. Francisco Proenza, Economist and Mission Leader, FAO, November 3, 2006
29. Darío M. Goussal, Investigador en Telecomunicaciones Rurales, Facultad de Ingeniería - UNNE, November 9 and 24, 2006
30. Pablo García Plandolit, Abogado, García Plandolit - Todaro y Asoc., November 21, 2006
31. Marcelo Sili, Especialista en Desarrollo Rural, Argentina, Chile, Paraguay y Uruguay - Banco Mundial, December 6, 2006

## Annex 3: Country Workshop Report

The main idea behind the country workshop was to produce a half-day event with 15-20 participants, including some of the stakeholders selected for interviews. This created a space for the various participants to exchange ideas and become better acquainted, so as to allow for a better coordination between them in current and future projects.

The Argentinean national workshop was held in Buenos Aires on December 19, 2006. It presented the key aspects and findings of the interviews. The response was outstanding – there were 17 representatives from diverse stakeholder groups in attendance. The workshop ran for a total of six hours. People were interactive and enthusiastic about participating – it well exceeded expectations. Participants came from various provinces of Argentina: (i) Patagonia (Neuquén); (ii) Northwest (Jujuy, Santiago del Estero); (iii) Northeast (Chaco, Misiones); and (iv) the Pampas (Buenos Aires, La Pampa, Santa Fe). This level of regional diversity is extremely important in a country with a very large area, and where policymaking is normally centralized in Buenos Aires.

### 1. Workshop Program

<u>Time</u>	<u>Activity</u>
9.30	Introduction and presentation of project
9.40	Presentation of workshop objectives and introduction of participants
10.00	Report back on interviews and draft report: presentation of draft report/interview findings
10.30	Report back on interviews and draft report: discussion and validation of conclusions and needs
11.15	Coffee break
11.25	Topic clustering and prioritization
13.00	Lunch
14.00	Presentation of issues from ODI
14.30	Exploration of future work opportunities: donor perspective
15.15	Closing remarks
15.30	End of workshop

### 2. List of participants

- 2.1. Angélica Abdallah (Tedel)
- 2.2. Magdalena Acuña (Red Argentina de Instituciones de Microcrédito)
- 2.3. Silvana Avila (COMFER)
- 2.4. Martín Chiapparra (Arroyo Corto Telephony Cooperative: Buenos Aires)
- 2.5. Alejandro Collia (Fundación Cambio Democrático)
- 2.6. Miriam Dahir (Fundación Compañía Social Equidad)
- 2.7. Juan Carlos – Tato – Figueredo (Incupo, FARCO: Chaco and Santiago del Estero)
- 2.8. Paula Jure (Consultant Secretary of Agriculture, SAGPyA)
- 2.9. Ing. Rainer Kunz (Perico Telephony Cooperative: Jujuy)
- 2.10. Alejandro Lembo (Telefónica mobiles)
- 2.11. Mariana Maggio (Microsoft)
- 2.12. Mercedes Martín (Tedel)
- 2.13. Paul Matthews (ODI)
- 2.14. Andrea Molinari (CIPPEC)
- 2.15. Paula Nahirñak (Fundación Mediterránea)
- 2.16. Luis Nocenti (Incupo, Chaco and Santa Fé)
- 2.17. Daniel Otal (FM Alas: El Bolsón, Neuquén)
- 2.18. Pablo García Plandolit (García Plandolit – Todaro y Asoc.)
- 2.19. Ariel F. Rodríguez (Telecom)
- 2.20. Marcelo Sili (World Bank in Argentina)
- 2.21. Vanesa Weyrauch (CIPPEC)

### 3. Brief summary of the key points that emerged from the discussion

The issues that emerged as key points in the workshop were as follows:

#### 3.1 Main characteristics that influence the impact of ICTs on rural livelihoods:

- Heterogeneity of Argentinean rural regions.
- Decentralization and atomization of different programs. There does not seem to be any governmental strategy on rural areas *per se*. In fact, the state is sometimes seen as an obstacle, because subsidies often fail owing to the top-down nature of initiatives.
- There is a strong process of delocalization, or mobility, from rural to urban areas, which has partly been favored by the presence of ICTs.
- Access to information should be viewed as a human right.

#### 3.2 Actors, implementation model and sustainability:

- The importance of emphasizing universal access, rather than universal service; the appropriation of technology by beneficiaries. This point was reinforced by the fact that people actually live in the implementation areas. Moreover, it is important that value stays where it originates (local capabilities and competencies). Appropriation of the project is vital.
- It is crucial that the project be generated from within the community. Social enterprises, with projects generated within the community, include tourism to develop attractive localities and telephony cooperatives.
- Moreover, people need to know what to do with the technology. Content also has to be generated from within the community, and not 'imposed' by Buenos Aires.
- Big agricultural producers are not necessarily allies of the rural population. Multinationals form sowing pools by renting a field with a purely economic aim, to the disadvantage of the rural population.
- The project has to be generated with and for the community, with only part of the project receiving funding to allow for its appropriation by the local population.
- Role of the state in guaranteeing the right to education and access to ICTs.

#### 3.3 Main needs:

- Need to differentiate between economic and human development, with the latter being much more comprehensive.
- Solidarity and lower costs to increase access for rural poor. This is also related to the need for good service quality to improve ICT access.
- Information to determine key policy priorities is missing (supply side). In this respect, a map of people's real needs would be extremely helpful (demand side).
- Some places still lack basic infrastructure (e.g. electricity or water, or even decent buildings); these are urgent needs which need to be met beforehand. The rural population will then appropriate the technology it considers useful for its purposes.
- The need to establish networks to work in association with different actors within the community.
- It is also important to break down people's resistance to technology. In this sense, it is necessary to help the community understand the value of technology and its link to knowledge.
- The need for trained technicians who can facilitate adequate maintenance of the equipment and solve immediate problems.
- Moreover, it is important to focus on generating a critical mass to justify the ICT investment within the rural environment.

## Annex 4: Case Study Visit

Our case study took place in the department of Belén, a rural area in one of the poorest provinces of Argentina: Catamarca. Our visit, which was facilitated with the help of a local contact, revealed an extremely high need for the improvement of basic infrastructure. The local coordinator for Tedel was extremely helpful in contacting people before the visit, and accompanied us throughout the whole week. Rural communities in the area mainly use the radio and the telephone as a means of communication, and this fact determined the two main traditional ICT projects focused on in this report. The first was the telephony cooperative CoTelBe, which provides service to the city of Belén and to most of the localities in the interior of the department of Belén. The second was a private radio station, FM Líder, which provides community services. We carried out a focus group discussion with the beneficiaries in one of the rural localities near the city of Belén, and also interviewed several different actors affected by both ICT projects, e.g. teachers and local government actors.

The visit lasted four days – from Monday, 01/08, to Friday, 01/12. Getting to Belén takes about four hours from the city of San Fernando del Valle de Catamarca, which is the capital of Catamarca province. It is the only city in the province with an airport. Upon arrival, we met our local contact in Belén, Laura Soria, in order to organize the work. Laura is one of Tedel's locally-based coordinators. She works on installing ICT projects in the local community (see <http://www.tedel.org/> for more information).

On Tuesday, we interviewed the secretary of CoTelBe, who gave us information about the cooperative's functioning and business. We also interviewed the owner and director of FM Líder. Then we met the vice-mayor of Pozo de Piedra in order to arrange our transportation for Thursday, and to talk about the possibility of arranging a second focus group for Thursday.

Wednesday was the day for our first focus group. We travelled to La Puerta de San José, which is 13km from Belén. Irma Espinosa, the person in charge of the municipality, was waiting for us. We first interviewed Alberto Espinosa, the second in command after the mayor, and then organized the focus group with five people. We then interviewed Silvia Sarapura, who is in charge of the municipality social action division. After that, we visited the local campsite that La Puerta de San José is building in order to start attracting tourism to the area. In the entire department of Belén, only the city of Belén has any tourist infrastructure, e.g. hotels and taxis. We then took a municipality vehicle to visit La Ciénaga, which is 5km from La Puerta de San José. We spoke with people working in the local government. After returning to Belén, we were also able to visit Asampay and Chistín (42km from Belén), where we also had brief contact with local people. We attended a council meeting at CoTelBe, in which we introduced our research and talked with members of the council about the provision of telephony services to the northern regions (see Box 1 in the case study report).

On Thursday we planned to visit Pozo de Piedra and Condor Huasi. However, a big storm on Wednesday night made it impossible to travel to that area, because most roads were cut off due to flooding. Moreover, as these localities (the only ones with telephone lines) were without electricity, we were unable even to reach them to see if we could be received. Given the bad weather conditions, we decided to stay in Belén. We continued talking to the people of CoTelBe, and then interviewed Rene Sánchez, a rural teacher in Pozo de Piedra.

# Case Study Report

# Rural ICTs in Argentina: Case Study Report

The case study was carried out in the department of Belén, a rural area in one of the poorest provinces of Argentina, Catamarca. Rural communities in the area mainly use the radio and the telephone as means of communication. This defined the two main traditional ICT projects on which this report focuses.

The first project is the telephony cooperative, CoTelBe, which provides a service to the city of Belén and to most of the localities in the interior of the department of Belén. The second project is the private radio station, FM Líder, which provides community services. We organized a focus group discussion with beneficiaries in one of the rural localities near the city of Belén, and we also interviewed several different stakeholders affected by both ICT projects, e.g. teachers and local government actors.

The radio is often used as a source of information for issues such as work and health, whereas the somewhat deficient telephone service is used almost exclusively for personal and emergency purposes. The beneficiaries' complaints about the telephone service strongly indicate that ICT has the potential to offer important impacts on people's livelihoods.

## I. Description of the Area

The city of Belén is the capital of the department of Belén, in the western region of the province of Catamarca (see Annex 1 for maps). According to the latest national census (2001), the department of Belén has a total of 25,475 inhabitants, including 12,252 in the capital. The department has a density of 1.9 inhabitants per square kilometer, which represents 7% of Catamarca's total population.<sup>27</sup> Following INDEC's definition – that rural means an area with fewer than 2,000 inhabitants – 8.1% of the population in Catamarca is rural. Within the department of Belén, except for the localities of Belén and Londres, every locality had fewer than 1,000 inhabitants in 1991.

We concentrated our case study on some of the northern regions to which CoTelBe provides a service. That said, the city of Belén, with its quite rudimentary public services,<sup>28</sup> is not all that different from the rural localities in the interior of the department. The department of Belén has a quite decentralized structure; it is the department with by far the highest number of municipalities (see Annex 1 maps). Belén and Londres are the largest, and the remaining seven are all located in the northern regions. Two are located in the Norte Chico: (i) La Puerta de San José; and (ii) Pozo de Piedra. Five are located in the Norte Grande: (i) San Fernando; (ii) Hualfín; (iii) Puerta de Corral Quemado; (iv) Corral Quemado; and (v) Villa Vil.

One of the rural municipalities studied was La Puerta de San José, together with La Ciénaga and Asampay. La Puerta de San José is 13km from Belén city. It has a population of 1,073, and a population density of 1.7 persons/km<sup>2</sup>. The other rural municipality studied was Pozo de Piedra. It has a population of 1,933, and a population density of 4.5 persons/km<sup>2</sup>.<sup>29</sup> As mentioned in the country report, these two rural localities are among the poorest in the country. In 2001, 32% of the population in La Puerta de San José, and 34% of the population in Pozo de Piedra, saw their basic needs unsatisfied.

La Puerta de San José was selected because of its economic circumstances, and because it is the only locality where CoTelBe has installed fixed residential lines. Pozo de Piedra was selected because it has a semi-public telephone from CoTelBe, and because it has a markedly higher population density.

Asampay is a very isolated town. Few improvements been made to increase access from the main road, and those have been made only recently. Not many services are available. There is a municipality vehicle covering the Belén-Asampay passage once or twice a day, three days per week. This vehicle is one of the only connections that Asampay and nearby Chistín have with the outside world. It allows people not only to travel, but also to deliver and receive goods and messages from Belén and other nearby towns.

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<sup>27</sup> According to Belén's municipality, the population of the department has now reached 30,000 people.

<sup>28</sup> During our visit to the area, an electric storm left the city with energy problems. This meant that it was impossible to make long distance calls or use the Internet for a whole day following the storm.

<sup>29</sup> According to the 2001 national census. This takes into account the population of every locality in the municipalities of La Puerta de San José (e.g. La Ciénaga de Abajo, La Ciénaga de Arriba and Asampay), and Pozo de Piedra (e.g. Condor Huasi and La Toma). Employees working at the municipality dependency of La Ciénaga, which runs a yearly population census, told us that they have registered a total of 139 families and 500 people in this locality.

## II. Stakeholders: Technology and Project Phases

The main technology we researched in Belén was the telephony cooperative CoTelBe (see Picture 1). We also interviewed the owner of FM Líder, a private radio station based in the city of Belén, which has a signal and audience throughout the northern region of the department (see Picture 2).

### II.1 Telephony cooperative

In November 1990, the Argentinean state telecommunications company EnTel was privatized. It assigned a monopolistic concession to two companies: Telecom and Telefónica de Argentina. Telecom controlled the north and Telefónica de Argentina controlled the south. Telecom had two telecenters in Belén. In mid-2006, the company decided to leave Belén city, and is currently only providing telephone and internet services to the locality of Londres.

CoTelBe was created in 1970 by 39 neighbors from Belén, who were facing a lack of alternative telecommunication services. The residential telephone service was launched in 1976 with 100 lines for local calls. CoTelBe started providing long distance calls in 1987, but the big growth of the cooperative was during the 1990s – i.e. during the convertibility years, with the benefits of a strong local currency. Toward the end of 1990, Telecom had started allowing CoTelBe interconnection services which, together with the purchase of a digital switch, allowed CoTelBe to expand its service to 600 families. In 1996, CoTelBe started installing fiber optic infrastructure in the northern regions. During the second half of the 1990s, it established payphones in six localities: (i) Asampay; (ii) Condor Huasi; (iii) Hualfín; (iv) La Ciénaga de Arriba; (v) Pozo de Piedra; and (vi) La Puerta de San José. These payphones work with a coded card, and are quite straightforward to use (see pictures below). By mid-2000, CoTelBe had started providing ADSL services, for which Telecom is currently allowing a 10MB bandwidth.

CoTelBe is ruled by an administrative council of nine members, which includes a president, a vice-president, a treasurer, five other members, and one syndic.<sup>30</sup> The council has to meet at least once a month,<sup>31</sup> and is responsible for setting the cooperative's priorities and identifying its needs. There are currently 15 persons working in the cooperative, including four administrators, seven technicians, three operators and three interns. CoTelBe has a presence in four telecenters – one of which holds CoTelBe's offices – spread across the center of Belén. At the moment, the cooperative counts 2,058 active fixed lines, including eight residential lines in the locality of La Puerta de San José. It finances its activities entirely through income from the service, and from new line connection charges. The cooperative had just acquired a new switch that should allow the capacity to install over 600 additional lines and provide Internet services to some of the northern localities.

As is the case with most cooperatives, CoTelBe has only one way of providing services to and from outside its network (i.e. for any outgoing long distance calls): it has to pay an interconnection charge of 78% to its incumbent, Telecom. This dependency is also seen in the provision of Internet connectivity services. The 10MB broadband that Telecom provides to CoTelBe is used by the whole city of Belén, including banks and local government offices. This means that, during working hours, it is quite hard for most residential and telecenter users to find a good internet browsing speed.<sup>32</sup>

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<sup>30</sup> Plus three substitute counsellors and one syndic.

<sup>31</sup> In fact, the council meets at least once a week.

<sup>32</sup> CoTelBe has started negotiations with a Bolivian association to obtain a wider bandwidth, in order to be able to provide more and better ADSL services to both the city of Belén and the northern region.

The cooperative gives training courses to its partners and teachers and students, mainly covering topics such as cooperativism. Its relationship with Belén's municipal government seems to be uneven (see, however, relationship with the municipalities of the northern regions in **Error! Reference source not found.**).

### Box 1: Public-private coordination problems

One of the main findings of the focus group was a very significant coordination problem between CoTelBe and the northern regions' municipalities. Municipality officials at La Puerta de San José were quite insistent that CoTelBe was not providing a good service, and that it did not invest enough either in improving the service or in increasing the number of residential lines in the area.

We were told that the main role of CoTelBe's council was to provide a service in the city of Belén, and that northern residents benefited by being able to receive outside calls. Over the previous year, and without the full agreement of the assembly, the cooperative council had tried to make an agreement with the northern mayors to increase the number of residential or payphone lines in the area. This was to be accomplished by using a portion of mining funds (royalties) received by each municipality. CoTelBe's counsellors told us that the only thing they were asking was that the municipalities requested and managed those funds, but that nevertheless, it was not possible to reach an agreement.

The northern region has never been a profitable service area for CoTelBe. There seems to be a clear misunderstanding on the part of the local government: actors seem to see the cooperative as a private (i.e. profit-seeking) company, and seem to be closed to negotiating cooperation agreements.

This is a clear example of a lack of coordination among key local actors. The municipalities could help the cooperative to solve the problem, but they are not willing to invest funds in a non-economical business.

### Picture 1: CoTelBe offices and telecenter, city of Belén



## II.2 The media in the department of Belén

The city of Belén has four radio stations. Three are private: (i) FM Líder; (ii) FM Norte; and (iii) Radio Belén. One is academic: FM Técnica. The city of Belén has one open TV channel: Canal 4. It has two private cable companies: (i) Belén Televisora Color; and (ii) DirectTV, which provides satellite TV.

As mentioned above, FM Líder (see Picture 2) is the radio station with the largest audience in the northern region. With a schedule more AM than FM-like (i.e., that contains more information than music), this radio acts as the main communication and integration link within and between the rural areas and the city of Belén, especially for the most isolated communities. FM Líder has been in existence since the late 1980s. It offers several community services, e.g. various solidarity campaigns (see **Error! Reference source not found.** below), obituaries, classified ads, birthdays

and information on pension payment dates, energy problems, or doctor or priest trips to the area<sup>33</sup>. Its main source of income is publicity, from both the local government and Belén's private sector.

According to the owner of the radio station, the municipality of Belén acts as a normal customer – it pays for its advertisements, and produces roughly 10% of the station's income. The main reason for FM Líder's ubiquity in the northern region, is that, even though the station has equipment that can reach only 25km, minerals – especially iron – in the mountains multiply this capacity by at least four times. In addition, a repeater in La Puerta de San José allows people living beyond the Norte Chico to capture the radio's signal.

There are seven people currently working at FM Líder. Although none of them holds professional qualifications, most have received and given training courses in the provincial capital and in schools. The radio station has Internet and cable (satellite) access.

### **Box 2: Solidarity campaigns of FM Líder**

Belén is, according to Mr Saadi, a society with strong solidarity principles. FM Líder provides several community services, such as announcing the need for free samples of medicines in a particular locality, for donations of furniture after a flood, or for baby-care equipment (e.g. pushchairs) for single mothers. The station apparently raised \$2,000 (i.e. £331 or US\$650) in one day, to help a person who needed to travel to Buenos Aires for urgent sight surgery.

**Picture 2: FM Líder, city of Belén**



## **II.3 Municipality of Belén**

The persons in charge of the municipality acknowledge the importance of ICT in terms of impact on rural populations. To improve e-government, they have bought 40 computers since coming into office in 1999 – most have networked Internet services. The municipality has three publications, one daily (with different sections each day), one weekly, and one which is a monthly report on the main activities and news from the city of Belén and its surroundings.

<sup>33</sup> For example, Pozo de Piedra has a doctor from Monday to Thursday, who also goes to other localities (e.g. Asampay) on Tuesdays and Thursdays.

### III. Beneficiaries' Views: Impact of ICTs on Rural Livelihoods

The fact that people rely mainly on the radio and the telephone for emergencies and daily information (e.g. to avoid unnecessary trips to the city) demonstrates the positive impact of ICTs on the rural poor of the area studied. That said, not every ICT is considered essential by users. For example, throughout our visit we saw many houses with DirectTV aerials, but none of the people consulted even mentioned the TV as a key communication medium affecting livelihoods. The sections below highlight the main results collected from the visits and interviews with locals living within the jurisdictions of the municipalities of La Puerta de San José and Pozo de Piedra.

#### III.1 La Puerta de San José, La Ciénaga and Asampay

There are public payphones in six different localities in the interior of the department of Belén. The phone in La Puerta de San José was installed more than 10 years ago. La Ciénaga and Asampay have had the service for about eight years.

The main economic activity in these localities is agriculture. In particular, there is large-scale production of nuts – *criollas*, and now, chandler. The municipality has installed a processing factory that is located between La Puerta de San José and La Ciénaga, to generate more employment for people residing in the area. At the moment, the paving of the road toward the north is occupying a large proportion of the workforce.

The need for better and more telephonic services is evident – and users made this quite explicit. For example, they argued that the only payphone in La Ciénaga (see Picture 3),<sup>34</sup> which was initially installed in the police station but then moved to a location outside of a convenience store, has been vandalized several times. Even when the telephone is working, people have to queue for long stretches of time in order to make their calls. In addition, there are localities without any telephones, such as La Ciénaga de Abajo. Beneficiaries pointed to the need to install more payphones and residential lines in the northern regions.<sup>35</sup> Sometimes, users have to go as far as the city of Belén to get a card to talk on the telephone. (However, we were able to buy the cards at the convenience store in La Ciénaga.)

Silvia Sarapura told us that the firm now paving the road toward the north could have contacted prospective workers more easily if telephones were available. The five people in the group agreed that a good telephone service was the most vital consideration. They agreed that there was far less need for computer service, although they recognized the advantages of learning the basics of computers and the Internet for their children. They also pointed to the advantages of the internet for distance learning.

There is a computer laboratory in La Ciénaga that has been in existence since September 2005 (see Picture 4). Although this laboratory initially had an ADSL connection, it stopped working after six or seven months. The center is currently being used for training courses, especially focused on students over 10 years of age. These courses are offered free of charge to the students of the school in La Ciénaga (see Picture 5), but interest in participating seems to be low. The teacher who is running the training courses mentioned that parents did not show much interest in seeing their children obtain computer training.

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<sup>34</sup> La Ciénaga is 5km from La Puerta de San José, and is under the jurisdiction of the same municipality.

<sup>35</sup> Mabel, who has a telephone at her home in La Puerta de San José, told us that she had to wait for one year and a half to get the line connected.

**Picture 3: La Ciénaga**



**Picture 4: Students at the computer laboratory, La Ciénaga**



**Picture 5: School at La Ciénaga**



Asampay<sup>36</sup> is in a worse situation, as it is subject to harsh weather and often suffers from power cuts. The town does have a payphone, but it rarely works. Some locals told us that of the 200 or so people living there, about five had mobile telephones that they used to communicate with Belén or with family outside of Asampay. They use the radio (FM Líder or FM Norte) as their main information media.

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<sup>36</sup> Asampay is a town located 29km from La Puerta de San José. It is under the jurisdiction of the same municipality.

### **III.2 Pozo de Piedra and Cónдор Huasi**

The only direct communication link for the municipality of Pozo de Piedra is an ADSL connection that has been in place since the beginning of 2005. It was provided by a company based in the province of Córdoba. In the past, there were four payphones, also with a service provided from Córdoba. This has changed recently because calls were too expensive. Even a local call had to go via Córdoba, hence it became a long distance call. The only telephone currently in all Pozo de Piedra is a CoTelBe service installed in a private house (a semi-public telephone). Users and teachers argue that the main two difficulties with having a semi-public payphone are: (i) the lack of privacy, the queues and the overcrowding; and (ii) the fact that people picking up the phone for incoming calls do not always deliver messages. A major problem is related to the provision of energy. The telephone quite frequently runs out of batteries and, when there is a big storm, cuts in service leave the area isolated. The residents of Condor Huasi, a locality dependent on the municipality of Pozo de Piedra, suffer in a similar way.

The school at Pozo de Piedra has about 190 students, 20 of whom stay for the whole week as boarders. When the municipality's telecenter was in good working order, the teachers taught the theory of informatics in the school, and then went with the students to the telecenter to carry out practical work. The teachers told us that the main reason that the Internet is now not incorporated into the community is due to a lack of infrastructure; interest of both teachers and students is high. The municipality of Pozo de Piedra also runs a sort of telecenter with several computers, that is equipped by means of a subsidy from the national government.

## IV. Factors Facilitating or Hindering Project Achievement

It is first worth mentioning the potential impact that an appropriate communications network would have on the area, given the various initiatives generated by the municipality and national government. In 2005, the Municipality of La Puerta de San José started building a campsite, which will contain the first lodging facilities in the area. This site, set to open by mid-January, was developed to attract more tourism – that would, in turn, give more opportunities for the sale of local handicrafts and agricultural products. There is a nut-processing factory that is already functioning, which allows for the addition of local value to one of the main agricultural products from the area. The paving of the national road (No. 40) that passes through most of these localities has had an immense impact on the local labor market. This three-year plus project will also contribute to improving general access to the area.

An appropriate communications network would increase the leverage of these projects through the provision of better links among the different stakeholders involved. In the case of the campsite, better telephony or Internet access would generate a larger influx of tourists to the area. ICTs would further contribute to the diversification of productive activity behind the nut processing plant project, by creating a better advertisement and sales network to commercialize products with more value-added. At the same time, the road paving project would be facilitated by means of more efficient links between the company and its prospective employees, both at recruitment stage and for the duration of the project.

The weather is a serious deterrent to the implementation of ICT projects. Although Belén is a relatively populous city, its infrastructure is dependent upon services from another province – Tucumán. It is not uncommon for storms to leave the whole city completely isolated for many hours or even days. It is difficult to envisage developing ICT initiatives without first investing in appropriate basic infrastructure, such as energy provision and paved roads. In addition, it is often difficult to contact actors involved in ICT projects. For example, most mayors have mobile phones, but most of the north does not have a signal. This means that in order to contact the mayors, one has to call them on their sporadic trips to Belén city.

One important factor is the dependency of CoTelBe on Telecom services for calls outside its network and for broadband access. Although CoTelBe does manage to sustain itself financially, the cooperative has limited resources for expanding its network and investing in wider and better services – especially in the less profitable northern regions. This situation is exacerbated by the apparent lack of coordination between CoTelBe and relevant local governments (see **Error! Reference source not found.**).

FM Líder has also struggled over the years with a variety of obstacles. Among them, is a lack of local capacity. None of the people working for the radio station has professional training, and the director has made considerable efforts to enable training – both locally and nationally – on operations, broadcasting and editing. The main obstacle is funding. The director himself is required to travel throughout Belén, trying to find advertisement and funding opportunities.

That said, the fact that we found successful ICT initiatives, such as CoTelBe and FM Líder, shows that it is possible, at least partially, to overcome adversities by using community will and participation. These two initiatives, which have never had external financial support, were organized for and from the local community. They now constitute two examples of how it is possible to have a positive impact on the livelihoods of the rural poor. However, the reach of community-generated initiatives is still limited, and it is difficult for these initiatives to overcome

obstacles. This calls for the intervention of other stakeholders, such as local or national governments, technology providers, and national and international donors.

## V. Lessons

Although rural ICTs in the department of Belén suffer problems, their direct users – beneficiaries and local governments – acknowledge their contribution to improving livelihoods. Beneficiaries use the radio as their main means of communication – as their main way of getting information on health, work and personal matters. The fact that people find the telephone service to be deficient, not only demonstrates their needs, but also highlights their recognition of the great impact of telephonic communication in their daily life. Given deficient telecommunications access, beneficiaries consider the radio to be a more reliable information and communication tool. Despite this, they acknowledge the positive impact that more interactive communication, such as telephone service, can have on their lives. It is likely that an improved service would be able to nicely complement current radio usage.

Poor ICT infrastructure affects users at every level, including heads of local government. Most mayors have mobile phones that have very limited use due to huge gaps in availability of service. This makes communication to and from the municipalities extremely difficult and cumbersome. This is especially worrying in places such as Pozo de Piedra, where the only payphone – which is installed in a private house – is the means by which messages are delivered to local government officials. The situation is exacerbated by frequent road closures due to flooding. Given the extremely important role of local government as the main employment provider, and as a community integrator, poor communication service with the outside is a significant problem.

Users seem to be less conscious than local government officials of the impact of new technologies, e.g. the internet, on their lives. Although they consider the radio to be their main link with the outside, beneficiaries often use the telephone for personal, work, and emergency purposes.

Improving both basic and ICT infrastructure is also likely to have an impact on the diversification of economic activities in the area. Among other initiatives, it is worth citing investment in tourism and agricultural goods processing, as well as different services in the area. All of this new activity would allow locals to cease relying so much on local government or their own agricultural production to earn a living.

# Annex 1: Maps

Map 1: Argentinean Republic, provinces



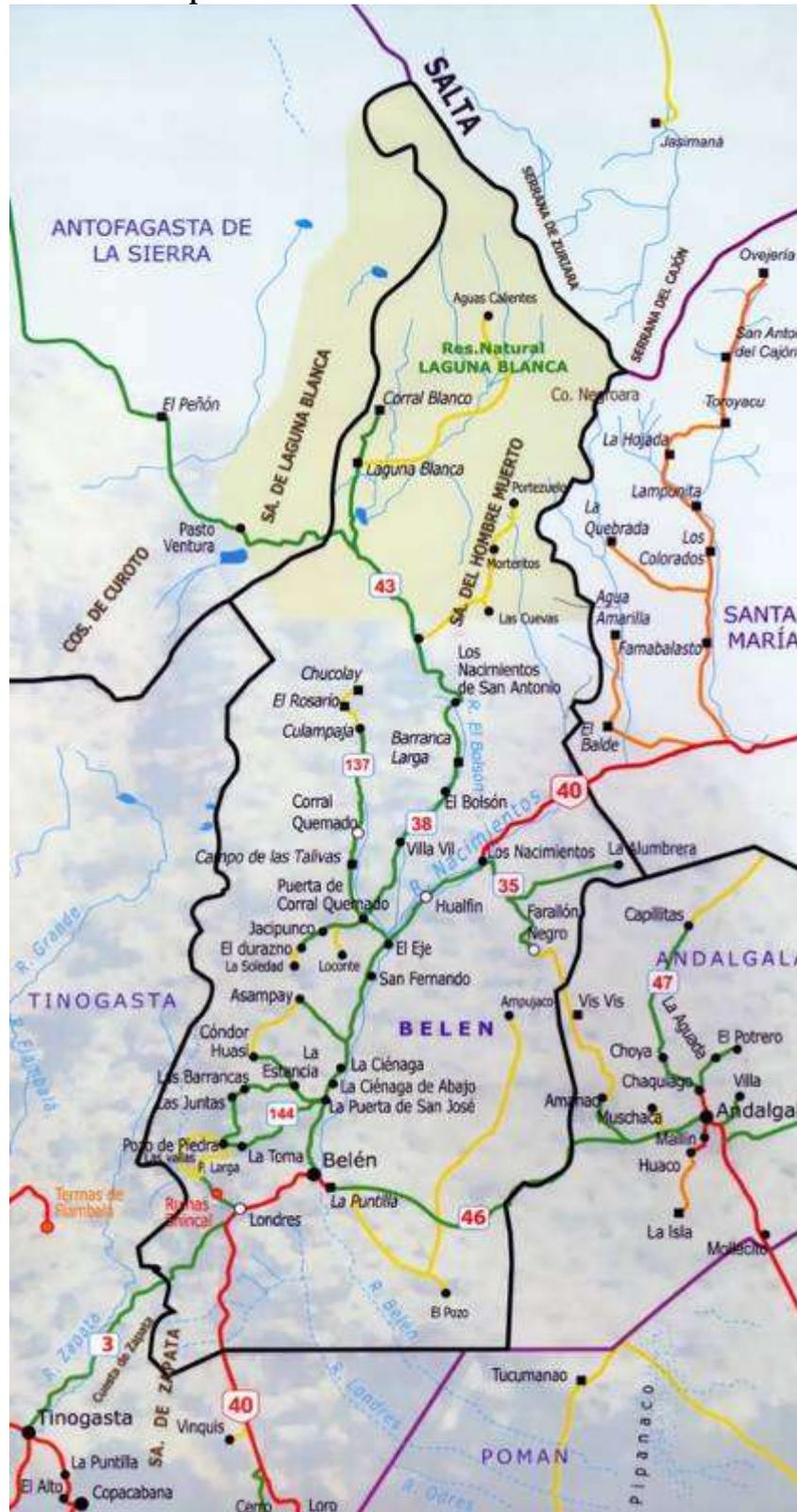
Source: Catamarca's Provincial Directory for Statistics and Censuses.

Map 2: Political departments of Catamarca province



Source: Catamarca's Provincial Directory for Statistics and Censuses.

Map 3: Localities within the department of Belén



Source: Government of Catamarca.

## Annex 2: Case Study Interview Questions

### Telephony cooperative

1. ¿Cómo está conformada la cooperativa?
  - 1.1. ¿Quiénes la manejan?
  - 1.2. ¿Cuánta gente trabaja y cuáles son sus actividades?
2. ¿Cuántos clientes tiene CoTelBe?
3. ¿Qué tipo de inversiones hace la cooperativa?
  - 3.1. ¿Cómo se definen las prioridades para realizar inversiones?
4. ¿Cómo se costean los gastos de la cooperativa?
5. ¿Cuentan con alguna información pública financiera o legal (por ejemplo informe anual) para proporcionarnos?
6. ¿Cómo y con quiénes se conectan dentro de la comunidad local? ¿Cómo acuerdan con la misma el proceso de instalación de una tecnología?
7. ¿Cómo manejan los temas de interconexión?
8. ¿Provee servicios de Internet?
  - 8.1. ¿En qué localidades?
9. ¿Desarrollan actividades de capacitación de algún tipo?
10. ¿Cuál es la relación de CoTelBe con el gobierno local y/o provincial?

### Focus group

Hola a todos. Mi nombre es Andrea y trabajo para CIPPEC, una organización no gubernamental de Buenos Aires. Estamos haciendo un estudio sobre cómo las tecnologías de información y comunicación (TICs) pueden aportar para mejorar la calidad de vida de la población en zonas rurales, para lo cual estoy organizando grupos de discusión en distintos lugares del departamento de Belén. En esta ocasión, les haré varias preguntas para entender su opinión acerca de los temas propuestos. No importa si sus respuestas son correctas, sólo estamos interesados en sus opiniones. Primero les voy a pedir que llenen este formulario para tener información básica sobre ustedes.

### FORMULARIO:

- A. Información general:
  - A.1. Nombre  
.....
  - A.2. Edad  
.....
  - A.3. Lugar de residencia  
.....
  - A.4. ¿Está casado/a?  
.....
  - A.5. ¿Tiene hijos? ¿Cuántos y de qué edades?  
.....
  - A.6. ¿Cuál es su nivel de educación alcanzado?
    - A.6.1. Primaria incompleta
    - A.6.2. Primaria completa
    - A.6.3. Secundaria incompleta
    - A.6.4. Secundaria completa
    - A.6.5. Terciario/universitario incompleto
    - A.6.6. Terciario/universitario completo  
.....
  - A.7. ¿A qué se dedica Ud.? ¿Y su familia?  
.....

B. El servicio

B.1. ¿Con qué frecuencia usa el teléfono?

.....

B.2. ¿Para qué usa más el teléfono?

B.2.1. Por temas familiares o personales

B.2.2. Por temas educacionales

B.2.3. Por temas laborales

B.2.4. Por temas de salud

B.2.5. Por otros temas, ¿cuáles?

.....

B.3. ¿Ha tenido dificultades para usar el teléfono?

.....

B.4. Si tiene un teléfono en su casa, ¿ha tenido problemas en el servicio?

.....

**CUESTIONARIO PARA CONTESTAR EN EL GRUPO DE FOCO**

C.1. Quienes hayan tenido dificultades para usar el teléfono:

B.3.1. ¿a quién ha recurrido?

B.3.2. ¿se sintió escuchado/a?

B.3.3. ¿cuánto han tardado en resolver su problema?

C.2. Quienes tengan teléfono en su casa y hayan tenido problemas en el servicio:

B.4.1. ¿a quién ha recurrido?

B.4.2. ¿se sintió escuchado/a?

B.4.3. ¿cuánto han tardado en resolver su problema?

D. Impacto en la vida cotidiana

D.1. ¿Siente que lo ha ayudado tener el teléfono en su vida?

D.1.1. Laboralmente

D.1.2. Cuestione de salud

D.1.3. Otras cuestiones, ¿cuáles?

D.2. ¿Le parece que el acceso al teléfono es igual para todos?

D.3. ¿Se han beneficiado por programas especiales para grupos específicos o minoritarios (mujeres, jóvenes, ancianos, etc.)?

E. Necesidades a futuro:

E.1. ¿Qué otro medio usa para comunicarse e informarse (por ejemplo, radio, diarios, televisión, Internet, celular)?

E.2. ¿Cuáles le parece serían los principales obstáculos para el uso de estos servicios?

E.3. ¿Qué otro medio usaría para comunicarse e informarse si estuviera disponible en su localidad?

E.4. Dados estos diferentes medios, ¿qué beneficios le parece que le traería en los siguientes aspectos?

E.4.1. Familia y cuestiones personales

E.4.2. Educación (por ejemplo, como medio de estudio, investigación e información)

E.4.3. Negocios (por ejemplo, para encontrar trabajo)

E.4.4. Salud (por ejemplo, para informarse sobre distintas enfermedades y curas).

### **Annex 3: List of Case Study Interviewees**

1. Alberto Espinosa, Vice Mayor, Municipalidad de La Puerta de San José, January 10, 2007
2. Irma Espinosa, Encargada, Municipalidad de La Puerta de San José, January 10, 2007
3. Carlos Maza, Vice-Mayor, Municipality of Pozo de Piedra, January 9, 2007
4. Raul Saadi, Director, FM Líder, January 9, 2007
5. Rene Sánchez, Maestro, Escuela No. 335 (Pozo de Piedra), January 11, 2007
6. Silvia Sarapura, Directora de Acción Social, Municipalidad de La Puerta de San José, January 10, 2007
7. Laura Soria, Coordinator, Tedel, January 8, 2007
8. Domingo Teodulfo Barberis, Secretario, CoTelBe, January 9, 2007

I would like personally to thank Laura Soria, the local coordinator for Tedel and my local facilitator. Laura was extremely helpful in contacting people before my visit, and accompanied me throughout the whole week. This was an important factor, as she knows people both through her work and because she has lived in Belén most of her life.

## **Annex 4: Constraints and Facilitating Factors**

The department of Belén was selected because it met most of the necessary criteria. First, it is a rural area, but it also is relatively easily accessible, with available transportation. Second, the telephony cooperative and the radio have a large amount of beneficiaries, and can be linked to similar experiences in other regions. Third, there was a significant amount of already systematized information. We contacted the municipalities to make sure that we would be able to contact stakeholders, from whom we could form a focus group, through a local agent. A final factor was the diversity of the actors involved: we found an NGO (Tedel), local government, and a private sector actor with donor roles in the cooperative and the radio station.

We had some transportation difficulties, because public transportation is scarce, unreliable and infrequent. The weather was also a deterrent - it led to a change in the schedule, and to the cancellation of the second focus group on the last day of the visit. Although we were unable to access Pozo de Piedra because of the bad weather conditions, we were able to interview a teacher instead who gave us valuable information on telecentrers in the area.

## **Annex 5: Focus Group Participants**

The focus group aimed at identifying the needs of telephone and radio beneficiaries was organized in La Puerta de San José, which is 13km from the city of Belén. It consisted of five people: four women and one man, from 37-52 years of age. They are all married and have at least three children. Three completed high school, and one completed primary school. Four live in La Puerta de San José, and the fifth lives in La Ciénaga. Except for one housewife, they all work in the municipality and/or in agriculture. Only one has a private telephone line in her home. The rest use the municipal payphone quite regularly for family, work and health purposes. The radio is their main source of information and their key link with the city of Belén.