

Enhancing the Livelihoods of the Rural Poor

The Role of Information and Communication Technologies

Overseas Development Institute (ODI) UK - InfoDev
Country Report

URUGUAY

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Foreword

This report named “URUGUAY Country Report” is part of the global research project “*Enhancing the Livelihoods of the Rural Poor. The Role of Information and Communication Technologies*”, coordinated by the Overseas Development Institute (ODI) and financed by the Information for Development Program InfoDev¹.

The research was carried out at the Area of Development, Globalization and Information and Communication Technologies (ICTs) in the Institute of Political Science, Faculty of Social Science, University of the Republic in Montevideo, Uruguay. The general coordination of the research project was in charge of Martín Rivero Illa, who authored this report. The research team was integrated by Lara Robledo, who performed the field work coordination and data collection, Inés Ksiazenicki and Soledad Morales who were the research assistants in charge of coordinating and conducting interviews, as well as processing the findings.

This research team would like to thank Andrea Molinari, from CIPPEC Argentina responsible for Argentina Country Report, with whom we shared insights, bibliography, statistics as well as coordinated approaches and methodological instruments that benefited our research work enormously.

Finally, we wish to express our special gratitude to all the ICT key stakeholders, authorities, government officials, company managers, technicians, peasants, activists, academics and many other actors who kindly accepted to be interviewed, providing very useful information to generate this country report.

Important Note: All the information included in this report as well as the opinions presented are the exclusive responsibility of the author, which may not necessarily be shared by the institution he belongs to ICP, or the other institutions involved: ODI and InfoDev.

¹ InfoDev is an international partnership of bilateral and multilateral development agencies housed at the World Bank in the Global Information and Communications Technologies Group (GICT). Its mission is: “*to assist developing countries and their international partners to effectively use information and communication technologies (ICT) to combat poverty, promote sustainable economic growth and empower individuals and communities to participate more fully and creatively in their societies and economies*”. (<http://www.infodev.org/>).

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Abbreviations and Acronyms

ALADI	Latin American Integration Association
ANEP	National Administration of Public Education
ANTEL	National Administration of Telecommunications (SOE)
ANCEL	Mobiles division of ANTEL
ANTELDATA	Data transmission division of ANTEL
BCU	Central Bank of Uruguay
CTI	Private Mobile phones Telecommunication Company
CUTI	Uruguayan Chamber Information Technology
CASI	Information Society Access Centres (ANTEL division)
CIS	Social Internet Centres (ANTEL social project)
DGSG	General Division of Stockbreeding Services (MGAP)
ECLAC/CEPAL	Economic Commission for Latin America and Caribbean-(UN)
IADB	Inter American Development Bank
IDRC	International Development Research Centre (Canada)
ICP	Institute of Political Science, UdelaR, Uruguay
IMA	Artigas Municipality Council (local government)
INE	National Institute of Statistics
INIA	National Institute of Agricultural Research
ISPs	Internet Service Providers
MEVIR	Movement for the Eradication of Unhealthy Rural Housing
MGAP	Ministry of Cutlery, Agriculture and Fishery
SIRA	Animal Identification and Register System (MGAP)
UdelaR	University of the Republic (Uruguay)
USI	Uruguay Information Society (ANTEL division)

Executive Summary

This research has been carried out by the Area of Development, Globalization and ICTs in the Institute of Political Science of the UdelaR, Montevideo, Uruguay. The general coordination of the research was in charge of Martín Rivero Illa who authored this report and Lara Robledo, Inés Ksiazenicki and Soledad Morales as research assistants. A total of 44 qualified informants from 21 institutions were interviewed.

This paper is structured as follows: Chapter I is the Introduction. There, the scope of the report, the methodology used, and the research instruments applied are defined. In Chapter II, a conceptual framework is presented including a brief literature review in a regional perspective as well as a general overview of Uruguay socio-economic and ICTs core indicators. Chapter III is centred on the main findings from ICTs stakeholders' perspective and Chapter IV presents the key issues identified through the whole research process. Finally, Chapter V presents the concluding remarks based on the literature review, the analysis of the interviews and the empirical evidence found. Furthermore, the future activities of the research projects are indicated there.

Uruguay is one of the smallest countries in Latin America and it has traditionally shown favourable socio-economic and ICT indicators. Currently, it possesses a 100% digital telecommunication system and a broadly extended optic fibre network for data transmission, the telephony penetration in fixed lines in households is 78% and 52% in mobile phones. Official statistics show that 31% of the Uruguayan population normally uses the Internet, a figure that reaches 50% in the capital city, Montevideo, where 32.8% of the households have a computer. However, in small villages and rural areas the situation is significantly different. Only 10.7% of the rural households own a computer, and while 32% of the urban public schools are connected to Internet, the rate in the rural ones is less than 4%. In addition, there are very few studies about the Uruguayan ICTs sector in general, and even less concerned with poor livelihoods.

Among the main conclusions of this report it can be highlighted that the traditional radio is still a very powerful information and communication instrument in rural areas; even though the explosion of mobile telephony is the most important transformation taking place. The telecommunication SOE ANTEL has proved to be a relevant actor for infrastructure deployment and for social projects funding. Besides, some market driven initiatives for ICT incorporation, like the cattle identification and trace system, can have a significant impact, in the mid and long-run, on productivity growth of the rural production, eventually leading to poverty reduction through progressive tax policies and social protection of rural workers. On the other hand, the absence of a clear national strategy and a relatively weak management capacity of the public sector (except for ANTEL) combined with lack of proper coordination and articulation of CSOs, and international donors' initiatives, weaken the sustainability and potential impact of undergoing ICTs projects.

Finally, along the report are identified several areas and specific topics where much **more research and knowledge** are needed to achieve a better understanding of the type and intensity of correlation between ICTs promotion and rural poverty reduction.

Chapter 1

Introduction

1.1. The Research Institution

The Institute of Political Science (ICP) is the main public academic centre in Uruguay specialized on research and university teaching on contemporary political science. It is part of the Faculty of Social Sciences (FCS) of the University of the Republic (UdelaR)². The UdelaR is a national public university, being the largest and most prestigious academic institution with more than 70.000 students and 4.000 professors and researchers covering all knowledge areas.

At the ICP work 60 permanent staff teachers and researchers, in a wide range of political science sub-areas. Among others, can be highlighted the Area of State Reform and Public Policy, Local and Regional Development, Party Politics and Electoral Systems, Educational Policies, Political Theory and the Area of Development, Globalization and Information and Communication Technologies (ICTs). It provides courses for students of Political Science and other social sciences (or subject areas) and currently involves more than 400 graduate students and approximately 40 post-graduates from its MA and PhD programmes.³

Since 2001, the ICP started a research area on ICTs with the project “Public Policies and ICTs in Uruguay”, financed by the Scientific Research Commission (CSIC) of the UdelaR. Lately, the ICP created the area of Development, Globalization and Information and Communication Technologies (ICTs) which is in charge of research activities on this thematic area, collecting data, indicators and teaching courses on ICT4D at graduate level.

1.2. Methodology

According to the Terms of Reference of the project “*Enhancing the Livelihoods of the Rural Poor: The Role of Information and Communication Technologies*” the main questions that guided the country report research were:

- *“How can the full range of ICTs, appropriately adapted, help to 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?”*
- *“What do we know already, 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?”*
- *“How should we think about the role of ICT in enhancing the livelihoods of the rural poor? What elements most urgently require further research and analysis in order to lay the basis for informed policy and investment by donors, governments and others?”*

² More information available at: www.universidad.edu.uy

³ More information available at: www.fcs.edu.uy/icp

In order to tackle these questions and to articulate the findings of the different country reports across the world, the research methodology and instruments were coordinated with the Argentinean team. In this regard, three main instruments were used: a) literature review in a global, regional and local perspective including data collection and statistics processing, b) in depth interviews with key stakeholders involved in the different stages of the process and c) a specific analysis of one or two representative projects as case studies d) workshop .

a) Literature Review

This component included the review of books, articles and reports generated by academics, specific projects and programmes, public institutions, private companies, etc. This has the purpose of contextualizing the analysis and better understand the actual relation between ICT and poverty reduction in this specific context. Even though there is quite a considerable amount of literature about ICT4D in general, solid academic research specifically referred to the southern cone of Latin America is very scarce, needless to say, about rural areas in Uruguay. Particular attention was put on official statistics on ICT infrastructure in poor rural areas to identify knowledge gaps where more information and research is needed (*see Chapter II*).

b) Interviews

The interviews were semi-structured. They were pre-arranged meetings and took place at the interviewee's work place, lasting on average 45 minutes to 1 hour. In some cases of relevant projects the conversations demanded longer interviews. The questionnaire used was previously coordinated with the Argentinean research team to use a common set of variables. It had 6 parts: i) general identification of project or service; ii) description of the project type, scale of the initiative and potential for expansion; iii) participation of stakeholders, implementation process and management,; iv) specific technology and services involved; v) economic and financial viability; and vi) concrete results and impact. A total of **44 people from 21 institutions** were interviewed, plus **64 people** that took part in **4 focus groups** for the case study (see Table 1). The interviews took place between November and December 2006 and in all cases they took place at the interviewees' working places or offices. The interviewees were selected from seven main actors:

i. Public and private telecommunication companies and Internet providers

This set of interviews included several authorities of the National Administration of Telecommunications (ANTEL), the state owned enterprise, which is the biggest telecom actor, particularly the authorities of the rural infrastructure division. Also private telecom companies and ISPs were interviewed.

ii) Public institutions and private companies related to ICTs applied to agricultural and social services in rural areas.

These interviews covered Education Authorities from the ANEP, particularly those involved in rural schools, which constitute the main and only education and training places for digital inclusion and, in some cases, work as community tele-centres for the rural poor population. The Ministry of Agriculture, in order to identify the link of ICT initiatives with other growth and poverty reduction strategies in rural areas (like cattle track and trace system). In addition, a representative from a private company that is developing mobile devices to enhance health services in rural areas was also interviewed.

iii. Agricultural and peasant unions:

Authorities from the 'Rural Federation' were interviewed as it is the largest union of small landowners and peasants involving more than 55 organizations in the whole country.

iv. Mass media broadcasters and other private communication companies reaching rural areas

These interviews included radio stations and TV channels of national coverage and particularly oriented to rural areas. Also private companies that provide commercial agricultural services via web were included in the survey.

v. Civil Society Organizations (CSOs)

CSOs that implement projects focused on ICT for social inclusion and poverty reduction were included in the survey as well as local counterparts of international NGOs that work on ICT4D issues.

vi. International Institutions and Donors.

This country report took advantage of the situation that a significant quantity of international institutions and donors of regional influence are based in Uruguay. Those institutions specifically finance or implement ICT projects for the rural poor livelihoods.

vii. Scholars and ICT experts

These interviews and informal conversations involved well recognised scholars from the area of social sciences, informatics and rural development.

Table 1.- List of interviewees	
Type of Institution /Stakeholder	Qty.
1. Public and private telecommunication companies and Internet service providers	8
2. Public institutions and private companies related to ICTs services in rural areas	6
3. Agricultural and peasant unions:	1
4. Mass media broadcasters and other private communication companies reaching rural areas	3
5. Civil Society Organizations (CSOs)	3
6. International Institutions and Donors.	4
7. Scholars and ICT experts	2
8. Case Study	
<i>Local Government</i>	6
<i>Community actors</i>	11
<i>Users (by focus groups)</i>	64
TOTAL Institutions	21
TOTAL Interviewees	44

c) Case Study

In depth analysis of one selected project of ICT incorporation in poor rural areas. The project called “Intelligent Rural Community”, was implemented in the rural village of Bernabé Rivera in the province of Artigas far north of the country, close to the Brazilian border. It had three main goals: i) to provide internet connectivity to an isolated rural area, ii) provide a set of computers and other ICT instruments to be installed in key places of the community, and iii) implement training courses in basic computing and ICT tools for students and adults. The project involved an International Donor (IADB), the local government, a CSO “Fundajoven” and a significant amount of members of the community, particularly young students and teachers. The lessons learned and all the inputs from the stakeholders involved that participated in the workshop are included along this document.

d) Workshop

A workshop for the discussion of the draft version of this document and case study findings took place in Montevideo on April 2007. All the main actors interviewed during the whole research process were invited for the event. Draft versions of this document were delivered to all the participants in order to assure a well informed participation at the event. In addition a presentation was made in the first part of the workshop summarizing the principal components of the research, its main findings and concluding remarks.

Afterwards a very fruitful interaction and discussion took place. That participative and open discussion allowed the research team to receive relevant clarifications, specific inputs as well as general comments. These inputs and comments were incorporated all along this final document.

1.3. Structure of the Document

Chapter I constitute the Introduction and defines the scope and limitations of analysis of the report, the methodology used, and the research instruments applied. In Chapter II, a conceptual framework is presented including a brief literature review in a regional perspective. In addition, this chapter provides a general overview of Uruguay socio-economic situation, particularly regarding ICTs core indicators, in order to properly contextualize the research findings.

Chapter III is focused on the main findings concerning the knowledge needs of the different stakeholders related to ICTs for enhancing rural livelihoods. Chapter IV goes through the most relevant issues identified along the whole research process including the lessons learned in the case study and the inputs of the participants in the workshop.

Finally, Chapter V presents the concluding remarks based on the literature review, the analysis of the interviews and the empirical evidence found.

Chapter 2

Conceptual Framework and Background

2.1 Brief Literature Review

Global

Despite the fact that the notion of Information Society has been part of the international debate since the 60's, the discussion about ICT and development was set in the global agenda three decades later. Without doubt, clear milestones in this process are two major documents: the World Development Report 1998 (World Bank, 1998) and the Human Development Report 2001 (UNDP, 2001). These documents framed the discussion about the impact and potentiality of ICT on economic growth and human development enhancement of world nations. However, the type and strength of the correlation between ICTs expansion and poverty reduction is far from being a homogeneous perspective among scholars, experts and practitioners.

A fundamental contribution on the field of ICT and Development is the work of Matti Pohjola. Making a cross country analysis the author argues that ICTs have had a positive impact on economic growth in developed countries, although not in the same way or amount as in developing countries (Pohjola, 2001). Utilizing the growth theory analysis of Robert M. Solow, the author claims that there has been a limited impact of ICT over the development of poor countries, "*You can see the computer age everywhere but in the productivity statistics*" (Solow, 1987 quoted in Pohjola, 2001: 7).

Many authors have a very optimistic view of that impact (Indjikian, et al., 2005) or accept the potential capacity of the ICT to 'leapfrog' certain phases of the development process (Primo Braga, et al., 2002). Others share that view of the positive impact but consider that it is much more significant in already developed countries (Mansell, et al., 1998). Many scholars focused their attention on certain specific areas of ICTs such as the software sector in developing countries and its potential impact on exports growth and development (Heeks, 1999b: , Heeks, et al., 2002). This last perspective is useful to analyze the Uruguayan case, as the software sector exports have been growing steadily during the last decade (*see Graph 2*).

On the other hand, an increasing amount of literature has put into question in what extent the growth of ICTs is really generating an improvement in living conditions for the very poor (Saith, 2003) or if ICTs are really being included in the general development programmes of nations (Schech, 2002). The work of Christopher May should be included in that skeptical view of the information society. He does not view it as a revolutionary process and distrusts the real potentialities of ICT to foster development and transform society (May, 2002). Some others claim for the necessity to generate a new theory of the information society "*from the south*" that includes, apart from connectivity, access and capacity, the institutional arrangements and the autonomy of under-developed countries to self-define their ICTs goals (Gurumurthy, et al., 2005). Also, many critics of the ICT

potential focus their attention into the global disparities of access and use of ICT infrastructure, what has been called the "Digital Divide"⁴.

More recently, with the centrality of the Millennium Development Goals (MDG) in the global agenda, many international organizations started to consider the ICTs as a powerful instrument for information and knowledge share to foster the achievement of MDG (ONU, 2005). In addition, some scholars stress the importance of ICT as part of the social and physical infrastructure necessary for the MDG (Nishimoto, et al., 2005) and (Badimo, 2005). Some others have a more critical perspective concerned with reproducing, with the ICTs policies, the same top-down logic of imposition as with the MDG from north to south and from International organizations to poor countries (Heeks, 2005).

During the current decade, the explosive growth of mobile phones penetration in the Third World has also increased the amount of academic literature centred on wireless communication devices. Some examples of this kind of studies are, from academics (Torero, et al., 2005), from institutions (Srivastava, 2004), (Panosbrief, 2005), and from private telecommunication companies or consultancy firms (Rojas, 2006) and (Vodafone, 2005), this last one centred on the increasing penetration of mobiles in Africa.

Finally, a significant proportion of the literature on ICT and Development analyzes specific cases, mostly countries or initiatives that are considered as '*success stories*'. In the context of a global comparative study like this one, it is important to critically understand the 'successful' cases and not just to prescribe certain policy recommendations. As Rap notes, "*success depends upon the stabilization of a particular interpretation of events, that explains the origin, implementation and outcomes of a policy...*" (Rap, 2003: 3). The author explains how that particular interpretation can be used to justify the need of a similar policy in very different contexts or situations because it "*becomes a policy model*" (Rap, 2003: 4). As "*success is specially contagious*" other scholars highlight the problem that many times success stories are "*imitated blindly, attending to popularity rather than performance*" (Strang, et al., 2001: 155).

Regional - Latin America

Particularly regarding Latin America some initial works support the strong correlation between ICT and development (Castells, et al., 1994) and some others, a decade later, maintain that optimism (Castaldi, et al., 2004). In the same line, several documents of ECLAC explore that relation extensively (CEPAL, 2000: , Katz, 2000b) including some papers that stress the importance of better public policies for ICTs promotion (Amsden, 2004: , Hilbert, et al., 2002). Recent works from ECLAC are centred on the challenges of public policies on promoting ICT for a more efficient and equal growth strategy in the region (CEPAL, 2005). Other regional institutions produced documents pointing out the attention on the growing digital divide like the extensive comparative study for the whole continent made by ALADI (ALADI, 2003). In recent years many National Human Development Reports from Latin American Countries were centred on ICT4D issues, in 2001 Ecuador, in 2005 Uruguay and the last HDR of Chile 2006 (PNUD, 2006)

⁴ The amount of literature referred to "digital divide is huge, due to the restricted scope of this report is not reviewed here. However, among other works it can be suggested: (Mariscal, 2005) (Dewan, Ganley and Kraemer, 2005), (James, 2003), (Parayil, 2005) (Kauffman and Techatassanasoontorn, 2005), (Martin, 2005) (Nicholls, 2005).

As it was mentioned *up supra* for global studies, there are several works centred on the impact of mobile phones and wireless devices on poor people in the Latin America. In the academic area the works of Hernán Galperin and Judith Mariscal about the influence of process and regulation over mobile penetration among poor people can be highlighted (Galperin, 2004) and (Mariscal, et al., 2005). Many others refer to access to ICTs through telecentres, which is a widely expanded ICT promotion strategy used by NGOs, local governments or international financial institutions (Proenza, et al., 2001). There are also several works from the telecommunication private companies or consultancy reports, see for example (Pyramid_Research, 2006), (NEC, 2004).

Finally, a central discussion, extremely useful for this comparative study, are the theoretical efforts to have a better understanding of the concept of “digital poverty”. In this regard, a good conceptualization of digital poverty that includes educational level, functionality, availability and infrastructure can be found in (Barrantes, 2005) or (Barja, et al., 2005).

National - Uruguay

There are very few studies about the Uruguayan ICTs sector in general, and even less with a pro-poor or development perspective. There are some studies from Economics management-related disciplines that base the analysis on the impact of the ICT sector on employment (Notaro, 2002), on how to improve its management performance (Edelman, et al., 2003), or centred in the Uruguayan software industry international competitiveness and innovation capacity (Mejía, et al., 2002). Other studies were generated by scholars from the computer or telecommunications sphere, and focused on hardware, infrastructure, or technical programming topics.

The Uruguayan social science literature early focused on innovation, science and technology issues, pointing out the importance of well articulated policies with adequate levels of public spending on R&D (Sutz, et al., 1998). Further works in the same line analyse the relation of knowledge and innovation from a north-south, or ‘centre-periphery’, perspective arguing that the country are losing innovative capacity (Arocena, et al., 2003). The literature referred to the impact of ICT on civil society and institutions at the local levels is also scarce. It can be mentioned a comparative study across LAC that also includes Uruguay (Bonilla, et al., 2004: , Roggiero, 2004).

However, this relative lack of academic accumulation started to change the last few years. The Human Development Report Uruguay 2005 was devoted to these topics: “Towards a development strategy based on knowledge” (PNUD, 2005) and written by two well recognised academics⁵. This report constitutes a breaking point as it represents the outcome of a solid academic work that also includes the previous accumulations in the area. In addition, being a UNDP publication, the report reflects the centrality of ICT issues in the national development agenda. In the very recent years, from the Faculty of Social Sciences some scholars started to develop research projects at postgraduate level as well as teaching programmes on ICT related topics (Rivero IIIa, 2002: , Rivero IIIa, 2005: , Rivoir, 2006). In this regard, global research projects as this one of InfoDev are extremely useful to shed some light generating theoretical and analytical elements to contribute to the local and regional debate on the topic.

⁵ The main authors of the document are Andrea Vigorito and Lucía Pittaluga from the Economics Institute, Faculty of Economics of the University of the Republic.

2.2 Uruguay at a glance

Uruguay, with a population of only 3.3 million, an area of 176,215 sq km (68,037 sq miles) and a GDP of \$19.3bn, is one of the smallest countries in Latin America. It has traditionally shown favourable socio-economic indicators compared to the rest of the continent as literacy levels reach 97%, life expectancy is 75.6 years, social public spending is the highest in LAC⁶. In addition, it currently has the lowest level of income inequality of the continent with a Gini coefficient of 44.9, much lower than Chile (57.1) or Brazil (58.0) (UNDP, 2006:335). Political stability has been another relevant characteristic of the country, its civil society has a high level of confidence in democracy and comparatively good public institutions that rank second best in the continent (CID, 2003: 33). However, after the severe financial and economic crisis that affected Argentina and Uruguay in 2002, from 1998 to 2002, the country GDP plummeted around 40%, external debt surged to over 90% of GDP, poverty grew heavily and nowadays 27.4% of the population lives under the poverty line (*Table 2*). Moreover, in 2004 Uruguay presented worrying figures of 54% of its kids born in poor households, situation that is even worse in rural regions.

Population (millions)	3.324
Percentage of Rural Population	15.8%
GDP (U\$ millions)	19,319
GDP p/capita PPP**	9,421
Inequality (Gini Coefficient)	44.9
GDP Growth (compare to 2005)	6.6%
Foreign Debt as % of GDP	78%
HDI Ranking (value)	43 (0.851)
Alphabetization	97%
Life Expectancy	75.6
Pop. under Poverty Line (INE)***	27.4 %
Pop. under Extreme Poverty Line (INE)***	2.9%
Unemployment	10,0%
Total Exports (U\$ millions)	4,105

Sources: (INE, 2006), BCU, CUTI and (PNUD, 2005).⁷

Notes: *Population living in rural areas and small villages under 5.000 inhabitants, strictly rural is only 8.1%.

**Adjusted buy Purchase Power Parity, year 2004, source (UNDP 2006: 283).

***According to ECLAC poverty lines, poverty is 19.05% and extreme poverty 3.9%.

The struggle for growth has been one of the most important challenges of the development strategy of the country in recent years. In 1950 Uruguay had a GDP per

⁶ As an indicator the Uruguayan public spending on health is 5.1% of GDP (UNDP, 2004: 156)

⁷ Web pages: INE: <http://www.ine.gub.uy/> - BCU: <http://www.bcu.gub.uy/>

capita four times bigger than Korea and five times bigger than Taiwan. However, during the second half of the 20th century, Uruguay showed very low growth rates compared to its neighbours, just 1.8% average GDP growth rate against a Latin American one of 3.5% (Torres, 2003: 24). The current South Korean GDP per capita is more than four times the Uruguayan one.

In spite of this poor general performance, there are currently some economic sectors that are showing strong dynamism. The main ones are the traditional agro-industrial products. In 2006 beef exports constituted 25% of total exports. If we add cereals (9%), dairy products (8%) and wood (7%), almost 50% of Uruguayan exports are agro-industrial products, mainly due to very favourable international commodity prices and exchange rates. Another dynamic sector is, surprisingly, the ICTs sector; mainly originated by endogenous reasons of competitiveness due to good quality combined with relatively low prices in international terms.

2.3 ICTs sector dynamism

The Human Development Report 2001 was particularly focused on the impact of ICTs on development (UNDP, 2001). The report presented an Index of Technological Progress that ranks the countries in five categories: 1. 'Leaders', countries such as USA, Finland or Sweden and the rest of G7 nations; 2. 'Potential Leaders', for example Spain or Mexico; 3. 'Dynamic Followers', with Uruguay being the first in this category, the 38th place in overall ranking, ahead big countries like South Africa, Brazil or China; 4. 'Marginalized', including countries such as Nicaragua, Senegal or Nepal; and finally 5. 'Others', for countries where no data is available.

Table 3.- URUGUAY Main ICT Indicators 2006

1. Fixed Lines Density	78%
2. Mobiles phones penetration (whole country)	51.8%
3. Mobiles phones penetration (Rural areas)	31.5%
4. Fixed phone lines p/100 inhabitants	31
5. Internet penetration (National Average)	27.4%
6. Internet penetration (Rural Areas)	4.4%
7. Households with broadband connection (%)	10.5%
8. Households with TV (%)	92.8
9. Households with Radio (%)	97
10. Households with computer in Montevideo	32.8
11. Households with computer in Rural Areas	10.7
12. Software exports (U\$ millions)	132

Notes: Indicators 3, 4, 6, 8 and 9 data corresponds to year 2005.

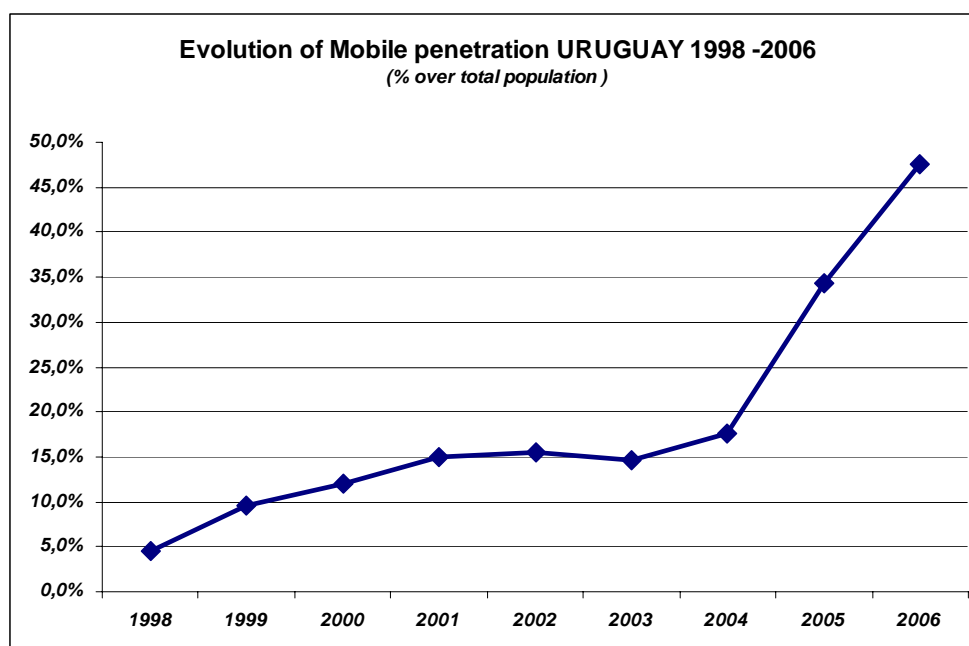
Sources: Indicators 1 and 4 ANTEL; 2 and 7 author calculations for ODI-InfoDev Research Project based on data from ANTEL, private ISPs and telecom. companies and INE; 3, 5, 6, 10 and 11 (INE, 2006b: 4); 8 and 9 (PNUD, 2005); 12 CUTI estimations, includes software packages and implementation and consultancy services.

Moreover, some analysts talked about an emerging 'success story'. Given these figures, in recent years, some specialized publications and analysts started to talk about Uruguay using the type of adjectives utilized in the ICT jargon all over the world, such as 'Celtic Tiger' for Ireland or 'Bombay Silicon Valley' for India. In this regard, in specialized press articles and reports expressions like these can be found: 'Uruguayan Massala' (Latin Trade Magazine, January 2004), 'The Example of Software sector in Uruguay' (newspaper El Mercurio, Santiago de Chile, 2003) or 'The Dublin of the South' (Edelman, et al., 2003). As mentioned in section 2.1. regarding "success stories", this perspective is too optimistic, a 'marketing oriented' type of analysis not generally well demonstrated empirically. Even so, there are some positive figures to be highlighted.

Uruguay possesses a 100% digital telecommunication system and a broadly extended fibre optic network for data transmission built by ANTEL. In the Global Technology Report 2003, the general ICT infrastructure of the country scored among the first places in the continent and 33rd in the world (CID, 2003: 42). The telephony penetration in fixed lines is 78% and 52% in mobile phones (Table 2 and Graph 1). Official statistics show that 31% of the Uruguayan population normally use the Internet, a figure that goes up to 41% in the population aged 30 or under (INE, 2006b). In the capital city of Montevideo, Internet use is over 50%, and around 32,8% of households have a computer.

However, there are strong differences on ICT access between households with different income levels. Among households at the top 10% income, 65.8% have a PC and 53.9% is connected to Internet. On the other hand, in the lowest 10% income, these figures fell down dramatically to 3.4% with PC and 0.5% with Internet connection (Pittaluga, 2007:10).

Graph 1

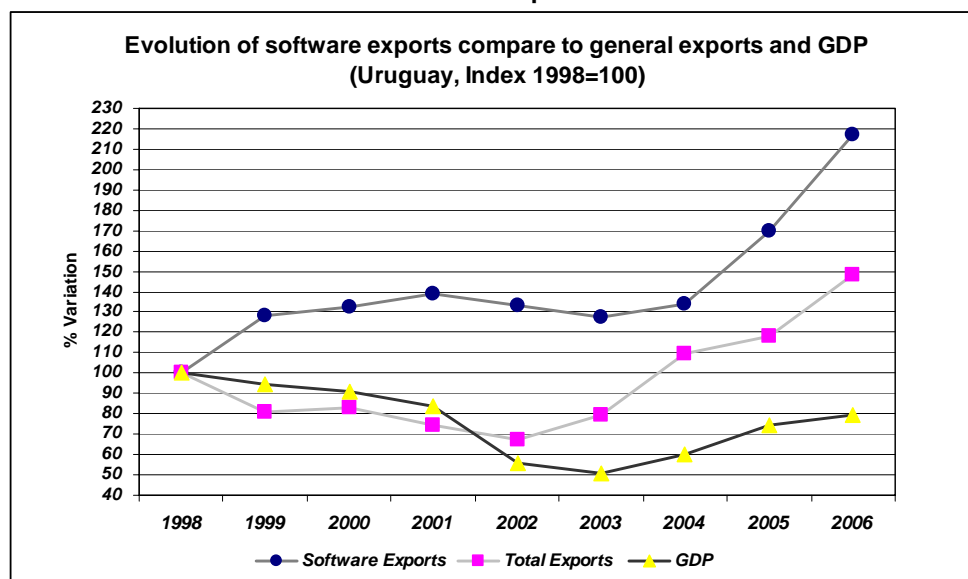


Source: Author calculations for ODI-InfoDev Research Project based on data from INE, ANTEL, and private Mobiles Telco companies.

It is important to note that, together with Costa Rica, Uruguay is one of the few cases in the whole Latin America, where the biggest telecommunication operator is a state owned enterprise (SOE). The company, ANTEL, has the monopoly in fixed telephony as well as the largest market share in competitive areas of the telecom market (mobiles, Internet access and international calls). In this regard, this dominant position in fixed lines allows the company to 'cross subsidize' less profitable telecommunication areas as well as provide substantial funds to support social inclusion ICT projects⁸ That unique characteristic in the LAC context makes this country a very interesting case study in terms of pro poor ICT public policies⁹.

Between 1998 and 2002, while Uruguayan general exports fell 33% in current dollars, the value of exports of software rose exactly in the same proportion. The total software exports grew 120% between 1998 and 2006, see Graph 2. Analysing the possible development strategies for the country in the near future, many authors mentioned the importance of promoting exports of a 'non-traditional product' as software and ICT consultancy services (Hausmann, et al., 2005), (Lescano, et al., 2004).

Graph 2.



Source: Author calculations for ODI-InfoDev Research Project based from data from BCU (general exports and GDP) and CUTI (software exports)

2.4 ICTs in Rural Areas

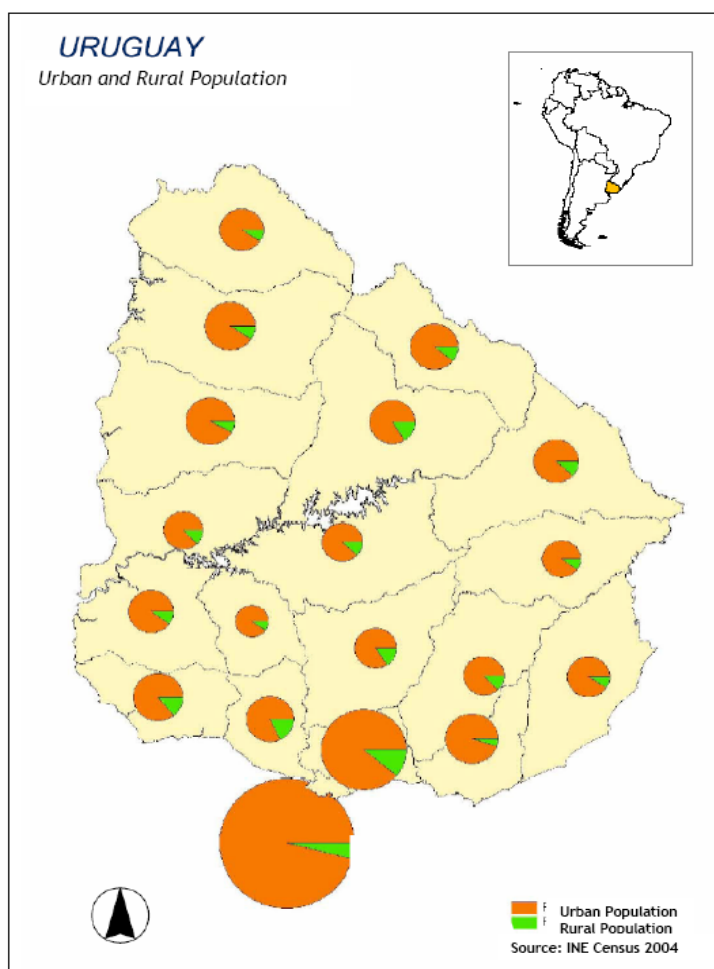
Despite these relatively positive ICT indicators in urban areas, there is a significantly different situation in the rural regions where a severe backwardness in terms of ICT access for poor people can be identified. While Internet penetration is relatively high among urban households and Internet is used regularly by 60% of those in the upper fifth of the income scale and with university education, in small villages and rural areas that

⁸ More information about ANTEL social projects see: www.antel.com.uy or www.usi.org.uy

⁹ ANTEL suffer some attempts to privatise it under the structural adjustment waves in the beginning of the 90's. In 1992, a law known as "SOEs Law" was approved. It allowed the total or partial privatisation of ANTEL and UTE. After a pro-referendum campaign in mid 1992, part of the law was put under plebiscite. The result was an overwhelming rejection of the reform law by 72% of the votes.

rate is approximately 5 to 6%. Here there is another example of that inequality: while 32% of the state primary schools in urban areas are connected to Internet, among the rural ones the connection rate is less than 4%. This urban-rural digital gap affects around 9% of the total primary schools students. Finally, in terms of infrastructure, according to official statistics only 10.7% of the rural households possess a computer, compared to 32.8% in the capital city, Montevideo (Table 2).

Graph 3



As shown in Graph 3, less than 16% of the total Uruguayan population lives in rural areas or small villages under 5,000 inhabitants. However, the particular combination of growing exports of agro-industrial products and a relatively dynamic ICTs sector has drawn attention to the potentiality of ICT to foster the general growth of the economy and, at the same time, to improve the living conditions of the rural poor. In connection with this, there are some initiatives and projects financed and implemented by public institutions, international donors or CSOs, related to rural areas, to face that challenge. Precisely, the main goal of this country report is to summarize the lessons that can be learned from those initiatives and tries to identify possible contributions to the elaboration of the global “knowledge map”, needed to understand the relation between ICTs promotion and poverty reduction in rural communities more deeply.

Chapter 3

Main Findings: Stakeholders

3.1. Telecommunication and ISPs Providers

The National Telecommunication Administration (ANTEL) is an SOE and the largest telecommunications operator in the country. Under the general 'umbrella' of the Project "Uruguay Information Society (USI)"¹⁰ it carries out several social and pro-poor projects, some of them involving rural livelihoods. The initiative includes the implementation of Information Society Access Centres (CASI). Currently there are 69 centres where ANTEL supplies subsidized equipments and connectivity. There are also other two types of projects: a) the Centres of Social Internet (CIS), 8 have been installed in the country, 2 of which are in the rural area; b) "Social Internet" (IS) functioned by equipments loans for one a year (renewable), they were 30 IS and currently 19 remain. According to ANTEL authorities, in the future it is expected that CASI and SIS will have 15 new services per year.

The other relevant programme is the "Educational Connectivity Programme", connectivity for state schools. This programme is currently in its second phase and is being implemented by means of an agreement with the Administration of Public Education (ANEP). According to ANTEL figures, there are currently 1300 schools connected, 100 of them in rural areas¹¹. The goal is to have all urban schools connected by the end of 2007 and in 2009 all rural schools. That will require connecting around 300 centres per year. This connectivity for education service is provided for free by ANTEL for state schools, which represents for the SOE a total cost of more than US\$ 2 million per year. Besides, ANTEL is also involved in the project called "Ceibal" which is the national "One Laptop per Child" (OLPC) pilot project. The implementation is shared by a consortium the Ministry of Economy and Finances (MEF) and the Technological Laboratory of Uruguay (LATU). The pilot project will be carried out in a school in the hinterland, not in a rural area but in a small city, where 200 laptops will be delivered.

Regarding commercial services, all fixed services in rural areas provided by ANTEL are subsidized with revenues from the urban markets. For example the RURALCEL¹² service charges similar phone call costs to an urban line, even though they are much more expensive for the company. With reference to the use of ADSL with satellite connectivity, it has such a high cost of equipment and reception that only tourist rural ranches or big agro-industrial companies can afford it¹³.

Important private companies consulted, like "Dedicado", do not offer specially designed services for rural areas. Private actors consistently argue that the necessary investment to be made in these areas does not have returns for any company. The implementation and adaptation of equipments are very expensive and for a small quantity of clients is not profitable at all for those companies. Among the obstacles they face were

¹⁰ In Spanish "Uruguay Sociedad de la Información: <http://www.usi.org.uy/>

¹¹ Part of this project was financed by IADB and the Japan cooperation Agency

¹² There are currently around 35,000 services of cell rural phone system, RURALCEL. During 2007 the services will migrate to GSM technology, the cost of the process will be covered by ANTEL.

¹³ According to ANTEL technicians, only the basic equipments cost around US\$ 2,500.

mentioned: distance, topographic characteristics that inhibit the use of certain technology devices, accessibility and “unequal” competition with the public company.

3.2. Public institutions and private companies related to ICTs applied to agricultural and social services in rural areas.

One of the main projects related to ICTs in rural areas has to do with the “Educational Connectivity Programme” mentioned above. As ANTEL is in charge of connectivity costs, the financial problems that this type of projects normally have are not the main ones. The programme faced three main problems: i) the absence of electricity in many rural schools, ii) the lack of training of rural teachers who, generally, are not well qualified in computing issues, iii) ANEP is a huge public institution, which sometimes make it relatively slow and many times inefficient in terms of ICT implementation. Although education authorities consulted estimate there are currently around 14,000 computers, it is quite difficult to estimate the exact number of students with ICT infrastructure coverage.

The main challenge these stakeholders identify refers to the necessity to enhance content generation and the incorporation of relevant material, useful for rural communities. The educational authorities have been trying to generate an educational portal by means of several initiatives that have failed to crystallize in a permanent service. According to some of the interviewees, among national authorities there is not a very clear vision about the real purpose of ICT promotion in education in general, and even less in rural areas. Even though the clear interest shown by the central government on ICT promotion initiatives in education, the level of participation of teachers is still quite weak, and in some cases non-existent.

Another relevant initiative is being carried out through the Ministry of Cutlery and Agriculture (MGAP) funded by FIDA with a national counterpart. The main aim of the project is to support low income¹⁴ rural communities to overcome poverty. As its main intervention instrument the project promotes the implementation of “*rural development community councils*” which has the purpose to promote local rural development. It started in 2001, and in 2004 only 18% of the total budget had been executed.

Currently, at the end of 2006, 90% has already been used. In the first semester of 2006 a total of 885 projects were approved, many of them related to ICT incorporation to rural areas. As examples of projects financed there are: long distance courses, informatics incorporation into agriculture activities, computers for rural schools, use of software cutlery management and identification, among others. There are currently 4,190 beneficiaries, representing 25% of rural poor households. According to official statistics, since the beginning of the projects there have been around 10,000 beneficiaries.

Finally, regarding State initiatives, there is a very important Project from the MGAP is the Animal Identification and Register System - SIRA implemented by the General Division of Stockbreeding Services - DGSG of the MGAP. This project, defined as one of strategic importance by the national government is being implemented to fulfill the requirements of the international beef markets. Uruguay was the only Latin American

¹⁴ For the purpose of this project low income is defined as families with an annual income lower than \$U80,000 (around U\$300 a month).

country to implement universal cattle identification and tracking systems together with Australia, New Zealand, Canada and USA. Argentina and Brazil are now using it only with cattle that will be lately exported, that is 14% of their total cattle production. It is very important to note that Uruguay exports 75% of its beef production, which constituted in 2006 around \$1billion, more than 25% of its total exports.

On the other hand, there are also a few private initiatives companies involved in ICT projects for rural areas, some of which have a direct or indirect effect over poor rural livelihoods. For example, EVIMED is a private software company with the objective of creating a virtual learning community for doctors through two main instruments: a) continuous medical education and b) electronic record of medical attention. Even though the target users of the service are generally doctors from any area, it has a strong demand among those working in rural areas, called '*rural doctors*'. The interviewee explained that rural doctors demand to be up-to-date through distance learning mechanisms as they are isolated and have few opportunities to travel long distances for training activities. The service currently covers 3,600 people all over the country; 80 of them are rural doctors. It is important to note that, during the first stage, the company counted on the subsidy like "incubator" of company start up¹⁵.

Another particularly relevant private initiative is the commercial project called "Pantalla Uruguay" (Screen Uruguay). One of the three firms of auctioneers with experience in cattle raisers transaction markets formed the company, which permits to sell and buy livestock through a multimedia communication system (Internet and Cable TV). At meeting of potential buyers, normally in the capital city, the system broadcasts short videos carried out to each lot in the own establishment cattle raiser (detailing cattle proprietary, place and date of birth, weight average, quantity of animals, category, reproductive state, etc.)

The service is broadcasted simultaneously through three systems: 1) live through 59 Cable TV points that cover the main cities of the country; 2) THD systems (Direct Television at Home); 3) Internet.

"Screen Uruguay" was created in 2001 as an answer to the problem of cattle mobility restrictions due to the epidemics of Foot and Mouth cow disease that had arisen in mid 2000. The fact that cattle could not be moved added to the technological capacity installed in the country, the confidence of the actors in the system, the territorial dimensions of the country and the implementation of a recognized certification system, enabled the development of the system. The service obtains its revenues from the commissions charged to every transaction that takes place through the system. The company has been consistently growing and it constitutes an example of transformation of cattle raisers' business activity, the main economic activity of the country.

All the referred State and private initiatives and the export figures clearly show the importance of the agricultural production and the potentiality of ICTs to foster productivity and increase national export. That growth would directly or indirectly benefit the rural poor. It is evident that the better the social protection regulations can be for rural workers, the greater the impact on their income will be. More research is

¹⁵ The company was created with the support of a subsidy from the Programme of Technological Innovation: "INGENIO", which is financed by a InfoDev and the Council of Science and Technology.

needed regarding the correlation between ICT incorporation in the agricultural production system - productivity increase - export growth and, most importantly, its actual impact on the income levels of poor peasants

3.3. Unions of small farmers and land owners

The '*Federación Rural*' (Rural Federation, FR) is the largest small farmers and land owners' union, involving more than 55 organizations in the whole country. The FR is not a poor peasants type of organization, like the "Sin Tierra" in Brazil. It represents the mid and low-income rural population, while the big land owners of high income are mainly represented by the '*Asociación Rural*' (Rural Association). The FR does not develop any specific project of ICTs implementation although it is involved in the diffusion of RURALCEL and it actively participates in the promotion of rural schools connectivity programme. In addition to this, they are currently analyzing a project to work as a federation in Internet because, due to their quantity, all the organizations that are part of the FR cannot get together in the Board of Directors.

The FR representative considered that the cultural impact of mass media, TV and radio, is extremely important in rural areas. In this regard, he stressed the risk that rural poor who live close to border areas and thus only receive TV channels of neighboring countries (Argentina and Brazil) but not the Uruguayan ones. According to the interviewee *"...it is not our TV programmes... if you go to the countryside or to MEVIR villages people are watching Brazilian soap operas, Big Brother, or other "pink press" Argentinian shows but they do not have the slightest idea about what is happening in Uruguay..."*. It is important to note that the equipment to receive national channels costs around U\$900, in their perspective there should be a public policy to favour the access. Cable TV made new information and content products available: *"it is a way to know things that before were not known"*. In relation to the role of the radio, he argues that *"the radio, as it works with any battery, has historically been the main instrument of information and communication in rural areas... it has deep roots in the whole population across social classes"*.

Like other stakeholders contacted, he reckoned that the mobile phone expansion is significantly transforming rural life, including the poor livelihoods. He illustrated his opinion with an anecdote: *"I was showing my ranch to some friends when a young boy who worked in my house arrived. He was one of the 'gauchos', with a "gaucho" hat, a 'facón'¹⁶ at his back and riding a fine horse and an impeccable 'apero'. I was introducing him to my friends when suddenly a mobile phone rang, we all began to look for our mobiles when the boy said, it is mine! 'my girlfriend has sent me an SMS'...all the people that work in my farm, and their kids have a mobile".* In his perspective, that phenomenon may also have some negative aspects: *"Many peasants become dependent on their mobile, they do not have money for the mobile pre-paid card... and sometimes they do not buy bread but they buy the card... the technology arrived all of a sudden and the rural communities were not financially prepared for that technology consumption"*.

¹⁶ "Gaucho" is the traditional peasant that works with cattle in rural areas; the 'facón' is the traditional gaucho knife; 'apero' is the mount and leather harnesses used to ride horses.

Finally he argued *“on the one hand that explosion is very positive, but the problem is when it does not go together with the general economic development of the community where the technology is being used, there is a pressure to have it and not everybody can afford it”*. He claimed that there should be better public policies that assure good living conditions for people to remain in rural areas. That implies traditional social services like watering, electricity, education *“but also communication at reasonable costs, so that’s why the ICTs social access must be subsidized”*.

3.4. Mass Media Organizations

Radio has had a long lasting tradition in Uruguay, the 2nd oldest radio station in the continent (El Espectador¹⁷) was founded in Montevideo in 1922 and currently 97% of households have at least one radio receiver, a penetration that can reach 100% in rural areas. Most of the interviewees coincide that radio is the most extended and accepted broadcasting system. In total there are 247 radio stations in the hinterland, 80 of them are AM. FM frequency stations are more popular among young people, but have a limited coverage (around 25 km) unlike AM, that is why they are so important in rural areas. Radio stations are private companies using public frequencies administered by a regulatory agency. Community radios are not a common phenomenon, in most cases they function in a not very clear legal framework, and are almost exclusively restricted to urban areas. Even though they have restricted coverage, they are quite popular among the population around their, sometimes ‘*hidden*’, transmission places.¹⁸

Mass media owners and scholars consulted agree that, even nowadays, radio is the most important means of social communication in rural areas: *“The radio in the deep hinterland is turned on when the first one gets up and turned off when the last one goes to bed, it is permanently on”*, says an authority of the hinterland radio association CORI¹⁹. No matter what the socio-economic level is, *“the radio acts as a way of social communication”*. In these areas, peasants still stop working to listen to the radio news and *“important local messages, they gather around the radio receivers, there is nothing there is no thing with more community spirit than the radio in the hinterland”*. Not long ago, before the explosion of mobiles, the radio was the only way to broadcast: *“local announcements of business issues like crops prices, local health information such as the doctors’ schedule in the local hospital, or even deaths or communications within families, it covers everything...”* argued one of the stakeholders contacted. Regarding TV, there are two main services: the State TV (Channel 5) and the RED system. RED is a private enterprise created 25 years ago by the private air channels based in the capital city, Montevideo. As a consequence, all air TV channels in the capital city and the hinterland, including rural areas, are under the oligopoly of three traditional broadcasting companies. The RED system is based on a “package of signals” emitted through a “baseband” of “microwaves” plus a digital signal using the “Nahuel Satellite”. The “package” of TV signals includes a summary of content extracted from the capital city air channels, prepared and transmitted from Montevideo, plus some local news content which is added at every local channel. According to the RED authorities

¹⁷ Currently also available in Internet: www.espectador.com

¹⁸ Due to the small quantity of community radios in the country and the restricted scope of this research the community radios were not analysed deeply. However this is a relevant phenomenon that deserves further research.

¹⁹ Out of 80 AM radio stations of the interior, CORI involves 58.

consulted: " *The objective of RED is to cover the whole country. It was created with the objective of providing an open air signal to the Interior*". It is important to note that before the installation of RED, the only signal with national coverage, including some (not all) rural areas, was the State Channel 5. Thus, in border areas, the Argentinean and Brazilian signals used to have (and still do) a strong cultural influence.

The interviewees understand that the current expansion of satellite transmission allowed thinking about the possibility of extending other TV signals to the rural area. Previously, microwave transmission implied a strong dependency on ANTEL. When satellite transmission was incorporated, the dependency levels on the SOE was reduced. Nevertheless, interviewees argue that the conditions for the expansion of ICT services in rural areas by private investment are difficult. The long distances and few population in these areas determine high costs and low profits. Finally, it should be mentioned that there are satellite TV services (Direct TV) but their penetration in the rural community is very low (less than 2%) as prices are quite high. Despite the fact that they offer a significant amount of channels (more than 100), they do not broadcast Uruguayan signals.

3.5. Civil Society Organizations (CSOs)

There are not many CSOs specifically working on ICTs promotion initiatives for rural poor livelihoods, even though many organizations implement more general projects that also involve rural areas. The Uruguayan chapter of the Committee for the Democratization of Informatics (CDI)²⁰ has the objective of offering access to ICT as an instrument to foster local capabilities and auto-sustainability of the community so as to promote social inclusion, enforcing the work towards social inclusion. The main project is the Schools of Computing Citizenship. There are 32 schools, 16 are in the hinterland covering 10 provinces districts. The projects covered 5,000 students in 2006; during the last 6 years 10,000 were trained in basic informatics, which shows the increased demand of the project courses.

Regarding financing, every community school is funded by sponsors and small contributions of the users, which gives financial independence to each school. Each school defines what is to be done so, it can be considered a bottom-up type of project. The local actors are also in charge of the diffusion strategies; however, it is sometimes weak. Expansion is constant, as there is demand from the communities for new schools and there are some sponsors that obtain the equipment. CDI also works together with existing productive projects or cooperatives like the project involving "Manos del Uruguay" and the University of the Republic (this project is detailed in 3.7). The main effects registered in the local community are related to learning how to work in a network, the generation of better job prospects for the rural poor as they can acquire some knowledge about informatics, and the appropriation process that schools generate in the community, which is also useful for other social promotion projects.

All the CSOs consulted agree that the local organizations are the ones that facilitate the relationship with the people and guarantee the participation of the community involved as well as widespread diffusion. This proper articulation between local CSOs and national institutions, like ANTEL (telecommunication) or ANEP (education), together

²⁰ More information about the institution and its projects available at: www.cdi.org.uy

with specialized ICTs promotion, NGOs and private companies, proved to be a key element, almost determinant to project success.

In addition, in most of the projects reviewed the rural women and young people are the most active actors. Women are the ones who participate more, in most cases taking management and decision-making positions, particularly in initiatives related to ICTs for education and health. Besides, they mention that the personal enrichment of the people that participate in the experiences; as they identify concrete results and changes in the livelihoods, great satisfaction is achieved, which starts up a virtuous circle of new initiatives in other areas considered relevant by the community. Among the obstacles most commonly mentioned by interviewees, we could include the high fragmentation of the civil society and public initiatives. That lack of coordination and information has a negative effect on the distribution of resources and implementation capacity of the initiatives.

3.6. International Organizations and Donors

Being a middle income country, Uruguay does not receive a significant amount of money from international donors for ICTs promotion projects. Yet, there are some experiences of small projects that are worth mentioning. Also, some international organizations of regional scope have their headquarters in Montevideo and they were consulted for a more general perspective not only referred to projects financed in Uruguay.

The IADB made an open call for proposals for ICT diffusion projects in Latin America. The objective was to support initiatives aiming to use ICT to enhance policy impact in social areas. From Uruguay approximately 20 projects were presented out of 60 from the whole continent. At the end of the selection process, only 6 were approved for financing, half of them were Uruguayan: a project to improve labor intermediation carried out in the Ministry of Work and Social Security (MTSS); a community project in 'Lavalleja Colony' in the surroundings of the city of Salto; and a project to improve ICTs access in a very poor rural area called Bernabé Rivera (province of Artigas) in the extreme north of the country. After several interviews and document reviews the latter project was selected to constitute the case study of the ODI-Info Dev Uruguay Country report. *(separate document with in- depth analysis).*

'Fundajoven' Foundation together with Artigas Municipality City Council (IMA), the local government and the community were responsible for the project. The objective was to improve social inclusion of citizens in rural areas using ICT instruments. It covered the whole population in the town: 850 people; between 200 and 300 of them are children and young people. The project finished at the end of 2006 when the IMA has transferred the project management to the local community in a process that is currently taking place. For that purpose, a local Commission was created and it is currently in charge of maintaining it.

The experts and authorities consulted agreed that the project generated a great effervescence in people, quite relevant to enhance the local development capacity. The replicability of the initiative in other communities is quite difficult for the high cost of the technology for rural satellite connectivity, around US\$ 5,000-6,000 (which in this project was funded by the IADB). The appropriation of the project was favored by the demographic configuration of the town and the significant young population. The sustainability prospects of the experience will very much depend on the degree of

appropriation of the local community where it is settled. In the projects deployed in Salto, there have been small but significant impacts. For example, the peasants can now look for the prices of their crops and farming products in the capital city. The technologies have constituted a great improvement, the appropriation in this town depends on the potential use of the technology for the production.

International donors identify ANTEL as a relevant 'player' in ICTs promotion in poor rural areas. For example authorities from the IADB consulted argue that *"Uruguay poses an advantage that other Latin-American countries do not possess: the country finds its differential in a SOE like ANTEL that invests a significant amount of resources in its social projects like CASI"*. (already mentioned in chapter 3.1).

Another relevant international donor present in Uruguay is the Latin American and Caribbean Regional Office of IDRC. The institution is supporting the project of OLPC mentioned in chapter 3.2. In addition, it has been financing research projects on ICT issues through the FRIDA Programme, some of them related to rural areas. The Programme was managed by LACNIC²¹. Some of its authorities were interviewed and one of them had previously been the coordinator of rural projects in the MGAP. They identify 4 main problems regarding successful implementation of ICT projects in rural areas: i) connectivity availability, ii) degree of community involvement, iii) costs, iv) community awareness of the importance of the projects. They also stress some possible contradictions of successful projects: *"These projects are an opportunity for social change. If you are successful, it is highly likely that the young people involved emigrate to urban areas, that's the terrible contradiction you face in this kind of initiatives"*. The interviewed donor explains that, according to his own experience, the *"most significant transformation in the rural areas is the explosion of mobile telephony, that's the real and most powerful transformation that is going on..."*.

3.7. Academic Institutions

The Computing Institute (InCo) of the Faculty of Engineering of the UdelaR, besides providing university teaching and research in computing, also participates in several social ICT projects²². The InCo began working on "Digital Inclusion" with a Project called "Link all"²³. It started in 2004 and finalized in October 2006, and the participation of a group of rural cooperatives related to "Manos del Uruguay"²⁴. The project involves three main areas: Crafts, Culture and Ecotourism. The objective of the Project was to foster and harness local capacities, interconnecting the services that the community produces and advertising their local products on Internet. The Project was financed by @lis, with the support of "Europe- Aid", European Commission.

InCo performed as a technological counterpart in a multidisciplinary team that generated relationships among actors that was evaluated as very good and rich. That experience allowed the group of academics to develop specific technologies to improve

²¹ Latin American and Caribbean Internet Addresses Registry, see: www.lacnic.net and Programme FRIDA: www.programafrida.net

²² Among others, it should be mentioned: "Link all", "Collaborative Platforms to the digital inclusion of rural communities", "E- learning: CATFRAY", "Week to enabling Social enterprising of de Interior", "Schools of Computer science Citizenship", "Development of wireless networks in rural areas".

²³ More information available at: www.link-all.org

²⁴ A very traditional and long lasting cooperative of high quality wool garments made by crafts women throughout rural isolated areas of Uruguay, see: www.manos.com.uy

connectivity access by sharing a broadband connection. The platforms were developed in the InCo, where all the applications were integrated using “open source” applications to solve specific needs. In addition, the training courses to use the technology developed were given by local professors with the InCo’s support.

Among the deficiencies of the projects it was referred the absence of a specific area specialized on social development, poverty and digital inclusion topics inside the InCo. This absence weakened the capacity of the institution to implement the projects with comprehensive approach. Moreover, this team of experts having a high quality but extremely technical academic and professional background were quite lacking in tools regarding social work with the communities. In addition, the importance of its future sustainability was a “too central issue” from the beginning of the project. That worry inhibited many actors from fully participating in the project due to the high compromise it would require in the mid and long run. This topic is referred in Chapter 4 “Key Themes” of this document.

Also, according to the stakeholders involved, more attention should be paid to the implementation process that is also extremely crucial: *“before sustaining something you have to create it, and make it strong enough to stand alone”*. Another problem faced in these projects were identified as “educational barriers” (average educational level) in the communities, which limited the processes of learning and appropriation of ICT technologies.

Based on the experience and the lessons learned during the implementation of the “Link-all” project, and the better understanding of the community needs, the InCo participated in another project called: ‘Deployment wireless ambient networks on heterogeneous rural environments’ financed by Microsoft Research²⁵. This projects allows wireless Internet connection of two groups of artisans at the rural villages of Totoral del Sauce (Canelones province) and Fray Marcos (Florida province).

Other projects of research institutions were identified and deserve further attention from other more embracing studies than this report. For example the National Agricultural Research Institute (INIA) implements a project called “Technologies for small family production”²⁶. These initiatives in the Rural Sociology Area involved more than 8,000 production units that were benefited. Despite the fact that the project intended to use more complex Internet tools, the main communication instrument used were the widely extended mobile phones as well as broadcasting announcements of training activities and coordination through local radio stations.

²⁵ More information about this project: <http://www.fing.edu.uy/inco/proyectos/wan/presentacion.html>

²⁶ The institutions involved were the National Institute of Agriculture Research (INIA) - IADB the FPTA (Fund for Agriculture Technology Production at INIA, Farm National Council (JUNAGRA) and IRTA (from Cataluña)

Chapter 4

Main Findings: Key Themes

4.1 Connectivity and complementary infrastructure

It proved to be an extremely important issue for the success of the ICTs promotion project to have a well developed electricity infrastructure. The electricity generation and distribution in Uruguay is also in the hands of a SOE called UTE²⁷. The energy matrix of the country is crucially dependent on oil which the country does not produce, being a price taker of imported oil. Hence, compared to the region average, gas oil and electricity are very expensive goods constituting a high percentage of fixed costs in transport and industrial activities.

As was mentioned regarding ANTEL, its public characteristics allow the company to introduce cross subsidies from more profitable urban areas to clearly non-profitable isolated rural ones. Many rural areas, particularly those that include a MEVIR group of housing, possess electricity due to subsidized rural development policies. Even so the electricity distribution infrastructure and the service for rural poor households are still too expensive. That partially explains why those technologies that can work with batteries, like radio and mobiles, and do not necessarily need electricity are universally distributed while the ones that need it, as computers, have restricted coverage.

4.2 Sustainability aspects

The problem of sustainability of the projects after the donors have finished their assistance has traditionally been an extremely relevant issue. That leads donors to insist and impose conditions from the very beginning of the project design and implementation to assure sustainability mechanisms. In some cases, these conditions can constitute an extreme pressure over the prospect of the projects to be implemented. In this regard, if a small community has to accept the compromise of sustaining a project for a certain period of time, the probabilities of accepting the challenge to get involved are lower than if the initiative is implemented as a pilot experience that not necessarily will continue.

4.3 Cultural and social changes

Among all the stakeholders consulted there was the shared feeling that the implementation of ICT projects in rural areas, when successfully implemented and sustained, can generate relevant cultural and socio-economic changes. Many aspects of rural life can be altered by the access to information, communication and knowledge that ICT can deliver to the rural community. That access, they argue, can many times take the "urban life" closer to the rural isolated areas, and thus be an incentive for young peasants to emigrate to the city, rather than to generate better life conditions in their own environment. Many interviewees considered that these projects open up opportunities, but also *"they provide tools to emigrate from the rural poor areas"*.

²⁷ More information at: www.ute.com.uy

On the other hand, small countries like Uruguay are greatly permeable to cultural influences from bigger neighbours with stronger and powerful TV channels and radio stations. Most of the interviewees agree on the necessity of public policies that facilitate access to national TV channels; the absence of border regions can severely put into question the national cultural identity in these communities. The incorporation of ICT instruments in the small rural communities allows access to new information and knowledge. This access can start up cultural changes and social interaction transformations inside the rural communities, for example regarding issues like women empowerments or youth participation in the community. These transformations processes could have outcomes not yet well understood. Without doubt, further research is necessary regarding this issue.

4.4 Mobile phones penetration

The significant growth of mobile penetration in the whole country in general, more than 100% increase in only two years, and an even greater expansion in the rural areas, has focused attention on this particular communication instrument. Previously, most of the projects were centred on tele-centres or different strategies to foster Internet access and productive use in poor rural communities. More recently, there has been an increasing interest on this explosive growth and its potentialities. A relevant aspect of this growth is that it is mainly market driven, compared to those Internet initiatives that were subsidised by social policies or donors funds. This issue (market vs. social policy delivery) is a huge social and academic controversy that requires much more research to be done. Finally, mobile and other wireless technologies are opening new cheaper opportunities of Internet access, as WiMax, that can make it more available, and affordable, for low income communities.

4.5 The technological paradigm

Many of the projects analysed face what some experts call "*the problem of the technological paradigm*". This means that some initiatives prioritise the infrastructure and the degree of development of specific equipment, rather than the specific role it will play in project objectives or the content it will transmit. In this regard, most of the times, policy makers are victims of "the gadget beauty" regardless its actual utility. In addition, some projects face problems to develop a specific technology or "tailored solutions" and, at the same time, promote the digital inclusion of a certain community. Many stakeholders consulted suggest that projects should have one or two main goals at a time, otherwise the probability of failure increases enormously. Also in this area, much more research is needed to explain the relationship between specific needs and suitable ICT instruments.

4.6 Coordination of different projects

One of the significant problems that many of the projects of ICT promotion face in the country is the absence of minimum coordination of the initiatives and projects. The importance of the definition of a national ICTs promotion strategy is widely accepted among the main actors interviewed. A strategy implies the definition of a package of policies that pursue a common goal and that are implemented with a variety of specific instruments at different levels and maintained for a certain period of time. If not, rather than a strategy, those are isolated initiatives that will probably encounter severe

sustainability problems due to irrational use of resources and lack of coordinated work among the different actors involved.

4.7 ICTs promotion in rural areas as an instrument of e-government

The promotion of ICTs in isolated rural areas is a key instrument for any e-government implementation strategy. Improving the level of access and productive use of ICT instruments among could constitute a significant contribution in terms of a more democratic access to public services. This is particularly important in rural livelihoods. Central and local governments possess limited resources to deploy infrastructure and human resources in rural isolated areas. In this regard, promoting e-government by making some public services and information available via Internet and the same time promoting ICT infrastructure can be an efficient way to improve public services delivery. Without doubt, this strategy could constitute a significant contribution to a more inclusive citizenship and a more democratic access to services.

4.8 Women and youth involvement on ICT promotion projects

According to the literature review, the opinion of the key stake holders interviewed and the lessons learned in the case study project, women and young people are consistently more involved in ICT projects in rural areas. That relevant role not only has to do to their role as beneficiaries, but also as promoters and key implementation stakeholders. Considering this particular characteristic, ICT projects could constitute a privileged environment were other policies related to foster gender equality or promote women empowerment can be implemented. In addition, youth policies to promote job creation and cultural inclusion can also have ICT instruments as core goals.

Chapter 5

Concluding Remarks

5.1. Main Conclusions

- In rural areas, the **radio** is still a very powerful communication instrument, particularly among poor communities, with a coverage that reaches almost 100% households. That has to do with a long- lasting radio hearing tradition deeply rooted inside the Uruguayan culture, the prestige of that broadcasting system as a source of information and communication of news of local interest and the low cost of equipments and batteries with no need of electricity. As was strongly referred in the workshop, any projects that use the radio as a main communication instrument it can take advantage of the exiting infrastructure that covers the rural areas. In addition, no further training is needed for the people in poor rural livelihoods participating of the projects.
- Air **TV** channels do not have that level of penetration but a lower coverage and higher equipment costs. Cable and satellite TV are still too expensive so their penetration rates are extremely low. In addition, there are two aspects that should be noted. First, except for the state owned channel, (Channel 5 of national coverage) most of the existing air channels are in the hands, or transmit the content of, the same three private channels of the capital city. This constitutes an **oligopoly** of three traditional broadcasting companies. Second, in rural areas close to the border, Argentinean and Brazilian channels have a strong penetration and **cultural influence**. That situation is far from being ideal in terms of the diversity of perspectives, interests, cultural background necessary in mass media communication to truly use the basic right to choose the communication system and the information source.
- In terms of the new **ICTs infrastructure and services** the presence of an SOE Telecommunication company like ANTEL constitutes a singular case in the highly privatized Latin-American market. With the biggest telecommunication player under control, public authorities still have a powerful tool, which means having the technical capacity to design and implement, as well as the funds to maintain pro-poor or social ICTs promotion strategies in non profitable markets. That strategic role of ANTEL was recognised by all the participants to the workshop, even by the private telecommunication companies representatives.
- There is a clear majority of stakeholders that regard the **mobile phone expansion** among rural areas as the most significant transformation connected with ICT incorporation in rural areas. That is also supported by the empirical evidence presented about the explosive growth of mobile penetration, particularly during the last two years. This expansion is reducing the cost of other wireless communication systems, as Internet access, that will constitute a relevant transformation of the connectivity opportunities available for the low- income rural population.
- There is a shared perspective among the stakeholders consulted that, in order to help people to remain in rural areas, the State should implement public policies and promote private investments that improve living conditions. Nowadays, these

conditions imply traditional **subsidies to social service provision** like watering, electricity, education, but also should include **access to ICTs**.

- There are not many **ICT products and services specifically conceived for rural areas**, and when they exist, if they are not strongly subsidized (like connectivity for rural schools) they are too expensive for the average rural population. Thus, they only cover big agro-industrial companies or extensive ranches. However, there are some **private or public-private initiatives** to be highlighted. First, cattle sales system using ICTs and the identification and tracing system. Even though these initiatives are not conceived to assist or enhance rural poor, the indirect consequences of economic development and job generation in the rural areas are evident. As the relative inequality in Uruguay is not that high, empirical evidence demonstrates that every point of economic growth has a relevant impact on poverty reduction. On top, if there was a **progressive tax structure** that promotes more equal income distribution, and the application of already existing social protection policies could be assured, there would be substantial improvement in the living conditions of the rural poor.
- Projects of ICTs promotion in rural areas **run the risk of their own success**. If they are effective, they will be taking basic communication facilities, common in urban life, to the rural isolated areas. However, that same exposition which provides better prospects for poor communities can also generate a **cultural change**, eventually constituting an incentive or opportunity, particularly for young people, to emigrate to the city. Regarding this, this type of projects, should not only consider the implementation challenges that they may face, but also the possible unexpected impacts of their own success.
- One of the main problems identified is the **lack of coherent public policies** for ICT promotion in rural areas. In fact, as was stressed in the workshop, there is no clear national policy for digital inclusion. Stakeholders claim for a better coordination of initiatives and projects among SOEs, Ministries, national and local government, academic institutions and CSOs. As well, actors directly related to ICT issues, mainly the private companies but also the public ones, generally have quite faster **implementation capacity** than the average bureaucratic state. When a wide spectrum of stakeholders implement integral projects together there are several coordination problems (project cycle, speed, timing, workflow, etc.) that severely weaken the impact in the poor rural livelihoods.
- **Political conflicts** among central and local government as well as the **electoral periods** during implementation process can constitute important threats to the success of the projects. When local leaders, political parties or national authorities try to use the projects as an electoral platform or as a publicity instrument, rather than a truly social, cultural or economic development project, the results are generally not the ideal ones. The case study analysed provided some examples in this regard.
- The CSOs that work on ICTs promotion for the rural poor are still few and relatively small in the quantity of beneficiaries involved in the projects. Projects centred on, or appropriated by, young people or women seem to have much more probability of success and sustainability, and they are generally more bottom-up type. The **sustainability prospects** of an experience will strongly depend on the degree of appropriation of the community where it is established.

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