

Digital Review 2007 of Latin America and the Caribbean: Progress and Challenges Policies for Development with ICT

Abridged document



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The present summary is based on eleven separate studies that were elaborated by the following consultants: Karim Anaya Stucchi, Yuri Arrais, Alex Gives Silva Alves, Jorge Dussán Hitscherich, Federico Kuhlmann, Ignacio Jara, Antonio José Junqueira Botelho, Carlos Miranda Levy, Ana Laura Rivoir, Roberto Rodríguez, and Marlon Tabora. The opinions expressed in this document, which has not been subjected to editorial revision, are those of the author's exclusive responsibility and cannot be taken to reflect the official opinion of any of the organizations involved in its preparation. Neither does it reflect the official opinion of the European Union, which has collaborated with financial support for the elaboration of this document.

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Summary

This document is an abridged¹ version of the “Latin America and the Caribbean Digital Review 2007” report which provides an inventory of the national policies and strategies that aim to guide the different countries of Latin America and the Caribbean towards Information Societies. It aims to contribute the understanding of the situations faced by these countries as this process matures.

The report is the result of a collective effort by UNDP, ECLAC, DIRSI and ICA-IDRC. It describes the progress achieved and challenges remaining for policy development in 21 countries of the region. The initiative responds to the calls made by the countries in the current Regional Action Plan (eLAC2010),² specifically to goal 60, in which the authorities aim to “Strengthen national policies for the information society from a regional perspective, including coordination and participation by public agencies, civil society and the private and academic sectors, within their respective roles and areas of responsibility, in the design and dissemination of ICT programmes.”

The first part of the Digital Review 2007 deals with the development context of Information and Communications Technologies (ICT) in Latin America and the Caribbean, characterized by the so-called digital divide, focusing on its characteristics and dimensions. The second part of this study focuses on two selected topics that are part of the development agenda: education and health, given that they are fundamental tools in the fight against poverty. The third part analyzes the state of existing policies for the construction of Information Societies at a national and regional level in Latin America and the Caribbean; lastly, the fourth part presents the digital development profiles of the countries of the region.

The document shows that although all of the countries of the region have begun to face the challenges of becoming modern and equitable Information Societies, a great heterogeneity among the advances of the countries persists. A certain grade of political maturity can also be observed by comparing countries that are part of a second generation with countries that are recently starting with the process. These results underline the great potential for the exchange of experiences and intra-regional collaboration, in order to accelerate the learning process in the elaboration of policies that strengthen development with ICT in Latin America and the Caribbean. The Digital Review project acts as vehicle in this learning process.

¹ This abridged document follows the same logic as the complete Digital Review 2007 document, which is only available in Spanish. The complete version is more extensive than this abridged version and includes, among other deeper insights, a separate country profile for each of the 21 country studies, with an average of nine pages each.

² See: <http://www.cepal.org/SocInfo/eLAC>

I. Introduction

The advent of modern ICT, such as mobile phones and the Internet, and the debate on the emerging Information Society are recent topics of increasing importance in a rapidly changing development agenda. The rate at which technologies are adopted is constantly increasing. For example, in 2003, only one out of every 12 inhabitants in Latin America and the Caribbean was an Internet user; as of the end of 2006, there was one in every five.

The last 25 years has seen the appearance of mobile telephony, data transmission and the Internet. Today, IP telephony, text messaging, chats, e-mail and smart phones are common expressions, as well as technologies such as ADSL, cable modem, WiFi and Wimax, and 3G mobile telephony. All this has been accompanied by a series of reforms and public policies in the telecommunications sector.

The countries of Latin America and the Caribbean have had noticeable perceivable difficulty in designing and implementing policies, and the more successful countries have had to struggle with the sustainability of strategies and ICT agendas over time. It is common for the environment to change more rapidly than regulations or the responses of governments, as the potential of these technologies depends on certain factors that are endogenous to those countries, and do therefore not represent an automatic solution to the problems they seek to address. *While ICTs are mostly imported in Latin America and the Caribbean, and therefore present an exogenous factor for policy-making, the adoption of the technology is not automatic and the benefits are linked to certain endogenous factors. Technologies are never an automatic solution. To reap real benefits, the process of adoption and integration, and therefore modernization of socio-economic organization, becomes the key.*

II. The digital divide

ICTs are general purpose technologies for the processing and transmission of information. The economic benefits of the use of these technologies derive from their capacity to increase the efficiency of processes for handling, exchanging and managing information, leading to productivity gains. From a social perspective, these technologies are a means to access information that facilitates the creation of knowledge. This makes them an important tool in the fight against poverty, to the extent that knowledge is an instrument for progress.

However, to sum up these benefits, it is not only necessary that the population have access to these technologies but also that they make efficient use of them by familiarizing themselves and incorporating them into their productive and social activities. Different socio-economic variables condition such use, thus creating a digital divide that is a separation between those who access and use these technologies and those who do not. Being excluded from ICT leads to further exclusion from the potential benefits of the Information Society.

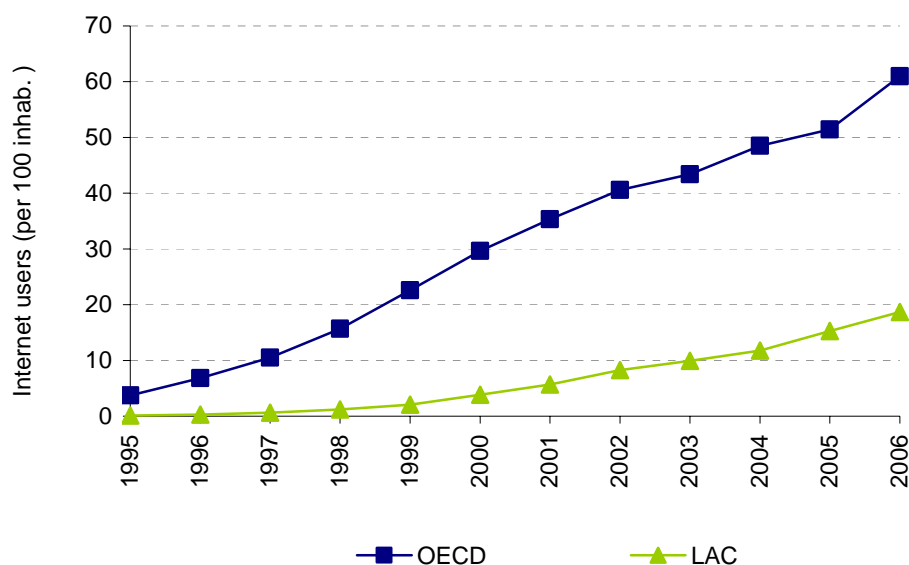
The digital divide has different dimensions, which include: access to networks and equipment, quality of access, and the use of applications and electronic contents.

1. The access divide

- Developed countries are able to quickly reach high levels of access, thereby accentuating the existing socio-economic differences between developed and developing countries, giving way to a digital divide that evolves with the emergence of new ICTs, thus becoming a mobile target. Evidence of the first divide was seen with the penetration of fixed telephony, where the most advanced countries presented rates over 50% of the population, meanwhile in 2006 an 18% teledensity was reached in the region, with stagnant growth.
- Mobile telephony meant a solution to voice communications. Between 1995 and 2000, developed countries quickly expanded their access to mobile telephony. This rapidly increased the distance between them and developing countries. But since 2003, the latter have accelerated the rate of growth of this service, slightly shortening the distance with OECD countries. The reason behind it is that the OECD countries are showing signs of deceleration after reaching a significant penetration rate of 50% of the population. The countries of the region overcame this rate in 2006, reaching 54%; so it remains to be seen what will happen with the rapid rhythm of growth that they have maintained during the last few years.

- The speed of adoption of computers has reached a 50% penetration rate in OECD countries, versus 10% in the countries of the region in the year 2005. For a great part of the population of the region, income will continue to be a determining factor when it comes to access to this technology.
- Internet is one of the fastest-growing technologies after mobile telephony. Although when it was commercially launched halfway through the nineties, the levels of Internet penetration between both groups of countries were not as far apart, towards the year 2000, a strong amplification of the divide can be noted. In 2006, OECD countries registered a near 60% participation rate, compared to only 18% in the countries of the region (graph 1). In the year 2006, developed countries experienced an equal penetration rate for the Internet and computers. Meanwhile, in Latin America and the Caribbean, the Internet penetration rate overcame that of computers; this would indicate a tendency towards the shared use of this technology in the region.

GRAPH 1
INTERNET PENETRATION IN THE REGION AND THE OECD, 1995-2006
(In percentages)



Source: OSILAC with data from the ITU, "World Telecommunications Indicators Database", 2006.

- The most recently introduced access technology to the Information Society, broadband Internet, generated a new divide, strongly distancing developed countries from the developing group. The countries of the region had an average broadband penetration rate of only 2% in 2006, more than eight times less than the number registered by the most advanced countries.

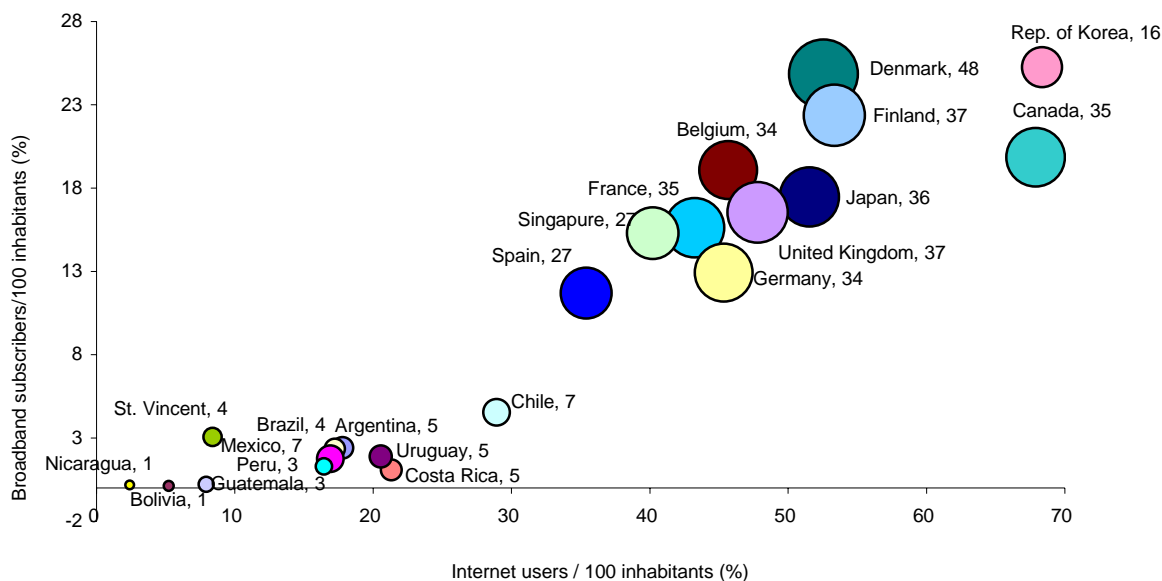
2. The divide in access quality

- Being left behind in access to high-speed Internet is a great obstacle for the adoption of new electronic applications based on this type of network, which gives rise to a new dimension of

the digital divide: the quality of access.

- Between 2003 and 2005, Internet penetration in the countries of the region grew from 10 to 15 users for every 100 inhabitants, while broadband penetration increased from 0.5% to 2%. Although this tendency is positive, penetration levels continue to be low, and their growth does not seem to shorten the divide with developed countries. Fifteen Internet users for every 100 inhabitants in the region, versus 51 in the countries of the OECD, reflects the existent divide. That is further enlarged when the comparison is made in the broadband penetration rate: 2% versus 15% rate for the OECD.

GRAPH 2
INTERNET PENETRATION, BROADBAND PENETRATION AND GDP PER CAPITA, 2005



Source: OSILAC with data of the ITU, "World Telecommunications Indicators Database", 2006.

Note: The size of the bubbles is proportional to the income per capita. The value, expressed in thousands of US dollars, figures beside the name of each country.

- Penetration levels have a growing relationship with income per capita, but even at similar income levels there are significant differences. This indicates that there are other factors beyond income that determine the diffusion of this technology (see graph 2). Among them, the offer of services by means of electronic applications stands out, and also, the population's capacity to use these technologies.
- The Information Society is quickly evolving towards on-line multimedia services that enable the realization of transactions, productive and learning processes, and a growing number of electronic applications. These cannot be carried out without the necessary equipment in terms of the capacity to process and transmit data, not even with the appropriate Internet connection. This means that although increasing access to this service is being observed in the region, it is not that encouraging, given that most of it happens via dial-up.³

³ The Internet connection speed via dial-up has a maximum transmission speed of 56 kbit/s. Meanwhile, broadband Internet invokes a speed greater than 256 kbit/s.

- The demand for an international bandwidth can limit or facilitate the broadband penetration in a country. The countries of the region had approximately 1.5 Mb of international bandwidth per second per inhabitant in 2004, while countries with more advanced economies registered among 7 and 15 Mb/sec.
- While the developed countries maintained a balance between growth of their international bandwidth capacity and growth of residential broadband subscribers between 2002 and 2004, the countries of Latin America and the Caribbean increased the second factor far more than the first. Thus, the penetration of broadband subscriptions is being promoted in these countries without a parallel expansion of the capacity for connecting these users to the world wide web. This results in poor quality of broadband services in developing countries

3. The usage divide

- In the diffusion of ICT is a basic, but not sufficient condition to achieve an impact in key areas for development, such as poverty reduction, health and education. The impact will depend on the way these technologies are being used to confront each of these challenges.
- An analysis in the education sector reveals that in Latin America and the Caribbean administrative personnel use computers more often than professors, in comparison with the countries of the OECD. The modernization of administrative tasks only has an indirect impact on the progress of this sector; a much greater impact depends on the use of these technologies by students and professors, who should serve as guides for their efficient use.
- While developed countries are advancing towards a more personalized use of these technologies by students, developing countries are still far from such a goal. This can be reflected in the fact that there is an average of nine students per computer in Europe – a rate considerably higher than in the countries of the region, whose best example is Chile, with a rate of 30 students per computer in 2003.
- The rate of equipment connected to the Internet in schools is significantly lower than the countries of the OECD, which can be explained by resource availability and technological infrastructure.
- The health sector is lagging and shows little progress in the incorporation of ICT, in spite of being a highly information-intensive sector. In 2006, 38% of the health ministries of the countries in the region did not have a web site. The web sites of their health authorities are more focused on the diffusion of ministerial information than of health topics, which means that this tool is seldom used for the promotion of health.

III. ICT for development

At the moment, there are not enough studies and measurements that reveal in a reliable way the impact of ICT-for-development, or in areas considered fundamental in this process.

The impact of ICTs has been difficult to measure for several reasons. Among them is the fact that the dynamism of technological progress makes technology a relatively new topic, especially for the region. As a result, countries have undergone a maturing period in order to assimilate the issue of technology. During this time, besides deepening their knowledge about the technologies, they have carried out attempts to appropriate it without accompanying this process with mechanisms to measure the results. This translates into a lack of standard methodologies and indicators for measurement⁴. As a result, the available information should be used with caution, because at the moment there is no vast information about the results of policies, much less a tracking of their results over time.

Notwithstanding the aforementioned, on occasion, the evidence can be sufficiently overwhelming and tangible in sectors like education. Specifically, ICT policies for schools have been able to show their important role in the decrease of the digital divide; as an important part of the student population has ICT access through schools.

1. ICT and education

ICT applications in education began with distance education projects that promised to be a solution to increase educational service coverage, particularly in remote areas, because they had the capacity to eliminate geographical barriers. However, as technologies evolved, new applications surfaced that go from their original conception to their incorporation as learning and administrative tools, giving place to a new concept: electronic education (e-education). The suffix "e-" means that part of the information involved in the educational process is carried out with "electronic" tools.

⁴ For example, one of the simplest indicators used for measuring ICT penetration in schools, the rate of students per computer, does not use a common definition in the different studies that are being carried out. In some cases, only computers used by the students are counted, while in other studies they are included with all the equipment of the school; in some cases they use a national average, including all the schools and students of the country, while in others it only reflects the schools that are part of governmental initiatives.

E-education consists of ICT applications in all those aspects of education, from teaching and learning through electronic means, to training in their uses, as well as management of the organizations involved in these activities. For students, it implies the possibility of receiving educational programmes and learning systems through electronic means, accessing more information despite their location, besides becoming qualified in the use of those means. For educators, it represents the use of network technologies and communications to design, as well as select, manage, provide, and extend education, as well as organizing and administering information regarding their students.

Literature reports three main types of rationalities guiding the introduction of ICT in school systems:

- **Economic rationale:** According to the economic argument, ICTs are necessary so that students can develop competence in handling ICTs that will be demanded in the labour market. In the meantime, it will allow countries to improve the competitiveness of their workers, their companies and their economy.
- **Social rationale:** According to social arguments, there is a political imperative to provide all the students of all social sectors with the competence to use ICTs and to allow them to take advantage of the opportunities offered by the Information Society.
- **Educational rationale:** ICT has entered schools to support educational improvement, especially in classrooms, where they are viewed as instruments to enrich, develop and even transform teaching and learning processes.

Most of the analyses coincide in pointing out that it is still difficult to observe consistent impacts of the use of ICT in academic achievements in different areas of the curriculum. The accumulated evidence only allows one to affirm that, in general, the educational use of ICT helps to improve certain intermediate results, such as students' motivation, since its contribution to the learning process is still not clear or evident, as it does not follow context patterns nor a disciplinary focus that can be reproduced. Additionally, the results coincide in pointing out that ICT contributions to teaching and learning processes are recently beginning to emerge in a very irregular and dependent way. They rely on several factors such as a school's characteristics, its leadership, the teaching, the students, the access to ICT in schools and households, among others. Professors and the positioning given to ICTs are the key factors in this process.

Digital contents allow student interactivity with educational material, which is very attractive and stimulating for developing a more active education through "learning by doing." Digital contents also provide automatic feedback to the student according to their individual performance, facilitating new knowledge construction based on a progressive process of development, design and refinement, which frequently evolves from preexistent models. Computerized animations and simulations stimulate students and improve their understanding of complex concepts, by allowing their visualization, making abstract topics more concrete, especially in matters like mathematics and sciences. Additionally, ICT allows access to information and communication with people from all over the world, which facilitates practically unlimited investigation and collaboration.

Notwithstanding the aforementioned, it is necessary to consider that ICTs do not have an intrinsic pedagogic approach towards constructivism, nor does their use drive unfailingly towards the development of these new abilities; ICTs are flexible instruments that can also support the development of traditional pedagogies and, in most cases, these technologies and existent pedagogical practices are coupled in an inefficient way, deterring the full use of ICTs due to a series of obstacles.

One of them is the widespread incomprehension among educators regarding the role of ICTs in teaching and learning processes and in particular the limitations of their educational potential. Teachers

do not receive enough practical orientation on the specific ways of how to integrate ICTs in the subjects in their curricula.

However, even with a more concrete and practical approach, there are other pedagogical-type barriers inhibiting the integration of technological resources into the curriculum: most professors do not feel comfortable giving classes in a computer room or laboratory, because it requires to them to adapt themselves to a new role in guiding students' activities. Teachers are afraid of losing control over the activity, which is taken on by computer programs, and technical problems can make the class flow less smoothly.

Lastly, teachers also inhibit themselves from making use of these new resources for other practical reasons, such as: the shortage of time to plan classes using ICT, as they require more preparation than traditional ones; or difficulties synchronizing the necessities of their class with the availability of the computer room, which is a scarce and shared resource.

The use of ICT in teaching requires support from the school's administration that is not always available, as well as the commitment and leadership of its board members and the necessary financial resources to acquire and maintain the equipment. It is common in the region that the quantity and quality of equipment necessities are not fully covered.

Additionally, schools often do not have the appropriate digital contents to fulfill their necessities: contents closely linked to the curriculum, which concentrate on topics where the teachers really require support and that include the orientations needed to facilitate their pedagogical integration.

Experience has shown that all the previous elements mentioned should be addressed in any ICT policy for education. School access to technological infrastructure is very important, but it is far from enough in the countries of the region. Additionally, new strategies should be considered to provide educational contents, to prepare the teachers, to incorporate the use of ICT in the curriculum, and lastly to evaluate their use and impact⁵.

2. ICT and health

In the last few years, the health sector has been characterized by a relative growth in the markets of complex and segmented services, where a demand exists for personalized services. At the same time, there is an imperative to provide an effective, opportune and efficient service. Contrary to a couple of decades ago, they are also including health promotion and prevention practices. Therein lies the potential for the use of ICTs in this sector.

In this context, e-health is conceived as a term that embraces all topics related to ICT and medicine, passing over the traditional medical computer practices. It consists of the application of ICT to the wide range of aspects involved in health care, from diagnosis to patient treatment, to management of the organizations involved in these activities. For patients, it means obtaining considerable advantages regarding information as well as alternative and distance diagnostics. For professionals, e-health permits greater access to relevant information, either of a clinical type or accessibility to global personal medical data, through Computerized Clinical History (CCH), or educational health information, such as publications, medical associations and courses.

The progress of developing societies has its consequences for the organizational health model, which should also consider: increasing coverage and amplifying health services, guaranteeing equal

⁵ For a wider analysis of recommendations for the policies of countries in development see Osin, 1997; Hepp et al, 2004; Wagner et al; 2005.

access to quality services, while at the same time maintaining an efficient control over expenses. A considerable number of avoidable illnesses and premature deaths still exist in the region, due to problems of access to medical services. The inequality of access to basic services illustrates the isolation of some communities. In cases where it is possible to receive primary health services, weak connections to the secondary and tertiary levels can disrupt or disconnect the service provision. Moreover, in most countries, the sector has insufficient financing, while coordination between the health subsectors and relevant actors is totally deficient.

Literature has defined some areas where e-health should promote significant changes, which correspond to the rationale that underlies ICT applications in the sector, summarized here:

- **Efficiency:** The efficiency of medical services involves the reduction of expenses, by avoiding unnecessary duplications (diagnostic or therapeutic) and increasing communication among medical service establishments.
- **Service quality:** The quality of medical services can be increased by improving the certainty of diagnoses and allowing comparisons among different suppliers, empowering their consumers.
- **Reasoning based on tests:** Through ICT, it is possible to prove a hypothesis in a scientific and rigorous way, facilitating the decision-making process.
- **Establishment of a new relationship among patient and health professionals:** The information available about the patient allows for a greater interaction on his or her part, allowing the patient to participate in the decisions that are being made.
- **Education for professionals and citizens:** This action is possible thanks to the existence of on-line resources, either for professionals in continuous education or consumers that can access educational information, including sanitary training and preventive information, among others.
- **Standardized information facilitates interaction and communication:** Progress in this area can be developed among medical service facilities, or among different levels of service, as well as among people in charge of its undertaking.
- **Amplifying the reach of medical services:** E-health allows consumers to easily obtain on-line health services from global suppliers and access products online, for example, pharmaceutical products.
- **Ethics:** E-health implies new challenges and threats in this field. On-line professional practices, intimacy and data protection, among others, represent new challenges for health suppliers.
- **Equity:** ICTs are tools that can help to provide more equitable medical service.

Most of the outlined solutions include the use of technologies connected to a network based on the Internet. The essence of e-health is the realization of reliable information transactions in a fast and changing atmosphere that involves the adoption of new processes on the user's part. In developed countries, e-health has quickly evolved from the delivery of on-line medical contents towards the adaptation of generic solutions, with the processing of administrative transactions related to health and logistical support of clinical tasks, which respond to the standardization of processes and economies of scale.

People, their human capital and services are the crucial elements in the creation of added value in e-health products. The citizens as well as professionals from the sector should develop abilities on the use of technology that go beyond the strict use of their profession.

The experience of the countries in the region reflects variable results, which combine periods of great expectation, followed by almost total inactivity. In this last phase, the general characteristic has been a lack of clarity about the necessities and priorities, discontinuity (operative, political or a combination of both), the lack of political will, among others, which in many times has led to unbreakable barriers for the unfolding and effective use of ICT. As a result, the existent divide in the health sector between developed countries and Latin America and the Caribbean is wider than in other productive and social sectors. Additionally, the privatization of medical services has added a new element to the structural inequity that prevails in the countries of the region.

Resources and access to technology represent one of the critical questions in the dissemination of e-health applications. The true problem for the health sector is financial; the capital cost of deploying the appropriate technological infrastructure, the recurrent expenses of the use of telecommunications services (access to Internet and telephony), the maintenance and the improvement of equipment and facilities, among others. Many of the countries in the region cannot carry out such costs in an integral way, much less when it refers to public health.

3. Incidence of ICT applications for poverty reduction

Regarding education, which is one of the most influential variables in the definition of poverty, digital policies are mainly carried out through ICT initiatives in schools. It is possible to observe three ways in which these policies look to have an impact on poverty reduction:

- Developing technological capabilities among students.
- Incorporating excluded sectors.
- Reducing the digital divide.

In the first place, the introduction of ICTs in schools seeks to encourage students to familiarize themselves and manage new digital technologies with ease, important skills for their incorporation into the working world. It is expected that these policies will help to improve the abilities of human capital and the integration of technology in productive processes, increasing their productivity and competitiveness, and thus improving the economic and social development of countries.

Secondly, ICT policies for schools usually deploy applications that specifically train those social sectors that are traditionally excluded. For example, when remote schools are connected to the Internet they get the possibility to accede to high quality materials offered by educational web sites. These new opportunities open new ways for people to escape their condition of poverty.

People from poorer sectors value receiving ICT training not only because those specific capabilities are necessary in order to access many labour opportunities, but also because they see ICTs as a symbol of being educated, modern and prepared. There are many ICT initiatives in Latin America and the Caribbean focused on schools with lower incomes (Costa Rica, Chile, Mexico).

At the same time, some people warn that the relationship between ICT investment and economic development is not as instantaneous or mechanical as many believe: in fact, there are some indications that ICT began to affect the economy of the United States as a whole, beyond one or another sector in particular, only when Internet access intensified. This can be bad news for the countries that, in spite of their efforts, have difficulties intensifying the spread of this technology and its appropriation by their inhabitants.

Others say that even if economic development is affected, this does not always translate into a decrease in social inequalities, especially in those countries with little regulation of labour markets and social policies. There are also some experts who doubt the direct relationship between the decrease of the digital divide and poverty reduction, to the extent that this is a complex and multidimensional phenomenon whose diminution requires strategies that point to disabling its causes and promoting the factors that facilitate its decrease, and that the mere presence of ICT is far from enough to spur these changes. Consequently, where there is a higher degree of maturity of ICT policies, efforts must go beyond securing access to ICT, to focus on the application of these technologies on processes in different sectors.

Additionally, developing countries have characteristics that make it difficult to take advantage of technology in order to reduce poverty: a limited coverage of electrical and telecommunications networks, weakness of educational systems to assure basic learning as a way of compensating differences in origin. The new technologies have not really changed the fundamental rules of the game that poor sectors face; therefore, complementary aspects should be developed.

Summing up, ICT policies for schools look to contribute fundamentally to the reduction of poverty, through the reduction of the digital divide. Thanks to these policies, poorer sectors are able to access ICTs, which should open up new labour opportunities and social development. However, the impact of these policies is still not clear, given that the reduction of poverty is a complex phenomenon whose solution requires much more than simple access to ICT.

Good health is also a necessary condition for fighting or preventing the condition of poverty. The vicious circle between poverty and bad health is evident; poor people living in adverse conditions, without basic services or appropriate sanitation have a greater risk of worsening their health and that of their environment. At the same time, sick individuals don't have the capacity to acquire or to carry out their work, which makes them even poorer.

Health and poverty are multidimensional aspects and they reflect strong differences among the countries of the region. Those countries affected by social conflicts or particular geographical conditions, face specific challenges when attacking these two variables. For middle- and low-income countries, the aspiration is to improve the coverage and quality of medical care to radically change the state of the population's health.

The kind of actions through which ICT can palliate the mentioned results, such as in the educational sector, come from focalized approaches in the poorest sectors which results from political influence as well as existing social and political priorities. Long-term commitments to cover all those investments at a national scale are necessary so that they can impact the sectoral results and applications of ICT. This requires creating capacities - mainly of a financial nature - to carry out the investments needed in long-range projects. In fact, e-health is one of the areas of priority for international cooperation programmes. Nevertheless, the imminent danger of relying on this type of assistance is that it can yield too many funds right away or insufficient funds too late.

Population capabilities are another point that has to be reinforced. The wisest efforts to incorporate ICT have occurred in countries with strong institutions, at governmental and academic levels that have invested in education, scientific and technological development, and public services. The development of human resources, the education of healthcare personnel and continuous training should be aspects that are institutionalized from the beginning.

Another obstacle for the countries of the region is that the health sector has an organizational structure and regulatory framework that does not lead to a quick, effective and efficient solution to their problems; much less when it involves technical collaborative work and resources with the capacity to resolve complex technological problems.

IV. National and regional strategies

Data digitalization through ICTs has had a deep impact on the way of generating, storing, processing, exchanging, and disseminating information. This tool has turned into an essential resource in all economic and social activity; hence the emergence of the concept of Information Society to describe an organization form, in which the efficient use of this resource by means of ICTs allows for the optimization of processes, creating greater economic and social value, with positive effects for the development of countries. Given this opportunity, and the fact that the countries of Latin America and the Caribbean presented a certain delay in their access to, and use of, these technologies – the denominated digital divide (term that is also internally applied) – these countries undertook multiple efforts to create public policies to confront this delay, in order to catapult the construction of the Information Society. The need to confront this problem is evidenced both by the potential growth that the adoption and use of such technologies implies, as well as by the negative implications of remaining at the margin of this worldwide trend.

If one refers to the conception and nature of the Information Society it inevitably alludes to social transformation processes. If they are relegated exclusively to the market structure, they could possibly increase the previously signaled problems. The Information Society is conceived as an inclusive social reality, centered on human development, accessible to all people, groups and regions of the planet, so that they can take part in it through ICT. This generates the need for public policies in ICT not just destined to resolve the international divide, but also to promote greater social integration, in the sense that nobody should be excluded from the benefits of these technologies. Therefore, given the potential of these technologies to generate social cohesion, people's access to know-how and use of ICTs for interaction should not depend on their economic capacity. This argument points to the redistributive role of the State needed to confront the digital divide in an *ex-ante* way, in order to avoid increasing the social divide.

ICTs are general purpose technologies so they can be used in any activity related to information management, from productive to social activities, focused on improving the quality of life of the population and the training of human capital, such as the provision of government services, such as justice, education, health, etc. Therefore, it is socially desirable to have individuals that are not only able to use the technology, but rather to understand the reach and potentialities of ICT in the realization of daily activities. This is somehow comparable to the positive externalities generated by education, even moreso given that people who possess qualifications in sciences and technology are essential for the technological progress of a country.

Nevertheless, since the benefits of ICT stem from their potential to optimize transactional processes among diverse agents, adopting these technologies independently in each sector is not enough. Rather, they should be developed at the same time, generating cross-cutting complementarities that facilitate the effective integration of the processes associated with the productive and organizational activities of society so as to generate an improvement in the quality of life. For example, the development of electronic government services is useless if citizens do not have access to the Internet.

ICTs are instruments that contribute to generating efficiency and productivity earnings at a business level. This represents a fundamental tool for competitiveness in a global environment. However, the appropriation of such technologies seems not to be able to adjust to the dynamism of progress, that can be explained by the uncertain condition of the technical progress. Since it directly affects the economic growth of the countries, ICT constitutes another focus of public attention that seeks to take advantage of the potential benefits generated by the adoption of such instruments.

Moreover, in addition to the aforementioned facts, there are additional commercial failures in those sectors somehow considered to be the driving forces of the Information Society. Indeed, some markets in the telecommunication sector have historically developed as a monopoly, with the resulting inefficiency problems, such as scarce access infrastructure development, which supposes another reason for the State to take action through regulation mechanisms.

Additionally, it should be considered that the process of evolution of ICT has emerged in parallel and irregularly in the different economic and social sectors, generating some inefficiency such as duplicities of efforts that happen when the work is not under an integral coordination.

In this way, the main ideas behind the creation of strategies for the Information Society are, on the one hand supplementing and correcting market development, and on the other, greater efficiency in fostering activities related to ICT among all the agents and sectoral authorities. The actors will generate more collective benefits by acting in a combined way than through particular actions due to the resulting synergy; only in this case, the multiplying effects of ICT are even greater than those derived from technical processes prior to the digital revolution and they depend especially on sectoral interrelation. Particularly in the countries of the region, the shortage of resources and the high transitional cost towards the Information Society create the necessity for collaboration among the participants in ICT through a national strategy. This collaboration tries to maximize the potential of existing initiatives, creating scale, synergies and visibility to save resources that can be dedicated to additional initiatives, without substituting or competing with current projects. A digital agenda is not a small coordination effort; it requires political understanding of the problem and it also has to be able to convince the stakeholders that the efforts as a whole will achieve greater results than isolated initiatives. This should be done hand-in-hand with significant political will and commitment in order to transform declarations into concrete actions.

1. State of national ICT strategies

The formulation of a national strategy is determined by endogenous factors such as the country's development level that includes not only traditional socio-economic variables, but also per capita income, human development components, and the degree of progress and preparation towards the Information Society⁶. It is fundamental that the political class be aware of the importance of this topic, as much in the

⁶ For example, the celebration of the World Summit on the Information Society 2003-2005 contributed to increasing the consciousness of the governments about the importance of the digital paradigm, when speeding up the debate in the identification stage of the problem and revealing the world consensus around ICT as a topic of public policy.

definition stage as in the rest of the process, because they must foster the necessary measures to execute the decisions. Other factors, such as growth tendencies, the general political orientation, the macro-economic situation and stability, also influence the continuity of the process. Additional factors of an endogenous nature that have an influence include the hierarchical level and the degree of institutionalism of the organism to which leadership has been assigned in the coordination or the execution of the national strategy. The nature of the political document is also decisive, because if a juridical instrument is established, the coercive power of it will be greater. In the same way, the availability and the administration of resources designated to the national strategy, the work methods and the establishment of clear procedures for the coordination among the participants have an impact on the different stages of the process.

Table 1 illustrates the stages of the process for defining and implementing public policies for building information societies in 25 countries in the region up to January 2008. It shows the progress, features of the current policy document, previous documents and the institutional framework set up for implementing the strategy established in each country.⁷

⁷ The table may contain inaccuracies as it is based on an exhaustive attempt to collect secondary information.

TABLE 1
LATIN AMERICA AND THE CARIBBEAN (SELECTED COUNTRIES): NATIONAL STRATEGIES FOR INFORMATION SOCIETIES,
JANUARY 2008

| Country | Characteristics of the current document | | | Background and status | | Institutional framework of the current strategy | | |
|-----------|---|--------------------|------------------|--|---------------------------------|--|------------------------|---|
| | Name of the document | Period of validity | Type of Document | Previous document and year of issue | Status of ICT policy | Main coordinator | Strategic management | Operative management |
| Argentina | No document | NA | NA | National programme for the Information society, 2000 | 1st Generation - Formulation | NA | NA | NA |
| Bahamas | Policy Statement on Electronic Commerce and the Bahamian Digital Agenda | 2003 - undefined | Defined | No previous document | 1st Generation - Implementation | Ministry of Finance (e-business Development Office) | Interagency Commission | Ministry of Finance |
| Barbados | Barbados National ICT Strategic Plan | ND | Beginning draft | No previous document | 1st Generation - Formulation | National Advisory Committee on ICT | Interagency Commission | Ministry of Trade, Consumer Matters, and productive Development |
| Bolivia | National Plan for Digital Inclusion 2007-2010 | 2007 - 2010 | Continuity draft | Bolivian strategy for Information and the Communication Technologies for the Development (ETIC) 2005 | 1st Generation - Formulation | Agency for the Development of Information the Society in Bolivia (ADSIB) and Vice ministry of Science and Technology of the Ministry of Planning and Development | Interagency Commission | Strategic Commission (interagency) |
| Brazil | No document | NA | NA | Green book of the Information Society 2001 | 1st Generation - Formulation | NA | NA | NA |
| Chile | Strategic Digital Development Plan 2007-2012 | 2007 - 2012 | Definitive | Agenda Digital 2004 - 2006 | 2nd Generation - Implementation | Ministerial Committee for the Digital Development | Interagency Commission | Executive secretary in the Ministry of Economy (interagency) |

| Country | Characteristics of the current document | | | Background and status | | Institutional framework of the current strategy | | |
|-------------|--|--------------------|------------------|--|---------------------------------|--|---|---|
| | Name of the document | Period of validity | Type of Document | Previous document and year of issue | Status of ICT policy | Main coordinator | Strategic management | Operative management |
| Colombia | Connectivity Agenda | 2000 - Undefined | Definitive | No previous document | 1st Generation - Implementation | Institution by the name of Agenda for Connectivity | Office of the President | Directory chaired by the Ministry of Communications |
| Costa Rica | No document | NA | NA | National Science and Technology Plan 2002 - 2006 | 1st Generation - Origin | NA | NA | NA |
| Cuba | Governing Programme for the Computerization of the Cuban Society | ND | Definitive | Policy for the Information Society | 1st Generation - Implementation | Office for the Information of Ministry of Science and Communications | Council of Ministries | Office for the Information of Ministry of Science and Communications |
| Ecuador | National Connectivity Agenda 2002 (Plan of Action 2005-2010) | 2005 - 2010 | Definitive | No previous document | 1st Generation - Formulation | National Commission of Connectivity | National Commission of Connectivity (interagency) | National Commission of Connectivity through Special Technical Commissions |
| El Salvador | e-Country Programme | 2007 - 2021 | Definitive | No previous document | 1st Generation - Implementation | National commission for the Information Society | Presidency of the Republic | e-Country Organization |
| Granada | ICT Strategy and Action Plan 2006 – 2010 | 2006 - 2010 | Definitive | ICT Strategy and Action Plan 2001 - 2005 | 2nd Generation - Implementation | Central Information Management Agency | Central Information Management Agency | Office of Prime Minister |
| Guatemala | National Agenda for the Information and Knowledge Society | 2007 -2015 | Definitive | No previous document | 1st Generation - Implementation | Not established | Not established | Not established |
| Guyana | ICT4D Guyana, National Strategy, Final Draft. | ND | Draft | National Development Strategy 2001 - 2010 | 1st Generation - Formulation | Presidency | Interagency Commission | Presidency |
| Honduras | No document | NA | NA | NA | 1st Generation - Origin | NA | NA | NA |

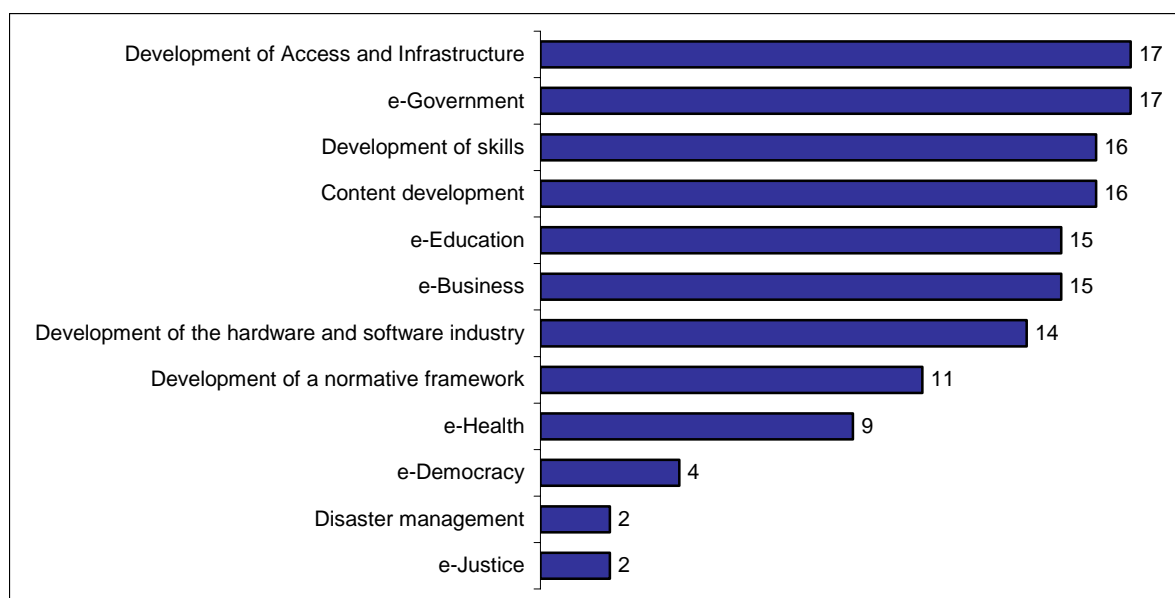
| Country | Characteristics of the current document | | | Background and status | | Institutional framework of the current strategy | | |
|--------------------|--|--------------------|------------------|--|---------------------------------|--|--|---|
| | Name of the document | Period of validity | Type of Document | Previous document and year of issue | Status of ICT policy | Main coordinator | Strategic management | Operative management |
| Jamaica | E-Powering Jamaica 2007 – 2012 | 2007 - 2012 | Definitive | NICT Strategy 2002 - 2006 | 2nd Generation - Implementation | Oficina Central de Tecnologías de la Información | Inter ministerial (Strategy Steering Committee) | Independent, linked to the Ministry of Trade, Science and Technology |
| Mexico | National Development Plan 2007-2012, National e-Mexico System | 2007 - 2012 | Definitive | National Development plan 2001 - 2006 | 2nd Generation - Implementation | E-Mexico National System | Communications and Transport Secretariat | Communications and Transport Secretariat |
| Nicaragua | No document | NA | NA | National development strategy ICT 2005 | 1st Generation - Origin | NA | NA | NA |
| Panama | No document | NA | NA | National Agenda for the Innovation and the Connectivity 2005 | 1st Generation - Origin | NA | NA | NA |
| Paraguay | No document | NA | NA | National Development plan of the Information Society 2002 - 2005 | 1st Generation - Origin | NA | NA | NA |
| Peru | Peruvian Digital Agenda | 2005 - 2014 | Definitive | No previous document | 1st Generation - Implementation | Multisectoral interagency monitoring committee (Interagency) | Office of the Chair of the Council of Ministers | National Office for Electronic Government and Information Technology (ONGEI), Office of the Chair of the Council of Ministers |
| Dominican Republic | National Strategy for the Information Society Strategic Plan 2007-2010 | 2007 - 2010 | Definitive | No previous document | 1st Generation - Implementation | National Committee for the Information and Knowledge Society | Office of the Technical Secretary, Office of the President | Technical Support Unit (UTEA), based at the Dominican Telecommunications Institute (INDOTEL) |

| Country | Characteristics of the current document | | | Background and status | | Institutional framework of the current strategy | | |
|----------------------------------|--|--------------------|------------------|---|---------------------------------|--|---|--|
| | Name of the document | Period of validity | Type of Document | Previous document and year of issue | Status of ICT policy | Main coordinator | Strategic management | Operative management |
| Trinidad & Tobago | Fast Forward | 2003 - 2008 | Definitive | No previous document | 1st Generation - Implementation | Executive Group on the National Information and Communication Technology Plan | Ministry of Public Administration and Information, in interministerial coordination | Executive Group |
| Uruguay | Uruguay Digital Agenda 2007-2008 (ADU'0708) | 2007 - 2008 | Definitive | No previous document | 1st Generation - Implementation | Agency for the Development of Electronic Governance and the Information and Knowledge Society (AGESIC) | Presidency of the Republic | Agency for the Development of Electronic Governance and the Information and Knowledge Society (AGESIC) |
| Bolivarian Republic of Venezuela | National Plan for Telecommunications, Information Technologies and Postal Services 2007-2013 | 2007 - 2013 | Definitive | National Information Technology Plan 2001 | 1st Generation - Implementation | National Information Technologies Centre | Ministry of Science and Technology | Ministry of Science and Technology |

Source: OSILAC based on information published in official web sites, and the document "Information Society and Public ICT Policies in the Caribbean: a review of advances and challenges, policy instruments and country experiences," Miranda, Carlos (2007), Information Society Programme, ECLAC, 2007.

The issues on the agendas show that the countries of the region are more interested in ICTs as a means of achieving social integration and improving the quality of life of the population than as a driver for economic development. The recurrent themes in the 17 countries for which information was available and which have formulated ICT policies are the creation of access and infrastructure, e-government, followed by human capital formation and the generation of contents and applications. Issues relating to the production sector, such as e-business and the development of software and hardware industries, seem to arise less frequently (see graph 3).

GRAPH 3
TOPICS OF THE NATIONAL AGENDAS OF THE INFORMATION SOCIETY, JANUARY OF 2008
(n = 17 national agendas)



Source: OSILAC, 2007.

Note: It includes Bahamas, Barbados, Bolivia, Chile, Colombia, Cuba, Ecuador, El Salvador, Guatemala, Guyana, Jamaica, Mexico, Peru, Dominican Republic, Trinidad and Tobago, Uruguay, and the Bolivarian Republic of Venezuela. The information of Granada could not be accessed.

The specific objectives of the digital agendas are changing. Strategies have been used to increase access by developing shared access centers (telecenters), in some cases along with computer-literacy programmes. Only in a second stage, once this objective has been achieved, is it possible to evolve towards topics such as content and quality, increasing the importance of the variety and quality of services, particularly in regard to access to broadband.

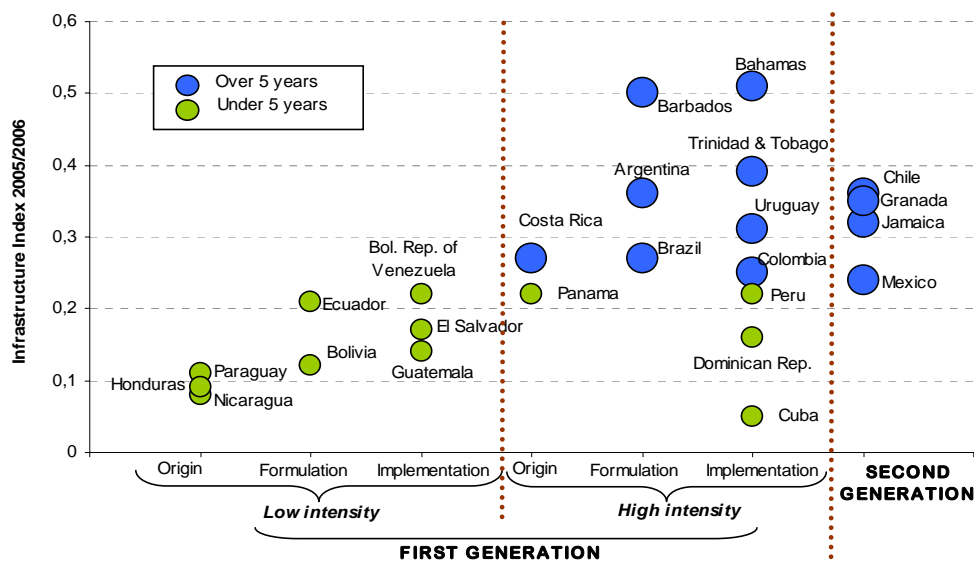
2. Country progress in critical areas and the status of their ICT policies

Having assessed the state of digital policies, this analysis will now turn to the situation of the countries of the region in some of the critical areas of the information society: infrastructure and e-government. These areas have been the focus of efforts and policy-making over the longest period of time.⁸

⁸ The Infrastructure Index from the Digital Opportunities Index of the International Telecommunications Union (ITU) will be

Graph 4 illustrates the degree of access to ICT infrastructure and the status of development of the ICT policies in countries of the region. Countries are classified according to whether they are applying first- or second-generation ICT policies. In the case of countries at the stage of first-generation strategies, a further distinction is made based on the phase of the process of policy adoption and implementation (origin, formulation or implementation) and on the intensity of the ICT-related activities being conducted. The term “ICT-related activities” refers to the execution of programmes, projects or initiatives with a strong ICT component; such activities may or may not be part of sectoral digital policies. Countries are also classified on the basis of the maturity of such activities, that is, the time over which measures of this type have been implemented; to simplify the analysis, this classification includes two categories: measures with a maturity of more, or less, than five years.

GRAPH 4
LEVEL OF INFRASTRUCTURE DEVELOPMENT IN 2005/2006, STATUS OF DIGITAL POLICIES,
INTENSITY AND MATURATION TIME OF THE RELATIVE ACTIVITIES IN ICT, AS OF JANUARY
2008



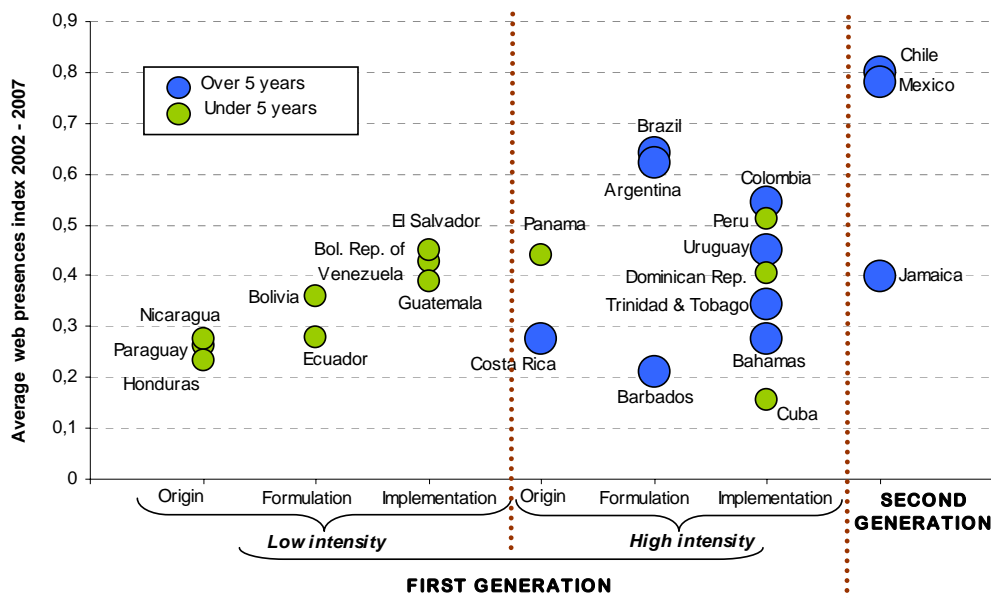
Source: OSILAC.

The graph shows that the more ICT-related measures are adopted in a durable form, the better the country's situation is in terms of access and infrastructure. While such progress is concordant with the level of economic development, there are countries with similar per capita income levels, such as Chile and the Bolivarian Republic of Venezuela, or Colombia and El Salvador, which have different degrees of progress. The countries that have achieved greater progress are those that have adopted more intensive measures and whose digital policies have a higher level of maturity.

used to analyze the level of development infrastructure. The Infrastructure Index is composed of penetration indicators of ICT services in order to evaluate the degree of access of the population to these technologies. The indicators used are the penetration of fixed telephony, computers and Internet access at home; also the individual penetration of mobile telephony and mobile access to the Internet are used. As for the advance in electronic government, we will use the index of Web presence elaborated by the United Nations Online Network in Public Administration and Finance (UNPAN). The Web presence index is composed of the Index of Global Preparation of Electronic Government, and it is based on an on-line presence model, meaning that the Index bases itself on the different levels of Web development. It differentiates between Government web sites according to their degree of sophistication, going from emergent-type presence, to consolidated presence, interactive, and transactional presence on the net. The classifications of Web presence reflect a subjective evaluation based on a methodological framework.

Graph 5 shows the development status of e-government and the national ICT strategies in some countries of the region. The classification criteria follow the same logic used in the previous case to classify the maturity level of the country regarding ICT agendas.

GRAPH 5
INDEX OF ELECTRONIC GOVERNMENT'S ON-LINE PRESENCE, THE STATE OF DIGITAL POLICY DEVELOPMENT, AND THE INTENSITY AND MATURITY OF ICT-RELATED ACTIVITIES, TO JANUARY 2008



Source: OSILAC.

As in the previous case, the more intense the use of ICT-related measures over time, the greater the development of e-government. The cases of Chile, Mexico, Colombia, Brazil, and Argentina illustrate this situation. In the case of the last two countries, since the countries have not yet defined digital strategies or are in the process of defining one, the results relate to initiatives being executed. Chile and Mexico, on the other hand, are in the second phase of policy generation, which shows that better results are obtained when the country acts in accordance with coordinated consensus-based guidelines, such as digital policies or agendas.

Hence, the importance of the execution of concrete actions to achieve advances in critical areas of digital development. It is indispensable to impel action, although sometimes it is not possible to define a policy. However, the evidence reveals that the countries that have had more continuous coordinated actions over time are those that are better-positioned to build the Information Society. This suggests the importance of a learning process. A virtuous circle seems to exist between the consolidation of a coherent national strategy and the achievement of progress. However, the logic of inverse causality, from progress towards the existence of a strategy, cannot be ruled out.

3. Lessons learned from national experiences

Efforts to implement ICT policies have been affected by diverse factors, not only inherent to the process but also exogenous. Inherent factors include the institutional weaknesses of agencies, which, together with certain coordination failures, are an obstacle to success. The lack of funding for this area or the fact that it has frequently been necessary to resort to each ministry's regular budget has meant that funds are insufficient and fragmented, preventing planned activities from being undertaken. In some cases, lack of participation and commitment by significant actors has detracted from the legitimacy of the process, shifted its emphasis or caused serious deterioration, compounded by factors such as a change of government or of the competent authority. In the same way, some countries have embarked on policies promoted by ICT-related sectors without taking into account the fact that the topic had not matured sufficiently to justify the establishment of a State policy.

Given the fact that this is a new topic; those policies have frequently been the result of individual leaderships, which raises doubts as to their continuity even if they have the backing of the country's highest authorities

In some countries, certain sectors see themselves as the exclusive owners of the issue and consider that the entry of new stakeholders and opinions into the debate only serves to complicate the process. This may lead to a situation where the telecommunications authority or the software industry, for example, may be allowed to determine the modernization strategy or the teaching methods and contents adopted for digital education in schools. The experience of ICT experts is decisive, but the same applies to the knowledge of persons working in sectors in which ICTs may have far-reaching repercussions. Moreover, ICTs themselves are an effective instrument for facilitating consensus-building, the integration of all sectors and coordination of efforts.

The integration of relevant authorities in the digital agenda is crucial for its success. In order to achieve the commitment and cohesiveness needed for a particular objective, raising awareness of the issue is vital. Opinion-shapers, whether from civil society, the business sector, academia or the public service, will have a role to play in explaining the importance of ICTs for economic and social development and in conveying the relevance of the issue in a clear, comprehensible and convincing manner to different political and social segments.

National expenditure on ICTs may be viewed from two perspectives: spending on ICT projects in each country, and spending on ICT equipment and software by each public body. Lack of information on the amount of money actually spent on ICTs means that their relative weight in the budget is underestimated; whereas software or telecommunications companies know exactly what and how much is sold to public agencies, the public sector does not usually record this information. This often results in the use of incompatible standards which hamper interoperability between agencies; this leads to adjustments that end up wasting resources. Inefficiencies in resource management may also arise when contracting services or when equipment is purchased in a fragmented way. Consequently, the entity responsible for coordinating and implementing the national agenda should have access to this information when making recommendations on investment in ICT projects.

In summary, a successful strategy for the Information Society will collapse or triumph depending on the organizational architecture and information and communication mechanisms. Such a strategy has to establish and open up functional communication channels with all the sectors, while at the same time assuring that the voices of national promoters are heard. Information on the resources used is a prerequisite for coordination during the operative stage of the strategy.

4. The regional dimension: origins, characteristics and significance

The Regional Action Plan on the Information Society for Latin America and the Caribbean (eLAC) is a regionally concerted political agenda that recognizes the importance of ICT for the economic and social development of the countries in the region. It also looks to facilitate the adoption processes of ICT through improved cooperation and exchange of best practices in their development. This agenda was conceived at the World Summit on the Information Society (WSIS, 2003-2005), an instance in which a consensual political commitment was achieved among 175 countries, with a Declaration that defined 67 guiding principles, and an Action Plan that sets out 167 goals as global challenges to be achieved by the year 2015. Considering that most of the 167 actions are not directly relevant to the region, there was a need to formulate and develop an action plan that reflects the necessities and specific realities of Latin America and the Caribbean. The eLAC plan is the fruit of a sustained, joint effort by the authorities of the countries and is the principal set of ICT policies in the region. At the same time, it is an operational instrument for achieving the targets of the World Summit on the Information Society, along with those of the Millennium Development Goals.

The Regional Action Plan focuses on the creation of an environment suited for the implementation of policies, built to coordinate and guide the different efforts, existent initiatives and to incorporate the use of ICT in the different areas of activity of societies, taking advantage of economies of scale and cost reduction in the adoption of ICT.

The central idea of eLAC was to identify what was urgent and important for the region, by defining the eLAC2007 Action Plan, which included 30 goals and 70 activities to undertake in the 2005-2007 triennium,⁹ and later on eLAC2010 with 83 goals to achieve during the years 2008-2010. This way, they try to adapt the regional particularities to the goals of the global community, completing an intermediary function between the necessities of the countries in the region and the rhythm of global development.

For the plan to accomplish its intermediary function between world requirements and regional realities, it bases itself on guidelines that aim to achieve three types of benefits that provide feedback regarding its evolutionary dynamic:

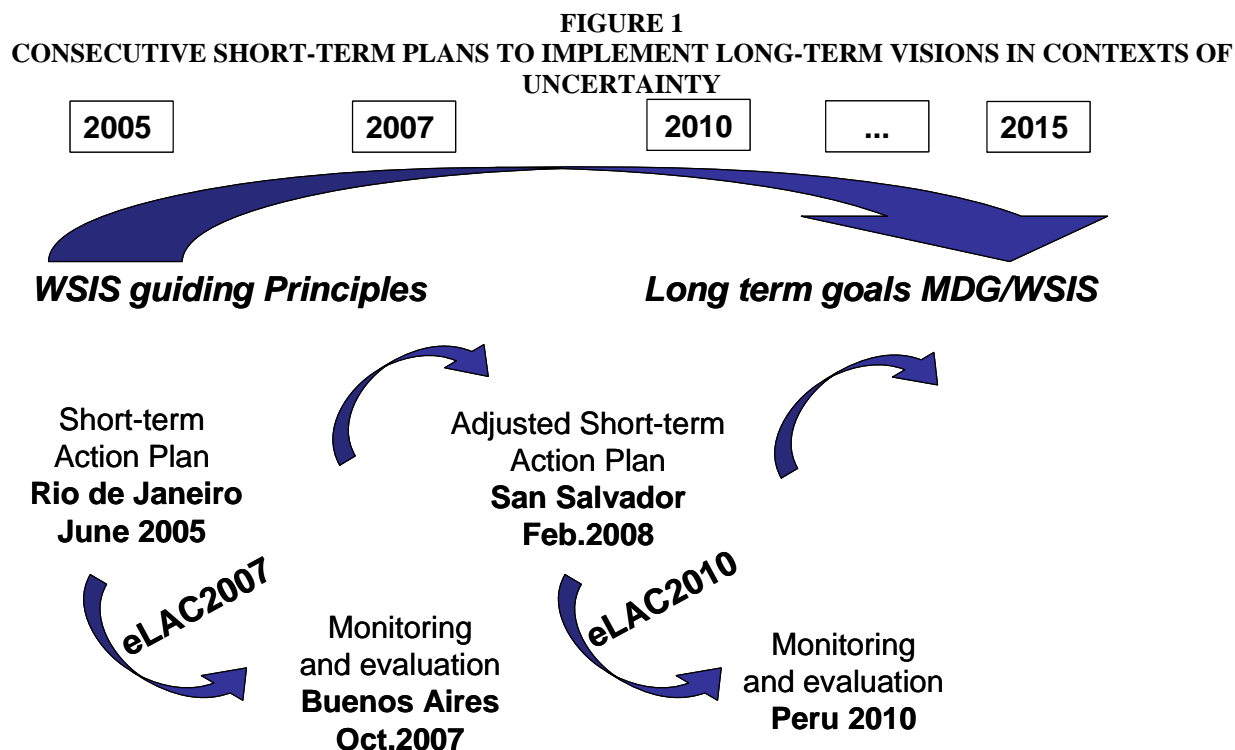
- To strengthen regional projects
- To drive strategies
- To study critical topics in depth

The goals of the plan can be classified depending on these orientations. As much in the eLAC2007 plan as in eLAC2010 most of them are action-oriented and associate themselves with the strengthening of regional projects and the deepening of knowledge in critical topics. To promote strategies, they rely on action-oriented activities, as well as activities aimed at quantifiable results. The region is progressing in its learning process as far as the formulation of goals that are quantifiable. While only 10% of the eLAC2007 goals were of this type, the countries defined 22% of the eLAC2010 goals in a way that allows concrete monitoring with quantitatively verifiable results.

In light of the dynamic nature of ICT, eLAC is inspired by a long-term vision (towards 2015) that is characterized by short-term actions linked to a specific action plan. This innovative concept allows for the revision of the execution of the goals and reformulation of the objectives, as they are completed and

⁹ See: <http://www.cepal.org/SocInfo/eLAC>.

according to new necessities that emerge (see figure 1). To facilitate that, ECLAC carried out a monitoring exercise to measure the degree of progress towards the execution of the goals of eLAC2007¹⁰.



Source: Regional monitoring mechanism of the eLAC Regional Action Plan.

Also, between April of 2006 and September of 2007, ECLAC carried out a multi-sectoral policy priority consultation exercise (Delphi) to evaluate the importance of the goals of the eLAC2007 so as to define a new regional agenda for the 2007 to 2010 period. The exercise received 1,454 contributions from people working in the public and private sectors, academia and civil society¹¹. The document that presents the results of the process served as input for the negotiations that culminated in February of 2008 at the II Ministerial Conference on the Information Society, in San Salvador, with the adoption of a new action plan, the eLAC2010. Of the 83 approved goals in eLAC2010, 60% came from the multi-sectoral consultation.

Comparing the goals of eLAC2007 with those of eLAC2010, 20% of them are similar; 50% are in line with the previous ones but have been adjusted to the changing contexts and the progress of the Information Society, while 30% point out new challenges for the period 2008-2010. The exercise suggests

¹⁰ See "Monitoring eLAC2007: Progress and current state of development of Latin American and Caribbean information societies," OSILAC, ECLAC, 2007, on-line <http://www.cepal.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/5/29945/P29945.xml&xsl=/ddpe/tpl/p9f.xsl&base=/socinfo/tpl/top-bottom.xsl>.

¹¹ According to the available information, this Delphi is the most extensive on-line exercise for the formulation of public policies in the history of intergovernmental processes in Latin America and the Caribbean.

that three years is a reasonable timeframe to review the goals of a regional political agenda because, once that period had passed, it was necessary to adjust more than half of them. Meanwhile, 20% of the new plan points to challenges that did not exist in the regional policy proposals three years earlier.

Another innovation in the design of the regional plan is its emphasis on the coordination of public and private actions. To build inclusive and efficient Information Societies, public policies designed through the collaboration of all the sectors involved with ICT are needed. The complexity of the task and the transnational nature of digital networks demand the establishment of multilateral strategies of action to promote and negotiate the integration of countries as information societies.

Most of the eLAC2007 initiatives were in progress for years and they relied on resources from the government and the private sector. With eLAC2007, it was possible to join their efforts in a public-private working scenario that facilitates the coordination of initiatives and the creation of synergies, avoiding the duplication of efforts and liberating resources that can be used to promote new projects. A good part of the eLAC2007 activities have been carried out by sectors not linked to the State, in cooperation with the governments who decide on the actions and coordination of the plan. In this sense, the platform enhances the functionality of the current multilateral system by introducing certain characteristics of direct democracy. This way, it profiles itself as a new style of multilateral action that includes actors of the civil society together with state representatives.

The Monitoring of eLAC2007 showed that goals related to capacity-building and knowledge reveal greater progress than the areas of transparency and public efficiency, relative to the development of electronic applications and of policy instruments. This is also the case for access and digital inclusion. The monitoring highlights the advances in connectivity and the increased penetration of telephony and Internet, the deployment of public ICT access centers, the connectivity of municipalities and local governments, and the interconnection of investigation and education networks, mainly among the universities of the region. In regards to electronic applications, the stagnation in the area of healthcare and the use of digital tools for the administration of natural catastrophes are notable areas in which ICT has not been fully incorporated.

As such, the Information Societies of the region still have not taken advantage of many technological possibilities in this respect. As for political instruments, it is worth noting the paralysis of the areas of financing and universal access policies as well as in the implementation and operation of the legislative framework. The fact that in most of the countries of the region universal access funds were created but have not been used shows that the policy challenge many times does not lie in the creation of legislation and regulatory frameworks, but in its effective implementation. In the same way, regarding computer rights, the simple establishment of norms is not enough, given the need to train experts, judges, lawyers, etc. that are able to put these laws into practice.

From the point of view of policy formulation, it is clear that the institutionalization of a transversal strategy containing so many different topics is a very complex process. That is why it is important to observe progress on this aspect. The countries of Latin America and the Caribbean have opted for different models to solve the coordination challenge of a transversal policy, with different results; however the topic of ICT has managed to occupy an unquestionable space in the political agendas that have started an important process of maturity around them.

5. Lessons learned from regional coordination

From the results obtained, one can derive five conclusions as feedback to the process, especially relating to the renovation or temporary extension of the regional coordination effort and its content.

- i) The conceptual distinction between access, capacities, applications and policies can lead to a partial and fragmented approach to digital development that focuses development efforts on these aspects.

- ii) eLAC produces major benefits as a public-private “metaplatform” for regional cooperation.
- iii) Digital development in the public sphere shows strong heterogeneity among countries that can be the basis for regional cooperation.
- iv) Activities designed to achieve quantifiable results are less useful when indicators are imprecise or measured in relative terms.
- v) Action-oriented activities show more progress when partners and action mechanisms are well-defined.

6. Abridged digital profiles for the 21 countries studied

Under the framework of the Digital Review 2007 for Latin America and the Caribbean, 21 countries of the region were studied during the year 2007. In this abridged document, only a few representative statistics will be presented, while more details of the 21 case studies can be found in the complete report.

Digital development involves a wide range of aspects to keep in mind. Among characteristics that stand out are: the income, the degree of maturity of institutions, the political level, and culture in relation to the topic. Some international organizations have built aggregated indexes that classify, according to different methodologies, the different variables associated with the development of the Information Society, in order to measure the degree of readiness of the countries and regions regarding this objective. To this end, access indicators are used as well as other indicators related to the population’s educational level and their capacities to make appropriate use of ICT, the development of electronic applications, the existence of an appropriate legal framework for the implementation of electronic solutions, the existence of digital policies and the business environment, among others.

In the region, it seems that the countries of the Southern Cone lead the development process towards the Information Society, followed by the countries of the Caribbean. Meanwhile, Central America and the Andean Region are falling behind.

The following tables present the digital profile of the countries studied, separated by sub-region.

As can be observed in Table 2, the countries of Central America are characterized by a medium and low level of development, in socio-economic terms. Low literacy still exists in countries like Guatemala, an aspect that hinders the transition towards an Information Society.

The penetration levels of these technologies are still very low, and in countries like Honduras, Guatemala and Nicaragua; broadband Internet subscriptions are practically non-existent.

TABLE 2
MAIN INDICATORS OF CONTEXT AND ICT FOR SELECTED COUNTRIES IN MESOAMERICA

| MACROECONOMIC AND SOCIAL INDICATORS (2006) | COSTA RICA | EL SALVADOR | GUATEMALA | HONDURAS | MEXICO | NICARAGUA | PANAMA |
|--|---------------|----------------|----------------|---------------|---------------|----------------|---------------|
| POPULATION (MILLIONS) | 4.3 | 6.9 (2007) | 12.7 (2005) | 7.3 (2005) | 106.5 | 5.6 (2005) | 3.2 |
| GDP PER CAPITA (THOUSANDS OF USD) | 11.6 | 5 | 4.5 | 2.7 | 11.8 | 4 | 9.3 |
| HUMAN DEVELOPMENT INDEX (HDI) (POSITION) | 0.846 (48) | 0.729 (101) | 0.673 (118) | 0.7 (117) | 0.829 (52) | 0.698 (112) | 0.812 (61) |

| | | | | | | | |
|---|-------|-----------|-------------|------------|-------|-------------|----------------|
| ALPHABETIZATION RATE (%) | 95 | 95 (2007) | 69.1 | 80 (2005) | 91.63 | 70 | HIGHER THAN 90 |
| ICT INDICATORS (2006) | | | | | | | |
| FIXED TELEPHONY (FIXED LINES/100 BITS.) | 30.72 | 14.81 | 10.49 | 9.69 | ND | 4.43 | 13.17 |
| MOBILE TELEPHONY (FIXED LINES/100 BITS.) | 32.82 | 55.03 | 55.6 | 30.44 | ND | 32.68 | 52.46 (2005) |
| COMPUTERS (PC PER 100 HABITANTS) | ND | ND | 2.08 | 1.9 | ND | 3.77 (2005) | 4.56 (2005) |
| INTERNET (USERS EVERY 100 HABITANTS.) | 27.61 | 10 | 10.22 | 4.67 | ND | 2.77 | 6.69 |
| BROADBAND (SUBSCRIBERS PER EVERY 100 HABITANTS) | 2.2 | 0.88 | 0.22 (2005) | 0.0 (2005) | ND | 0.34 | 0.54 |

Source: International Telecommunication Union, UNICEF, WEF

The countries of the Caribbean identified in Table 3 possess a medium to high level of development. Nevertheless, there is still a low penetration of broadband subscribers, which limits the use of new ICT applications.

TABLE 3
MAIN INDICATORS OF CONTEXT AND ICT USED IN SELECTED CARIBBEAN COUNTRIES

| MACROECONOMIC AND SOCIAL INDICATORS(2006) | BARBADOS | CUBA | JAMAICA | DOMINICAN REPUBLIC | TRINIDAD & TOBAGO |
|---|--------------|------------|-----------------|--------------------|-------------------|
| Population (millions) | 0.28 | 11.2 | 2.6 | 9.7 | 1.3 |
| GDP per capita (thousands of USD) | 15.7 | 3.9 | 4.0 | 8.05 | 18.9 |
| Human Development Index (HDI) (Position) | 0.892 (31) | 0.826 (50) | 0.736 (101) | 0.779 (79) | 0.814 (59) |
| Alphabetization Rate (%) | 99.7 | 99.8 | 88.7 (est.2005) | 87 | 98.6 |
| ICT INDICATORS (2006) | | | | | |
| Fixed Telephony (fixed lines/100 bits.) | 50.14 (2005) | n.a. | 12.85 | n.a. | 24.87 |
| Mobile Telephony (fixed lines/100 bits.) | 76.65 (2005) | n.a. | 93.74 | n.a. | 126.42 |
| Computers (CPU per 100 habitants) | 14.8 (2005) | 2.2 | n.a | n.a. | n/a |
| Internet (users every 100 habitants.) | 59.48 (2005) | n.a. | 29.82 | n.a. | 12.48 (2005) |
| Broadband (subscribers per every 100 habitants) | 11.87 (2005) | n.a. | 2.97 | n.a. | 1.57 |

Source: International Telecommunication Union, UNICEF, WEF

The Andean Region possesses the smallest per capita income of the region, although all the countries present Human Development Indexes classified in the "medium" range. Of all the technologies, the greatest expansion has been in mobile telephony, due to the low access costs. Nevertheless, computers

are still scarce and there is a relatively low level of Internet users and broadband subscribers – all of which are related variables.

TABLE 4
MAIN INDICATORS OF CONTEXT AND ICT IN SELECTED ANDEAN COUNTRIES

| MACROECONOMIC AND SOCIAL INDICATORS(2006) | BOLIVIA | COLOMBIA | ECUADOR | PERU |
|--|----------------|-----------------|----------------|---------------|
| Population (millions) | 9.63 | 42.8 | 18.7 | 27.1 |
| GDP per capita (thousands of USD) | 2.2 | 2.2 | 2.97 | 3.6 |
| Human Development Index (HDI) (Position) | 0.692 (115) | 0.791 (75) | 0.772 (89) | 0.767 (82) |
| Alphabetization Rate (%) | 87 | 93 | 91 | 88 |
| ICT INDICATORS (2006) | | | | |
| Fixed Telephony (fixed lines/100 bits.) | 7.13 | 16.98 | 13.07 | 8.46 |
| Mobile Telephony (fixed lines/100 bits.) | 28.86 | 64.31 | 63.23 | 30.91 |
| Computers (CPU per 100 habitants) | 2.4 | 5.38 | 6.55 | n.a. |
| Internet (users every 100 habitants.) | 6.2 | 14.49 | 11.54 | 25.81 |
| Broadband (subscribers per every 100 habitants) | n.a. | 1.36 | 0.2 | 1.71 |

Source: International Telecommunication Union, UNICEF, WEF

The Southern Cone has higher penetration rates compared to the rest of the sub-regions. The countries possess relatively high literacy rates, in spite of their heterogeneity in terms of per capita income. This situation determines the penetration and appropriation of some technologies, as in the case of Paraguay, the country with the smallest regional income per capita.

TABLE 5
MAIN INDICATORS OF CONTEXT AND ICT IN SELECTED COUNTRIES OF THE SOUTHERN CONE

| MACROECONOMIC AND SOCIAL INDICATORS(2006) | ARGENTINA | BRASIL | CHILE | PARAGUAY | URUGUAY |
|--|-------------------------|---------------|---------------|-----------------|----------------|
| Population (millions) | 37.8 | 187 | 16.5 | 6.1 | 3.4 |
| GDP per capita (thousands of USD) | 6.3 (2007) | 8.8 | 7.3 | 5.2 | 11.6 |
| Human Development Index (HDI) (Position) | 0.869 (2007) (38) | 0.8 (70) | 0.867 (40) | 0.755 (95) | 0.852 (46) |
| Literacy Rate (%) | 99 | 89 | 96 | 91 | 96.8 |
| ICT INDICATORS (2006) | | | | | |
| Fixed Telephony (fixed lines/100 bits.) | 24.17 | 20.54 | 20.2 | 5.25 | 28.31 |
| Mobile Telephony (fixed lines/100 bits.) | 80.52 | n.a. | 75.62 | 51.31 | 66.83 |
| Computers (CPU per 100 habitants) | 9.07 | n.a. | n/a | 7.47 (2005) | n.a. |
| Internet (users every 100 habitants.) | 20.91 | 17 | 25 | 4 | n.a. |
| Broadband (subscribers per every 100 habitants) | 4.01 | 2.35 | 5.08 | 0.25 | 3.06 |

Source: International Telecommunication Union, UNICEF, WEF

The 21 national case studies carried out under the framework of the Digital Review 2007 (to be found in the complete Spanish version of the report) present qualitative evidence of the situation presented by the previous statistics. Although all countries have begun activities to confront the challenge of becoming modern Information Societies, a great heterogeneity can be observed in their progress. In general, as the topic matures, the tendency to use ICT as a true tool for development increases, in an attempt to make better use of these technologies; meanwhile, most of the countries still continue with the challenge of expanding access. The above-mentioned can be explained due to a number of variables and events which occurred in the countries -- from socio-economic crises and policies that arose together with the whole process of adopting ICT in neighbouring countries (as in the case of Argentina), to the development of policies centered on personal leaderships or of certain government agencies, which can compromise the continuity of the processes.

Within the countries studied, the stronger dimensions relate to ICT access and infrastructure and e-government. Practically all the countries have begun initiatives and/or policies that aim to provide greater access to ICT, even in other areas such as education, when they are connected to remote communities to provide content. As such, the next step is the creation of capabilities for the handling of these technologies, the development of applications and electronic contents, especially in the education and trade sectors. However, in spite of much progress being reported in terms of existent initiatives in the mentioned areas, there are also important obstacles that arise in the way the different subsystems work, which consider ICT as an annex to their conceived processes and not as a tool that needs to be integrated through a general reformulation of the system.

At the beginning, the development of e-government was focused on the generation of web presence, because the efforts initially concentrated on the creation of digital web sites of governmental entities, evolving from merely informative places to interactive pages that provide information and allow a certain degree of participation, like the downloading of forms and realization of on-line procedures. Subsequently, it was acknowledged that in order to add value by means of ICT, changes were needed at the level of processes. As such, their incorporation seeks to improve the administration of the State and the efficiency of service to citizens. In these cases, actions have concentrated on the central government, on processes that can diminish their operational costs and increase their transparency. Such is the case of tax collection systems, the emission of invoices and tickets, customs, fiscal accounting and public purchases. At the same time, there are advances in the interoperability among different government's electronic applications.

In spite of these advances, there are still big challenges. Health and the administration of justice are the sectors that have been most relegated. They are essential for development, but they still have not reached the digital era. The lessons learned in more advanced sectors, like public administration and education, can be useful to accelerate the integration of ICT for the modernization of these areas of development. Exchange and coordination between authorities and decision-makers will be decisive for achieving this acceleration.

In this sense, and especially in light of the potential of intra-regional exchange, the "Digital Review 2007" aims to act as a vehicle to implement goal 60 of the current Regional Action Plan eLAC2010, wherein the authorities of the region highlight the need to: "strengthen the national policies for the Information Society from a regional perspective, including the coordination and participation of public organisms, civil society and the private and academic sector, inside their respective roles and responsibilities, in the design and the diffusion of ICT programs".¹²

¹² San Salvador Commitment: <http://www.cepal.org/SocInfo/eLAC>