

FROM INFRASTRUCTURE TO SOCIAL APPROPRIATION OF PUBLIC ACCESS COMPUTING: AN ASSESSMENT OF ICT POLICY IN COLOMBIA

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From Infrastructure to Social Appropriation of Public Access Computing: An Assessment of ICT Policy in Colombia

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ABSTRACT

This paper presents an overview of the national policies related to public access to information and communication technologies (ICT) in Colombia. Public access to ICT, through venues such as libraries, telecenters and cybercafés, can be a powerful driver to bridge the digital divide and to contribute to social and political equality and change. While the country was one of the region's pioneers in regard to ICT policy, and has exhibited an unusual degree of public consultation, citizens' participation, and emphasis on social issues beyond basic infrastructure and connectivity, many challenges remain to ensure equitable access and effective social appropriation of ICT to contribute to human development in the country. The government's interest in public access to ICT, as exhibited by the Compartel and other telecenter initiatives, is unique in the Americas, and it complements the telecenter initiatives sponsored by non-profit and other social organizations; furthermore, public libraries are playing an increasingly strong role in offering public access to ICT, bolstered by the recently passed Libraries Act of 2010. By bringing together the trajectory and contributions of government policies and social organizations in the country, this paper presents a comprehensive and systematic analysis of the public policy environment in Colombia, and how it is enabling (or hindering) the use of ICT for human development and social change.

Keywords

ICT, Colombia, Public Access, Libraries, Telecenters, Cybercafés

INTRODUCTION

As it has developed, public policy regarding the use of Information and Communication Technology (ICT) in Colombia has tended to address the information, communication and education needs of vulnerable and marginalized sectors of the country. In a similar way, this policy development demonstrates that the government in Colombia has made serious efforts to achieve greater regional and territorial coverage with ICT, optimizing the economic and technological resources not only of state institutions but also of social organizations and the private sector. This paper describes the recent history of ICT policy in Colombia, and analyzes its contribution towards building a viable environment for equitable access and social appropriation of ICT from a social and human development perspective. The notion of social appropriation of ICT is derived from the Spanish language phrase "apropiación social," frequently used in Latin America to describe people's capacity not just to access but to effectively use ICT tools and resources to solve their information and communication needs and to improve their quality of life.

The Colombian case is of interest to other Latin American countries, as it has at least two unique elements: First, since the introduction of the Internet to the country, civil society organizations (universities, NGOs, CBOs) have participated actively in the development and adaptation of ICT, in discussions and the design and implementation of public policies that have guided State plans and programs. Secondly, the Colombian case highlights the significant role played by the connection between ICT, education and knowledge. This includes the important role of libraries and cultural institutions in developing local and national networks that have not only strengthened the experiences of public access ICT, but have also provided opportunities for the exchange and coordination of projects among government entities, private sector, and civil society organizations.

Another important feature of ICT policy in Colombia is that, as in many other countries, it has given little attention to cybercafés, also called Internet cafes, as important players in the ecosystem of organizations that offer public access to computers and the Internet (Gomez 2012). Cybercafés not only represent by far the largest proportion of public access centers in the country, but are preferred by users over other types of access centers for information, communication and education. The policies have paid little attention to the contributions that cybercafés have made

as spaces for socialization and networking, or the contributions they make to processes of individual and collective development at the local level. With the exception of Peru, which has “cabinas públicas,” which are hybrids between telecenters and cybercafés, other Latin American countries show the same disconnect between public policy on ICT, which focuses on libraries and telecenters; and the experiences of the public at the many cybercafés that have proliferated in towns and cities.

This paper is organized as follows: it first presents an overview of the trajectory of public policy regarding ICT in Colombia, followed by a closer look at public policy issues that bear on public access to ICT (in cybercafés, telecenters and libraries). We analyze this trajectory’s development over the last decade, and we close with the presentation of a series of challenges facing policy for the years to come. These challenges are related to the economic and technological sustainability of public policies; to coverage and access in rural and semirural areas; to the regional and cultural diversity of the country; and to the need to think creatively and judiciously about indicators for monitoring access to and impact of ICT.

DEVELOPMENT OF ICT POLICIES IN COLOMBIA

The first efforts to connect to the Internet in Colombia occurred in the mid-1980s, when Universidad de los Andes made local connections and performed the first tests to connect to the Internet backbone in the U.S., in the interest of sharing knowledge. Tamayo et al. (2007) identify three key moments in the history of the Internet in the country.

The first phase occurred between 1986 and 1993. It was characterized by the country’s universities as the sole actors in the development of ICT and the organization of the Internet field, favoring strategies for knowledge management.

The second phase, which lasted from 1994 to 2000, was characterized by the State's entry into the development of ICT, maintaining the approach proposed by the universities. The State took the lead in developing ICT provisions, not only offering infrastructure, resources and equipment, but also establishing a symbolic framework of the arrival and spread of Internet from a development-as-modernization approach, according to Tamayo et.al. (2007).

The third stage began in 2001 and extends through the publishing of the work of Tamayo, Delgado and Penagos in 2007. During this period, both the State and private entities merged cultural and educational approaches to ICT with the economic forces that began to prevail in the organization of ICT in the country.

We suggest a fourth stage, starting about the time the abovementioned study was published (2007). This fourth stage would be characterized by a more collaborative approach in discussion and policy formulation between state institutions (primarily the Ministries of Communications, Culture and Education), private organizations (service providers) and social organizations (non-profit organizations, universities and grassroots groups).

From the governmental perspective, public policies have been developed according to the State's ability to provide solutions that suit the political and technological environment. Thus, public policy documents organized by the National Economic and Social Policy Council, or CONPES,¹ show two phases in ICT policy developments in the last decade. The first occurred between 2000 and 2006, and its priority was to expand community access to basic voice services (phone) and Internet access to public schools. The second, between 2006 and 2010, sought to strengthen the provision of broadband access and the processes of appropriation of ICT in education, with emphasis on public institutions. In this phase the Government sought to involve businesses (especially micro-, small and medium enterprises and regions) in ICT policy as a way of encouraging the use of ICT (CONPES 28 de junio de 2010).

The following table presents a summary of the path followed by the policies and programs related to ICT development in the country between 1994 and 2010:

Plans and Programs for ICT Policy	Objectives
1994 - National Policy on Science and Technology 1994-1998 (CONPES 2739)	Develop the country's ability to use information and computers in education and science; provide access to information through national and international networks; promote the development of standards that facilitate integration in computer science.
1998 - National Development Plan	Promote the development of telecommunications to achieve peace, to ensure

¹ Spanish acronym for “Consejo Nacional de Política Económica y Social,” the highest national planning authority and advisor to the Government in all matters related to the country’s economic and social development.

1998-2002: "Change for Building Peace"	that the private sector contributes to increased productivity and competitiveness in the country, and to strengthen the decentralization process that has been proposed in the new development model. The Plan placed special emphasis on the development of the Colombian Information Infrastructure.
1999 - Compartel Program	Provide community telephones in locations without basic telephone service.
1999 - Computers for Schools Program (CONPES 3063)	Promote and provide access to ICT by collecting and conditioning computers decommissioned by state and private enterprise and installing these computers at public educational institutions.
2000 - Connectivity Agenda: The shift to online (CONPES 3072)	Expand the use of ICT and thereby increase the competitiveness of the productive sector, modernize public institutions and government, and socialize access to information.
2000 - Decree 2324, related to Computers for Schools Program	Encourage the Ministry of Education to coordinate with the Ministries of Education Departmental Municipal District, and provide a plan of distribution, effective use and appropriate technology to the beneficiary institutions.
2000 - Compartel Program: Social Internet (One of 30 programs established by the Connectivity Agenda)	Provide community-based solutions for Internet service in the municipalities of the country that lack this service.
2002 - Policy Guidelines social Telecommunications 2002-2003 (CONPES 3171)	Provide new guidelines to further reduce the access gap and promote universalization of telecommunications services.
2006 - National Development Plan 2006-2010, "Community State: Development for All"	Promote digital inclusion through further implementation of universal access and service, as well as incorporating ICT as a tool for development across different sectors of the State.
2007 - Visión Plan Colombia II Centenario: 2019	The guidelines aimed at developing ICT are integrated into a plan for "building adequate infrastructure for development" and "moving towards an informed society."
2007 - Policy Guidelines to reshape the telecommunications social program Compartel (CONPES 3457)	Redesign the Compartel program as a strategic response to market demands in order to achieve i) greater flexibility and adaptability to market conditions, ii) improve quality of ICT services, iii) greater coordination with government initiatives, iv) increase use and ownership of infrastructure, v) continuity of social programs and vi) regional competitiveness.
2008 - National ICT Plan: Online with the Future 2008-2019	Ensure that by 2019 all Colombians are connected to the Internet and informed about its benefits, making efficient and productive use of ICT for greater social inclusion and competitiveness.
2009 - Law 1341	Transform the Ministry of Communications into the Ministry of Information Technologies and Communications. Promote use of ICT through access to ICT, the promotion of free competition, efficient use of infrastructure, and especially through strengthening the protection of the rights of users.
2009 - Law 1286	Transform the National Science Technology System into the National System of Science, Technology and Innovation, or SNCTI.
2010 - Policy Guidelines for the further implementation of universal service and access to technologies of communication and information (CONPES 3670)	Define the policy guidelines for the continuation of initiatives that promote access to ICT, its use and exploitation, in coordination with the programs of the Ministry of Information Technologies and Communications and other levels of government.
2010 - Law 1379 on National Libraries	Ensure that The Network of Public Libraries provides Internet access and digital literacy as a basic service.

Table 1: Overview of Public Policies in Colombia that have Regulated the Field of ICT Between 1994 and 2010.
Source: Compiled from Document Review.

Public Access to ICT in Public Policy

With the creation of the Computers for Schools and Compartel programs in 1999, as well as the design of the Connectivity Agenda and the creation of other programs, there was a huge boost to ICT development in Colombia.

These programs share a strong focus on access in public spaces, at first through telecenters and educational institutions, and later through libraries, city halls and courthouses.

Compartel initially aimed to provide access to community telephones in locations that did not have basic phone service--mostly rural areas--facilitating educational, cultural and health development within the State and local communities. A year later, they launched the program Compartel: Social Internet, which implemented the creation of community Internet access centers. These community access centers (CACI), or telecenters, were located in municipal capitals and poor neighborhoods in larger cities. Over time, the program has taken on other programs of action: telecenters and other social Internet initiatives, broadband connectivity for public institutions, expansion and replacement of outdated networks, and expansion of broadband networks—with emphasis on small and medium businesses.

In 2000, CONPES 3072, "Connectivity Agenda: The leap to the Internet," was published in order to encourage the expansion of the use of ICT in Colombia and thereby increase the competitiveness of the productive sector, modernize public institutions and government, and socialize access to information (Consejo Nacional de Política Económica y Social — CONPES 9 de febrero de 2000). The report argues that ICT offers a great opportunity for developing countries to progress economically, culturally, politically and socially, and that the national government should integrate ICT into the country's development plans, under the assumption that widespread use of ICT will create an attractive economic environment and increase participation in the new "E-economy".

To achieve its objectives, the Connectivity Agenda focuses on three priority groups: local communities, businesses, and the State, through six strategies: 1) Access to information infrastructure, 2) use of IT in education and training processes in the use of IT, 3) use of IT in business, 4) promotion of the national IT industry, 5) generation of content, and 6) the e-government program Government Online.

According to CONPES 3072, the proposed Connectivity Agenda promotes the use of information technology to improve the quality of life in communities by providing equitable access to educational opportunities, labor, justice, culture and recreation, among other resources. Through the Connectivity Agenda, the Government sought to disseminate information and knowledge regarding ICT to empower communities in the use of these technologies and promote their use as educational tools. Furthermore, the Connectivity Agenda proposed providing access to information technologies to the majority of the Colombian people at more affordable costs.

In 2000, Decree 2324 suggested that the Computers for Schools program should be part of the National Connectivity Agenda, under the supervision of the Ministry of Education, the National Learning Service (SENA, a technical-level national college), and the Communications Fund. This decree states that computers will be installed not only in public educational institutions, but also in libraries, cultural centers and public telecenters that are part of the Social Internet program. It also states that SENA will provide technical instruction on reconditioning equipment for use by beneficiary institutions, in addition to training those responsible for the use of equipment.

However, these efforts at connectivity proved insufficient when compared to what was already going on in the country in relation to connectivity and ICT training efforts beyond the sphere of government initiatives. This is reflected in the criticism from recognized institutions such as Colnodo, a key player in the development of ICT in Colombia and coordinator of the National Network of Telecenters. Along these same lines, Rueda et.al. (2006) suggested that until that time State action had focused on improving the coverage rates of education and ICT penetration through the development of infrastructure and equipment, giving too much emphasis to technical discourse and making it harder to advance participatory development.

A marked increase in the number of telecenters in Colombia occurred in the middle of the first decade of this century. These telecenters were mostly sponsored by social organizations, private institutions and educational organizations. Their work was focused on supporting projects for community involvement centered around telecenters, encouraging better use of these spaces, and strengthening the technical and administrative capacities of their operators.

After 2000, The proliferation of initiatives for public access to computers and the Internet created the need for greater emphasis within state policies on the local dynamics of access to ICT, as confirmed by CONPES 3457 (Consejo Nacional de Política Económica y Social — CONPES 29 de enero de 2007) which redefined the Compartel program and gave greater prominence to the promotion of the use and appropriation of ICT to underserved populations. The assessment also showed that despite the progress of the policies implemented, Colombia was still at levels below the Latin American average in access to services such as Internet broadband, public access and use of ICT. Additionally, it stated that there is a gap between physical access and actual, effective

use of these technologies in the country. Additionally, CONPES 3457 mentioned the importance of adapting to market conditions, improving the quality of services, coordinating with government initiatives, getting more out of existing infrastructure, promoting regional competitiveness, and leading processes of appropriation of ICT by the productive sector and society in general.

In particular, CONPES 3457 outlined the findings of an evaluation of the Compartel Program in 2006, which showed a positive impact on the income of individuals who regularly attended community telecenters.² However, it also noted the need to promote greater use of telecenters and greater coordination of existing telecenter infrastructure with regions where other projects developed by the National Government (such as the SENA, the National Federation of Coffee Growers, or the Ministry of Agriculture) have no ICT infrastructure. The study also recommended upgrading technological infrastructure and maintenance activities, and improving the quality of services provided in telecenters.

A National ICT Plan

Important changes took place in public ICT policies between 2007 and 2008, as shown by key documents such as the National Development Plan 2006-2010, "Community State: Development for All" (República de Colombia 2007); the document *Visión Colombia II Centenario: 2019* (Presidencia Republica de Colombia 2007); and the National Plan for Information Technology and Communications: ICT Plan 2008-2019 (Ministerio de Comunicaciones 2008). These are the basis for the guidelines of current policies in the field of ICT.

The National ICT Plan, in particular, picked up and articulated the experiences and progress in the country's policies up to that moment. Among other key issues, the ICT Plan states that "... a good supply of infrastructure and access is not enough, if this is not reflected in substantial improvements in quality of life, improving equity, closing gaps, fostering widespread use. The plan highlights the importance of intensifying the processes of education, training, research, design and dissemination of useful content available to individuals" (Ministerio de Comunicaciones 2008).

As indicated by Paz (2006) and Corporación Colombia Digital (2005), before 2006 there was no policy uniting the various national and local initiatives carried out in the country to address the issue of ICT. Until then, the most recognized public policies were the Connectivity Agenda, the Compartel Program and the Computers for Schools Program. In 2008 the then-Ministry of Communications launched the National Plan for Information and Communication Technologies: ICT Plan 2008-2019, through which to channel all ICT-related initiatives into a single policy that provides guidance to industry, government and civil society for working toward common objectives (Ministerio de Comunicaciones 2008).

The National ICT Plan was developed through a participatory process supported by an interdisciplinary group of Colombian experts. The process included input from groups and stakeholders on the issue in government, large and small businesses, the financial sector, healthcare, software and Internet, press, TV, radio, telecommunications, and education, through meetings in the major cities of Bogota, Medellin, Cali, Barranquilla and Bucaramanga. In addition, meetings were held with various agencies in the public and private sectors to ensure coordination and alignment with the national development plan *Vision Colombia II Centenario: 2019*, the National Development Plan 2006-2010, the National Competitiveness Policy, the Science and Technology Plan, and the Program for Strategic Use of Media and ICT in Education (Rodríguez 2008).

The process also made use of an online discussion forum between July and November 2007, and an open consultation that posted the draft ICT Plan online for two weeks. According to data in the final Plan, the online site received more than thirteen thousand visitors and was downloaded by more than fifteen hundred people. However, while the process involved the participation of universities, research groups and different social actors, the process was criticized for lack of regional inclusion, limited participation by grassroots organizations, and a strong business and commercial focus (Castrillón 2009).

The National ICT Plan 2008-2019 reaffirmed the guidelines of the World Summit on Information Society; these include the development of health programs, education and culture using ICT within the guidelines of Colombian social telecommunications policy. The document also emphasizes three key areas: improving access to infrastructure, helping the widespread use of ICT in small and medium enterprises, and strengthening the process of government services online. It uses an action matrix composed of eight axes. First, four themes frame the actions of

² For more details, see the consultancy conducted by the Center for Economic Development at the Universidad de Los Andes. Report cards and phone calls to 920 telecenters. First version. January 15, 2007. pp. 65, 101, 103.

use and appropriation of ICT in specific sectors considered critical: Education; Health; Justice; and Business Competitiveness. Second, four sectors that are touched by all themes: Community; Government Online; Regulatory Framework; and Research, Development and Innovation, as discussed in the following table:

	PROGRAMS
Education	National use of media and new technologies Computers for Education Academic Network of Advanced Technology (RENATA) SENA programs
Health	Telemedicine Program Information System Protection (SISPRO)
Justice	Plan for technological modernization of judicial administration
Business competitiveness	My digital SMEs E-Commerce IT Security
Community	Compartel Program National ICT Culture IT Security
Government Online	Government Online Government Intranet
Regulatory Framework	Policy and regulatory framework
Research and development	Research and Training Center for High Level ICT Bioinformatics Center Excellence Center for Research in Electronics, Telecommunications and Informatics (ETI) ICT Observatory

Table 2. Programs of the National ICT Plan
(Compiled from information retrieved from www.plantic.gov.co)

To ensure the application of the ICT Plan, regional commissions established the competitiveness of the departments and municipalities in coordination with ICT plans at the regional level to handle relations with allies, and execute and track resources, plans and program implementation. In addition, the ICT Plan enlisted the participation of the private sector, which would work independently or partner with public entities to ensure the sustainability of the project. The action plans also involved local authorities, academia, the private sector and international cooperation.

The community component of the Plan continues to promote universal access to ICT through community access programs such as Compartel, combined with mechanisms to encourage the expansion of the reach of private operators as well as wireless access. However, the it also acknowledges that the Compartel Program was at the time in the process of redefining its goals, objectives and modes of operation.

The outstanding issues of the Compartel Program's reorientation are: 1) Adjustments to the regionalization of its projects; 2) Communicating to the Colombian society that the Compartel Program supports access and appropriation of ICT in remote areas and for the lower strata; 3) Emphasizing the connectivity of SMEs; and 4) Redefining alliances and agreements with private entities to ensure the sustainability of Compartel-sponsored telecenters once the State withdraws its contributions.

In concluding this overview of the National ICT Plan, it is important to mention CONPES 3670, adopted on June 28, 2010 to ensure the continuity of universal service programs and access to ICT (CONPES 28 de junio de 2010). According to information provided by this document, between 2005 and 2009 the ICT Fund (formerly the Communications Fund) held a fund of \$ 0.9 billion, committed to various social programs such as telecommunications (universal access to ICT), governance, public radio and network television, and e-social and other institutional programs. Investments in social programs in telecommunications represented over 70% of the

fund; this group included The Compartel programs and Computers for Education. The Compartel Program, as well as other government telecenter programs, are aimed at the provision of Internet access to educational and health institutions, to judicial offices, and to libraries.

According to CONPES 3670, the Compartel program has served approximately 22,540 Compartel Educational sites, of which 1,669 are part of the strategy of opening educational institutions to offer services to the public (a crossover between computers for schools and public access telecenters). Compartel has also served 415 libraries belonging to the National Network of Public Libraries, and 78 Culture Houses. Likewise, the Computers for Schools Program has served 292 libraries, installing a total of 4,450 computers, and 124 Culture Houses with 2,363 computers. These crossovers make it difficult to track the reach of public access computing initiatives: some originate in schools that are supposed to be open to the public, and some originate in public access initiatives that serve school populations.

The policy identifies two problem areas for continued development and strengthening public access to ICT. On one hand, there are limited sources to support the continuity of services and contracts once the current funding cycle ends, and on the other hand, there are other risks associated with technological change and management of obsolete computers, and the need for improved service quality. Therefore, the policy document suggests the following strategies: 1) Coordination with local governments to incorporate connectivity as a recurring expense in the budgets of local authorities; 2) Liaising with international and/or private sector organizations in order to secure resources for adaptation and improvement of physical and technological infrastructure, expansion of coverage, and sustainability of service in public libraries and culture houses; and 3) Prioritization of resources needed by the Ministry of Information Technologies and Communications and/or the Ministry of Culture for their respective Midterm Expenditure Budgets.

The above strategies include a sustainability analysis for 1,669 educational sites, which are today part of the strategy of opening up facilities in educational institutions as public access telecenters. The source of additional resources needed to continue operating after November 2010, when committed resources ended, was unclear. In addition, the Ministry of ICT plans to promote the opening of Interactive Access Centers to ICT in rural and suburban areas, or areas with high levels of unsatisfied basic needs. These educational initiatives are intended to maximize and leverage the benefits of these technologies for the communities they serve. Within this framework, the Ministry would provide resources for the installation and formulation of sustainability mechanisms for at least 500 centers in the next four years.

Finally, the Libraries Law (Law 1379 of 2010) requires that all public libraries provide Internet access and digital literacy as a basic service (Congreso de la República de Colombia 2010) and that by the year 2015, 100% of them have Internet connectivity. The Libraries Law states that the Ministry of ICT and the Ministry of Culture should define a strategy to explore alternatives for connectivity and technology deployment, taking into account the evaluation of the current and future markets in the regions, as well as technical, economic, and quality of service considerations, in order to determine the respective responsibilities for each of the ministries involved. At the time of writing, it was too early to know how this initiative was progressing.

PUBLIC POLICIES ON ICT AND SOCIAL ORGANIZATIONS

Colombian social organizations have an interest in ICT to meet their needs for information, communication and knowledge sharing, and for the establishment of relationships with other national and international networks. This interest has in turn led to stronger local, national and international relationships between social organizations and government agencies, as well as to increased participation by social organizations in the discussion, design and implementation of public policies at all levels.

We would like to emphasize the importance and prominence of several Colombian universities in the early stages of the development of ICT in Colombia. We also appreciate the important role that NGOs and other grassroots organizations played in public outreach and connectivity for ICT, as service providers for Internet access and as sponsors of telecenters. In the last five years, more fluid relationships and networks of cooperation have formed between government institutions, civil society organizations, academic institutions, and private sector companies (either directly or through their corporate social responsibility programs or private foundations). The participation of and relationships between these diverse sectors have determined, and will continue to determine, the shape of public policies and programs for ICT and its development in Colombia.

One of the strategies implemented by the State to encourage social appropriation of ICT is to promote training for advanced research and innovation focusing on social issues, not just on technological ones. This allows for a complex reading of the social landscape of ICT in the country, as opposed to a technocratic vision of the sector.

Limited appropriation of ICT is also being addressed through programs that include technological literacy processes and community outreach, bringing these processes into alignment with the particular needs of each community. The development of private and community initiatives (by institutions such as Colnodo, Colombia Digital, and Makaia) is highly relevant, as these organizations seek to establish a more comprehensive approach to ICT than merely offering access to technology. The advocacy of these organizations also seeks public policy guidelines that enable a more participatory approach to the decision-making process, taking into account voices from different sectors.

Consultation with Telecenter Network and other Social Organizations

One of the most important contributors to the processes related to production and implementation of public policies concerning ICT in Colombia is the National Network of Telecenters. This is an initiative made up of telecenters, academic institutions, NGOs, and government organizations working in the field of ICT. Its aim is to support management processes, participation, and overall improvement of living conditions for people and communities. This is accomplished through projects, meetings, communication, dialogue and an exchange of knowledge designed to strengthen participants' technical and skills and support the work and sustainability of telecenters.

In particular, the Network works for the definition and implementation of plans and policies to strengthen telecenters and the social actors involved with ICT in Colombia. The Network has not only developed an inventory of public access ICT initiatives in Colombia, with information about the basic features of each one, but has also managed a series of meetings offering national and regional opportunities for debate and knowledge sharing at local, national and international levels. The Telecenter Network meetings have established pluralistic open spaces for discussion of the status of public access sites and the development of joint actions. Between 2001 and 2008 there were five national meetings; in 2009 there were four regional meetings; and 2010 saw the first "National ICT Development and Digital Culture " meeting, in which participants shared experiences from public and private sector initiatives, from national and international activities related to the development of telecenters, and from other types of venues providing public access to ICT³.

Another example of partnerships between private, public and educational organizations that has had significant impacts on public policy was the planned exchange of experiences and knowledge between various telecenters started in 2006. This program is known as "Knowledge Management and Sharing of Experiences among Community Telecenters and Compartel Telecenters in Colombia." (Casasbuenas 2007). The initiative brought together Colnodo, Universidad Autonoma de Occidente (UAO), the Telecentre.org Foundation, and the Compartel Program as some of its participants.

Among the notable results of this project was the design of a methodology of social appropriation of telecenters, which served as an example to others when installing and organizing "new telecenters," or centers created under the Compartel program (under CONPES 3457 directives, described earlier). These "new telecenters" were set up in schools and other educational institutions, providing services to the public after school hours, and offering training, information resources, and knowledge sharing opportunities (APC et al. 2009).

In 2007 civil society organizations convened the first consultation for ICT policy in Colombia, as part of an international initiative promoted by the Association for Progressive Communications (APC). The consultation was organized by Colnodo and APC, in association with the Universidad Externado de Colombia, the Observatory of Government Information & Technology Company (Observatics), the Electronic Governance Network, and Corporación Colombia Digital. It was aimed at promoting opportunities for dialogue on ICT policies among various social sectors, and developing proposals intended for the national government (Colnodo et al. 2007). The consultation was set up to extend the discussion about ICT Policy, to promote stronger citizens' participation and inclusion in the process, to promote a better understanding of the proposed policies, to offer inputs to the formulation of the National ICT Plan then in discussion in the government, and to contribute ideas to the process of restructuring the Ministry of Communications.

Additional examples of public and private sector collaboration are: 1) The creation of the National Academy of Telecenters, which is the result of a concerted effort by Colnodo and the Ministry of ICT, technical and financial support from the international initiative telecentre.org, and assistance from the Esplai Foundation of Spain; and 2) A

³ More information about these meetings is at <http://www.mintic.gov.co/mincom/faces/index.jsp?id=14817>.

pilot program developed by Fundación Telefónica of Spain and Corporación Colombia Digital⁴, which worked with teachers from public and private institutions in urban and rural regions of Colombia to create a framework for facilitating ICT appropriation in educational settings.

Furthermore, the debate about the importance of the social appropriation of ICT (and of going beyond mere connectivity) has been strengthened by the analyses of NGOs such as Makaia. They argue that the digital divide is an expression of the social divide, and that social inequalities affect people's capacities to own, access and use ICT. Effective social appropriation of ICT requires that ICT programs address social inequalities and addressing cultural and contextual elements (Botero et al. 2009; Gomez et al. 2011a).

Libraries as Key Players in Public Access to ICT

Colombia has been engaged in different events with various entities to develop an information and knowledge society that is inclusive and participatory, and to work for a country with better access to information and communication for its people. Its government has emphasized that improving these conditions contributes to equity and strengthens the country's competitiveness. Although these policy directions are not binding, i.e., are not mandatory, they have been very useful because on the one hand they have served as tools to support citizens' rights and duties, and on the other hand, have served as points of reference for government institutions as they maintain a certain balance between public responsibilities and the provision of services to the private sector.

International and regional discussions have provided a very useful framework for the development of policies and initiatives to promote public access to ICT in the country. These frameworks emphasize universal access, relationships between the social and digital divides in knowledge society, and rights to information and communication. Among the major international guidelines in the ICT sector are the Millennium Development Goals (MDGs) and the World Summit on Information Society (WSIS) held in Geneva and Tunis, 2003-2005. MDGs and the WSIS international declarations have been adopted by the national government,⁵ and they have helped to consolidate guidelines and ICT development plans at national, regional and local levels.

Libraries and their international networks have also issued manifestos and statements highlighting the need to adopt and adapt ICT to their work, such as the 2002 Internet Manifesto of the International Federation of Library Associations (IFLA), which proclaims freedom of access to information via the Internet in libraries; and the IFLA/UNESCO Guidelines on the Internet (2006), which provide recommendations for developing policies and priorities of action applicable to Internet services under the needs of various types of communities.

The guidelines and statements by international networks of libraries, as well as the work of the national network of libraries with the support of government officials and academics, led to the approval of the landmark National Libraries Law 1379 of 2010 (Congreso de la República de Colombia 2010). The National Libraries Law establishes the fundamental rights of expression and access to information; it not only aims to ensure access to the Internet as a basic public service, but it mandates public libraries to address the challenge of improving digital literacy and offering locally relevant information services.

Most libraries and library networks that are working under the policies and strategic actions to offer public access computing services in the country aim to provide not only access, use and management of information, but also education and knowledge management programs. Libraries are seen as a bridge between local and global knowledge: "the role of the public library is focused on the local-global-local dimension, while the role of ICT focuses on the global-local-global dimension; the public library is a bridge between users and ICT" (Congreso de la República de Colombia 2010). This establishes the role of the library in relation to defending and promoting local culture and expression, while recognizing the importance of globalization expressions and knowledge as well. For example for BiblioRed, the library network of the nation's capital Bogota (www.bibliored.edu.co), ICT is a

⁴ Corporación Colombia Digital is a non-profit organization sponsored by both public and private sectors, with the purpose of promoting the use and appropriation of ICT in the social and economic life of the country (www.colombiadigital.net).

⁵ For example, they are explicitly addressed in Plan Nacional de Desarrollo 2006-2010 "Estado comunitario: Desarrollo para todos;" Visión Colombia II Centenario: 2019; and Plan TIC 2008-2019, as well as in several CONPES planning documents such as CONPES 3171 of 2002, CONPES 3457 of 2007, 1 CONPES 3670 of 2010, and CONPES Social 91, "Metas y estrategias de Colombia para el logro de los Objetivos de Desarrollo del Milenio - 2015" of 2005.

mechanism through which public libraries can distribute and generate cultural capital. The library network of Medellin and its metropolitan area, on the other hand, has the portal (www.reddebibliotecas.org.co), which is part of Medellin Digital, a municipal program that works to expand the use of ICT and offer access to educational resources and connections to training, in order to improve the quality of education in the region. The community library network in Cali (<http://www.cali.gov.co/redbibliotecas>) aims to facilitate access to information in all its forms, with emphasis on access to ICT, as part of its qualification process to improve library and cultural services.

An important indication of the serious commitment of the public library network policies and programs in the country is their demonstrated interest in better understanding the current uses of ICT in libraries (regrettably, there seems to be little interest in the library community to learn about the experiences of telecenters, and even less of cybercafés). Even though there is still much to be done in the systematization of past experiences, studies undertaken by some of the library networks show much promise. For example, a 2009 study by the National Library Network shows not only how the demand for Internet use has increased, but also how libraries have responded with specialized information services focused on user training in technology literacy and the appropriation of ICT. An impact study conducted by the Network of Libraries of Medellin in early 2010 on ICT skills and the importance and usability of ICT services and the network's online portal found that the Internet has grown in importance to library users, many of whom expressed high levels of satisfaction with the services provided in the library. For example, 94% of respondents selected the library as a place to use computers and the Internet for free, and many also saw the Internet as a gateway to other ICT services offered at the libraries.

What to do with Cybercafés?

The situation of Internet cafes, or cybercafés, in Colombia is paradoxical: although the figures show that cybercafés are far more common than both telecenters and libraries, there is almost no study that looks at cybercafés as public access venues offering computers and the Internet to the public. According to recent estimates, more than 81% of Public Access Computing (PAC) venues in the country are cybercafés: there are about 15,000 cybercafés in the country, about 2,700 telecenters (including both governmental --mainly Compartel--and non-governmental), and about 670 libraries that have public access services to the Internet. In addition, according to other international studies that included Colombia and 24 other developing countries, Internet cafes tend to be more popular than telecenters or libraries as places to use ICT (Gomez et al. 2010), and their cost does not seem to be a deterrent for use (Clark et al. 2011). Cybercafés are more numerous and seem to be preferred by users, and yet they have not been included in the consultation for policy formulation, or in studies about the uses and impact of ICT in public places. There is much to be learned from the experience of cybercafés, and much that must be shared with them if ICT policies, for libraries and telecenters in particular, are to be more successful and play an influential role in the lives of people in the country.

In 2008, the National Department of Statistics (DANE) issued a press release on "Basic Indicators of Information Technology and Communication ICT: Households, Commerce, Industry, Services and Microenterprises." Created using data from an Integrated Household Survey in 2007, the report states that "the places most used by people 5 years and older to access the Internet were public access centers that charge user fees [i.e., cybercafés]: 53.1% of people used them in the last 12 months."

In 2009, DANE released a new study on basic ICT indicators looking at ICT penetration in households, and again found that the majority of ICT use happened in fee-based public access venues (cybercafés), with 47% of those surveyed having used them in the last 12 months. Only 43.8% of respondents used ICT at home, while 26.6% used ICT at school. Only 4.1% of respondents used ICT in free locations such as libraries (some telecenters are free, and some charge user fees; it is not clear from DANE's documents what the use of telecenters is). The results of this study, which also included data on places, frequency of use and types of activities done using ICT, show not only a growth in use of public access computing in the country, but also the importance of public access computing as part of information, communication, access and knowledge processes. Furthermore, Internet cafés have become important places for ICT training, as well as meeting and socialization (especially for children and youth). However, the country's policies have not only ignored these developments, but in some cases have punished the Internet cafés involved for not being properly licensed or for being part of an informal economy. By action or omission, national policies may be hurting cybercafés, which could turn out to be the government's most important allies in providing public access to computers and the Internet.

The state of the development and use of Internet cafés is a challenge not only for scholars and networks working for public access to ICT, but also for policymakers. In Argentina, a recent study showed the potential and involuntary

contribution of Internet cafés to social development (Finkelievich et al. 2007). Internet cafés should be included in discussions and programs about strengthening ICT as a tool for development in the country.

CONCLUSIONS: CHALLENGES OF ICT PUBLIC POLICIES IN COLOMBIA

We have presented an overview of the recent history of ICT policy in Colombia, and outlined how it is placed to contribute to the country's social and economic development. We emphasized the importance of the role of civil society organizations in the discussion of these policies and in implementing programs for the access to, use and social appropriation of ICT, and the important role of the national telecenter network, civil society organizations, and networks of public libraries in the negotiation and implementation of national ICT plans. Finally, we noted the important role Internet cafés play in public access to ICT in the country, and the importance of including them in dialogues and consultations for policy formulation, and in the implementation of connectivity programs that were designed with a view to contribute to people's development. We now conclude this discussion with five major challenges for public policy on ICT in Colombia.

1. Economic and Technological Sustainability of ICT

The first and most notable challenge is related to the technological and economic sustainability of the ICT initiatives, and of the public access computing initiatives (regarding libraries and telecenters) in particular. As stated in 2010 at the National ICT Conference by the then-acting Minister of ICT, Daniel Enrique Medina, one of the biggest threats to current policies is the lack of budget; sustaining the current growth rate of ICT implementation in the country requires about USD\$350 Million per year. Funding for social programs with ICT comes from the ICT Fund⁶ created by the new ICT Ministry. Although according to CONPES 3670 directives, the Fund has been expanding to solicit resources from other sectors and local governments involved in social ICT investments, it is necessary to strengthen the networks and partnerships between public institutions, the private sector and social organizations if the Fund is to be able to cover all the needed expenses (CONPES 28 de junio de 2010). As noted by the acting Minister mentioned above, not getting funding in time would threaten the sustainability and the expansion of programs geared for the social uses of ICT. The first to suffer would be programs dedicated to the social appropriation of ICT in Colombia, which would lead to increasing social and economic inequities in the country. In this light, opportunities for partnerships with cybercafés may be even more important: if cybercafés provide the access, can the social Internet promoted by the ICT plan promote effective use and social appropriation, in partnership with cybercafés, or adopting some of their business models (Gomez 2011)? This is an area that warrants further exploration and creative solutions.

2. Service in Rural Areas

Providing coverage and access to ICT in rural and semirural areas remains a major challenge. Although the population distribution in the country has changed profoundly in recent decades, with a growing shift toward urban centers, the rural population still represents an important proportion of the country (approximately 26% of Colombia's population, according to DANE (2010)). Rural areas tend to have high proportions of the population living in poverty, and in Colombia, they tend to be more affected by the political and criminal violence of the last few decades. Improving the quality of life of rural communities not only contributes to peace building in Colombia, but also to socioeconomic and political development in the country. ICT, obviously, can play an important role in these processes (Gomez et al. 2011b).

Usage statistics show that most Internet providers and users are located in five major cities, with small cities and towns having far less access to ICT opportunities and services. Nonetheless, rural and semirural areas are, for the most part, completely left out of the ICT development plans, and are not strong enough markets for private operators (including cybercafés) to profitably operate there. But government ICT initiatives are also mostly absent in these rural regions. As noted by Paz (2007), digital inclusion programs such as the abovementioned Compartel, Government Online, Computers for Schools, distance education programs offered by SENA, and even agrarian programs such as the Colombian Corporation of Agricultural Research (CORPOICA), the Information Network and the Agricultural Sector Strategic Communication (AGRONET) are not reaching the majority of rural and semi-rural populations in the country. Paz suggests a thorough review of these programs and policies, looking for ways to encourage the use of the Internet to strengthen and improve the implementation of ICT public policies in rural areas (Paz Martínez 2007).

⁶ The ICT Fund receives income mostly from taxes on network and service providers, and license fees for use of the radio spectrum (airwaves).

Access, use and ownership of ICT are even more complex when the cultural, educational and socio-political characteristics of individuals and communities in rural regions are taken into account. This means the challenges are not just those of access in remote, rural areas, but also of meaningful use and social appropriation among rural communities that have specific social and cultural needs and ways of meeting them.

3. Beyond Modernization: Social Appropriation

It is important to note that despite the efforts of civil society organizations (many of them in partnership with the government), many of the ICT policies and their implementations continue to favor a *modernization* approach to development. This approach tends to see the introduction and dissemination of ICT as development goals in themselves, without taking into consideration the contexts and needs of the populations involved, or the characteristics of the use, integration and innovation of these technologies in the everyday lives of individuals, organizations and communities. In other words, the modernization approach is content with just providing access to ICT, without regard for effective use or social appropriation of its tools and resources to transform living conditions and improve quality of life (Gomez et al. 2012).

Public policies in Colombia continue to focus on strategies to ensure service delivery, to increase the speed of Internet connections, and to increase the number of computers and access points in public institutions, paying less attention to the quality and results of the applications of those technologies. The processes of "technological literacy" and the formation of human resources for research and innovation are very important; however, they are insufficient for the purpose of social appropriation of ICT, or more effectively integrating ICT development processes, including social, political and cultural integration. It is important to strengthen research and the production of information on the results of user experiences, to promote community participation in decision-making processes on the adoption and development of ICT programs.

4. Ethnicity, Gender and Age Inclusion in ICT Policy

Despite the leadership and participation of diverse social sectors in ICT public policies, policies and programs related to public access in particular show serious limitations in addressing ethnic, regional, generational and gender differences in the country.

The most pressing difference is age. Oswaldo Ospina, Coordinator of ICT for Education and Social Development of Corporacion Colombia Digital, shows that access to and use of ICT differs according to gender and educational level; fewer women have access to ICT, and if they have a little education, their odds are even lower (Ospina 2009). These reports show that indicators related to gender difference (not just the distribution of users by region and age), and mechanisms to monitor the impact of ICT with particular attention to reducing conditions of exclusion and inequality for women, should be included in the measurement of ICT. On the other hand, despite significant efforts by the state and social organizations on the production and application of laws and programs related to restricting children's access to pornography on the Internet, there is still a need to design programs that specifically protect children and youth. Children and youth are not only the main users of public access computing sites, but also the most willing and skilled, and have the ability to use ICT tools. And children and youth are, paradoxically, the ones that find it most difficult to access these technologies.

5. The use of Performance Indicators

Diversity, disparity, and a lack of continuity of information and indicators on the performance of ICT represent major challenges for the sectors involved in the construction and implementation of public policies--the State, civil society organizations, academia and the private sector. Building common frameworks and categories, and the inclusion of shared criteria for observing the impact of public access to ICT, would make a great contribution both to knowledge of the trajectories of these experiences and also how to strengthen and develop them. The efforts by the Network of Telecenters to systematize and socialize the basic information about the number, location and main characteristics of telecenters across the country are most worthwhile to help establish a baseline.

Information from Colombia accounts for at least two main sources of indicators on ICT performance. On the one hand, the National Bureau of Statistics (DANE) collects information on the use of ICT in the productive, educational, state and community sectors through periodic surveys such as the Continuous Household Survey (CHS), the Great Integrated Household Survey (GISH), and the Quality of Life Survey (QLS). On the other hand, a centralized service called Unified Information System of the Telecommunications Sector (SUISTS) helps to collect data about fixed telephone, cellular and Internet access in the country. Although state institutions have adopted the international UNCTAD/UN-ECLAC standards for their data and statistics to facilitate international comparison of

figures, they have faced problems of continuity, the use of categories, allowing shared variables to track, and comparisons of temporal, spatial or population groups, among others.⁷

Most studies done by the Network of Telecenters or the networks of public libraries around the country have tended to respond to particular needs or conditions. They are not representative of the diversity of public access initiatives around the country, and they have not developed frameworks or measures that are comparable across experiences or over time. This limits the current possibility of comparative analyses or of tracking progress over time. Despite the public-private collaboration mentioned earlier in this chapter in relation to policy formulation, there seems to be little dialogue or collaboration in the assessment and evaluation of experiences, which results in limited datasets produced separately by various government institutions on one side, and by social organizations or academic institutions on the other.

The construction of regular exchanges and collaborative assessments of data and information on the performance of ICT--and on public access centers in particular--would represent an extraordinary development of trust. The real challenge is to jointly develop analytical frameworks, categories and indicators to measure the social appropriation of ICT, and to conduct joint analysis of the experiences of government, non-profit and for-profit initiatives for social uses of the Internet, in the broader context of ICT development—in the country, in other developing countries in Latin America, and around the world.

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