# Monitoring of the Plan of Action eLAC2010: Advances and challenges of the information society in Latin America and the Caribbean

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# Executive Summary

The Regional Plan of Action on the Information Society in Latin America and the Caribbean, known as eLAC2010, is a joint strategy undertaken by the countries of the region and conceives of Information and Communications Technologies (ICT) as instruments for furthering economic development and social inclusion. eLAC2010, a second version of the Regional Plan, was approved at the Second Ministerial Conference on the Information Society in Latin America and the Caribbean, held in San Salvador on 6-8 February 2008.

The Plan of Action is a platform for public, private, civil and academic action in all of the region's countries, and sets the stage for dialogue and cooperation among regional and international organizations, as well as with other regions. At the same time, it serves as a catalyst for intraregional cooperation and supports efforts to identify and design public policies by means of technical evaluations.

This monitoring report was prepared by the Economic Commission for Latin America and the Caribbean (ECLAC), in its capacity as technical secretariat of eLAC, in collaboration with the Governments involved. Its objective is to highlight progress towards the goals identified in the Plan, identify the main areas in which the region lags behind the rest of the developed world, evaluate the position of each of the continent's countries, while at the same time bringing to light, whenever possible, the differences that exist within individual countries. The expectation is that this report will allow Governments and other stakeholders to draw their own conclusions about the effectiveness of their policies and the pace of progress in their respective countries.

The Plan of Action eLAC2010 expanded and deepened a number of the goals contained in the first Regional Plan of Action eLAC2007, which covered the 2005-2007 period. The Plan includes 83 goals, grouped in six chapters, reflecting the region's priorities at the time the plan was launched (2008): education, infrastructure and access, health, public management and electronic government, the productive sector, and policy and strategy instruments.

This Plan of Action has triggered and served as a benchmark for the development of national policies, creating synergies and eliminating duplication of efforts among the different stakeholders and sectors working on ICT issues in the region. Along with the positive aspects of eLAC2010, lessons have been learned from the various difficulties encountered along the way.

## Advances and challenges

ICT and education were identified as top priorities for eLAC2010, given that they provide a strategic setting for transitioning towards the information society, while also providing a path to achieving equity. The hope is that, in Latin America and the Caribbean, ICT can contribute to broadening educational coverage and, particularly, to improving the overall quality of education. Electronic education (e-education) has progressed at a rapid pace in the last few years in a number of the countries of the region, where e-education policies have been implemented. This has facilitated greater digital inclusion and generated more equal opportunities. In the last several years the region has also seen a change in perspective regarding the incorporation of ICT in the educational sector, with a lessening of the emphasis on funding infrastructure and an increase in prioritizing ICT as a means of improving teaching and learning.

There continue to be constraints on access to educational content suitable to individual local circumstances. However, the national and regional educational portals are a helpful contribution in this regard. Attempts must be made to increase the

presence of interactive educational materials on such sites. At the same time, the limited access to the Internet and, in particular to broadband service, remains one of the greatest obstacles to the use of ICT on a mass scale for teaching/learning. High-speed networks at lower cost would facilitate the work of teachers and students by providing collaborative activities and access to information. In addition, insufficient efforts are being devoted to training teachers to effectively incorporate ICT in their teaching process.

Infrastructure and access were defined by eLAC2010 as the second priority, since the development of a country's information and communications infrastructure determines the ability to carry out all of the activities involved in exchanging and managing information, from those involving production to activities related to the social objectives of improving the population's quality of life and training human capital. If there is unequal access to ICT –a vital factor in carrying on a society's daily activities – a new form of social exclusion arises, one known commonly as the digital divide. Those without access to these technologies not only remain marginalized in terms of the resulting benefits, but also become victims of a new form of marginalization in areas where such technologies are used, such as, for instance, in the productive, educational and health sectors. Thus, access to and use of these technologies can provide not only new employment opportunities, but can also enhance social interaction and integration. The lack of access to such technologies often relates less to preferences, interests or generational factors than to constraints resulting from socioeconomic factors that limit the possibilities for using ICT services and acquiring the skills to use them. This problem is increasingly impeding the inclusion of the most vulnerable segments of the population. Thus, closing the digital divide is essential, inasmuch as telecommunications services, particularly the Internet and broadband service, form the foundation of modern societies and economies.

Though there have been obvious advances in telecommunications infrastructure in recent years, they fall short of current needs. Along with the spread of mobile telephony –though this is largely in the area of prepaid cell phones that often are used only to receive calls– there are clear limitations on bandwidth, in terms of coverage, speed and pricing. Problems such as restrictions on international links or insufficient local internet traffic exchange points (IXP), result in broadband services of lower quality and higher price than in the developed countries. Adding significantly to this problem is the fact that content is largely hosted outside the region. In view of the foregoing, and given that these technologies are an essential means of accessing information and knowledge, ECLAC has proposed that bandwidth should be conceived as a public interest service and requires initiatives on the part of the State, and that it should therefore be a priority on national development agendas. The region has vast resources in universal access funds, which in many countries are not being used and which could play an important role in expanding broadband to currently marginalized sectors. Furthermore, the development of public access centres could contribute to social inclusion. The region's regulatory structures have so far failed to deal with the technological changes involved in convergence, as well as with the challenges of universalizing services. Addressing these issues will be an important step in developing telecommunications infrastructure.

The role of ICT in the field of health was highlighted in eLAC2010 as a third priority and could help address the current challenge, in the health sector in Latin America and the Caribbean, of guaranteeing access to care, particularly for the most vulnerable segments of society. ICT could not only help to improve coverage and quality of care, but could also optimize the management of national health care services. In recent years there has been a proliferation of initiatives, both public and private, consisting of everything from telephone lines to sophisticated telemedicine applications and systems for transmitting data. Their general objectives have the common goals of extending health care to remote areas, providing low-complexity health centres with access to specialists located at major health centres, obtaining timely epidemiological information, and offering training to personnel at individual sites. However, progress in incorporating ICT in the health field is broadly viewed as lagging behind similar efforts in other sectors, as is apparent from the slowness in establishing specific national policies.

With regard to public governance, eLAC2010 highlights the need to improve communication between citizens and the various national and local governmental entities by providing better services and enhancing the transparency of government agencies. The region has made major progress in developing electronic government, although progress has varied from country to country, as shown by the 2010 Electronic Government Index prepared by the United Nations[1]. At present, all of the countries in the region have government portals, and there has been a

[1] United Nations, *United Nations E-Government Survey 2010* (ST/ESA/PAD/SER.E/131), New York, 2010.

notable increase in the number of online transactions. However, progress with regard to interacting with citizens through Web 2.0 tools remains incipient. At the same time, there has been an increase in the number of public procurement portals, and nine of the region's countries make it possible to offer services and goods online. The monitoring carried out for this report concluded that there was a significant lag in incorporating ICT in the operations of local governments, despite the fact that in some countries more than 80% of municipalities have a website, some with the ability to execute online transactions. However, there has been limited progress in the basic conditions of interoperability, posing major challenges in designing national plans for electronic government, including the task of developing common standards.

The eLAC2010 goals related to the productive sector are aimed at increasing the region's productivity. To this end, the objective is to foster access to and use of ICT in productive processes among micro, small and medium-sized enterprises, promote the development of firms that produce ICT goods and services (software and applications), and support industries that produce creative content. The proposed initiatives include encouraging telework and other forms of network-based work. Although the region has seen progress in basic ICT infrastructure among enterprises, there has been insufficient and unequal progress from one type of enterprise to another, varying according to size and to the sector of activity. Smaller firms, as well as firms in traditional sectors, where there continues to be scant use of the more sophisticated applications that could significantly increase productivity, continue to lag behind. Moreover, there is a lack of available labour skilled in using the most advanced tools – an obstacle that also confronts ICT firms, such as software developers. There are few initiatives to directly support the incorporation of ICT in enterprises, and there has been insufficient effort to exploit indirect incentives that Governments could bring to bear through electronic procurement policies or the implementation of tools such as electronic billing.

In short, considerable advances have been made in recent years, in a number of different areas. Most countries have been implementing digital policies and, thus, the region is now well placed to take advantage of the new opportunities provided by ICT for development. At the same time, it should be noted that while certain gaps have narrowed –for example in terms of access to mobile telephones– there has been a resurgence of new divides which threaten to leave the region far behind with regard to new applications and the benefits of digital development. The region is lagging further and further behind with respect to broadband access, in terms not only of the number of subscribers but also of the quality of access. Moreover, the gap with the industrialized countries in terms of digital-readiness remains just as wide. Thus, the region must redouble its digital efforts in the interests of development, competitiveness and equality.

## Evaluation of the Plan of Action goals

The monitoring process makes it possible to obtain detailed information on the extent of progress towards the goals contained in the Plan. In order to provide an overview of the relative progress achieved by the region in the different areas, three levels of progress have been established as follows: "progress", "little progress" and "no progress". Based on the views of experts who have examined the information contained in this document, a table summarizing this assessment has been prepared, but should be viewed as only preliminary.

## TABLE A
## PROGRESS TOWARDS MEETING ELAC2010 GOALS

| Area | Goals (grouped) | Progress |
|---|---|---|
| Education | ICT in the teaching-learning process (goals 1 and 2) | Moderate progress |
| | Improving school connectivity, through broadband technology (goal 3) | Moderate progress |
| | Making computers available to students (goal 4) | Moderate progress |
| | The need for teacher training (goals 5 and 6) | Moderate progress |
| | Educational websites that are full members of regional networks (goal 7) | Progress |
| | Availability of content for learning (goals 8 and 9) | Moderate progress |
| | Promoting cultural diversity and tolerance and combating discrimination through the use of ICT (goal 10) | Moderate progress |
| Infrastructure and access | Providing mass access to ICT and making them inclusive (goals 11, 12, 18, 21-23 and 25) | Moderate progress |
| | Promote the development of ICT infrastructure (goals 13-17 and 24) | Moderate progress |
| | Promote the connectivity of research centres (goals 19 y 20) | Progress |
| | Incorporate ICT in disaster management (goals 26-28) | Moderate progress |
| Health | Promote public policies for electronic health care (goal 29) | Moderate progress |
| | Establish electronic health service in public health centres and hospitals (goal 30) | Moderate progress |
| | Incorporate ICT into health care planning and management (goal 34) | Moderate progress |
| | Train health professionals in the use of ITC (goal 31-33) | Moderate progress |
| Public governance | Improve the provision of e-government services (goals 37-40 and 47) | Progress |
| | Increase government access and use (goals 41-46) | Progress |
| | Develop spatial data infrastructure (goal 48) | Progress |
| Productive sector | Increase ICT access and use among firms (goals 49, 52, 57 and 58) | Moderate progress |
| | Promote capacity-building and innovation (goals 50, 51 and 55) | Moderate progress |
| | Strengthen the region's software industry (goal 58) | Progress |
| | Promote the region's creative and content industries (goal 54) | Progress |
| | Increase regional cooperation (goals 51, 53, 54, 56 and 59) | Progress |
| Policy instruments and strategies | Strengthen policies for the information society (goals 60 and 63) | Moderate progress |
| | eLAC as a mechanism for coordination and follow-up (goals 24, 33, 54, 57, 61, 65, 72–74, 78 and 82) | Progress |
| | Improve the process of information society measurement and strengthen OSILAC (goals 63 and 66-68) | Progress |
| | Regional cooperation for Internet governance (goal 72) | Progress |
| | Legal framework of the information society (goal 78) | Moderate progress |
| | Mainstreaming the gender perspective into eLAC2010 (goal 73) | Moderate progress |
| | Proper management of technological waste (goal 82) | Moderate progress |
| | Stimulate the local production of digital content (goal 83) | Moderate progress |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of target monitoring in this document.

# I. Regional Plan of Action

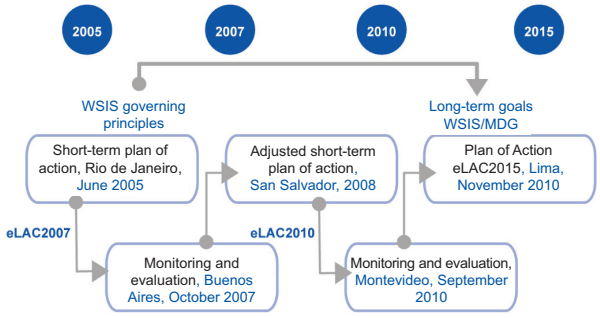
## A. Origin, characteristics and significance

The Regional Plan of Action on the Information Society in Latin America and the Caribbean is a joint strategy undertaken by the countries of the region that conceives of information and communications technologies (ICT) as instruments for furthering economic development and social inclusion. eLAC2010 is a long-term strategy (aimed at 2015) aligned with the Millennium Development Goals and the goals of the World Summit on the Information Society (WSIS), which includes a set of goals associated with various short-term plans of action.

eLAC2010 was approved at the Second Ministerial Conference on the Information Society in Latin America and the Caribbean, held in San Salvador on 6-8 February 2008. This second version, following on the eLAC2007 Plan of Action, constitutes an intermediate stage on the road towards fulfilling the long-term WSIS goals and Millennium Development Goals, as indicated in Diagram I.1.

The World Summit on the Information Society represents the commitment of the Governments and peoples of the world to "build an inclusive Information Society; to put the potential of knowledge and ICT at the service of development; to promote the use of information and knowledge for the achievement of internationally agreed development goals, including those contained in the Millennium Declaration; and to address new challenges of the Information Society, at the national, regional and international levels".[1]

**DIAGRAM I.1**
**LATIN AMERICA AND THE CARIBBEAN: PRINCIPAL MILESTONES ON THE PATH TOWARDS THE OBJECTIVES OF THE WORLD SUMMIT ON THE INFORMATION SOCIETY**




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of the Plan of Action for the Information Society in Latin America and the Caribbean, eLAC2010.

The eLAC2010 goals resulted from, on the one hand, the exercise carried out through a Policy Priorities Delphi method, which involved multisectoral consultation between 2006 and 2007 with nearly 1,500 participants, and, on the other, the political consensus of the Governments of the region. The ultimate purpose of the Plan of Action eLAC2010 has been to contribute to building an inclusive, development-oriented information society. To this end, the Governments of Latin America and the Caribbean invited the principal stakeholders of their respective societies and of the international community to lend their cooperation, through the eLAC platform, to achieving the objectives established in this Plan of Action.

[1] See United Nations, World Summit on the Information Society. Plan of Action (WSIS-03/GENEVA/DOC/5-E), 2003, p. 1.

The new Plan of Action eLAC2015 will be adopted at the Third Ministerial Conference on the Information Society in Latin America and the Caribbean: building inclusive and innovative digital societies, which will take place in Lima, Peru, from 21 to 23 November 2010. At the Regional Preparatory Meeting for this Conference, which was held in Montevideo in September 2010, a proposal defining the number of goals, introduces goals for regional cooperation and poses a set of priorities including: "achieve a leap towards universal broadband access", "achieve transactional and participatory e-government" and "achieve access to ICT for all microenterprises and SMEs and promote digital innovation".

## B. Structure and content

The Plan of Action eLAC2010 was structured as a matrix of six chapters with four common areas, as shown in table I.1. The six chapters reflect the region's major challenges, seeking to promote access to, use of, and training in ICT in the areas of education, infrastructure and access, health, public management and electronic government, the productive sector, and policy instruments and strategies. eLAC2010 also established priorities, centred on the three main areas: education, infrastructure and access, and health.

**TABLE I.1**
**eLAC2010: NUMBER OF GOALS PER CHAPTER AND AREA**

| Chapters | Areas | | | | |
|---|---|---|---|---|---|
| | Enabling environment | Access | Capacities | Applications and content | Total |
| Education | 2 | 1 | 3 | 4 | 10 |
| Infrastructure | 5 | 9 | 3 | 1 | 18 |
| Health | 1 | 1 | 3 | 3 | 8 |
| Public management | 2 | 2 | 4 | 4 | 12 |
| Productive sector | 3 | 2 | 3 | 3 | 11 |
| Policies and strategies | 24 | | | | 24 |
| **Total** | 37 | 15 | 16 | 15 | 83 |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

This plan expanded the design of the Regional Follow-Up Mechanism, which includes a Board of Directors, Points of Thematic Coordination (coordinators for countries that volunteer to provide them) and Working Groups, of which 10 had already been created through eLAC2007, with four established in eLAC2010. The "national focal points" were given renewed support, and ECLAC was asked to serve as the Technical Secretariat.

With 83 specific goals, the Plan of Action has served as a benchmark for developing national policies, creating synergies and eliminating duplication of efforts among the different stakeholders and sectors working on ICT issues.

Annex 1 lists the goals of the Plan of Action eLAC2010, which formed the basis for the present monitoring document.

In the course of the monitoring process, certain limitations in the Plan of Action eLAC2010 became evident; these were noted as items to be considered in developing a new Plan of Action for 2015. Problems encountered in monitoring goals were, in some cases, the result of poor editing that left a lack of clarity and definition in the objectives being sought. The plan also came to be seen, in the course of public consultation, as containing an excessive number of goals, corresponding to different levels of action –some related to strategic, others to operational guidelines– with insufficient differentiation, thus making it difficult to grasp the entirety as a unified whole. Moreover, during the monitoring process certain gaps in the plan became evident, such as the scant importance given to issues of intergovernmental coordination, public-private collaboration, and the development of a legal framework to foster the dissemination of ICT in a way that promotes equity. There was also a lack of emphasis on intraregional cooperation.

## C. Monitoring of eLAC 2010

The monitoring of eLAC2010 has been carried out by ECLAC through the eLAC2010 Technical Secretariat, under the mandate of the Ministerial Conference on the Information Society in Latin America and the Caribbean. The work of the Technical Secretariat has faced the challenge of monitoring 83 goals contained in the Plan dealing with various areas of the information society. As can be seen in table I.1, each of these areas contains goals related to creating a favourable environment, while others concern measures relating to the access needed to fulfill the objectives; a third group of goals deals with skills, and a fourth relates to applications and content.

Among the proposed goals, some are qualitative, while others are quantitative. With regard to the qualitative goals, there has been a bibliographic examination, as well as an analysis of the various sources of information, including the press, in all of the region's countries. This compilation includes a coverage of academic and private sources, public sources such as the Internet, and project reports. Experts were consulted, particularly the eLAC focal points in each country, each of whom was sent an electronic survey to be completed by official authorities in the individual areas covered by the Plan of Action eLAC2010. With all of this information in hand, and having made a detailed analysis of the data, an evaluation was made regarding the stage of progress of the information society in the region.

In regard to the quantitative goals, there has been an attempt to select and validate the most appropriate indicators available. In many cases, the choice of indicators is based on those that have been collected and provided by the Observatory for the Information Society in Latin America and the Caribbean (OSILAC), which, as a member of the Partnership on Measuring ICT for Development, has been a driver and participant in efforts to establish international indicators and incorporate them in different statistical collection instruments. However, given that this is a recent and complex, process, there are indicators on which information has not yet been collected. OSILAC has compiled information from a broad range of sources and countries in the region, primarily from national statistical offices, which have provided data from household surveys for processing and analysis. On this basis, OSILAC has worked to reconcile the variables related to ICT and provide a disaggregated analysis of different socioeconomic and geographic sectors –an element vital to any determination of the status of ICT in the region. Information produced by other members of the Partnership on Measuring ICT for Development was also used, as were the databases of the International Telecommunication Union (ITU) and of the United Nations Department of Economic and Social Affairs. Also, given the close relation between the Plan of Action eLAC2010 and the objectives of the World Summit on the Information Society, attempts have been made to use the proposed indicators for monitoring those objectives.

Countries lack the capacity to assess quantitatively progress towards incorporating ICT in different areas. This situation has a notable effect in specific fields, such as e-education and e-health – areas in which publicly available information exists in only some of the countries.

The present monitoring document provides information on the degree to which there has been progress in regard to each of the goals of the Plan of Action eLAC2010. However, in order to carry out a systematic analysis, the various goals, which are closely interconnected, have been grouped according to thematic areas, which are analysed in different sections. Thus, the present document is organized to correspond to the chapters of the Plan and, for each chapter, there are sections with an evaluation of the main issues/goals. Based on the analysis, the end of each section sets forth the corresponding challenges, in the form of proposed actions to be included in the new Regional Plan of Action.

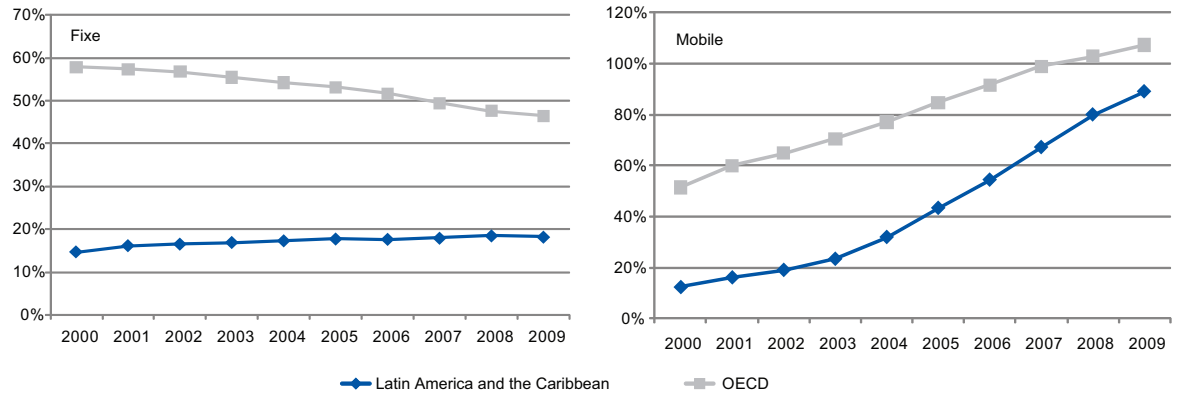
The preliminary results obtained in the monitoring task, were presented to the representatives of the countries of the region at the meeting "eLAC2010 Progress meeting: establishing priorities for the information society of the future", held 2-3 December 2009 at the ECLAC headquarters in Santiago, Chile. Subsequently, new advances were presented at the Fifth European Union-Latin America and the Caribbean Ministerial Forum on the Information Society, held in Segovia, Spain, in March 2010, through the ECLAC publication, "Avances en el acceso y el uso de las tecnologías de la información y la comunicación en América latina y el Caribe, 2008-2010". As a result of that process, a preliminary version of this document was presented at the Regional Preparatory Meeting for the Third Ministerial Conference on the Information Society in Latin America and the Caribbean: Building inclusive and innovative digital societies, which was held from 23 to 24 September 2010 in Montevideo. The various comments and contributions of the countries of the region have been incorporated in the preliminary version of eLAC2010 and the consolidated version of the monitoring report on this Plan of Action is presented below.

# II. The region in the international context

The developed countries have been at the forefront of producing and adopting ICT, quickly attaining high levels of access to the technologies and paving the way for their use in the less developed countries. The differences in the degree of development of ICT has highlighted the socioeconomic disparities between industrialized and developing countries, giving an international perspective to the so-called digital gap. Because the constant emergence of new technologies makes for an ever-changing landscape with regard to ICT, the digital gap is constantly evolving, with those who already have access to one technology being the first to exploit the next. This makes the digital gap a constantly moving and elusive target.

There are great differences in ICT access between the world's developed regions and Latin America and the Caribbean. In the case of landline telephony, as shown in figure II.1, penetration in Latin America and the Caribbean is 19.9 subscribers per 100 inhabitants, while the rate for the high-income OECD countries is 42 per 100 inhabitants, with landline telephony experiencing a steady decline in the developed countries since 2000. In the countries of Latin America and the Caribbean, landline penetration has reached a plateau of approximately 20 lines per 100 inhabitants; in contrast, the gap has narrowed considerably for mobile telephony. The high levels of penetration for this technology in the region (89 per 100 inhabitants in the aggregate as of 2009) reflect, above all, the high penetration in the Caribbean countries (over 100 mobile telephone subscribers per 100 inhabitants), with high rates in some Latin American countries as well. As a result of the relative costs of different services, the vast majority of people in Latin America and the Caribbean –primarily low-income segments of the population– primarily use cell phones for text messaging and for receiving calls, rather than for placing calls.

**FIGURE II.1**
**LATIN AMERICA AND THE CARIBBEAN AND ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD): PENETRATION OF FIXED AND MOBILE TELEPHONY, 2000-2009**

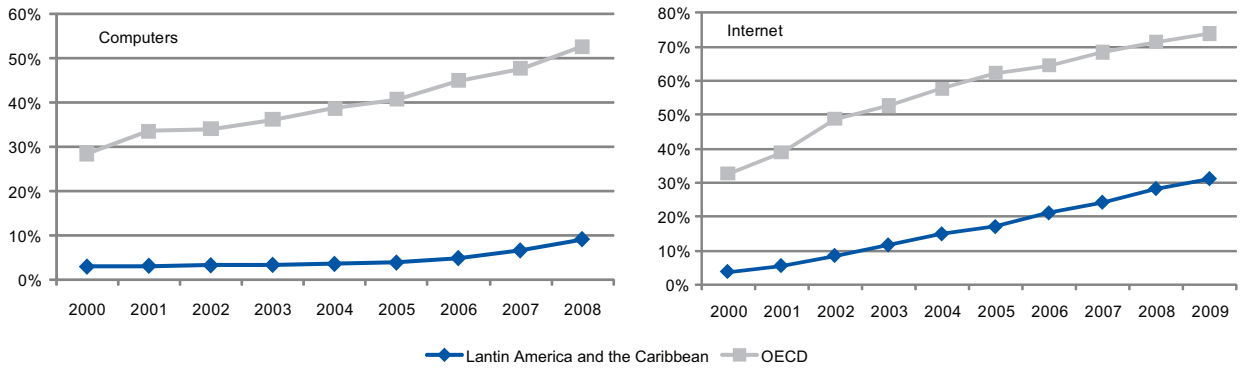



Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of International Telecommunication Union (ITU), "World Telecommunication/ICT Indicators Database 2010" [online] http://www.itu.int/ITU-D/ict/publications/world/world.html, 2010.

Computer penetration remains low in the Latin American and Caribbean region, at below 10 per 100 inhabitants. This is in sharp contrast with rate in the high-income OECD countries, which stood at 50 per 100 inhabitants in 2008. One factor in this gap is the still-high cost of computers in the region. In short, equipment penetration has not reached the levels required to provide universal access. Thus, shared access remains important in the region.

Internet use is continuing rising in the high-income OECD countries, as shown in figure II.2. In this group of countries, penetration in 2009 was 74 Internet users per 100 inhabitants, whereas penetration in Latin America and the Caribbean was 31 per 100 inhabitants.

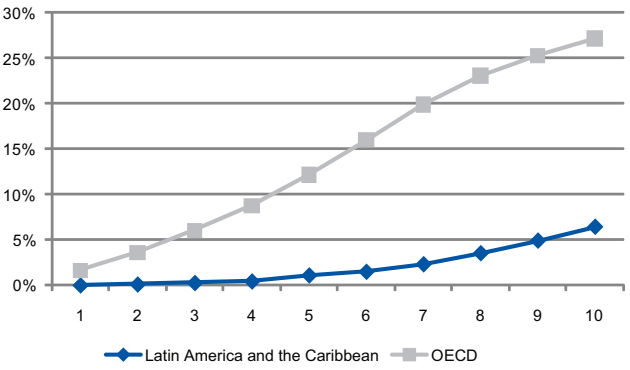
**FIGURE II. 2**
**LATIN AMERICA AND THE CARIBBEAN AND ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD): PENETRATION OF COMPUTERS AND INTERNET, 2000-2009**




Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of International Telecommunication Union (ITU), "World Telecommunication/ICT Indicators Database 2010" [online] http://www.itu.int/ITU-D/ict/publications/world/world.html, 2010.

During this period, new gaps opened up between Latin America and the Caribbean and the OECD countries, including a gap in broadband access and a gap in transmission capacity. Broadband serves as the basis for the applications that Governments and citizens require if they are to obtain the full benefits of ICT. Figure II.3 shows the rapid expansion of broadband in the OECD countries, compared with its slow growth in Latin America and the Caribbean, where average national broadband penetration is only six subscribers per 100 inhabitants, in contrast to 27 per 100 inhabitants in the high-income OECD countries.

**FIGURE II.3**
**LATIN AMERICA AND THE CARIBBEAN AND ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD): PENETRATION OF FIXED BROADBAND INTERNET, 2000-2009**




Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of International Telecommunication Union (ITU), "World Telecommunication/ICT Indicators Database 2010" [online] http://www.itu.int/ITU-D/ict/publications/world/world.html, 2010.

Although infrastructure and access are highly influential factors in the spread of ICT in the region, ICT growth is a multi-dimensional phenomenon. Therefore, the present monitoring of the information society includes other factors that are important to consider when assessing societies' preparedness with regard to digital development. International organizations such as the International Telecommunication Union (ITU), the United Nations Department of Economic and Social Affairs (DESA) and the World Bank have constructed aggregate indices that use different methods to group the variables associated with the development of the information society to measure the preparedness of countries and regions with respect to this objective.

In addition to indicators of access, the material below reflects more general indicators related to the populations' educational levels and their ability to make beneficial use of ICT, the development of electronic applications, the presence of legal frameworks adequate for the implementation of electronic solutions, the existence of digital policies, and the business climate, and so forth. The analysis of these aggregate indices provides a preliminary picture of the region's state of digital development in comparison with other world regions. Table II.1 below shows electronic preparedness, or e-readiness, by world region, using the world leader (in this case, OECD) as a reference value. The table shows the average index in the region in relation to the average for the world leader. The highest value is expressed as 1, and each region's position is shown in relation to this maximum. A total of seven world rankings published in 2009 and 2010 were consulted to calculate these values: the 2009 ICT Development Index (IDI), the 2009 Economist Intelligence Unit e-Readiness Index (EIU), the Networked Readiness Index 2009–2010 (NRI), the E-Government Index of the Department of Economic and Social Affairs of the United Nations (DESA E-GI), the World Bank Institute Knowledge Economy Index (WBKEI), the World Bank Institute Knowledge Index (WBKI) and the World Bank Information and Communications Technology Index (WBICT).

**TABLE II.1**
**PREPAREDNESS FOR THE INFORMATION SOCIETY IN COMPARISON WITH THE WORLD'S LEADING REGION, BY REGION, 2009-2010**

| Region / Index of e-readiness | Average index in the region in relation to the average index in the world's leading region Region (Leader's reference value = 1) | | | | | | | | Position of the region among the six developing regions |
|---|---|---|---|---|---|---|---|---|---|
| | High income: OECD | High income: Non-OECD | Eastern Europe and Central Asia | Latin America and the Caribbean | East Asia and the Pacific | Middle East and North Africa | South Asia | Sub-Saharan Africa | |
| WBKEI | 1 | 0.99 | 0.68 | 0.59 | 0.73 | 0.62 | 0.29 | 0.31 | 4 |
| WBKI | 1 | 0.99 | 0.70 | 0.62 | 0.77 | 0.65 | 0.29 | 0.31 | 4 |
| IDI (ITU) | 1 | 0.70 | 0.64 | 0.51 | 0.62 | 0.55 | 0.25 | 0.24 | 4 |
| NRI | 1 | 0.90 | 0.76 | 0.71 | 0.90 | 0.77 | 0.70 | 0.65 | 4 |
| DESA E-GI | 1 | 0.82 | 0.73 | 0.64 | 0.72 | 0.64 | 0.73 | 0.38 | 5 |
| EIU | 1 | 0.92 | 0.69 | 0.66 | 0.82 | 0.67 | 0.50 | 0.62 | 4 |
| WBICT | 1 | 0.88 | 0.68 | 0.58 | 0.64 | 0.63 | 0.26 | 0.25 | 4 |
| Average | 1 | 0.84 | 0.67 | 0.58 | 0.73 | 0.61 | 0.53 | 0.35 | 4 |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of World Bank [online databases] http://www.worldbank.org/; International Telecommunication Union (ITU), *Measuring the Information Society. The ICT Development Index*, Geneva, 2009; World Economic Forum, *The Global Information Technology Report 2009-2010*, Geneva, 2010; United Nations, *United Nations E-Government Survey 2010* (ST/ESA/PAD/SER.E/131), New York, 2010; and Economist Intelligence Unit (EIU), "E-readiness rankings 2009: the usage imperative", London, 2009.
Note: The indices are as follows: World Bank Institute Knowledge Economy Index (WBKEI); World Bank Institute Knowledge Index (WBKI); ICT Development Index (IDI), Network Readiness Index (NRI); E-government Index (DESA E-GI); Economist Intelligence Unit e-Readiness Index (EIU); and World Bank Information and Communication Technology Index (WBICT).

Averaging of these seven indices shows that the highest-income countries are leading in the construction of information societies. The Latin American and Caribbean region is in fourth place among the developing regions. This is a very significant gap compared to the region's position in the previous monitoring of the information society. At that time, the average of the 2004/2005 indices showed the region in second place, just behind Eastern Europe and Central Asia.

Further information can be garnered by comparing different subregions within Latin America and the Caribbean. Taking the regional average as a reference value, it is clear that the Southern Cone countries are most favourably positioned, followed by the countries of the Caribbean and Andean subregions. The latter subregion advanced from its position in the eLAC2007 monitoring, leaving Central America as the lowest-ranked subregion (see table II.2).

**TABLE II.2**
**LATIN AMERICA AND THE CARIBBEAN: PREPAREDNESS FOR THE INFORMATION SOCIETY IN RELATION TO THE REGIONAL AVERAGE, 2009-2010**

| | Southern Cone | Caribbean | Latin America and the Caribbean | Central America | Andean Subegion |
|---|---|---|---|---|---|
| KBKEI | 1.11 | 1.12 | 1.00 | 0.80 | 0.81 |
| KBKI | 1.11 | 1.10 | 1.00 | 0.78 | 0.87 |
| IDI (ITU) | 1.14 | 1.16 | 1.00 | 0.45 | 0.94 |
| NRI | 1.04 | 1.07 | 1.00 | 1.01 | 0.92 |
| DESA E-GI | 1.16 | 1.00 | 1.00 | 0.52 | 1.07 |
| EIU | 1.11 | 1.04 | 1.00 | 0.00 | 0.88 |
| WBICT | 1.16 | 1.15 | 1.00 | 0.82 | 0.97 |
| Average | 1.18 | 1.02 | 1.00 | 0.68 | 1.02 |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of World Bank [online database] http://info.worldbank.org; International Telecommunication Union (ITU), Measuring the information society- The ICT Development Index (IDI), Geneva, 2009; World Economic Forum, The global information technology report 2009-2010, Geneva, 2010; United Nations, UN e-government survey 2010 (ST/ESA/PAD/SER.E/131), New York, 2010; and Economist Intelligence Unit e-Readiness Index (EIU), E-readiness ranking 2009: the usage imperative", London, 2009. ,
Note: The indices are as follows: World Bank Institute Knowledge Economy Index (WBKEI); World Bank Institute Knowledge Index (WBKI); ICT Development Index (IDI), Network Readiness Index (NRI); E-government Index (DESA E-GI); Economist Intelligence Unit e-Readiness Index (EIU); and World Bank Information and Communication Technology Index (WBICT).

# III. Education

The eLAC2010 Plan of Action defined the incorporation of ICT in education as the highest priority in Latin America and the Caribbean, primarily because of the potential of these technologies for enhancing the teaching-learning process.

The high priority given to this area was due to the fact that education is a strategic element in transitioning to the information society, while at the same time representing a means of achieving greater equity. In Latin America and the Caribbean, ICT are expected to contribute to expanding the coverage of education and, above all, to improving its overall quality.

In the past decade, the countries of the region have made a concerted effort to incorporate national policies designed to integrate ICT in schools. This type of policy has yielded significant results for reducing the digital divide and social inequalities.

Views within the region concerning the incorporation of ICT in the education sector have changed. Whereas, initially, the emphasis had been on providing infrastructure, the development of models for integrating these technologies into the teaching-learning process is now an added concern.

# A. ICT in the teaching-learning process (goals 1 and 2)

## Growing interest in studying the impact of ICT use in the teaching-learning process

- There has been growing interest in the region in studying ICT as a tool for improving the teaching-learning process, but nothing conclusive has emerged to date.
- Studies have been conducted in Argentina, Barbados, Chile, Colombia and Uruguay.[1]

**Challenge:** To develop appropriate models for evaluating the impact of ICT on teaching.

# B. Improving school connectivity, through broadband technology (goal 3)

## Insufficient connectivity in most of the region's countries

- The eLAC2010 objectives include achieving Internet connectivity (preferably broadband) in 70% of public teaching institutions, or tripling the number of schools connected.
- Internet access in schools, as well as efforts to improve the quality of access, will afford teachers and students access to new educational content in order to facilitate and support the teaching process in particular through digital libraries.
- A number of initiatives have been introduced to promote Internet access in schools, However, such access is still very limited, because network ranges are insufficient. According to a study conducted by the World Economic Forum in 1009 –which assesses Internet access in schools on a scale of 1 to 7, based on an opinion poll– the average rating was 3 for the countries of the region, compared with 6 for the OECD countries.[2]

## Initiatives to provide broadband service in schools

- There are initiatives in a number of the region's countries to expand coverage and improve the quality of broadband in schools (see figure III.1).
- Brazil's broadband-in-schools initiative was launched in 2008, and has provided broadband Internet access for 43,192 urban public schools throughout the country. According to an assessment by the National Telecommunications Agency (ANATEL), 25, 331 teaching institutions achieved connectivity in 2009, adding to the 17,861 that had acquired connectivity in 2008. By the end of 2010, all of the country's urban public schools are expected to be connected, with benefits to approximately 37 million students.[3]
- In Chile, the Ministry of Education's Enlaces programme created the Digital Network for Education (RDE) in 2009, aimed at increasing the bandwidth and quality of Internet connections in subsidized educational establishments and creating a more protected environment, with

[1] See Centro de Estudios en Políticas Públicas, fourth programme assessment " Todos los chicos en la red", Argentina, 2009; Centre of the University of the West Indies, " Impact on ICT", Barbados, 2009; Ministry of Education of Chile and the Organization of Ibero-American States for Education , Science and Culture (OEI), "¿Qué nos dice PISA sobre la educación de los jóvenes en Chile? Nuevos análisis y perspectivas sobre los resultados en PISA 2006", 2009; Centre of Studies on Economic Development of the University of Los Andes (CEDE), Colombia, February 2010; and Plan Ceibal, "Monitores y evaluación de impacto social del Plan Ceibal", 2009.

[2] The average was based on 22 countries in the case of Latin America and the Caribbean and on 13 countries in the case of OECD. For further information, see World Economic Forum, "Executive opinion survey 2009-2010". The global competitiveness report 2009-2010, 2009.

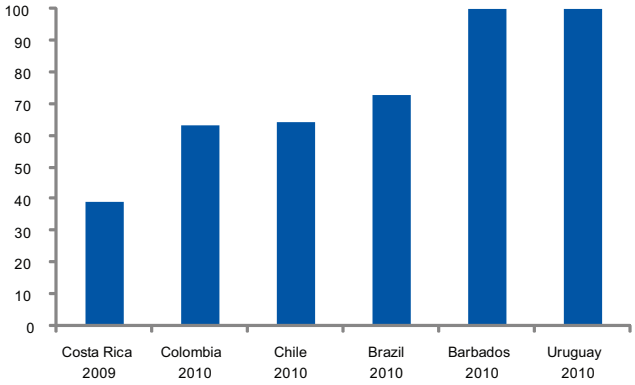
[3] See Brazil, official press release of the National Telecommunications Agency (ANATEL) [online], www.anatel.gov.br, February 2010.

solutions specifically tailored to schools. These have connectivity services that were designed specifically for educational establishments by 11 of the country's telecommunications firms.[4]

- In Uruguay, the Plan for Educational Connectivity/ Basic Computing for Online Learning (Plan CEIBAL) provides Internet access for XO laptop computers through schools and other connection points, taking advantage of the capacity of these devices to connect wirelessly. In 2009, the National Telecommunications Administration (ANTEL) connected 818 ADSL modems, including 574 with EDGE 20 technology with satellite service and seven with 3G. In 2010, 2,068 schools were capable of connecting to the CEIBAL network.[5]

**Challenge:** Increase broadband connections in educational establishments to make advanced educational applications viable.

**FIGURE III.1**
**LATIN AMERICA AND THE CARIBBEAN (6 COUNTRIES): BROADBAND ACCESS IN PRIMARY SCHOOLS, 2010 (Percentages)**




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official communications between Barbados, Colombia and Chile, and eLAC2010; and data from "Plan Ceibal", from Uruguay, "Barómetro Cisco de Banda Ancha para Costa Rica", from Costa Rica, and Federal Government of Brazil, "Inclusão digital" [on line] www.inclusaodigital.gov.br.

## C. Making computers available to students (goal 4)

### Progress in incorporating computers in the classroom

- One of the eLAC2010 goals was to ensure that 90% of students have spent at least 100 hours using computers for educational purposes by the time they complete their schooling.

- Various programmes have been implemented in the region to increase the availability of computers for students. In the initial stage, computer labs were created. Subsequently, computers entered the classroom as a result of various initiatives, some involving computers installed in classrooms, others involving computers on wheeled carts, and some providing projectors to make the teacher's computer screen visible to the class. In addition, there are interactive digital blackboards and one-to-one models in which each student works with his or her own device, be it portable computer, PC tablet and/or multimedia-enabled cell phone.

- Table IIIIII.1 identifies some of the initiatives for the provision of computers in schools. It attests to the results obtained with the CEIBAL Plan, which was launched in Uruguay in 2007. By the end of 2009, the goal of providing one laptop to each pupil in primary school had been fulfilled, and in 2010, distribution of these computers among students in secondary school had started. Similar initiatives are being pursued in other countries such as Argentina, Brazil, Costa Rica, El Salvador, Paraguay and Peru.

[4] See Chile, "Programa Enlaces" [online], www.enlaces.cl.
[5] This Plan is being conducted jointly by the Ministry of Education and Culture, the Laboratorio Tecnológico del Uruguay (LATU), the National Telecommunications Administration (ANTEL) and the National Administration for Public Education (ANEP). See Uruguay, "Plan CEIBAL [online] www.ceibal.edu.uy; and Uruguay Ciencia, "Plan CEIBAL" [online] http://www.uruguay-ciencia.com/articulos/PlanCeibalUCN6.pdf.N°7. January, 2009.

### TABLE III.1
### LATIN AMERICA AND THE CARIBBEAN (11 COUNTRIES): NATIONAL INITIATIVES FOR PROVIDING COMPUTERS TO STUDENTS AND TEACHERS, AROUND 2010

| Country | Initiative | Coverage |
|---|---|---|
| Argentina | Programa Conectar Igualdad.com.ar | 3 million netbooks for State schools |
| Bolivia (Plur. State of) | Computers for teachers | Computers for 135,000 teachers in State schools |
| Barbados | Ministry of Education | 100% of schools have been provided with infrastructure: computers + interactive whiteboards + printers + digital cameras, among others |
| Brazil | PROINFO | Proinfo had provided 42.688 State schools with computer equipment in 2010 |
| Chile | Programa Enlaces | The target is to arrive at a rate of 1 computer per 20 pupils in 2010 |
| Colombia | Colombia learning Computers for education | 134,827 computers for State schools |
| Nicaragua | Digital backpack plan | 100 schools have received digital backpacks |
| Mexico | Educational and information technology programme | Computers for 300,000 teachers |
| Paraguay | Plan for incorporating ICT in the classroom | By 2013: 1 computer for every 2 students. In 2010, providing training and computer equipment to 2,200 rural teachers and technological equipment to 20% of schools |
| Peru | 1 to 1 campaign | 153,000 computers for pupils in primary schools |
| Uruguay | Plan for Educational Connectivity/Basic Computing for Online Learning (Plan CEIBAL) | Provision of computers for 100% of pupils and teachers in State primary schools (315,000 computers). In 2010 start-up of delivery of computers in State secondary schools and technical colleges |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

- Notwithstanding these efforts, the student/computer ratio is high and variable. The average for the region is 45 pupils per computer, but there are significant differences between countries. For example, the rate for primary education in Uruguay is one computer per pupil, while in Honduras, the rate is one computer per 137 pupils (see table III.2).

- ICT access in schools increases equity. As figure III.2 shows, young people between the ages of 10 and 19 in the poorest income quintiles have access to the Internet at school more than they do in their homes.

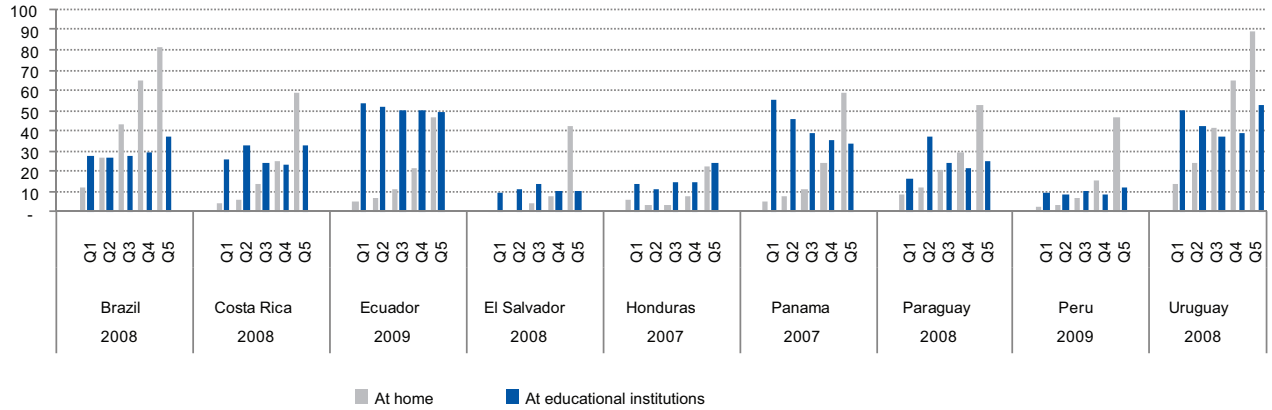
**Challenge:** Foster policies and initiatives for incorporating computers for students and teachers as well as for facilitating access to ICT in schools.

### TABLE III.2
### LATIN AMERICA (10 COUNTRIES): NUMBER OF STUDENTS PER COMPUTER IN THE SCHOOL SYSTEM, 2008

| | Primary | Secondary |
|---|---|---|
| Argentina | 28 | 28 |
| Brazil | 83 | 83 |
| Chile | 13 | 13 |
| Colombia | 30 | 30 |
| Costa Rica | 25 | 22 |
| Guatemala | 41 | 35 |
| Honduras | 137 | 30 |
| Nicaragua | 43 | 51 |
| Peru | 51 | 51 |
| Uruguay[a] | 1 | n.a. |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), "Aprendizajes en la sociedad del conocimiento: punto de quiebre para la introducción de las TIC en la educación de América Latina", unpublished; Chile, Programa ENLACES [en línea] www.enlaces.cl; y Plan for Educational Connectivity/Basic Computing for Online Learning (Ceibal Plan) [online] www.ceibal.edu.uy.
[a] Information relating to the year 2009.

FIGURE III.2
LATIN AMERICA (9 COUNTRIES): INTERNET USERS AGED 10-19,
BY PLACE OF ACCESS AND INCOME QUINTILE, AROUND 2009 (Percentage of total users)




Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of household surveys most recent data [online] http://www.cepal.org/tic/flash/.

## D. The need for teacher training (goals 5 and 6)

### Uneven realities in the region, and few teachers with specialized training

- Policies to promote the modernization of ICT infrastructure in schools have not been matched by policies to provide teacher training in the educational use of the new technologies.

- Teacher training in the region has been integrated into existing programmes and has taken the form of in-service training for fully-fledged teachers. Examples of continuous training programmes for teachers include the Red Enlaces in Chile and the National Programme for Informatics in Education (PROINFO) in Brazil.

- Teacher training in ICT use consists mainly of basic computer courses and only very recently of courses geared to its application in education. In those countries for which information is available, the scope of the training programmes is uneven. Chile and Peru have high indices for teacher training in the use of ICT, Colombia and Costa Rica are intermediate, and Nicaragua, Paraguay and Guatemala have the lowest training rates (see table III.3).[6]

TABLE III.3
LATIN AMERICA (8 COUNTRIES): TEACHERS WITH TRAINING IN THE USE OF COMPUTERS, 2009
(Percentages and number of teachers)

| Country | Trained in basic uses | Number of teachers with specialized training |
|---|---|---|
| Chile | 90 | 10 out of every 100 |
| Colombia | 90 | 44 out of every 100 |
| Costa Rica | 60 | 21 692 |
| Guatemala | 6 | 400 |
| Honduras | n.a. | 369 |
| Nicaragua | 17 | 267 |
| Paraguay | 10 | n.a. |
| Peru | 82 | n.a. |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), “Aprendizajes en la sociedad del conocimiento: punto de quiebre para la introducción de las TIC en la educación de América Latina”, unpublished.

[6] See Economic Commission for Latin America and the Caribbean (ECLAC), “Aprendizajes en la sociedad del conocimiento: punto de quiebre para la introducción de las TIC en la educación de América Latina”, unpublished.

- Government efforts to provide ICT training to teaching staff have been supported by a few public-private initiatives. Microsoft's Partners in Learning provides free training courses on the incorporation and use of technology in teaching. Participating are teachers in Argentina, the Plurinational State of Bolivia, Paraguay and Uruguay. The Intel Educar Programme in Latin America currently trains teachers in Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru.

**Challenge:** Incorporate within basic teacher training the skills required to fully utilize ICT. Continue to develop initiatives and programmes for the on-going training of teachers with emphasis on advanced ICT uses.

## E. Educational websites that are full members of regional networks (goal 7)

### New full members during the period

- One objective of eLAC2010 was to ensure that all national educational websites meet the criteria for full membership in regional networks (including completing the network-required content-indexing protocols and making the technical changes for connecting online with the educational network).

- The hope was to increase the sharing of experiences and high-quality content on regional networks, including Web 2.0 applications and distribution through other channels (such as radio and television).

- One of the most notable networks of educational websites in the region is the Latin American Network of Educational Portals (RELPE), which was created in 2004 by an agreement between the ministries of education of 16 Latin American countries.

- RELPE is a regional system for storage and circulation of educational contents and is constantly being expanded and upgraded. Its nodes are the national educational portals designed for each country. The network currently includes 19 national portals, of which 15 are full members and 4 are associate members (see table III.4).

- In addition, as of 2010 there are three partner members: the Educational Community of Central America and the Dominican Republic (CEDUCAR), the Educational Television Association of Latin America (ATEI) and the Latin American Portal for Education in Research-Based Science (INDAGALA) –as well as one honorary member, the Institute of Educational Technologies of Spain (ITE).

**Challenge:** Continue strengthening regional networks of educational portals.

TABLE III.4
LATIN AMERICAN NETWORK OF EDUCATIONAL PORTALS (RELPE): MEMBERS OF THE NETWORK, MARCH 2010

| Country | Name of portal | Category of membership |
|---|---|---|
| Argentina | Educ.ar | Full |
| Bolivia (Plur.State of) | Educabolivia | Full |
| Brazil | Portal do Professor | Full |
| Colombia | Colombia aprende | Full |
| Costa Rica | Educatico | Full |
| Cuba | CubaEduca | Associate member |
| Chile | Educarchile | Full |
| Ecuador | Educarecuador | Full |
| El Salvador | Mi Portal | Full |
| Guatemala | Mineduc | Associate member |
| Honduras | Hondurasaprende | Associate member |
| Mexico | Sepiensa | Full |
| Nicaragua | Nicaragua Educa | Full |
| Panama | Educa Panamá | Full |
| Paraguay | Arandu Rape | Full |
| Peru | Perú Educa | Full |
| Dominican Republic | Educando | Full |
| Uruguay | Uruguay Educa | Full |
| Venezuela (Bolivarian Republic of) | Portal Educativo Nacional | Associate member |

Source: Latin American Network of Educational Portals (RELPE) [online] www.relpe.org
Note: Full members are those websites designated, by the respective countries' ministries of education (one site per country), which have completed the network's content-indexing protocol and made the technical changes needed to connect online to the network. Associate members are those websites, designated by the respective countries' ministries of education, which are in the design or development stage or which have not yet completed the activities needed for effective connection to RELPE. These will immediately become full members once they have met the conditions described above.

# F. Availability of content for learning (goals 8 and 9)

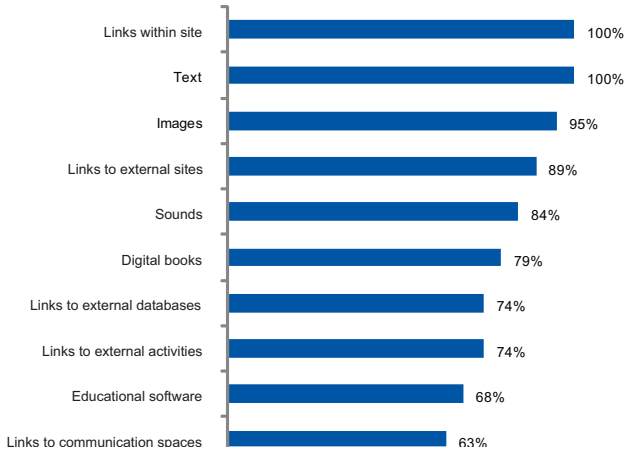
## Advances in digital content, and lags in the availability of educational software

- The content or digital resources of an educational website consist, among others, of the images, sounds, software, videos, interactive resources, digital books, moving images, links, communication spaces and distance learning courses available on it.

- The results of the revision of the 19 national websites designated by the respective ministries of education to participate in RELPE are presented in figure III.3. The revised educational websites have immediately available resources such as text, images and sounds. Moreover, some 80% of them have links or references to other sites. However, fewer than 70% of the educational websites have educational software and spaces for communication. Distance learning courses are offered by Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, the Dominican Republic, El Salvador, Paraguay and Peru.

- The option of locating content by educational level and area of learning exists in 16% of countries. This makes it easier to surf the web and obtain specific teaching objectives.

FIGURE III.3
LATIN AMERICA (19 COUNTRIES): PRESENCE OF DIGITAL EDUCATIONAL RESOURCES, 2010



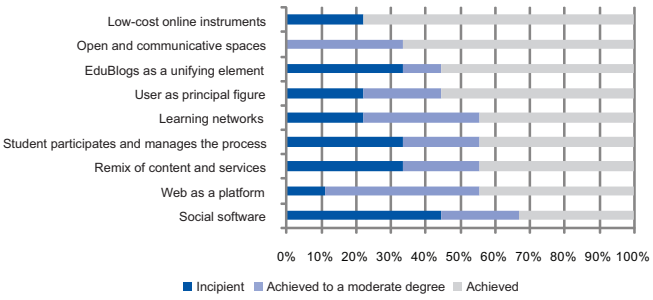

Source: Economic Commission for Latin America and the Caribbean (ECLAC), "El estado de los portales educativos latinoamericanos", unpublished.

## Moving towards Web 2.0 applications

- The current challenge for the websites is to move toward Web 2.0 status, which would mean that the sites allow for creative collaboration and involve users in the production of content. The countries of the region are gradually incorporating Web 2.0 features (see figure III.4), and some of them, such as Colombia's and Chile's, are already highly developed in terms of available technology.

**Challenge:** Increase the local offering of multimedia content for the learning process.

FIGURE III.4
LATIN AMERICA AND THE CARIBBEAN (19 COUNTRIES): WEB 2.0 FEATURES ON THE PRINCIPAL EDUCATIONAL SITES, 2009




Source: Economic Commission for Latin America and the Caribbean (ECLAC), "Aprendizajes en la sociedad del conocimiento punto de quiebre para la introducción de las TIC en la educación de América Latina", unpublished.

## G. Promoting cultural diversity and tolerance and combating discrimination through the use of ICT (goal 10)

### Interesting experiences in various countries

- eLAC2010 emphasized the need to use ICT applications in educational programmes as a means of promoting cultural diversity and tolerance, and as a way of combating all types of discrimination.

- Colombia and Panama have experience with ethnic and cultural programmes. In Colombia, the Atlas de la Diversidad Cultural is a teaching tool that draws on the collaboration of a network of schools to take advantage of the particular features of each location. Along with the Atlas de Culturas Afrocolombianas and el Micrositio de Etnoeducación, the Atlas de la Diversidad Cultural seeks to promote equity, tolerance, multilingualism, and all manifestations of pluralism in the region. Panama has developed interactive games as support material for an educational programme in order to encourage citizens to become familiar with the cultural wealth of its seven ethnic groups.

- Argentina, Chile and Paraguay offer experiences in bilingual and intercultural education. Educ. ar of Argentina incorporates content for bilingual intercultural education, which is included in school curricula. Chile has developed an educational software application through its Ministry of Education's Bilingual Intercultural Education Programme, which respects principles of non-discrimination. Paraguay's educational resources exist in both official languages (Spanish and Guaraní) and online courses are available for learning Guaraní.

**Challenge:** Substantially increase the production of digital content in different languages with special emphasis on indigenous languages, and continue using ICT in an environment of cultural diversity and tolerance, conducive to the elimination of all types of discrimination.

# IV. Infrastructure and Access

Information and communications technologies encompass telecommunications, audiovisual media and information technology. Communications networks constitute key infrastructure for the countries' development, being in mind that they provide services such as fixed and mobile telephony, data transmission and broadcasting.

In the past few years, the Internet has radically changed many aspects of people's lives –ways of communicating, interacting, sharing information, accessing services and marketing, among others. This has had reverberations in the social and productive spheres. As a result, there is now a wide range of electronic Internet applications in areas such as education, health and public administration, in the productive sector, and, recently, in environmental protection.[1]

The transmission of audio and video material, data, interactive services and certain other activities is highly dependent on the ability to share large volumes of information. This, in turn, depends on the bandwidth, or data transmission capacity, provided by networks. Broadband Internet, which can deliver speeds faster than those provided by switched networks (for example, 1Gbps versus 56Kbps), makes it possible to have permanent connectivity for services –both content and applications– while increasing opportunities for peer-to-peer exchanges of information and data.

It is, therefore, the combination of insufficient infrastructure and socioeconomic constraints that limits ICT access and use, resulting in digital gaps.

The term digital divide refers to the disparities between those with the ability to access and effectively use ICT and those that are totally or partially excluded from such benefits. Digital divides can be present both within countries and between countries.

Closing these gaps is an important objective, but one that is difficult to attain due to the rapid pace of technological change in the sector. Given the positive impact that ICT, and the Internet, in particular, have had in furthering the social and economic development of countries, it is essential that there be public policies to overcome obstacles to its widespread use.

The eLAC2010 infrastructure goals include providing mass access and inclusion for vulnerable groups and for populations in remote areas. They also underline the need to develop regional infrastructure, and to interconnect research centres through advanced networks. Lastly, they target greater use of ICT for disaster management. This chapter covers all of these challenges.

[1] As regards the eLAC2010 goals and the situation in the region, see the chapters on Education (II), Health (V), Public management (VI) and the Productive sector (VII).

# A. Providing mass access to ICT and making them inclusive (goals 11, 12, 18, 21-23 and 25)

## The relative lag of the Latin American and Caribbean countries in ensuring mass access

- The goals of the eLAC2010 Plan include promoting and developing high-quality ICT, as well as guaranteeing access. However, disparities in access stand out in comparisons between the LAC region and industrialized countries.

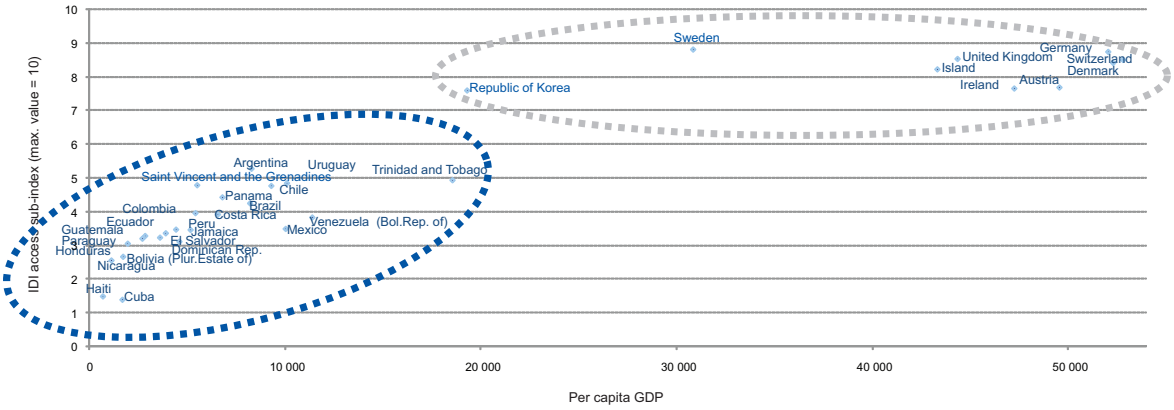
- The International Telecommunication Union's (ITU) ICT Development Index (IDI) is calculated for 159 countries. The index is composed of three sub-indices that are weighted differently: access (40%), use (40%) and capacities (20%).

- The range of the access sub-index is 1 to 10. It is based on the number of telephone lines and cell phone subscribers per 100 inhabitants, international bandwidth per Internet user, and the proportion of households with computers and Internet access.

- Figure IV.1 shows the access gap in relation to per capita GDP. While the industrialized countries, which have the highest access rankings, average 8 on this index, the region's countries average a mere 3. Of the latter, the highest-ranked are Argentina (in 49th place), Trinidad and Tobago (52nd), Chile (53rd), Saint Vincent and the Grenadines (54th) and Uruguay (55th).

- Comparing the positions of the region's countries on the access sub-index with their positions in 2007 shows that 30% have risen in the ranking (the Bolivarian Republic of Venezuela, Colombia, Honduras, Paraguay, Peru, the Plurinational State of Bolivia and Saint Vincent and the Grenadines, ), 9% have remained unchanged (Brazil and Mexico) and 61% have fallen in the ranking.

FIGURE IV.1
LATIN AMERICA AND THE CARIBBEAN (23 COUNTRIES) AND ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (9 COUNTRIES): ICT DEVELOPMENT INDEX (IDI), ACCESS SUB-INDEX AND PER CAPITA GDP, 2008 (current dollars)




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of International Telecommunication Union (ITU), "World telecommunication/ICT indicators database 2010", 2010.

## The broadband gap widens for the region's countries

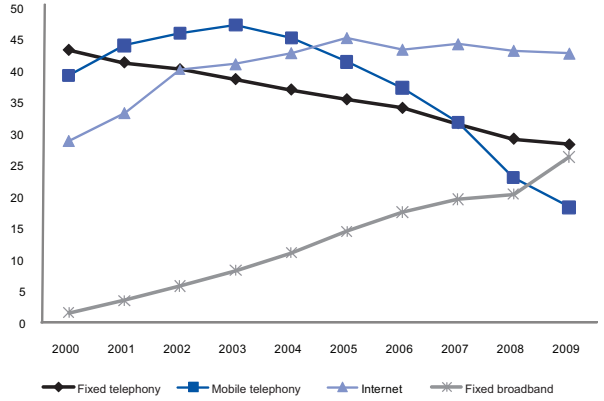
- While the gaps with Organization for Economic Co-operation and Development (OECD) countries have narrowed for fixed and mobile telephony, with the Internet penetration gap remaining stable, the fixed broadband penetration gap has widened (see figure IV.2).

- Internet penetration in the region stood at 31% in 2009, compared with 74% in the OECD countries. The major difference here is in fixed broadband, where the region's penetration in 2009 was 6%, as against 27% in the OECD countries.

- The fixed broadband gap has increased in the region, rising by an average of five percentage points every two years since the decade began. Thus, while it was below five percentage points up to 2002, it was over 10 by 2004, 15 by 2007 and 21 in 2009.

**Challenge:** Continue developing and promoting initiatives that contribute to broadband Internet access and the use of advanced applications, and that make use of the penetration of mobile telephony to provide access to new generation services over such networks.

FIGURE IV.2
LATIN AMERICA AND THE CARIBBEAN: CHANGES IN DIGITAL GAP, 2000-2009 (Percentages)




Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of International Telecommunication Union (ITU), "World telecommunication/ICT indicators database 2010", 2010.
Note: The digital access divide corresponds to the difference in penetration of the different services between the Latin American and OECD countries, based on an average penetration rate. The penetration rate for fixed and mobile telephony and broadband refers to the number of subscribers to these services as a percentage of the total population. Internet penetration is estimated on the basis of the number of users as a proportion of the total population.

## Unequal progress in accessing and using ICT within the countries

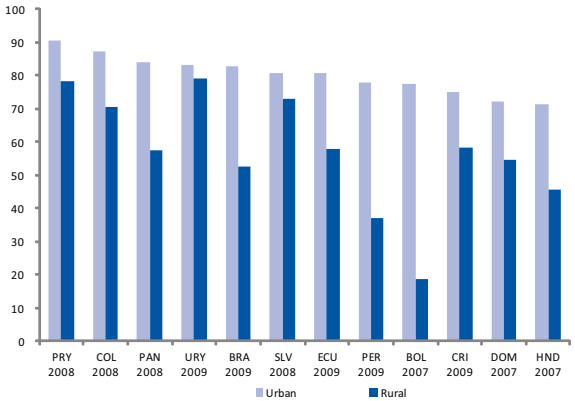
- Differences in access to electronic communications services are also evident within the countries. The principal factors behind these internal gaps are socioeconomic and geographical.

- In keeping with income distribution, mobile telephony is the service with the most even penetration in quintiles two to four in the region's countries, as a result of factors such as access to prepaid service, which has made it more possible for this segment of the population to participate in the information society.[2]

- The penetration disparities arise between the first and last quintiles. The difference is over 50 points in Costa Rica, Honduras, Mexico, Panama, Peru and the Plurinational State of Bolivia; between 30 and 40 points in Brazil, Ecuador and El Salvador; and 16 points in Colombia and Paraguay. Uruguay shows an almost uniform penetration rate, with a difference of only one point.

- The penetration rates of mobile telephony also differ between rural and urban areas (see figure IV.3). The differences are sharper, for example, in countries whose topography makes network coverage more difficult, such as the Plurinational State of Bolivia.

FIGURE IV.3
LATIN AMERICA (12 COUNTRIES): HOUSEHOLDS WITH ACCESS TO MOBILE TELEPHONY, BY AREA, 2007-2009 (Percentages)

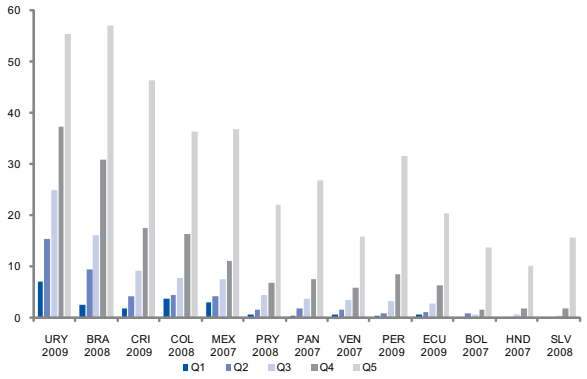



Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of household surveys, most recent year available [online] http: www.cepal.org/tic/flash/

[2] One of the objectives of the Mobile Opportunities 2.0 project, which is part of the Regional Dialogue on the Information Society (DIRSI), is to identify bottlenecks impeding effective expansion of mobile services to the most vulnerable sectors, including rural populations. For more information, see DIRSI [online] http://dirsi.net.

- Internet access has increased in all income quintiles in almost all the countries of the region that were surveyed. However, Internet access remains unequal between different socioeconomic segments. As figure IV.4 shows, 2 out of 100 households in the region, on average, have Internet, while this figure is 31 per 100 for the highest-income sectors.

### FIGURE IV.4
### LATIN AMERICA (13 COUNTRIES): HOUSEHOLDS WITH INTERNET ACCESS, BY INCOME QUINTILE, 2007-2009 (Percentages)




Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of household surveys, most recent year available [online] http: www.cepal.org/tic/flash/

- Internet access varies as a function of place of residence. On average in the region, 2 out of 100 rural households have Internet service. The figure is 15 out of 100 for urban households, however (see figure IV.5).

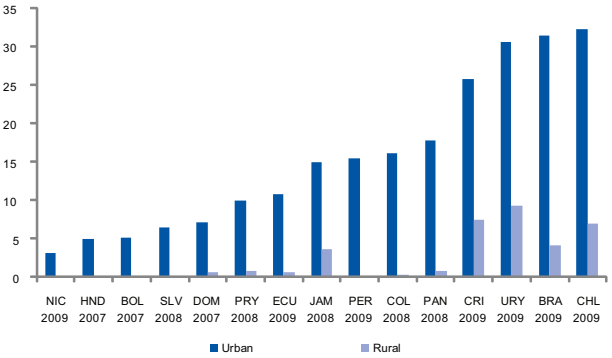
- Internet users between the ages of 15 and 74 in the region's countries state that their use of the Internet is primarily for communication (64%), educational purposes (43%), entertainment (40%) and, to a lesser extent, for electronic banking activities (10%), e-commerce (7%) and interacting with Government (7%).[3]

- There are no significant differences by sex in the use of Internet for communicating (see figure IV.6), but the second most frequent activity cited by men is entertainment (44% on average, versus 36% for women), while education takes first place for women (45% versus 40% for men).

**Challenge:** Place ICT on development agendas to reduce internal inequalities. Expand programmes and initiatives to include the entire population, including those in rural and remote areas.

[3] For historical information on Internet use by type in the region among persons aged 15 to 74 , see annex 2, table A.3.

### FIGURE IV.5
### LATIN AMERICA (15 COUNTRIES): HOUSEHOLDS WITH INTERNET ACCESS, BY AREA, 2007-2009 (Percentages)




Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of household surveys, most recent year available [online] http: www.cepal.org/tic/flash/

### FIGURE IV.6
### LATIN AMERICA (12 COUNTRIES): INTERNET USE BY PERSONS AGED 15 TO 74, ACCORDING TO TYPE OF USE, BY SEX, 2007-2009 (Percentages)

| Indicator | Sex | BRA 2008 | CRI 2008 | CHL 2009 | ECU 2009 | HND 2007 | MEX 2009 |
|---|---|---|---|---|---|---|---|
| Communication | Men | 83 | 86 | 79 | 48 | 75 | 62 |
| | Women | 84 | 85 | 80 | 49 | 75 | 66 |
| Entertainment | Men | 84 | 59 | 67 | 40 | 42 | 33 |
| | Women | 77 | 53 | 66 | 33 | 33 | 21 |
| Education | Men | 60 | 49 | 16 | 60 | 56 | 23 |
| | Women | 67 | 58 | 17 | 64 | 59 | 32 |
| Banking | Men | 18 | 29 | 18 | 7 | n.a | 2 |
| | Women | 13 | 26 | 14 | 6 | n.a | 3 |
| Shopping | Men | 21 | 11 | 17 | 3 | 6 | 9 |
| | Women | 15 | 7 | 13 | 3 | 4 | 4 |
| Government | Men | 19 | n.a | 20 | 3 | n.a | 3 |
| | Women | 17 | n.a | 16 | 2 | n.a | 2 |

| Indicator | Sex | PAN 2007 | PER 2009 | PRY 2008 | DOM 2007 | SLV 2008 | URY 2009 |
|---|---|---|---|---|---|---|---|
| Communication | Men | 19 | 83 | 53 | 64 | 24 | 88 |
| | Women | 19 | 84 | 54 | 59 | 22 | 89 |
| Entertainment | Men | 4 | 62 | 21 | 59 | 3 | 61 |
| | Women | 1 | 49 | 10 | 45 | 1 | 48 |
| Education | Men | 1 | 16 | 41 | 60 | 60 | 37 |
| | Women | 2 | 16 | 52 | 67 | 67 | 44 |
| Banking | Men | 1 | 10 | n.a | 19 | 1 | 9 |
| | Women | 1 | 7 | n.a | 20 | 0 | 6 |
| Shopping | Men | 2 | 5 | 4 | 13 | 1 | 12 |
| | Women | 1 | 3 | 1 | 7 | 1 | 6 |
| Government | Men | 1 | 8 | n.a | 12 | 1 | n.a. |
| | Women | 0 | 6 | n.a | 9 | 0 | n.a. |

Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of household surveys, most recent year available [online] http: www.cepal.org/tic/flash/

## Shared access facilities continue to be a solution to provide mass access

- Public access facilities have expanded in the region and are a means of narrowing the digital divide. These include (a) municipal access facilities installed at the initiative of the government using national networks of libraries or other establishments in areas of low penetration; (b) for-profit call centres or Internet cafés based on private initiatives; and (c) public-private centres, based, for example, on government-subsidized initiatives.

### FIGURE IV.7
### LATIN AMERICA (12 COUNTRIES): INTERNET USE BY PERSONS AGED 15 TO 74, ACCORDING TO PLACE OF ACCESS, 2007-2009
### (Percentages of total users)

| Country and year | Household | Public access | House of another person |
|---|---|---|---|
| Brazil 2008 | 60 | 35 | 19 |
| Chile 2009 | 64 | 22 | n.a. |
| Costa Rica 2008 | 38 | 40 | 6 |
| Ecuador 2009 | 34 | 62 | 7 |
| El Salvador 2008 | 31 | 45 | 2 |
| Honduras 2007 | 17 | 77 | n.a. |
| Mexico 2009 | 47 | 35 | 3 |
| Panama 2007 | 31 | 41 | 5 |
| Paraguay 2008 | 39 | 38 | 6 |
| Peru 2009 | 28 | 64 | n.a. |
| Dom. Rep . 2007 | 22 | 61 | 27 |
| Uruguay 2009 | 65 | 25 | 17 |

Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of household surveys, most recent year available [online] http: www.cepal.org/tic/flash/

- Public access facilities continue to be the most common form of access in seven of the twelve countries analysed. However, as Internet penetration increases, household access is becoming more important in some countries.[4] Brazil and Uruguay are cases in point, as are Mexico and Paraguay to a lesser degree (see figure IV.7). Users between the ages of 10 and 19 are the most avid consumers of Internet services in public access facilities and in the region account on average for 62% of such users; users aged 60 and over account for only 15% (see figure IV.8).

### FIGURE IV.8
### LATIN AMERICA (12 COUNTRIES): INTERNET USERS IN PUBLIC ACCESS FACILITIES BY AGE, 2007-2009
### (Percentages of users in each age bracket)

| | 10-19 years | 20-39 years | 40-59 years | 60 and over |
|---|---|---|---|---|
| Brazil 2008 | 57 | 35 | 12 | 7 |
| Chile 2009 | 37 | 24 | 9 | 4 |
| Costa Rica 2008 | 63 | 39 | 18 | 14 |
| Ecuador 2009 | 75 | 64 | 37 | 23 |
| El Salvador 2008 | 65 | 38 | 11 | n.a. |
| Honduras 2007 | 87 | 74 | 57 | 47 |
| Mexico 2009 | 57 | 31 | 10 | 10 |
| Panama 2007 | 50 | 41 | 24 | 17 |
| Paraguay 2008 | 54 | 35 | 19 | 11 |
| Peru 2009 | 80 | 66 | 37 | 22 |
| Dom. Rep. 2007 | 74 | 61 | 39 | 21 |
| Uruguay 2009 | 41 | 27 | 11 | 9 |

Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of household surveys, most recent year available [online] http: www.cepal.org/tic/flash/

- Although few public access facilities in the region keep records, there are a few examples which help to locate these establishments, for example, the National Observatory for Digital Inclusion (ONID) of Brazil and the Information Society Network of Uruguay (Red USI), or on a smaller scale, the Connection for Development Association of El Salvador and the network of Rural Telecentres of Peru.[5] In addition, network initiatives such as telecentre.org, which have facilitated the collection of information at the regional level, provide an approximation of the situation in the region (see table IV.1).

- The trend is towards changing these access facilities into knowledge-sharing centres. Although this practice is not widespread, there have been initiatives in this direction in the region. Information gathered in seven of the region's countries (Bolivarian Republic of Venezuela, Chile, Brazil, Ecuador, Guatemala, Panama and Peru) indicates that those countries' existing telecentres increase the use and appropriation of the technologies by a segment of the community, while increasing the value added of the services to which they provide access.[6] The services with the greatest value added include digital literacy, training in entrepreneurial areas, education, jobs, training in creating digital content, support for online official procedures and help with information searches.

**Challenge:** Promote the transformation of public access facilities into centres for the sharing of knowledge. Consider their sustainability, and continue regional cooperation to share experiences.

[4] For historical information on ICT access rates in households and Internet-use locations, see annex 2, tables A.1 and A.2, respectively.

[5] See National Observatory for Digital Inclusion (NODI) [online] http:onid.org.br and Telecentros Rurales, [online] http:telecentros.pe

[6] See M. Celedón and A. Razeto, "La transformación de puntos de acceso en nodos de conocimiento: análisis de diez experiencias de telecentros comunitarios en América Latina", *Project Documents* series (LC/W.233), Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), 2009.

**TABLE IV.1**
**LATIN AMERICA AND THE CARIBBEAN: EXAMPLES OF TELECENTRES AND REGIONAL NETWORKS, 2009**

| | Name of Network or Initiative | Telecentres | Users |
|---|---|---|---|
| Antigua and Barbuda | Connecting Antigua and Barbuda | 25 | n.a. |
| Barbados | Community Technology Programme | 14 | n.a. |
| Bolivia (Plur. St. of) | Community Telecentre Educational Network (NTIC) | 216 | 30 000 |
| | New Information and Communications Technologies (NTIC) | 133 | 10 000 |
| Brazil | Association of Information and Business Telecentres (ATN) | 1450 | 10 million |
| Chile | Chilean National Network of Telecentres (ATACH) | 137 | 391 820 |
| | Biblioredes (Network of libraries) | 387 | 750 000 |
| Colombia | National Network of Telecentres of Colombia and Medellín | 2000 | 5 714 000 |
| Cuba | Youth Computer and Electronics Club | 612 | 1 million |
| Ecuador | Ecuador Telecentre Network | 42 | 5 000 |
| El Salvador | Association Connectivity for Development | 8 | 17 500 |
| Guatemala | Community Digital Centres (CCD) | 7 | 144000 |
| Jamaica | E-education programme | 13 | n.a. |
| | Library service | 250 | n.a. |
| | IDB project | 10 | n.a. |
| Mexico | Public financing for ICT access | 8500 | |
| Nicaragua | Nicaragua Sustainable Development Network | 104 | 52 000 |
| Peru | Rural Entrepreneurs Contact Network, Endeavour | 500 | 60 000 |
| | Telecentres of the Huaral farm information system (SIA) | 11 | 6 000 |
| Dominican Rep./Jamaica | Telecentre Partners of the Caribbean | 100 | 285 714 |
| Uruguay | Committee for the Democratization of Computerization (CDI), Uruguay | 36 | 5 000 |
| 18 countries of LAC | Partnership in Opportunities for Employment through Technologies in the Americas (POETA) | 48 | 59 000 |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of national sources; O. Lawton," Monitoring Caribbean information societies", Project documents series (LC/W.315), Economic Commission for Latin America and the Caribbean (ECLAC), 2010, p. 31; encuesta telecentre.org in F. Rojas, "Evolución de los centros de acceso público a las TIC", Project documents series (LC/W.323), Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), 2010, p. 58.

## Rates for ICT services and cost of equipment are an obstacle to making the technologies widely available

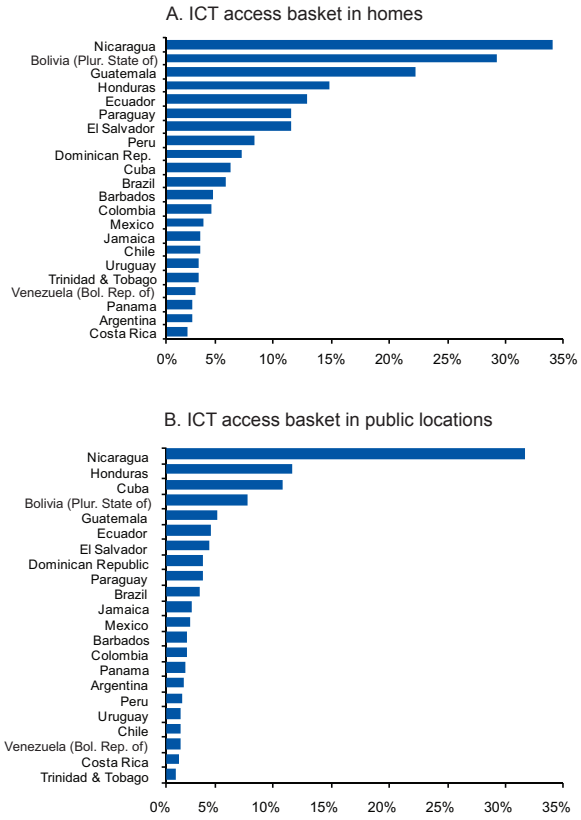
- One of the principal obstacles to ICT access is the cost of services. An ECLAC study calculated two baskets of services in two modes of access –shared and household. The price of the ICT services basket in public access facilities includes 30 telephone calls and 20 hours of Internet connection. The value of the basket in the household includes 30 landline telephone calls, the cost of a broadband subscription, 25 prepaid cell phone calls and 30 text messages.[7] Figure IV.9 shows the price of these baskets as a percentage of per capita GDP, both for public access and for household access.

- There are no major differences between the values of the public access basket and the household basket. Although mobility and constant availability of service would increase the attractiveness of contracting for household or private purposes, shared access is more flexible in terms of spending, and is thus particularly suitable for low-income sectors, which thus escape monthly mandatory payments for service and the need for contracts, which represent barriers to access for the lower-income segments of the population.

[7] Economic Commission for Latin America and the Caribbean (ECLAC), "Canasta de servicios básicos TIC: definición y exploración para América Latina y el Caribe", 2010, unpublished.

- In short, public access seems to be a solution in the region, mainly because it is flexible, since there are no business models with similar flexibility in household ICT services. Prepaid residential service is a modality that should be developed in order to make access to ICT more available at a mass level.

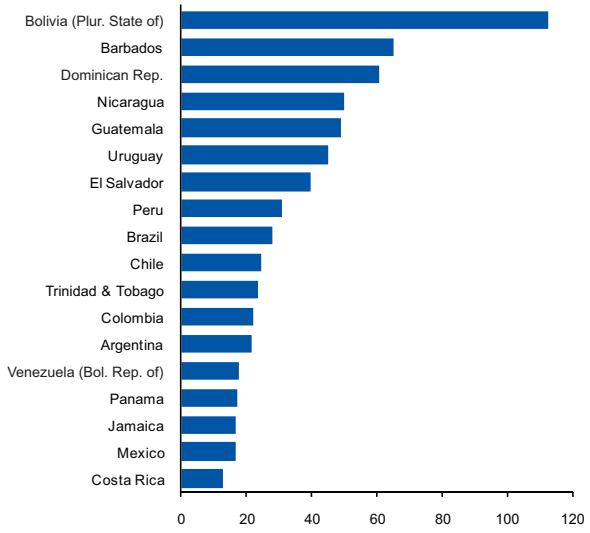
**FIGURE IV.9**
**LATIN AMERICA AND THE CARIBBEAN (22 COUNTRIES): VALUE OF ICT BASKET AS PERCENTAGE OF PER CAPITA GDP**




Source: Economic Commission for Latin America and the Caribbean (ECLAC), "Canasta de servicios básicos TIC: definición y exploración para América Latina y el Caribe", 2010, unpublished.
Note: The public access basket includes calls to mobile telephones and landlines, and national and international long-distance calls. The distribution and duration of calls was based on the methodology developed by OECD for both baskets. The mobile telephony component of the access in homes basket includes calls to fixed lines, and calls to mobiles on the same network and to mobiles on other networks. Two rate schedules —normal and off-peak— were considered for both types of telephony. For subscription to fixed broadband, the cost of plans from a download speed of 256 Kbps was included using a reference plan with a download speed of 1024 Kbps.

- The value of a monthly fixed broadband subscription with a download capacity of 1Mbps, independent of the technology used, averages US$36 in the region (see figure IV.10).

**FIGURE IV.10**
**LATIN AMERICA AND THE CARIBBEAN (18 COUNTRIES): PRICE OF FIXED BROADBAND SUBSCRIPTION, 1 MBPS SPEED, APRIL 2010**
**(Current dollars)**



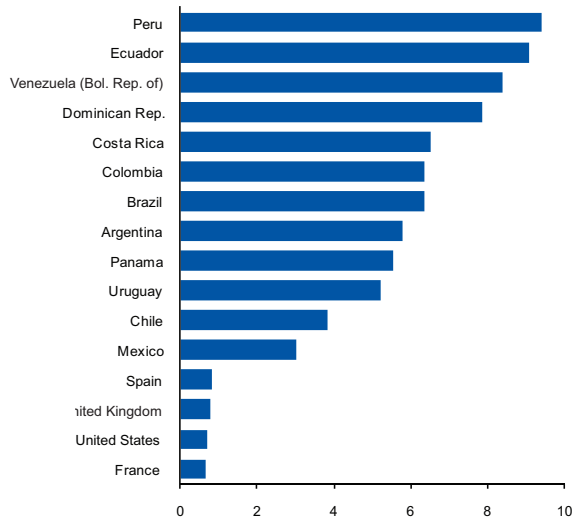

Source: Economic Commission for Latin America and the Caribbean (ECLAC), database of broadband rates, on the basis of public information from the main service providers.

- A comparison of the least expensive rates offered in the countries and the rates in five OECD countries shows that the advertised price in the region is four times higher. This difference is aggravated by the fact that the least expensive rate in the OECD countries is for ADSL, which has a download speed of 8Mbps, much higher than what is prevalent in Latin America and the Caribbean. Moreover, average income in the OECD countries as of 2009 was US$40,000, as opposed to approximately US$6,000 in the region's countries.[8]

- The cost of equipment can also be a barrier to Internet access and use. The relation between the average price of an Internet device (netbook) and per capita output is shown in figure IV.11. The difference between the region and the OECD countries averages $US100.

[8] The OECD countries considered were Australia, Spain, France, Portugal and the United Kingdom. The least expensive rate for 1mbps was offered by the English firm BE, at 7.50€/month.

FIGURE IV.11
LATIN AMERICA AND THE CARIBBEAN (12 COUNTRIES) AND ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (4 COUNTRIES): AVERAGE PRICE OF NETBOOK AS PERCENTAGE OF PER CAPITA GDP, MAY 2010 (Percentages)




Source: Economic Commission for Latin America and the Caribbean (ECLAC, on the basis of information obtained from public auction website Deremate.com, Amazon.com, Bizrate and Ciao.
Note: Values correspond to average offers for at least three well-known brands in the market for new netbooks with at least 1.6 ghz, 160 GB RAM, 19B RAM, ATOM N270 processor and 10.1" screen.

**Challenge:** Develop broadband policies designed to reduce the price of access to services, for both shared access and household access. Increase regional cooperation to achieve the price reduction objectives. Develop complementary policies to increase demand, such as reductions in taxes on end user equipment.

## The urgent need to update and develop policies to increase mass availability of broadband

- As one part of reforming the telecommunications sector in the 1990s, universal access funds were created to fund initiatives and projects designed to provide mass access to ICT, sometimes accompanied by specific policies.

- The region's universal access funds, although originally focused on universalizing access to telephone service, now fund projects to deploy infrastructure that provides Internet access or subsidize telecentres.

- Although it is difficult on the basis of available information to evaluate the execution of these funds (see table IV.2), a review of the projects that have been funded, or that are in the process of being evaluated, reveals a lag in execution of the funds, and difficulties in collecting the funds due from operators.

## TABLE IV.2
## LATIN AMERICA (12 COUNTRIES): ACCESS AND UNIVERSAL SERVICE FUNDS, 1996-2010

| | Name of Fund | Mode of financing | Funding (US$) | Period |
|---|---|---|---|---|
| Bolivia (Plur. State of) | National Fund for Regional Development (FNDR) | Frequency licensing fees, fines, other | 84,688,150 | 1996-2008 |
| Brazil | Fund for Universal Telecommunications Services (FUST) | 1% of operators' profits, fees, social security | 1.706 578.262[a] | 2001-2005 y 2010 |
| Chile | Brazilian Fund for the Technological Development of Telecommunications (FUNTTEL) | 0,5% of total income from operators and 1% of income from telecommunications services (bids) and public transfers | 55.000.000 | n.a. |
| Colombia | Telecommunications Development Fund (FDT) | National Treasury | 101.500.000 | 1994-2008 |
| | Communications Fund | Percentage of operators' profits, 4% postal profits, 5% profits from long-distance mobile services | 675.162.053 | 2008-2009 |
| Ecuador | Telecommunications Development Fund (FODETEL) | 1% of annual profits billed and received by operator | 2.492.635 | 2000-2008 |
| Mexico | Telecommunications Social Coverage Fund (FCST) | National Treasury | 74.997.529 | 2004 |
| Nicaragua | Telecommunications Investment Fund (FITEL) | 20% of TELCOR budget | 10.000.000 | 2007 |
| Panama | Universal Access and Service Fund | 1% of assessable income | 25.500.000[b] | 2009 |
| Paraguay | Universal Services Fund (FSU) | 40% of commercial operator rates | 14.371.860[c] | n.a. |
| Peru | Telecommunications Investment Fund (FITEL) | 1% of gross revenue and public funds | 115.096.073[d] | 1998-2009 |
| Dominican Rep. | Telecommunications Development Fund (FDT) | 2% of operators' billings | 7.000.000[e] | 2007 |
| Venezuela (Bol. Rep. of) | Universal Service Fund (FSU) | 1% of operators' gross revenue | 239.709.090 | 2001-2007 |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of national figures, Association for Telecommunications Progress (APC), Action reports on incidence of regional universal access and service funds, O. Arratia (Bolivia, Plur. State of), S. Benítez (Venezuela, Bol. Republic of), H. Carrión (Ecuador and Andean subregion), L. Kanashiro (Peru) and M. Peréz (Colombia), [online] www.apc.org, 2009; Latin American Forum of Telecommunications Regulators (REGULATEL), New Models for Universal Access in Latin America, 2007; and International Telecommunication Union (ITU), "Universal Access and Service", module 4, InfoDev [online] http://www.ictregulationtoolkit.org/en/index.html; and Ministry of Science and Technology of Brazil, "FUNTTEL – Fund for the Technological Development of Telecommunications [online] www.finep.gov.br/fundos_setoriais/funttel/funttel_ini.asp?codFundo=7.

[a] Includes the amount announced for financing the Broadband Plan.
[b] Allocation for Liberty project (Resolution 6, 2009).
[c] Sum of subsidies granted for projects published by the National Telecommunications Commission, period not specified.
[d] Corresponds to executed and pilot projects.
[e] Amount corresponds to the maximum allocated for projects.

- ICT policy in the region has begun to emphasize the role of broadband in providing mass availability and inclusion in ICT access. Table IV.3 provides an overview of broadband initiatives in the region. Only Brazil has an explicit, comprehensive policy for ICT development. Of the remaining 11 countries, one group of countries has initiatives that are part of their digital strategies, while the remaining group has only isolated efforts or is dependent on development funds for this type of effort.

**Challenge:** Develop inclusive policies that reduce ICT gaps, with special attention to the development of broadband and to reducing the cost of service. Adapt the use of universal access funds to this objective, and ensure their effective implementation.

TABLE IV.3
LATIN AMERICA AND THE CARIBBEAN (13 COUNTRIES): EXAMPLES OF REGIONAL BROADBAND INITIATIVES, 2003-2015

| Country | Initiative (year)[a] | Broadband goal |
|---|---|---|
| Argentina[b] | National Telecommunications Plan "Argentina Conectada" (2010) | Providing access to more than 10 million users by 2015. Contemplates a telecommunications network that includes satellite solutions |
| | Río Gallegos Digital Capital 2015 (2009) | Public policy for free broadband access throughout the city by 2015 |
| | Province of San Luis | Free Internet access guaranteed by law |
| Bahamas[b] | Electronic Commerce Policy and Bahamian Digital Agenda, Bahamas (2003) | Continue developing DSL broadband |
| Brazil[c] | National Broadband Plan | By 2014, triple broadband household access with speeds equal to or above 512 Kbps. Deployment of public network included. |
| Colombia | National Information and Communications Technologies Plan 2008-2019 (2008) | By 2019, 100% of municipalities with broadband, 70% residential and user penetration, 100% schools and universities. Projects for expanding broadband access for rural communities, low-income urban communities and SMEs |
| Costa Rica | National Telecommunications Development Plan 2009-2014 | Lines of action to ensure at least 512 Kbps broadband Internet access for the vulnerable population, 4Mbps for commercial enterprises; and symmetrical super broadband (20 Mbps) and symmetrical ultra broadband (100Mbps) for the productive sectors that require it. |
| Chile | Digital Agenda 2007-2012 | Double broadband connections nationwide. By 2006, 4,845 schools and colleges to be connected to broadband, including connectivity for rural schools |
| | Digital Plan of Action 2008-2010 | By 2010, 2.3 million households with broadband connections, 200 neighbourhoods and rural localities connected |
| | Rural Internet Network: Connecting all of Chile (2010) | Generating the supply of accessible, good quality connectivity for the rural areas. 3G mobile Internet in 1,474 localities as well as new fibre optic cables. 1 Mbps download service |
| Ecuador | Telecommunications Development Fund (2001) | Pilot project to provide broadband connections to rural localities and marginal urban areas in the province of Pichincha |
| Guatemala | National Agenda for the Information Society 2007-2015 | Maintain or lower costs of broadband connection, principally for SMEs. Diffusion of web-based broadband technology for use by SMEs |
| Jamaica | E-Powering Jamaica, strategy to 2012 | By 2010, increase rural and remote-area broadband penetration through 30 public access facilities |
| Mexico | E-Mexico National Development Plan 2007-2012 | State broadband networks in health, education and government |
| Peru[b] | Telecommunications Investment Fund (FITEL, 2009) | Broadband project in isolated localities based on satellite platform |
| Dominican Republic[b] | Rural Broadband Connectivity Project (2008) | Connectivity to 500 rural communities |
| Uruguay | Uruguay Digital Agenda 2008-2010 | Create a high-speed physical communications network to connect central government offices |

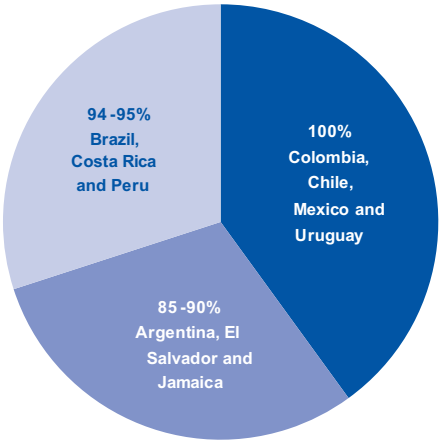
Source: Economic Commission for Latin America and the Caribbean (ECLAC).
[a] The official name may be different; years in brackets are the years in which the policy was implemented.
[b] Decree 7175 of 12 May 2010, which instituted the broadband plan of action (PNBL).
[c] The country has a digital agenda but has not specified broadband goals.

## B. Promote the development of ICT infrastructure (goals 13-17 and 24)

### Broadband infrastructure is insufficient

- With regard to developing infrastructure, the eLAC2010 Plan calls for improving networks to reduce their cost and increase the efficiency of traffic flow. It also calls for expanding the coverage of the networks in both urban and rural areas.
- The growing demand for mobile service has led to increased coverage of the region's cellular network. Thus, in 11 Latin American and Caribbean countries, the average national coverage in 2009 was 90% (see figure IV.12).

FIGURE IV.12
LATIN AMERICA AND THE CARIBBEAN (10 COUNTRIES): COVERAGE OF MOBILE TELEPHONY NETWORK, 2009

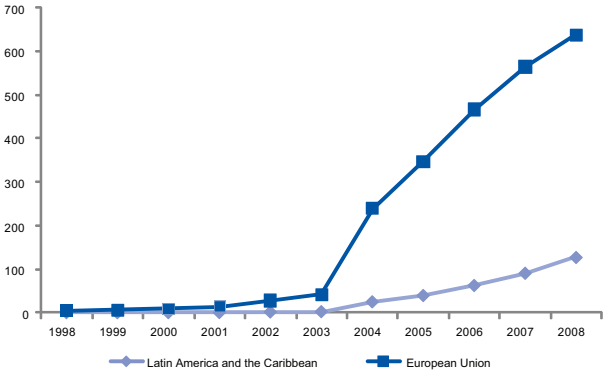



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of the indicators of the Regional Dialogue on the Information Society (DIRSI) [online] http://dirsi.net/indicadores/

- The cellular network provides opportunities to the rural world and to vulnerable sectors. However, since networks in rural and remote areas are not always commercially profitable, the percentage of coverage in rural areas is lower than at the national level.

- To achieve good flow of information and use of fixed broadband technologies, the capacities of local infrastructure must also be taken into account. Figure IV.13 shows the transmission capacity available through cable modem and DSL technologies in European Union countries, and in the countries of Latin America and the Caribbean.

FIGURE IV.13
LATIN AMERICA AND THE CARIBBEAN AND THE EUROPEAN UNION: FIXED BROADBAND TRANSMISSION CAPACITY, 1998-2008
(Kbps per capita)




Source: P. López, C. Vásquez and M.Hilbert, "Information societies or 'ICT equipment societies?' Measuring the digital information-processing capacity of a society in bits and bytes", vol.26, No.3, The Information Society, 2010.

- In 2008, when capacity in Europe was 625Kbps per capita, the capacity in the region averaged 128Kbps per capita.

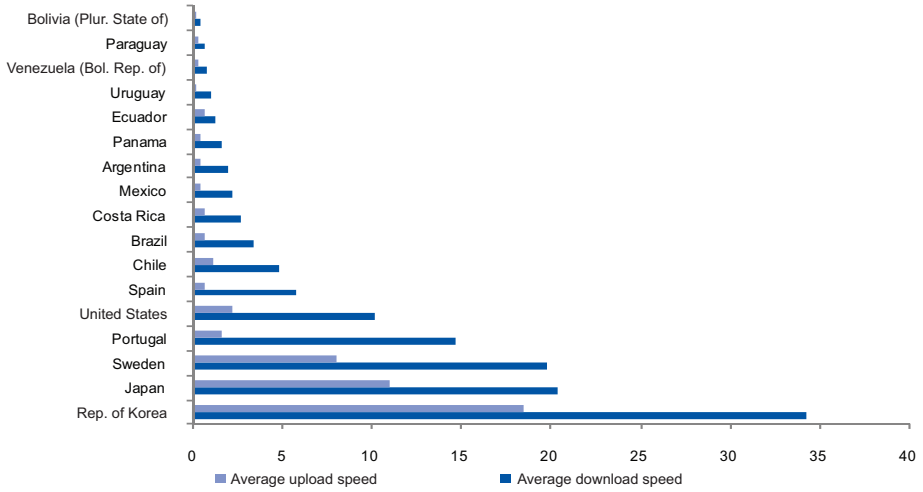
- Available bandwidth limits the speeds offered by Internet providers, affecting users' ability to take advantage of the technologies.

- In April 2010, only 6% of household broadband plans provided download speeds between 10Mbps and 32 Mbps and, unlike the OECD countries, the LAC countries had no offerings of speeds above 32Mbps.

- There are also major differences between the region and the developed countries in terms of download and upload speeds in fixed broadband plans. Lower upload speeds limit the use of applications with social impact, such as telemedicine and distance education (see figure IV.14).

**Challenge:** Take advantage of passive infrastructure (such as existing pipelines) to develop fixed broadband. Implement efficient spectrum-management policies that make it possible to provide new-generation services.

FIGURE IV.14
LATIN AMERICA AND THE CARIBBEAN (11 COUNTRIES) AND ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (6 COUNTRIES): AVERAGE SPEED OF FIXED BROADBAND INTERNET SERVICE, 2010 (Mbps)




Source: Net Index, on the basis of data from Speedtest.net [online] www.netindex.com.

## The region's broadband infrastructure needs to be strengthened

- Even though initial efforts have been made to reinforce national broadband infrastructure, these must be complemented by efforts to build networks to facilitate international movement of information. Submarine cable networks are the principal channel for international data transmission. In the region, the map of the submarine network shows that the information highways have been developed primarily for north-south traffic (see map IV.1).

- Complementing this information, map IV.2 shows the global traffic, according to which the most frequently used routes from Latin America and the Caribbean are principally those to the United States. This regional traffic results from factors such as the lack of regional connections and the use of website-hosting sites outside the region, where costs are lower.

- The national traffic exchange points increase the possibilities of handling local information and reducing dependency on international traffic. There is insufficient development of new local or regional traffic exchange points (IXP) in the region. However, there are efforts in this direction, such as Brazil's Internet Management Committee, and national projects, such as the information highway in Chile, which includes interconnection with IXP.[9]

MAP IV.1
THE AMERICAS: SUBMARINE CABLES, 2009

Source: Telegeography [online], www.telegeography.com.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

[9] See Economic Commission for Latin America and the Caribbean (ECLAC), "Avances en el acceso y el uso de las tecnologías de la información y la comunicación en América Latina y el Caribe 2008-2010, *Project Document* series (LC/W.316), Santiago, Chile, 2010, p. 19; and Brazil Internet Governance Committee (CGI) [online] www.cgi.br.; and the Office of the Under-Secretary for Telecommunications of Chile "Infraestructura Digital para la Competitividad e Innovación" [online] http://www.subtel.cl/prontus_subtel/site/artic/20090806/pags/20090806153818.html.

### MAP IV.2
### THE AMERICAS: GLOBAL TRAFFIC, 2010

Source: Telegeography [online], www.telegeography.com.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

- According to information published by Telegeography, the average amount of IP traffic in GigE[10] for the city of São Paulo in 2009 was over US$50, while the cost in New York was merely one third of this.

- According to estimates, international connections account for between 35% and 40% of the total cost of access. The average cost per Mbps in the OECD countries is between US$8 and US$10 per Mbps, while the average in Latin America and the Caribbean is between US$100 and US$200 per Mbps. The cost of national traffic is also on the rise bearing in mind that the price of domestic connection is between 20% and 50% higher than international access prices.[11]

- In Central America, the price of international connection is approximately 50% higher than in the Southern Cone. This situation could change when the Mesoamerican Information Highway (AMI) is fully installed and operational. The AMI involves building fibre optic networks to interconnect the Central American countries. It is expected to be functioning by 2011 (see map IV.3).[12]

- In order to develop a regulatory framework for the implementation of the AMI, a Technical Secretariat has been created, of which ECLAC is a part.

### MAP IV.3
### CENTRAL AMERICA: MESOAMERICAN INFORMATION HIGHWAY (AMI)


Source: Meso-American Integration and Development Project [online] http://portal2.sre.gob.mx/mesoamerica/
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

**Challenge:** Create incentives for Internet traffic exchange in the region, encouraging local storage and production of content. Optimize networks by increasing the number of regional traffic exchange points. Take account of the environment of technological convergence in developing and adapting infrastructure.

[10] GigE one Ethernet Gigsbit.
[11] See Economic Commission for Latin America and the Caribbean (ECLAC), "Panorama de la banda ancha en América Latina", 2010, unpublished.
[12] For more information, see Proyecto de Integración y Desarrollo Mesoamérica [online] http://portal2.sre.gob.mx/mesoamerica/.

## Progress towards the adoption of IPv6 in the region

- The dynamic effect and increasing appearance of ICT applications aggravate a scarcity of version 4 Internet Protocol (IPv4) addresses. Therefore, as the date on which they will be exhausted approaches, the adoption of version 6 (IPv6) increases.

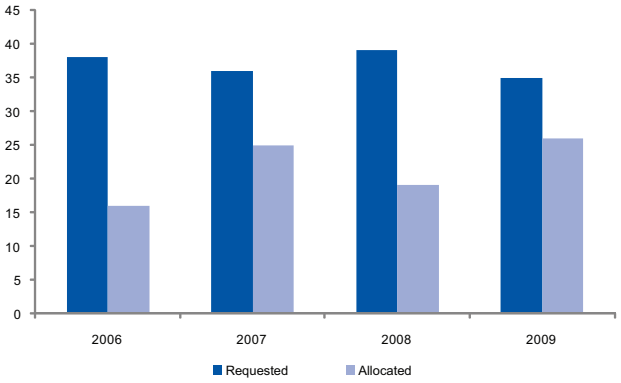
- In the region, the Latin American and Caribbean Internet Addresses Registry (LACNIC) is one of the organizations active in promoting Internet protocol version 6 (IPv6). LACNIC provides information and funds projects; in addition, it conducts training to make the transition to IPv6 successful in the region.[13]

- The distribution of Internet Provider and Autonomous System numbers among the various regional registries is handled by the Internet Assigned Numbers Authority (IANA). The regional entities then distribute them to requesting Internet providers and end users. According to information from the regional registries, assignments of IPv6 addresses in Latin America and the Caribbean account for 4% of the world total. Europe is responsible for the greatest number (46%), followed by North America (27%), Asia Pacific (21%) and Africa (2%).[14]

- In 2009, the number of IPv6 addresses assigned in the region increased (see figure IV.15). According to LACNIC, 75% of the region's national domain codes (ccTLDs) are accessible through IPv6.

- The countries that have incorporated IPv6 in their traffic exchange points include countries such as Haiti; this, according to LACNIC, indicates that national levels of development do not necessarily make it impossible to meet this challenge.[15]

**FIGURE IV.15**
**LATIN AMERICA AND THE CARIBBEAN: NUMBER OF IPV6 APPLICATIONS AND AWARDS, 2006-2009**




Source: Latin American and Caribbean Internet Addresses Registry (LACNIC) [online] http://lacnic.net.

- The incentive for transition to IPv6 increases as experience and training spread. Currently there are both regional and national initiatives to promote this.[16]

**Challenge:** Strengthen public-private cooperation to promote dissemination, share experiences and investigate adoption in the region's countries, thereby increasing IPv6 adoption.

[13] See R. Echeberría, "Pasos alentadores en la migración hacia el protocolo de Internet IPv6", *Newsletter* N° 10, Special on access and infrastructure, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), December 2009, p. 7; and Latin American and Caribbean Internet Addresses Registry (LACNIC) [online] http://lacnic.net

[14] See Organization for Economic Cooperation and Development (OECD), "Internet addressing: measuring deployment of IPv6", April 2010, p.13.

[15] Ibid., p. 10

[16] For more information, see IPv6 Task Force América Latina y el Caribe [online] www.lac.ipv6tf.org, and various national experiences in Brazil [online] www.br.ipv6tf.org, Colombia [online] www. co.ipv6tf.org, Cuba [online] www.cu.ipv6tf.org, Mexico [online] www. mx.ipv6tf.or, Panama [online] www.pa.ipv6tf.org and Uruguay [online] www.uy6tf.org.uy

## C. Promote the connectivity of research centres (goals 19 and 20)

- The eLAC2010 Plan calls for developing advanced networks for education and research, taking into account sustainability and scalability. It also calls for increasing the number of research and education centres linked to those networks.

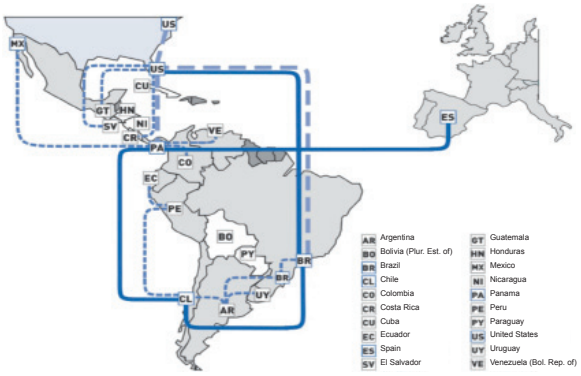
- Latin American Advanced Networks Cooperation (RedClara) is a regional network that interconnects Latin America's national academic networks. Its participants are: ADSIB (Plurinational State of Bolivia), ARANDU (Paraguay), CEDIA (Ecuador), CONARE (Costa Rica), CENIT (Bolivarian Republic of Venezuela), CUDI (Mexico), INNOVARED (Argentina), RAAP (Peru), RAGIE (Guatemala), RAÍCES (El Salvador), RedCyT (Panama), RENATA (Colombia), REUNA (Chile), RedUniv (Cuba), RNP (Brazil), RAU2 (Uruguay) and UNITEC (Honduras).[17]

- The advances recorded in national networks belonging to RedClara include the following: creation of 1Gbps regional nodes in Chile, the increase of the Ecuadorian and Mexican trunk line to 1GB, expansion of the El Salvador links in the network to 100 Mbps, an increase in the number of campuses connected to the network in Guatemala and integration of the main campuses in Costa Rica.[18]

- As map IV.4 shows, the network topology has new nodes with point-to-point connection, with every principal node serving as a point of presence for RedClara. RedClara connects with Europe through GÉANT 2 (São Paulo-Madrid), and that network's connections with TEIN2 and EUMEDCONNECT make connection with Asia Pacific and the countries of the Mediterranean basin possible. The WHREN-LILA project provides connection with the United States (Tijuana-San Diego and São Paulo-Miami). APAN, as a partner member, also facilitates connection with Asia Pacific.

**Challenge:** Continue promoting and developing high-capacity connections for information sharing in the region, urging all of the countries to participate.

**MAP IV.4**
**REDCLARA: TOPOLOGY OF THE NETWORK, JUNE 2008**




Source: RedClara, www.redclara.net
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

## D. Incorporate ICT in disaster management (goals 26-28)

### The potential of ICT is being under-utilized, and progress toward identifying critical elements is lacking

- The eLAC2010 goals aim to strengthen and interconnect regional platforms for disaster management and mitigation. They also emphasize cooperation and the development of disaster-response systems at both national and local levels.

- ICT facilitate disaster management, and constitute a platform for the provision of other services.

- National and regional portals are an application that helps in management, information, and the prevention of emergency situations. Some portals of organizations responsible for emergency and disaster response are in the stage at which they simply provide information, while others have advanced to the point of providing information in real time, as well offering training in disaster issues related to prevention and to warning the population of impending events.[19]

[17] See Latin American Advanced Networks Cooperation (RedClara), www.redclara.net.
[18] See Latin American Advanced Networks Cooperation (RedClara), "Compendio CLARA de redes nacionales de investigación y educación latinoamericanas", 2009.
[19] A regional evaluation of the portals can be found in the chapter on public management, chapter VI.

- The following play roles in regional initiatives for cooperation on issues relating to disasters: the Caribbean Disaster Response Agency (CDRA), the Network of Social Studies in the Prevention of Disasters in Latin America (La Red), the Coordination Center for the Prevention of Natural Disasters in Central America (CEPREDENAC), the Programme for Natural Disaster Prevention in Central America (PREVAC), the Regional Disaster Information Centre for Latin America and the Caribbean (CRID) and the International Strategy for Disaster Reduction (ISDR) as it applies to the Americas.

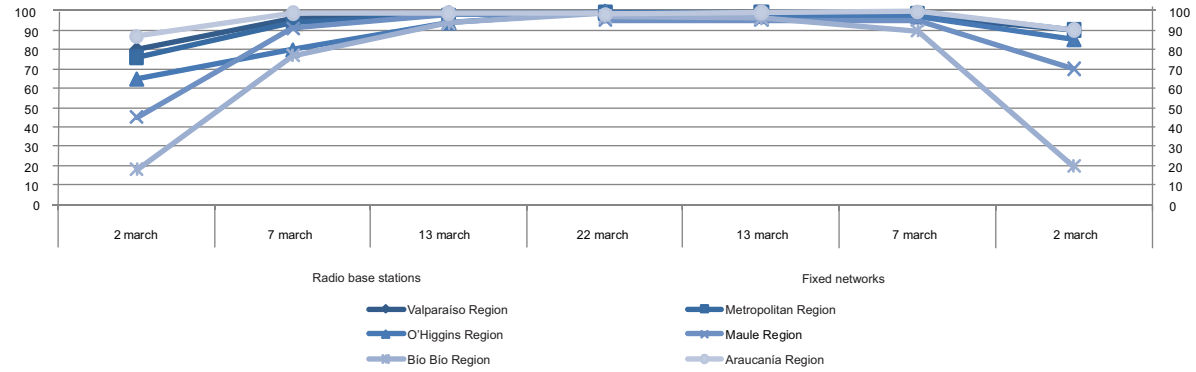
- Virtual libraries also facilitate information storage and quick access. Experiences in the region are shown in table IV.4.

**TABLE IV.4**
**LATIN AMERICA: DISASTER LIBRARIES**

| | Name of library | Website |
|---|---|---|
| Bolivia (Plur. St. of) | Biblioteca Virtual Andina para la prevención y atención de desastres BiVa-PaD Bolivia | http://desastres.bvsp.org.bo |
| Colombia | Plan de emergencias y contingencias del sector de telecomunicaciones | http://www.mintic.gov.co/mincom/faces/index.jsp?id=1278 |
| Guatemala | Biblioteca virtual en salud y desastres, BVS | http://desastres.usac.edu.gt/ |
| Honduras | Centro de información sobre desastres y salud BIMENA (CIDBIMENA) | http://cidbimena.desastres.hn |
| Nicaragua | Biblioteca virtual de desastres, Bvd | http://www.bvd.org.ni/php/index.php |
| Peru | Biblioteca virtual en prevención y atención de desastres, Bvpad | http://bvpad.indeci.gob.pe/html/es/home.html |
| | Biblioteca virtual sobre desastres | http://www.minsa.gob.pe |
| PAHO/WHO | Biblioteca virtual de salud para desastres | http://helid.desastres.net/en/ |
| Venezuela (Bol. Rep. of)] | EVirtual Disaster Library | http://opsu.sicht.ucv.ve |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

**FIGURE IV.16**
**CHILE: RESTORATION OF MOBILE AND FIXED NETWORKS AFTER THE EARTHQUAKE OF 27 FEBRUARY 2010 (Percentages)**




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of telecommunications reports from the regions hit by the disaster, issued by the Ministry of the Interior, between 3 and 22 March 2010.

- The recent strong earthquakes in Haiti and Chile highlighted the fragility of communications networks and the insufficient capacity to respond to emergencies.

- The earthquake in Haiti in January 2010 led to the collapse of the country's communications networks, with effects on the emergence response system. The earthquake damaged the single submarine fibre optic cable connecting the island with the rest of the world, but since most of the operators have satellite connections, the impact of this was not of great significance.[20]

- Three days after the Chilean earthquake in February 2010, mobile networks in the area close to the epicentre were operating at 20% of their capacity. A month later, they were almost fully restored (see figure IV.16).

[20] See Orientatelecos, "El terremoto de Haití y los ingenieros de telecomunicaciones", 4 February 2010.

- The Tampere Convention, signed in 2005 by 40 countries, 17 of which are in the region, allows rescue experts to make full use of communications to protect human life (see table IV.5). For this purpose, the Convention urges the States to eliminate regulatory barriers to the full use of telecommunications (such as the use of radio frequencies).

- The recent emergencies underlined the importance of social networks, both for searches for people, and to provide information on damage in different localities. One of the tools used most was the Twitter short message network.[21]

- Given the collapse of telecommunications networks in Haiti, the International Amateur Radio Union (IARU) called on its members not to use the 7045MHz and 3720MHz bands, so as to leave room for emergency traffic.[22]

- In Chile, as a response to the earthquake that struck in 2010, legislators tabled a bill entitled "On recovery and continuity in critical and emergency conditions in the public telecommunications system". The bill includes measures to guarantee continuity of service and early warning for emergencies (such as alerts via text messaging), optimization of the telecommunications infrastructure, identification of critical telecommunications infrastructure, compensation for lack of Internet service, optimization of information systems and simplification of the competitive system for allocation of radio broadcasting.[23]

**Challenge:** Increase interaction on both regional and national disaster websites. Promote the identification of critical information structures to improve emergency response. Continue working for regional cooperation on information sharing and to establish networks for efficient disaster management and prevention.

**TABLE IV.5**
**LATIN AMERICA AND THE CARIBBEAN (17 COUNTRIES): SIGNATORIES OF THE TAMPERE CONVENTION, JUNE 2010**

| | Joined | Date of final signing or acceptance |
|---|---|---|
| Argentina | 11 May 1999 | 5 July 2007 |
| Barbados | n.a. | 25 July 2003 |
| Brazil | 12 March 1999 | n.a. |
| Chile | 18 June 1998 | n.a. |
| Colombia | n.a. | 12 June 2008 |
| Costa Rica | 20 June 2003 | n.a. |
| Dominica | n.a. | 26 December 2000 |
| El Salvador | 9 August 2000 | 18 April 2002 |
| Haiti | 11 February 1999 | n.a. |
| Honduras | 25 February 1999 | n.a. |
| Nicaragua | 18 June 1998 | 18 November 1999 |
| Panama | 20 September 2001 | 5 March 2003 |
| Peru | 14 January 1999 | 27 October 2003 |
| Saint Lucia | 31 January 2000 | n.a. |
| Saint Vincent and the Grenadines | n.a. | 14 August 2003 |
| Uruguay | 13 May 2003 | n.a. |
| Venezuela (Bol. Rep. of) | 3 April 2003 | 13 May 2005 |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of International Telecommunication Union (ITU) [online] www.itu.int.

[21] For more information on other applications and experiences in Chile, see Economic Commission for Latin America and the Caribbean (ECLAC), Newsletter no. 11, Special on the Chilean earthquake, 2010.
[22] See International Amateur Radio Union (IARU), "Haiti earthquake—please keep frequencies clear, 13 January 2010.
[23] See Chile (2010), presidential statement launching a bill for telecommunications reconstruction in the disaster areas, and for emergency response, *Mensaje Nº* 169-358, *Boletín* 7029-15, 2010.

# V. Health

## ICT and health in Latin America and the Caribbean

The challenge for the health sector in Latin America and the Caribbean is to guarantee access to good-quality health care, especially for the most vulnerable sectors of the population. ICT can contribute to this by improving coverage and quality and by optimizing the processes of managing national health services.

It is generally agreed that the incorporation of ICT into health care in the region is lagging behind. Although there has been a huge upsurge in public and private initiatives, which represent a step forward and an opportunity for learning and for adopting a strategic approach to designing their coverage, progress towards defining specific policies has been slow.

These initiatives, most of which are in their infancy, range from telephone systems to sophisticated data transmission systems. They share the same objectives of extending health care to remote locations, linking low-complexity health centres with specialists located in more complex centres, obtaining timely epidemiological information and providing training to health professionals in remote areas.

# A. Promote public policies for electronic health care (goal 29)

## Few countries making progress

- eLAC2010 recognized the need to promote the adoption of public policies to ensure the proper integration of ICT into the health sector.
- The drafting of national and/or state public policies, with a few exceptions, began in the region in the middle of this decade. For the countries of the region, e-health is therefore a relatively recent public policy issue.
- In the majority of countries, the various initiatives that are being implemented effectively are not in line with public health policies. Furthermore, scant progress has been observed in the definition of interoperability standards.
- The shortcomings or absence of specific e-health policies and the lack of coordination between many initiatives and the national strategy have limited the scope and continuity of those initiatives.
- The few existing policy initiatives originate both from digital agendas (Argentina, Colombia and Uruguay) and from their incorporation into sectoral health policies (Colombia and Mexico) (see table V.1).

**Challenge:** To progress with the formulation, implementation and evaluation of policies for the development of e-health care.

TABLE V.1
LATIN AMERICA (6 COUNTRIES): POLICY INITIATIVES RELATING TO ELECTRONIC HEALTH, 2007–2012

| Country | Policy | Progress with policy formulation |
|---|---|---|
| Argentina 2009 | Digital Agenda Strategy of the Argentine Republic (7 May 2009) | The health sector participates in the Multisector Working Group set up for the Digital Agenda. |
| Brazil 2008-2011 | National Health Plan (2008-2011)<br>National Telehealth Programme (2010) | The Plan incorporates elements on science and technology for health through the national policy on science, technology and innovation in health. In 2008, priorities in the area of health were identified, including monitoring during the perinatal period, childhood and adolescence. The telehealth programme includes modules on health education for the community. |
| Colombia 2007–2010 | National Public Health Plan 2007–2010<br>'Plan TIC' (ITC Plan) 2008 | The Plan includes the promotion of telemedicine in remote areas.<br>The health strand of Plan TIC proposes high levels of service quality and coverage based on the installation of technology infrastructure and the appropriation and effective use of ICT. |
| Chile 2007-2012 | Digital Development Strategy 2007-2012 | The strategy puts forward the implementation of systems for establishing health-care schedules in health establishments, managing appointments and procedures, patient administration, managing emergencies and managing the distribution of medication. |
| Mexico 2007–2012 | National Health Programme for a Healthy Mexico: building alliances for better health (Programa Nacional de Salud por un México Sano: construyendo Alianzas para una Mejor Salud) (2007–2012) | The aims are to:<br>- create telehealth systems to link up health professionals at the different levels of health care;<br>- offer online health information to the entire population, via the e-health portal;<br>- build the capacities of health professionals by means of distance education and in-service training;<br>- modernize the processes of managing and administering health services, based on ITC options;<br>- introduce the electronic medical record. |
| Uruguay 2007–2009 | Strategy guidelines for the Digital Agenda Plan 2007–2009 | Includes:<br>planning and interim implementation of priority projects until they are assigned to their specific administrator, with special reference to the health sector. |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

## B. Establish electronic health services in public health centres and hospitals (goal 30)

### Isolated telemedicine initiatives not linked with health polcies

- eLAC2010 proposed the establishment of electronic health services in public health centres and public hospitals.
- In recent years, telemedicine has been implemented gradually in the region and is beginning to show the potential of technology for resolving access problems in communities isolated on account of geographical distance or a lack of specialists.
- Table V.2 presents a few examples of telemedicine projects. Although in some of these cases no information was available on their coverage, their existence is evidence of the growing interest in telemedicine in the region.

TABLE V.2
LATIN AMERICA (7 COUNTRIES): TELEMEDICINE EXPERIENCES, 2010

| Country | Institution | |
|---|---|---|
| Argentina | Garraham Hospital | This highly complex paediatric hospital supports health care centres nationwide. |
| | Instituto Zaldívar | Carries out tele-ophthalmology activities. |
| Brazil | University telemedicine network (RUTE) | RUTE brings the services offered by Brazil's teaching hospitals and primary health care hospitals in 10 states to healthcare professionals located in remote cities, sharing medical records, consultations, examinations and second opinions. |
| | Brazil Telehealth Network | Supports a system for consultations on family medicine issues for the community, from primary health-care to higher education institutions. It is estimated that the network assists 2,700 professional teams in the field of family medicine. |
| Colombia | Communications social welfare fund (CAPRECOM) | Carries out intensive telecare and basic telemedicine activities. |
| | Social security system and the private Colombian firm VTG (Vision Technology Group) | Provision of teleradiology services to 160 000 patients. |
| Mexico | Anáhuac University | Telemedicine and distance education applications involving health professionals and users from under-served geographical areas, as well as indigenous groups and rural dwellers in the Mexican State of Guerrero. |
| | Social Security and Social Services Institute for State Employees (ISSSTE) | Carries out telemedicine activities with the aim of reducing costs. |
| Panama | National Telemedicine and Telehealth Programme | Programme with three components: rural areas, prisons and teleradiology. It provides remote assistance and support to health professionals, as well as to indigenous communities, by means of radio and mobile telephone. |
| Peru | Río Napo Network | The EASHY Foundation, with the support of University Rey Juan Carlos (URJC), the Polytechnic University of Madrid (UPM) and the Pontifical Catholic University of Peru (PUCP), are testing telediagnosis applications, such as a digital tele-stethoscope. |
| Venezuela (Bol. Rep. of) | Telemedicine in rural areas of Amazonian regions | Telemedicine began via radio in the Maniapure region and is now carried out with a satellite connection in 17 other districts in the Bolivarian Republic of Venezuela. |
| | National Centre for Technological Innovation (CENIT) | It created a device for transferring health information with the ability to manage and monitor vital signs. |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

## C. Incorporate ICT into health care planning and management (goal 34)

- eLAC2010 proposed the incorporation of ICT into the management of public health centres and hospitals.
- The electronic medical record and health networks facilitate the management of health care systems. The digitization of electronic medical records facilitates faster and more efficient access to information, enabling data to be processed to keep records up to date and, where necessary, to request a second medical opinion more easily and rapidly. It also enables large volumes of information to be handled in a smaller physical

space, with the resulting improvement in health service management.

- In Latin America and the Caribbean, the electronic medical record is still in its infancy, although initiatives exist in countries of the region (see table V.3).

**Challenge:** To progress with the establishment of the electronic medical record and with networks linking up health services.

TABLE V.3
LATIN AMERICA (5 COUNTRIES): ELECTRONIC MEDICAL RECORD INITIATIVES, 2009

| Country | Electronic medical record status |
|---|---|
| Argentina | Initiated in the area of primary health care. An outpatient electronic medical record is being introduced by Hospital Italiano. |
| Chile | Electronic medical records are being introduced in the country's main hospitals and, according to national information, are gaining momentum more rapidly in the Metropolitan Region and in the cities of Valparaíso, Concepción and Temuco. |
| Mexico | National electronic medical record system (Sistema Nacional de Expediente Electrónico). It is being used or implemented throughout primary health care and in second-level care, as well as in the Mexican Social Security Institute (IMSS) and the Social Security and Social Services Institute for State Employees (ISSSTE). |
| Uruguay | Medical Federation of the Interior (FEMI) and the Multilateral Investment Fund of the Inter-American Development Bank (FOMIN–IDB): Project: "Mejora de la Gestión y Productividad del Sistema de Salud en Uruguay" (improving the management and productivity of Uruguay's health system).<br>1. Development of instruments for innovation in private health-sector management. Progress with the gradual introduction of the electronic medical record and the balanced scorecard.<br>2. Pilot projects for the electronic medical record, introduction of the balanced scorecard and the electronic medical prescription in four Collective Medical Care Institutions (IAMC) and at least two public hospitals.<br>3. Development of the project monitoring and evaluation system. |
| Venezuela (Bol. Rep. of) | A standardized medical record has been developed. The electronic medical record, entitled SINAPSIS (National Public Health System for Social Inclusion), was developed entirely using free software platforms. The National Centre for Technological Innovation (CENIT) administers the SINAPSIS system. |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

## Few health care networks

- Networks are needed to improve the management of health systems, while optimizing existing resources, to disseminate knowledge and innovation and to develop telemedicine applications. If possible, they should be high-speed networks to connect the different entities in the system. This requires broadband with far higher connection speeds than currently exist in Latin American and Caribbean countries.

- One of the most significant examples is the telemedicine university network in Brazil (RUTE), which has a transmission speed of 1 gigabit per second (Gbps) and supports various types of application.

- In other countries, only a few health care centres or territories are interconnected.

- In view of the importance given to primary health care in achieving the objective of expanding coverage, interconnection needs are a priority.

TABLE V.4
LATIN AMERICA (5 COUNTRIES): DIGITAL HEALTH CARE NETWORKS, 2010

| Country | Institution | Initiative |
|---|---|---|
| Argentina | Health Ministry of the City of Buenos Aires | 43 hospitals connected in a network. |
| Brazil | Telemedicine university network (RUTE) | The 33 hospitals in the RUTE network have a transmission speed of 1 Gbps. In cities with Education and Research Community Networks, they provide telemedicine and have personnel and infrastructure for videoconferencing. |
| | Brazil Telehealth Network | Composed of groups in nine different states, the network is made up of connections between almost 100 contact points. This number is expected to increase to 900 contact points in basic health units in municipalities selected by the state health authorities. |
| Chile | Communication network for health care centres nationwide | It has 60 000 voice terminals and 40 000 data nodes. |
| | Health care service network linking 8 out of 29 health services. | Covers all public health care institutions: Health Ministry, the National Health Fund (FONASA), the Supply Centre for the Ministry of Health (CENEBAST), the Public Health Institute (ISP) and health testing establishments. |
| Colombia | The State gaming and gambling regulatory authority (ETESA)<br>National Health Institute (INS) | Both institutions belong to the Colombian Government's High-speed Network, which links up public institutions. |
| Costa Rica | Communication network: in 6 of the 8 national hospitals, 18 of the 20 regional hospitals, 10 of the 90 health areas and 10 of the 800 EBAIS (integrated primary health care teams). | It makes it possible to manage the medical appointment diary, to make referrals and counter-referrals, to connect emergency, pharmacy and registration services for the control population, as well as to record activities associated with chronic patients. |
| | Telemedicine system | Online teleconsulting system to enable doctors from regional hospitals to consult specialist doctors in national hospitals (point-to-point) and videoconferencing system, which allows science and technology sharing by means of virtual meetings and talks. |

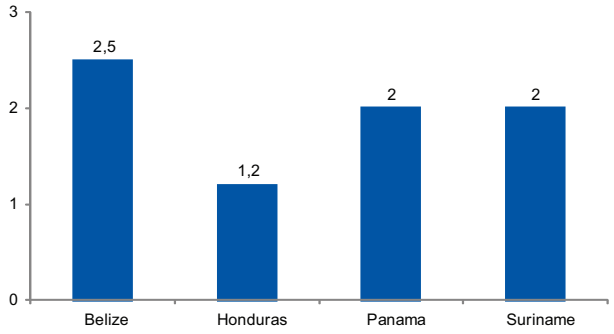
Source: Economic Commission for Latin America and the Caribbean (ECLAC).

## Limited connectivity in health services

- It is difficult to ascertain the level of development of ITC infrastructure in Latin American and Caribbean health services because the subject is not covered by official statistics. The only measurement initiative with comparable methodologies for several countries is the Health Metrics Network of the World Health Organization (WHO). Belize, El Salvador, Guatemala, Honduras, Panama, Paraguay, the Plurinational State of Bolivia and Suriname are participating in this initiative.

- With regard to basic communications infrastructure (telephones, internet and e-mail), in four of the countries for which information is available, this infrastructure is available in the majority of national and regional offices but in only a few local district. By contrast, in Honduras, less than 50% of regional and district health services have basic communications infrastructure (see figure V.1).

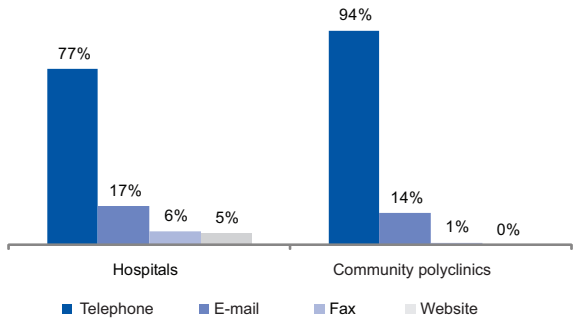
FIGURE V.1
LATIN AMERICA AND THE CARIBBEAN (4 COUNTRIES): ACCESS TO TELEPHONES, INTERNET AND E-MAIL IN THE HEALTH SYSTEM, 2009




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of World Health Organization (WHO), Health Metrics Network [online] http://www.who.int/healthmetrics/en/, 2009.
Note: The point values refer to the level of access to services: national (0 points); more than 50% regional (1 point); more than 50% regional and less than 50% district-level (2 points); and more than 50% national, regional and district-level (3 points).

- In Cuba in 2009, while practically all the hospitals and community polyclinics had a telephone, only 17% of hospitals and 14% of community polyclinics communicated via e-mail. Only 5% of hospitals had a website but virtually none of the community polyclinics had one (see figure V.2).

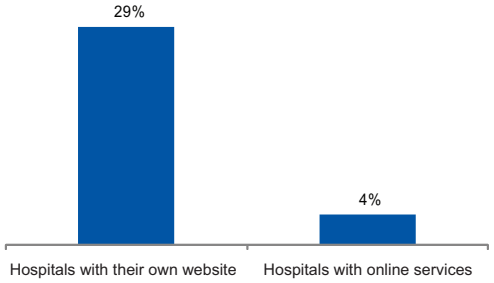
FIGURE V.2
CUBA: CONNECTIVITY OF THE HEALTH SYSTEM, 2009




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of "Directorio de Instituciones de Salud de Cuba" [online] http://bvsayuda.sld.cu/ayudas/hojas-informativas/directorio-de-instituciones-de-salud-de-cuba.

- An increasing number of health services make information available on the Web. In Chile, 29% of hospitals have a website. For example, on some of those websites it is possible to make appointments or to obtain test results (see figure V.3).

FIGURE V.3
CHILE: PROPORTION OF HOSPITALS WITH A WEBSITE AND ONLINE SERVICES, 2009




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from the Chilean Ministry of Health.

**Challenge**: Increase ICT connectivity and infrastructure in health services.

## D. Train health professionals in the use of ITC (goals 31 - 33)

### Limited progress

- eLAC2010 goal 31 is to train public health professionals in the use of ICT and goal 32 is to promote the inclusion in the general training of health professionals, particularly decision-makers, of issues relating to the planning and operation of ICT-based health services. eLAC2010 goal 33 refers to promotion of knowledge transfer in the region.

- The largest regional initiative for training health professionals is the Virtual Campus of Public Health of the Pan American Health Organization (PAHO). This is a network of institutions that share courses, resources, services and activities for education, information and knowledge-management in training, with the aim of improving ICT proficiency in continuing health education programmes. This network has nodes in eight Latin American countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Mexico and Peru.

- Cuba and Colombia stand out in terms of the availability of open educational resources relating to ICT in public health. In 2009, about half of the postgraduate training curricula for public health professionals in Chile included subjects relating to ICT in health.

**Challenge:** To increase the training of health professionals in information and communication technologies, including the incorporation of ICT into the basic vocational training curriculum. Promote knowledge transfer in the region.

## E. Link up e-health portals (goal 35)

### More work remains to be done

- eLAC2010 proposed to link up national health care portals with a view to setting up a regional network for sharing experiences, exchanging contents and promoting their development.

- Progress (albeit insufficient) has been made during the period 2008–2010 with the creation of portals for health authorities and services. Whereas in 2006 only 72% of health ministries had a website, by 2009 all countries had official health portals.

- The content of these health portals allows citizens to access information on health systems, diseases and treatment, which results in efficiency gains, but it still not adequate to guide and facilitate their administrative formalities. There is a proliferation of private health portals, but they lack quality certification.

- All the portals currently provide institutional information on health ministries, how they are organized and their objectives, and on current regulations (see table V.5).

- The majority of portals provide information on health campaigns and on the prevention of certain diseases, such as human influenza (AH1N1) and HIV/AIDS. A point of note is that Brazil publishes information on patients awaiting a transplant.

- As shown in table V.5, in only seven countries can health services be located via the website of the health ministries, and transactions can be made on these websites in only four countries.

**Challenge:** To improve official health portals by incorporating more information on health campaigns and online services, as well as by facilitating the location of services via the portals.

TABLE V.5
LATIN AMERICA (17 COUNTRIES): CONTENT OF WEBSITES OF HEALTH MINISTRIES AND SERVICES, 2009

| Portals | Institutional information | Information on health campaigns and disease prevention | Locator of health networks | Online services |
|---|---|---|---|---|
| Argentina | ✔ | ✖ | ✖ | ✖ |
| Brazil | ✔ | ✔ | ✖ | ✔ |
| Bolivia (Plur. State of) | ✔ | ✔ | ✖ | ✖ |
| Colombia | ✔ | ✖ | ✖ | ✖ |
| Costa Rica | ✔ | ✖ | ✖ | ✖ |
| Chile | ✔ | ✔ | ✔ | ✔ |
| Ecuador | ✔ | ✔ | ✔ | ✖ |
| El Salvador | ✔ | ✔ | ✔ | ✖ |
| Guatemala | ✔ | ✔ | ✔ | ✖ |
| Honduras | ✔ | ✖ | ✖ | ✖ |
| Mexico | ✔ | ✔ | ✔ | ✔ |
| Nicaragua | ✔ | ✔ | ✖ | ✖ |
| Panama | ✔ | ✔ | ✖ | ✖ |
| Paraguay | ✔ | ✖ | ✔ | ✖ |
| Peru | ✔ | ✔ | ✔ | ✖ |
| Dominican Republic | ✔ | ✖ | ✖ | ✖ |
| Uruguay | ✔ | ✔ | ✖ | ✔ |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

## F. Promote the interconnection of virtual health libraries (goal 36)

### Health libraries have made the greatest contribution to knowledge management

- eLAC2010 goal 36 signalled the need to promote improvements in regional health networks that will permit digital system interoperability, software exchange, interactive applications, the interconnection of applications, and the interconnection of virtual health-related libraries and portals.

- Among the most significant advances in the region is the contribution of the Virtual Health Library (VHL) of the World Health Organization (WHO), maintained by the Pan American Health Organization's Latin American and Caribbean Center on Health Sciences Information (BIREME). The operation of the VHL and associated networks has helped to improve the accessibility of information from regional and international sources. In 2009, the regional VHL website received an average of 16 million visits per month and it was estimated that the VHL network as a whole received more than 20 million visits.

**Challenge:** To incorporate all Latin American and Caribbean countries into health information networks.

TABLE V.6
LATIN AMERICA AND THE CARIBBEAN (23 COUNTRIES): PARTICIPATION IN HEALTH INFORMATION NETWORKS, 2010

| Country / Networks | Virtual Health Library (VHL) | ePortuguese | Evidence Portal | Localizador de Información de Salud (LIS) | Scientific Electronic Library Online (SciELO) | International Network of Information and Knowledge Sources for Science, Technology and Innovation Management (ScienTI) |
|---|---|---|---|---|---|---|
| Argentina | ✔ | | ✔ | ✔ | ✔ | ✔ |
| Barbados | ✔ | | | | | |
| Belize | ✔ | | | ✔ | | |
| Bolivia (Plur. State of) | ✔ | | | ✔ | Under development | |
| Brazil | ✔ | ✔ | | ✔ | ✔ | ✔ |
| Chile | ✔ | | ✔ | ✔ | ✔ | ✔ |
| Colombia | ✔ | | ✔ | ✔ | ✔ | ✔ |
| Costa Rica | ✔ | | | ✔ | Under development | |
| Cuba | ✔ | | ✔ | ✔ | ✔ | ✔ |
| Ecuador | ✔ | | | ✔ | | ✔ |
| El Salvador | ✔ | | | | | |
| Guatemala | ✔ | | | ✔ | | |
| Honduras | ✔ | | | ✔ | | |
| Jamaica | | | | ✔ | | |
| Mexico | ✔ | | | ✔ | Under development | ✔ |
| Nicaragua | ✔ | | | | | ✔ |
| Panama | ✔ | | | | | |
| Paraguay | ✔ | | | ✔ | Under development | |
| Peru | ✔ | | | ✔ | Under development | ✔ |
| Dominican Republic | ✔ | | | | | |
| Trinidad and Tobago | ✔ | | | | | |
| Uruguay | ✔ | | | ✔ | Under development | |
| Venezuela (Bol. Rep. of) | ✔ | | | ✔ | ✔ | ✔ |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of World Health Organization (WHO), Virtual Health Library [online] http://regional.bvsalud.org, Evidence Portal [online] http://evidences.bvsalud.org/php/index.php?lang=en ePORTUGUÊSe [online] http://eportuguese.bvsalud.org; Localizador de Información de Salud (LIS) [online] http://lis.bvs.br/lis-Regional/E/metodologia.htm; and Scientific Electronic Library Online (SciELO) [online] www.scielo.org.

# VI. Public management

One of the greatest challenges facing the Governments of Latin America and the Caribbean today is the need to strengthen democracy, ensuring real equality in economic, social and cultural rights. In view of the serious shortcomings in the region, a stronger and more modern State presence is required. For this to be possible, Governments will need to increase their available resources and to optimize resource use. In particular, this means designing and implementing reforms to improve the equity, efficiency, efficacy and transparency of public policies.

Progress with ICT allows new forms of public management to be developed. To exploit ICT to the full will require integrated and coordinated policies for introducing these technologies, which, when accompanied by a reform of administrative processes, will increase the efficiency of the State apparatus. Thus, the ability of Governments to access the new solutions afforded by ICT will depend on the state of progress in e-government practices and on the way the Government functions and interacts with citizens.

There is huge scope for improving efficiency in the operation of Governments by introducing new technologies. For example, the use of ITC for public procurement is vital in reducing costs and saving time, as well as in broadening the range of participation by firms and making public procurement processes more transparent. The use of computer tools for implementing social plans serves to improve their scope and coverage and to encourage the use of ICT among sections of the population with less access to such technologies. In tax administration, the implementation of electronic means of payment and the provision of information to the taxpayer can improve tax collection and have a positive impact on income distribution.

The introduction of Web 2.0 tools into e-government services and of regulations to aid information transparency are some of the initiatives under way to improve government interaction with citizens. However, in order to take full advantage of ICT benefits, e-government architecture must be such that systems used in public management are interoperable.

Making reference to the public management goals of the eLAC2010 Plan, this chapter presents an overview of the region, together with the challenges facing it in three areas: government services; access and use of electronic government; and georeferencing systems.

## A. Improve the provision of e-government services (goals 37–40 and 47)

### Significant but uneven progress has been made

- The goals of the eLAC2010 Plan cover the provision of online government services. One means for assessing the progress of e-government services in the region is the e-government development index of the United Nations Department of Economic and Social Affairs, which is based on three components: (a) presence of online services; (b) telecommunications infrastructure; and (c) human capital.

- According to the values published in the 2010 index, where the maximum value on the scale is 1, the average for the vast majority of Latin American and Caribbean countries was 0.45 points, or 30% below the average for the industrialized countries.

- A review of the relative position of Latin American and Caribbean countries in the ranking emerging from this index highlights the disparities that exist within the region. For example, the highest-ranking country in the 2010 index is Colombia, which stands in 31st position out of a total of 183 countries. It is followed by Chile (34th), Uruguay (36th) and Barbados (40th). Other countries such as Argentina, Brazil, Mexico and Peru also have a relatively high ranking within the region. The lowest-ranking countries in the region are Haiti, (169th), Suriname (127th), Belize (120th) and Nicaragua (118th).

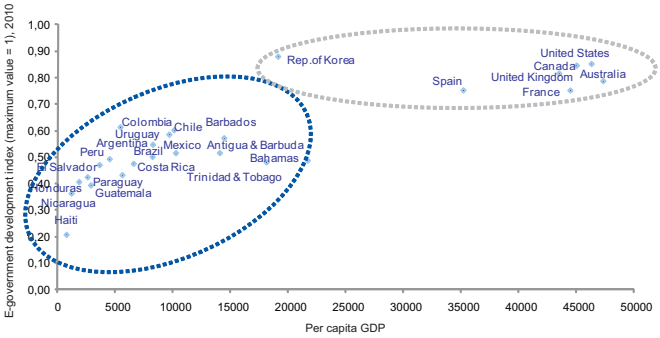
- A comparison of the e-government development index with per capita gross domestic product (GDP) (see figure VI.1) shows that industrialized countries occupy the top 10 positions in the ranking. Interestingly enough, the Republic of Korea is in first position, although its per capita GDP is lower than that of the other industrialized countries that figure in the comparison.

- Even though the measurement methodology for the 2010 edition of the index was amended from that for previous versions – which influences the countries' relative positions – the index shows that countries like Colombia, Uruguay, Barbados, Dominica and Honduras have been making steady progress since 2005. A comparison of the results with the 2008 index also shows clearly the progress that has been made by Antigua and Barbuda, the Bahamas, Chile, Cuba, Paraguay, St. Vincent and the Grenadines and Panama.

- This up the ranking reflects, for example, the policies implemented by Colombia in terms of interoperability. In the case of Chile, it reflects the progress made in terms of transparency and public procurement.

**Challenge:** To implement policies for the incorporation of ICT and innovation into public management in order to increase the efficiency and quality of the services offered.

**FIGURE VI.1**
**LATIN AMERICA AND THE CARIBBEAN (18 COUNTRIES) AND ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (7 COUNTRIES): E-GOVERNMENT DEVELOPMENT INDEX AND PER CAPITA GROSS DOMESTIC PRODUCT (GDP), 2008 AND 2010 (Current dollars)**




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations, *United Nations E-Government Survey 2010* (ST/ESA/PAD/SER.E/131), New York, 2010, and data from the World Bank.

## Progress with online services but an inadequate level of interaction

- The e-government component of the United Nations index that assesses the level of sophistication of online services considers four stages of online service development: emerging, enhanced, transactional and connected. Stage one refers to government websites containing information on regulations, standards and links with other government departments. In stage two, government websites deliver one-way or two-way information (e.g. downloadable forms), and stage three involves two-way communication incorporating feedback and electronic authentication. Stage four is where Web 2.0 tools are used.

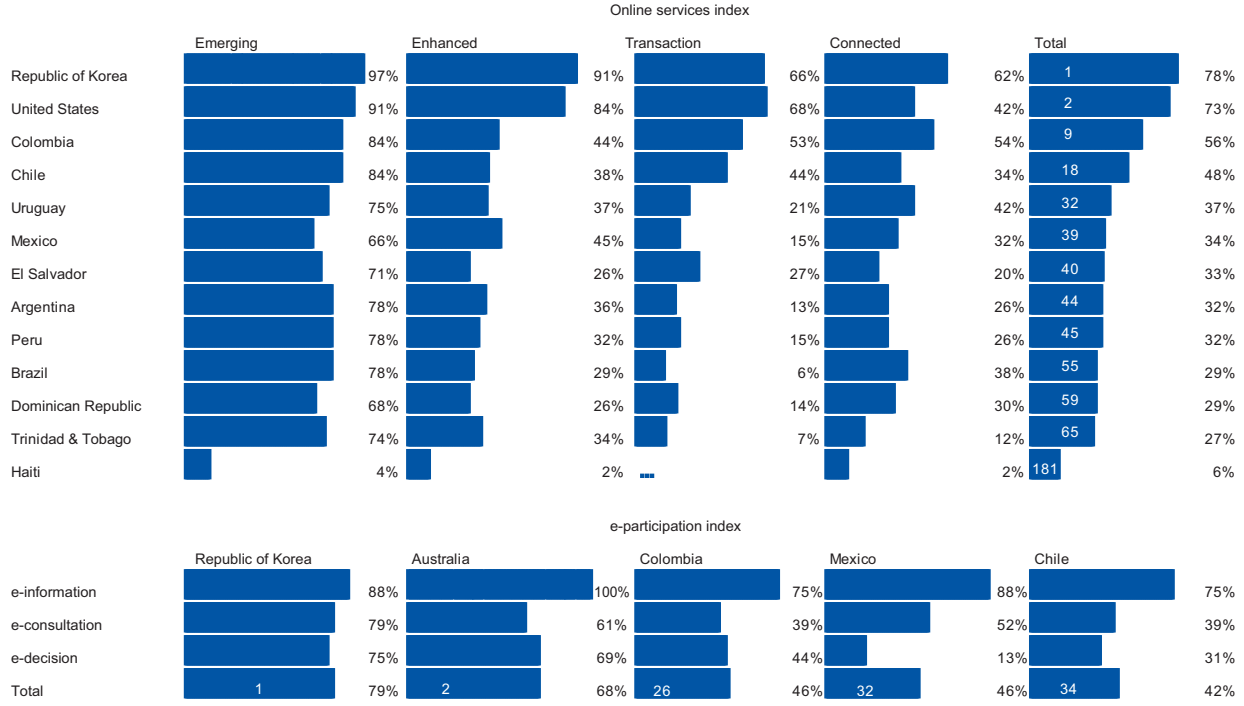
- Figure VI.2 presents the information on this component for countries of the region, as well as for countries which, according to the index, achieved the best relative performance. These include Colombia, which was in ninth place in the world ranking, Chile, 18th and Uruguay 32nd.

- It shows further that the majority of countries in the region are still in the 'emerging' stage, as they have few of the more sophisticated applications considered to represent the transactional stage or the connected stage, with its citizen-centric approach.

- A calculated index (also included in figure VI.2) lists the types of e-participation services offered by Governments for interacting with their citizens. Once again it shows that the Latin American and Caribbean countries interact with their citizens primarily by delivering information, with e-participation still in its early stages.

**Challenge:** To promote the development of interactive content and applications using Web 2.0 tools. To exploit the opportunities offered by ICT to increase citizen participation.

**FIGURE VI.2.**
**LATIN AMERICA AND THE CARIBBEAN AND ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (SELECTED COUNTRIES): ONLINE SERVICES AND E-PARTICIPATION INDICES, 2010**
**(Percentages and position in the overall ranking)**




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of United Nations, *United Nations E-Government Survey 2010* (ST/ESA/PAD/SER.E/131), New York, 2010.
Note: The online services index includes the total scores for the national portal and five ministries. The percentages denote the country's score out of a maximum possible score of 403 points. The e-participation index combines the cumulative scores from the national portals plus the scores for citizen empowerment. In both charts, the numbers inside the bars represent the ranking of the relevant countries.

## Online presence of Governments, with few transactional services

- In line with the world trend, Governments in the region have portals for the central administration, containing information relating to the Government.

- Even where Governments have a web presence, use of the 'one-stop window' approach for citizen transactions, as proposed in the eLAC2010 Plan, is not widespread. In Colombia, one-stop windows have been set up to facilitate foreign trade procedures and environmental formalities. In Mexico, 12% of federal online services are conducted through one-stop window facilities.

- Countries in the region have progressed in offering online government services, although progress is patchy. For instance, while in Chile 30% of all the administrative formalities published were offered in full or in part online, in Argentina the figure was 11%.[1] As regards the stage of maturity of online service delivery, Colombia's situation serves as an example: in 2009, 80% of the services were at the information stage, 17% at the interactive stage and only 3% at the transaction stage.[2]

- Table VI.1 lists portals for government services in the region according to the possibility for making transactions, showing that 55% of portals allow some transactions to be made online. The most common services offered are tax-related.

**Table VI.1 LATIN AMERICA: COUNTRIES WITH AND WITHOUT PORTALS FOR ONLINE GOVERNMENT SERVICES, 2009**

| No possibility for making online transactions | Possibility for making online transactions |
|---|---|
| Bolivia (Plur. State of) | Argentina |
| Cuba | Chile |
| Ecuador | Colombia |
| El Salvador | Costa Rica |
| Guatemala | Mexico |
| Honduras | Panama |
| Nicaragua | Peru |
| Paraguay | Dominican Republic |
| | Uruguay |
| | Venezuela (Bol. Rep. of) |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), "Avances en el acceso y el uso de las tecnologías de la información y la comunicación en América Latina y el Caribe 2008–2010", *Project documents*, No. 316 (LC/W.316), Santiago, Chile, 2010, p. 27.

**Challenge:** To increase transactional services in government portals. To increase the number of online government services taking a one-stop window approach.

## Uneven progress with the online presence of local governments, below the eLAC2010 goal

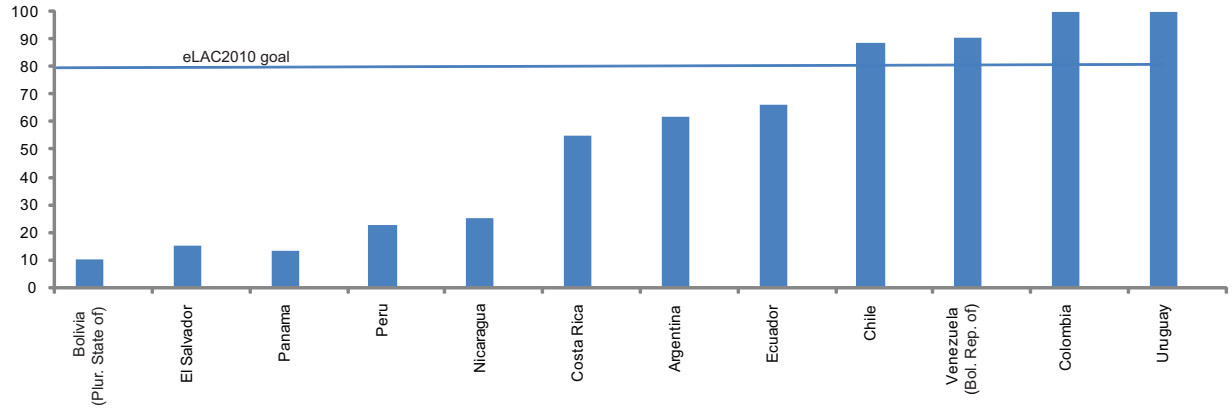
- One obstacle to meeting the eLAC2010 goal on local government portals is the lack of Internet connections in rural and remote areas, where most countries in the region fail to meet this goal (see figure IV.3). However, countries like the Bolivarian Republic of Venezuela, Chile, Colombia and Uruguay appear to have exceeded this goal.

- As regards the maturity of online services offered by local governments, it is possible to find municipalities that have developed the transactional stage of their web portals, although this is not widespread. One example is Chile, where, in 2008, 14% of municipalities processed administrative formalities online and 16% offered online payment facilities.[3]

**Challenge:** To promote policies for incorporating ICT into local government. To develop community content and continue to transfer content and applications from central to local government.

[1] See Economic Commission for Latin America and the Caribbean (ECLAC), "Avances en el acceso y el uso de la tecnologías de la informacón y la comunicación en América Latina y el Caribe 2008–2010", Project documents (LC/W.316), Santiago, Chile, 2010, p. 28.
[2] Ibid.
[3] See Centre for Studies on Information Technologies (CETIUC), "E-municipios. Índice de digitalización municipal 2008. ¿Cómo llevar mi municipio a la era digital?", Santiago, Chile, Catholic University of Chile (PUC), 2008, p. 7.

FIGURE VI.3
LATIN AMERICA (12 COUNTRIES): MUNICIPALITIES WITH A WEBSITE, 2010 (Percentages)




Source: Economic Commission for Latin America and the Caribbean (ECLAC), "Avances en el acceso y el uso de las tecnologías de la informacón y la comunicación en América Latina y el Caribe 2008–2010", *Project documents* (LC/W.316), Santiago, Chile, 2010, p. 31.

## Uneven progress with electronic public procurement

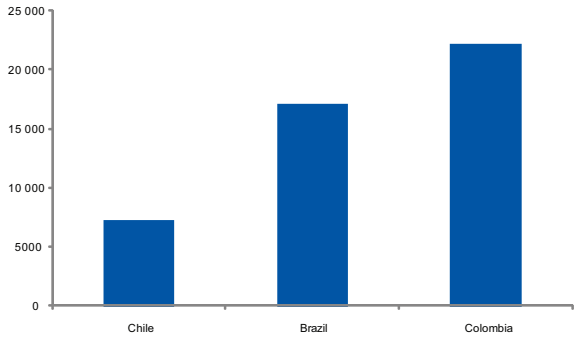
- Although the situation concerning public procurement portals is not uniform, there has been progress with electronic procurement by the public sector.

- While the majority of countries in the region are still in the initial stages of implementing electronic public procurement systems, Ecuador is making the transition towards a more advanced stage with greater use of ICT. Chile is already moving towards the incorporation of interoperable systems for electronic public procurement, while Brazil is the most mature case in this respect.

- It is difficult to estimate the savings in government spending achieved by implementing public procurement systems. However, there is general agreement that there have been improvements in State efficiency following their introduction.[4] This type of procurement system also improves transparency.

- Figure VI.4 shows the sums traded through public procurement systems in Brazil, Chile and Colombia. Competitive bidding procedures vary depending on the country. In Brazil, there are six types ranging from auctions –which are used for procurement of goods and services and in which the supply contract is conducted through public tenders– to competitions which are used for the selection of projects in which the overriding concern is technical quality. In Colombia, these processes include public bidding, merit-based competitions, abbreviated selection procedures, direct procurement and other processes. In Chile, the transactions correspond to public tenders, ChileCompra Express and ChileCompra Libros.

FIGURE VI.4
LATIN AMERICA (3 COUNTRIES): TOTAL AMOUNT TRADED IN PUBLIC PROCUREMENT, 2009
(Millions of US dollars)




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures from Brazil, Federal Government Procurement Portal [online] www.compranet.gov.br; Chile [online] www.chilecompra.cl; ; Colombia, Single procurement portal, Electronic System for Procurement [online] www.contratos.gov.co.

**Challenge:** To incorporate into all public procurement portals the possibility for making transactions. To implement policies and standards for portal interoperability.

[4] See M. Singer and others, "Does e-procurement save the State money?", *Journal of Public Procurement*, vol. 9, No. 1, 2009, pp.58-78.

## Scant progress with interoperability in countries of the region

- Interoperability is vital in advancing towards more highly developed e-government service provision. Interoperability means sharing information to improve the workings of public management. The information to be shared must be understandable (semantic level of interoperability), must accord with the stated objectives (organizational level) and must be technically feasible (technical level). All this calls for the design and implementation of architecture for interoperability, which has not been sufficiently developed in the region.[5]

- Table IV.2 sets out the legal frameworks and reference documents for the implementation of architectures for interoperability within the State. There are clear examples of progress towards the development of appropriate architectures and a constant review of established standards. These include the standards of interoperability for electronic government (e-PING) in Brazil, the interoperability of online e-government (GEL) in Mexico and the integrated platform of electronic State services (PISEE) in Chile.

**Challenge:** To implement standards for interoperability that will facilitate more highly developed e-government services.

TABLE VI.2
LATIN AMERICA (6 COUNTRIES): LEGISLATION ON INTEROPERABILITY

| | Legislation on interoperability |
|---|---|
| Argentina | Resolution No. 99/2008 (Component of interoperability for e-government), Office for Information Technologies |
| Brazil | Normative Act no. 5, 2005 coordination of e-PING. In 2010, latest e-PING version. |
| Chile | Law 19.880 of 2005, which establishes administrative procedures governing the acts of State authorities. |
| Colombia | Decree 1151, 2008, establishing general guidelines for the online government strategy of the Republic of Colombia, partly governing Law 962 of 2005 and setting forth other provisions. |
| Mexico | Creation of the Intrasectoral Commission for e-Government Development, 2005<br>Recommendation of a reference ICT government architecture model (MG. V2)<br>Technical interoperability guide for federal public management, 2009 |
| Peru | Ministerial order R.M. 381-2008-PCM (13/11/2008), which adopts guidelines and mechanisms for implementing the interconnection of electronic data-processing equipment between different State entities |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

## Regional cooperation as a tool for furthering interoperability and service delivery

- Regional cooperation institutions are key to promoting regional interoperability. Existing networks include the Network of e-Government Leaders of Latin America and the Caribbean (RedGeALC), which offers participating countries the opportunity to share experiences, visions and applications.

- e-Gobex is one of the regional tools available for sharing and transferring regional e-government applications. This portal facilitates sharing of applications in areas such as mobile government or service to citizens. In July 2010, e-Gobex offered 33 different applications, most of which were central-government tools (see figure VI.5). To facilitate networking, RedGEALC provides a database of regional experts in e-government, including information provided by more than 200 professionals.[6]

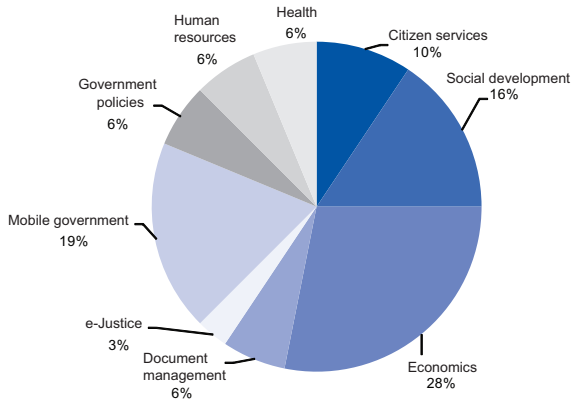
[5] See Economic Commission for Latin America and the Caribbean (ECLAC), "White Book of e-Government Interoperability for Latin America and the Caribbean" (LC/R.2143), Santiago, Chile, 2007.

[6] See RedGEALC, Base regional de expertos en e-gobierno [en línea] http://www.redgealc.net/expertos/prof_idx.php?pag=prof_qry.php September 2010.

- Cooperation among the countries of the region has taken the form of visits for learning best practices. ECLAC has been providing assisting countries in the design of policies in this area. In 2009-2010, it provided technical assistance to El Salvador and Ecuador.

**Challenge:** To strengthen cooperation and coordination bodies for sharing experiences at regional level.

**FIGURE VI.5**
**APPLICATIONS AVAILABLE IN eGOBEX, 2010**




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Exchange and Transfer E-Government Applications (eGobex) [online] www.egobex.net.
Note: eGobex is a portal for sharing and transferring electronic government applications.

## B. Increase government access and use (goals 41-46)

### Limited accessibility to portals in the region

- One of the public management goals of the eLAC2010 Plan is to establish accessibility mechanisms for government portals.

- Accessibility to portals refers to universal web access measured at a given point in time, irrespective of the devices or available network infrastructure, but with due regard to constraints such as the culture, language, geographical location or capabilities of users.

- Having guidelines and standards for the development of portals facilitates accessibility. One example is the web accessibility initiative of the W3C (World Wide Web Consortium) and its guidelines for web page design to reduce barriers to information. The guidelines recommend three priority levels of verification in order to avoid: (1) excluding certain groups from information; (2) hindering access by certain groups of users; and (3) compounding the difficulties of information access.[7] Some countries in the region have incorporated these recommendations within the definition of their guidelines for the accessibility of government portals. They include Chile, Mexico and, more recently, El Salvador, which has launched a government website standardization project that includes sites of ministries, regulatory agencies, State-owned banks and independent bodies.[8]

- The accessibility of government websites can only be improved if steps are taken to ensure compliance with adopted standards. W3C accessibility guidelines were used to evaluate the accessibility of Mexico's federal public management websites for the 2008–2009 period. According to the results, 66% of the institutions studied were evaluated positively. Similar evaluations conducted on institutional sites in Chile in 2008 showed that 76% of such sites complied with established standards.[9]

- As regards the availability of information in different languages, an evaluation of the content of central government websites in eight countries of the region revealed that these do not normally include indigenous languages. The exception is the portal of the Office of the President of Paraguay, which publishes content in both official languages (Spanish and Guaraní). Thus, in most cases, the content is available above all to the Spanish-, English- and Portuguese-speaking communities (see table VI.4).

[7] See World Wide Web Consoritum (W3C), "Web Accessibility Initiative (WAI)" [online] www.w3.org/WAI.
[8] See Office of the President of the Republic of El Salvador, "Estandarización y actualización de los sitios web de las instituciones de gobierno" [online] http://www.presidencia.gob.sv/index.php/temas/ticas/estandarizacion-y-actualizacion-de-los-sitios-web-de-las-instituciones-del-gobierno,15 September 2010.
[9] The levels of compliance relating to accessibility to websites in accordance with Supreme Decree 100 of 2006, which establishes standards for setting up government websites. For further information, see the Observatorio de Usabilidad del Gobierno de Chile [online] www.observatoriodeusabilidad.cl.

- To increase access by including people with a disability involves the use of multimedia or the incorporation of applications for accessing the content in the portal. For example, the availability of visual content is useful for people with a hearing impediment, while the inclusion of audio software tools that read out the content would benefit people with a visual impairment.

- Progress has been uneven in terms of ICT and disability. While some countries have made declarations of intent, others have included the disability component in their digital agenda or have progressed towards the implementation of initiatives.

**Challenge:** To increase the accessibility of government portals by considering the availability of content in indigenous languages and by implementing tools for people with disabilities.

TABLE VI.3
LATIN AMERICA AND THE CARIBBEAN (8 COUNTRIES): ACCESSIBILITY IN NATIONAL PORTALS, 2010

| | Official Website | Languages of the content | Consideration of disabilities |
|---|---|---|---|
| Argentina | www.argentina.gob.ar<br>Portal for accessing information on Argentina | Spanish, English and Portuguese (partial) | Statement of intent. National Plan for urban, building, communication and transport accessibility, which has not taken web form. |
| Brazil | www.Brazil.gov.br<br>Portal for accessing information on Brazil | Spanish (partial), English and Portuguese | Legislation on Internet accessibility. The portal contains documents with audio and video (partial). |
| Barbados | www.barbados.gov.bb and www.gov.bb | English | No information available<br>Portal for accessing information on Barbados and First Stop Window portal. |
| Chile | www.gobiernodechile.cl<br>Portal on the executive branch | Spanish | Statement of intent. National Disability Service (SENADIS), partial inclusion of multimedia material in portals. |
| Colombia | www.presidencia.gov.co<br>Portal on the Office of the President, includes news and accounts | Spanish and English (partial) | Initiatives within the community strand of Colombia's 'Plan TIC' (ICT Plan). |
| Mexico | www.presidencia.gob.mx<br>Portal for accessing information on Mexico | Spanish and English (partial) | Discap@cinet, includes content on health and society security. |
| Paraguay | www.presidencia.gov.py | Spanish and Guaraní | Portal for accessing information on Paraguay<br>Bills on accessibility to television and on the creation of the National Secretariat for the Human Rights of People with a Disability (SENADIS). |
| Peru | www.peru.gob.pe<br>Portal for accessing information on Peru | Spanish | Law 28530 on the Promotion of Internet Access for People with a Disability and on the Adaptation of Physical Space inside Public Internet Booths. |

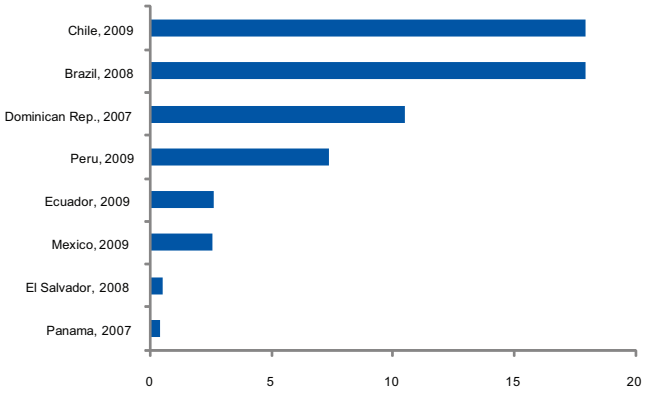
Source: Economic Commission for Latin America and the Caribbean (ECLAC).

## Little interaction with citizens, but growing participation of smaller businesses

- Although the use of e-government services and applications requires citizens to have proper digital training and appropriate means of access, it also depends on the public management model or strategy adopted. This means taking a citizen-centric approach to encourage participation. The development of this approach is in its infancy in the region (see figure VI.2).

- As a result, there is little citizen interaction with the Government via electronic media. According to the information collected by OSILAC in national household surveys, an average of only 7% of users state that they interact with the Government (see figure VI.6).

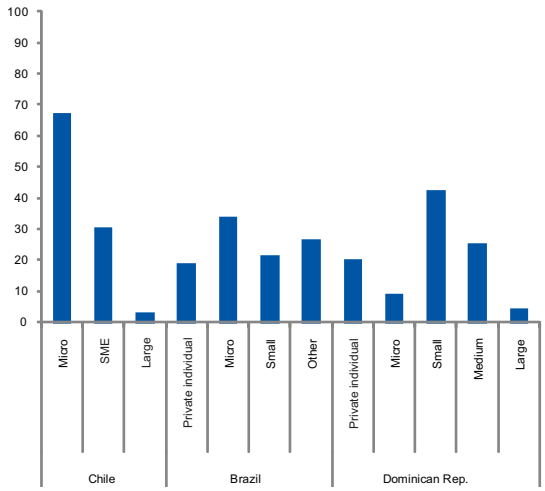
### FIGURE VI.6
### LATIN AMERICA (8 COUNTRIES): USERS AGED 15 TO 74 STATING THAT THEY INTERACT WITH THE GOVERNMENT, AROUND 2009
### (Percentage of all users)




Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of the data from household surveys, most recent year for which data were available, [online] http://www.cepal.org/tic/flas

- Government interaction with businesses is growing. One example of such interaction is via electronic public procurement portals, which encourage and increase the participation of bidders on equal terms. Information from registered suppliers reveals the preponderance of smaller businesses participating (see figure VI.7).

### FIGURE VI.7
### LATIN AMERICA (3 COUNTRIES): SUPPLIERS REGISTERED ON PUBLIC PROCUREMENT PORTALS, BY TYPE, 2009 (Percentages)




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures from Chile [online] www.chilecompra.cl; Brazil [online] www.comprasnet.gov.br; and the Dominican Republic [online] http://comprasdominicana.gov.do.

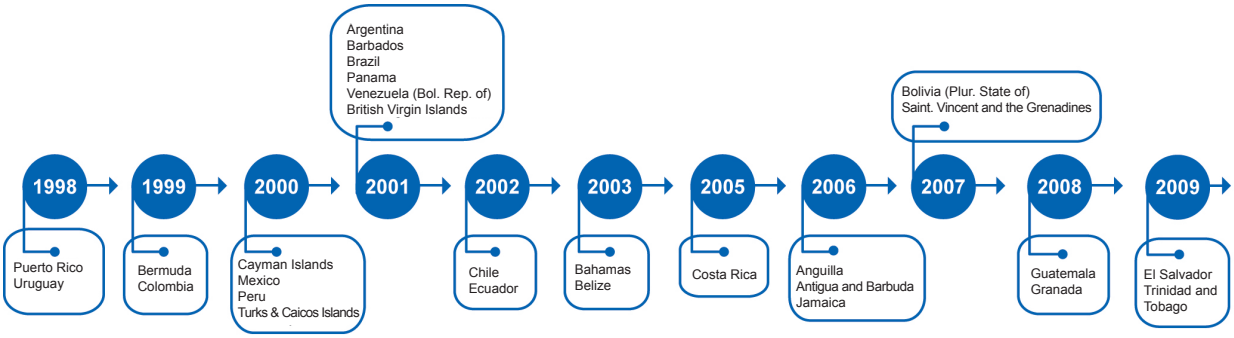
**Challenge:** To implement e-government policies with a citizen-centric approach. To continue developing applications that increase the interaction of businesses with the Government.

## Progress with electronic signature and digital documents

- The regional agendas contain elements on the provision and implementation of mechanisms for the use of electronic media by the State, as well as regulations on the use of electronic documents and digital signatures.
- A digital signature refers to the symbols or characters in digital format adopted or authenticated as being equivalent to the manual signature. Secure data transmission requires encryption for the transmission of the data and an access key for receiving information.
- Diagram VI.1 reflects regional efforts to foster the use of electronic media. It lists the regulations implemented during the 1998–2009 period, showing that the majority of countries have made major strides forward.
- Certification bodies in Latin America include a wide variety of entities, ranging from ministries to external agencies (see table VI.4).

**Challenge:** To continue developing tools to facilitate and encourage electronic means of payment.

### DIAGRAM VI.1
### LATIN AMERICA AND THE CARIBBEAN: LEGISLATION ON ELECTRONIC TRANSACTIONS AND SIGNATURES, 1998–2009




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of J. Gamba, "Panorama del derecho informático en América Latina y el Caribe", *Project documents*, No. 302 (LC/W.302), Santiago, Chile, ECLAC, 2010, pp. 11–12, and O. Lawton, "Monitoring Caribbean information societies", *Project documents*, No. 315 (LC/W.315), Santiago, Chile, ECLAC, March 2010, p. 40.

### TABLE VI.4
### LATIN AMERICA (10 COUNTRIES): DIGITAL SIGNATURE CERTIFYING BODIES

| | Institution | Website |
|---|---|---|
| Argentina | National Information Technology Office (ONTI) | http://ca.pki.gov.ar |
| Brazil | Public key infrastructure (ICP Brasil) | www.iti.gov.br |
| Chile | Accreditation Body (Entidad Acreditadora), which comes under the Ministry of Economy, Development and Tourism | www.entidadacreditadora.cl |
| Colombia | Colombia's trade and industry regulator (SIC), Technical Standards Division (División de Normas Técnicas) | www.sic.gov.co |
| Costa Rica | National Digital Certification System (Sistema Nacional de Certificación Digital). Ministry of Science and Technology (MICIT) | www.firmadigital.go.cr |
| Panama | Panama's National Secretariat for Science, Technology and Innovation (SENACYT) | www.senacyt.gob.pa |
| Peru | National Institute for the Defence of Competition and the Protection of Intellectual Property (INDECOPI) | www.indecopi.gob.pe |
| Dominican Republic | State telecommunications regulator, the Dominican Telecommunications Institute (INDOTEL) in resolutions No.166-06 and No. 169-07, authorizes suppliers of digital certification services | www.indotel.gob.do |
| Uruguay | Electronic Certification Unit (Unidad de Certificación Electrónica), autonomous technical body of the Agency for the Development of Electronic Government and the Knowledge-based Society (AGESIC) | www.agesic.gub.uy |
| Venezuela (Bol. Rep. of) | Regulatory authority for electronic certification services (SUSCERTE) | www.Suscerte.gob.ve |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of national portals and Economic Commission for Latin America and the Caribbean (ECLAC), "Avances en el acceso y el uso de las tecnologías de la información y la comunicación en América Latina y el Caribe 2008–2010", *Project documents*, No. 316 (LC/W.316), Santiago, Chile, 2010, p. 36.

## Training: crucial for the use of e-government tools and applications

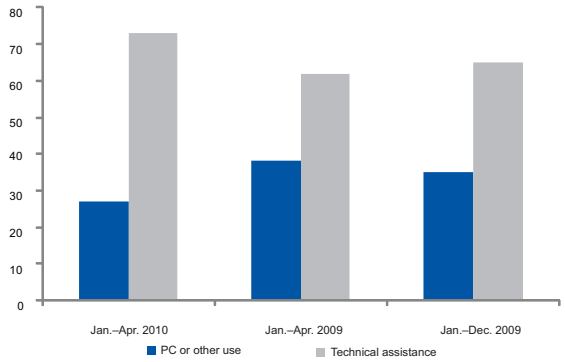
- As reflected in the goals of the eLAC2010 Plan, ICT training, both for civil servants with responsibility for decision-making and public management and for end users, is vital for increasing access to and use of e-government applications and services.

- In spite of the lack of information on evaluating training efforts for civil servants and end users, a few examples indicate the progress that has been achieved.

- In the Dominican Republic, training is provided to civil servants in e-procurement modules of the integrated financial management SCC-SIGEF system, and seminars are held to raise their awareness of Law 340-06 on public procurement.[10] Colombia's 'Prepárese' courses provide training and information to civil servants and contractors on electronic government and intranet.[11]

- According to the information provided by Chile's public procurement portal (ChileCompra), training for end users has focused on the use of PCs and technical assistance (figure VI.8).

**FIGURE VI.8**
**TRAINING PROVIDED BY CHILECOMPRA**
**(Percentages)**




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of ChileCompra management reports for April 2010, April 2009 and December 2009 [online] www.chilecompra.cl

**Challenge:** To promote the training of civil servants and end users in tools for making use of government services. To increase opportunities for training in ICT management, use and application, and to implement systems for the dissemination of existing training programmes and initiatives.

## Growing incorporation of pro-transparency legislation

- Making information available by electronic media is a means for facilitating State accountability. Also, the possibility of digital access to public information encourages both its use and citizen interaction with the Government.

- The region has progressed in terms of pro-transparency regulations (see table VI.4). One of the most noteworthy cases is that of Chile, which approved a Transparency Act in 2008 and set up the Transparency Council (Consejo de Transparencia),[12] an autonomous government-owned corporation with corporate status and assets, which is responsible for promoting and guaranteeing compliance with the Law.

- Figure VI.9 presents one measure for evaluating access to public information. It shows the position of countries in the region in the Index of Online Access to Judicial Information produced by the Justice Studies Center of the Americas (JSCA). According to the index, the countries of Latin America and the Caribbean score an average of 52% in terms of information available online.

[10] See Dominican Republic public procurement portal [online] https://comprasdominicana.gov.do/compras/.
[11] See Colombia, 'Prepárese' courses [online] http://programa.gobiernoenlinea.gov.co/noticias.shtml?apc=e1c1--&x=1398.
[12] See Chile, Consejo para la Transparencia [online] http://www.consejotransparencia.cl

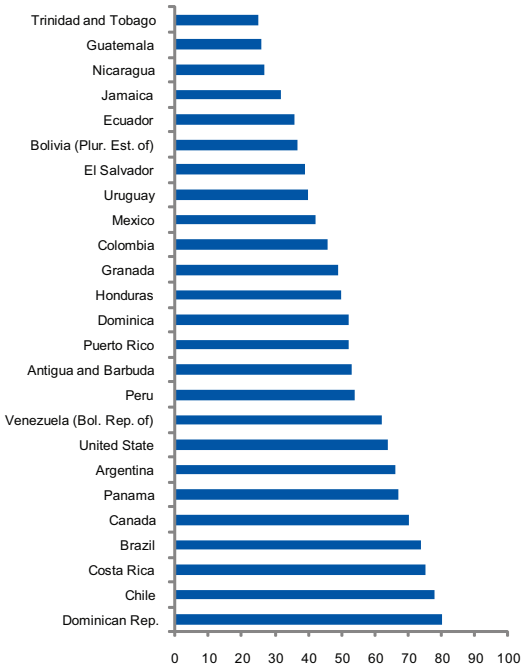
TABLE VI.5
LATIN AMERICA AND THE CARIBBEAN (7 COUNTRIES): LEGISLATION ON TRANSPARENCY

| | Legislation on transparency |
|---|---|
| Argentina | Access to Public Information (Decree 1172/2003) |
| Brazil | Supplementary Bill No. 131 (2009) |
| Barbados | No information available |
| Chile | Transparency Act (No. 20285/2009) |
| Colombia | Archives Act (No. 594 of 2000) |
| Mexico | Federal Law on Transparency and Access to Public Government Information (LFTAIPG) (2002) |
| Peru | Law on Transparency and Access to Public information (27808/2002) |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

**Challenge:** To progress towards an enforceable right to access information, using pro-transparency legislation and institutions to enforce it.

FIGURE VI.9
INDEX OF ONLINE ACCESS TO JUDICIAL INFORMATION, 2008




Source: J. Gamba, "Panorama del derecho informático en América Latina y el Caribe", *Project documents*, No. 302 (LC/W.302), Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), 2010, p. 33.
Note: Index produced by the Justice Studies Center of the Americas (JSCA) [online] www.cejamericas.org.

## C. Develop spatial data infrastructure (goal 48)

### Progress has been made with georeferencing systems both nationally and regionally

- One of the goals of the eLAC2010 Plan is to promote mechanisms for the standardization and consolidation of georeferencing systems to increase the information available to decision-makers.

- Spatial data systems provide information of use in such areas as agriculture, fisheries, coastal management and natural disaster management. The applications for private use include the provision of security services (for example, vehicle tracking).[13]

- Geospatial data infrastructure consists of mechanisms for cooperation between producers and users. Table VI.5 provides examples of national initiatives. Regional or subregional initiatives for the development of spatial data infrastructure include the Permanent Committee on Spatial Data Infrastructure for the Americas (PC-IDEA) and the Antarctic Spatial Data Infrastructure (AntSDI).[14]

**Challenge:** To foster the development of spatial data infrastructure, as well as to increase the use of georeferenced information for territorial decision-making.

[13] See O. Lawton, "Monitoring Caribbean information societies", Project documents (LC/W.315), Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), March 2010, p. 40.
[14] See Permanent Committee on Spatial Data Infrastructure for the Americas (PC-IDEA) [online] http://www.cp-idea.org/ and the Antarctic Spatial Data Infrastructure (AntSDI) [online] www.antsdi.scar.org.

## TABLE VI.6
## LATIN AMERICA AND THE CARIBBEAN (8 COUNTRIES): GOREFERENCING INITIATIVES

| | Institution | Website |
|---|---|---|
| Argentina | Spatial Data Infrastructure of the Argentine Republic (IDERA) | www.ign.gob.ar |
| Brazil | Brazilian Geographical and Statistical Institute (IBGE), National Commission of Cartography (CONCAR), Spatial Data Infrastructure (INDE) | www.ibge.gov.br<br>www.indeBrazil.com |
| Colombia | Geographic information system for comprehensive land-use planning and management (SIGOT) | www.geoportal.gov.co<br>www.icde.org.co |
| Chile | National Territorial Information Coordination System (SNIT) | www.snit.cl |
| Cuba | National Commission for Spatial Data Infrastructure of the Republic of Cuba (CIDERC). Spatial Data Infrastructure of the Republic of Cuba (INDERC) | www.iderc.co.cu |
| Jamaica | Mona GeoInformatics Institute (MonaGIS) | www.monagis.com |
| Mexico | Spatial Data Infrastructure of Mexico (IDEmex). Coordinating body: National Institute of Statistics and Geography (INEGI) | www.inegi.org.mx |
| Peru | Coordinating Committee on Spatial Data Infrastructure of Peru (CCIDEP) | www.ccidep.gob.pe |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), “Avances en el acceso y el uso de las tecnologías de la informacón y la comunicación en América Latina y el Caribe 2008–2010”, *Project documents*, No. 316 (LC/W.316), Santiago, Chile, 2010, p. 32.

# VII. Production Sector

Information and communications technologies have changed the way firms organize their global production, as well as their relations with their customers, suppliers and strategic partners, thereby contributing to major improvements in productivity and competitiveness.

In the case of industries and business firms with a high level of ICT adoption, this has led to far-reaching changes in organizational structures and to the development of new forms of learning and innovation, helping to reduce transaction costs and to create market opportunities.

The process of ICT adaptation and dissemination in the business and production world is complex and depends on a wide variety of factors, in particular the capacity built by firms. Some of the main determining factors are: (a) the availability of appropriate technology tools for meeting the challenges facing firms; (b) transfer and implementation costs; (c) the cost of maintaining and updating the technologies; (d) the availability and cost of skilled personnel; (e) the specific skills of executive and technical personnel; (f) the need for specialist technical assistance to adapt technologies to the specific characteristics of firms; and (g) the level of development of firms' in-house skills.

While the level of development of a country's ICT infrastructure determines the cost of and access to connectivity tools, the existence in that country of a sector producing ICT solutions also determines the availability of software products and services geared to firms' needs.

The process of ICT adaptation and dissemination is neither linear nor spontaneous; for ICT to be exploited to the full, their adoption needs to be accompanied by corporate and organizational changes aimed at adapting or transforming business models. The incorporation of ICT therefore calls for complementarity between technology and other types of investment in order to bring about changes in firms and in their productivity. Investment is required in such areas as process re-engineering, organizational change, training for workers and executives, the adaptation and implementation of new technology platforms and tools, and the development of new products and/or services based on the new technologies.

Therefore ICT can be exploited to the full only by making far-reaching changes in the internal processes of firms and in their relations with customers, suppliers and partners. These changes form part of a transformation process that can be costly to implement and learn. For smaller businesses in particular, the efforts required to promote ICT access, adoption and dissemination are all the greater as small and medium-sized enterprises tend to make little use of IT tools and have fewer human and financial resources owing to their precarious production and organizational structures.

This chapter reviews the main production-sector issues in the light of the goals in the eLAC2010 Plan. These issues have been grouped into five sections, starting with a presentation of ICT access and use in firms and going on to discuss the need to build capacity and innovate. The subsequent two sections address sectoral issues in the software and the creative and content industries, and the final section discusses regional cooperation issues.

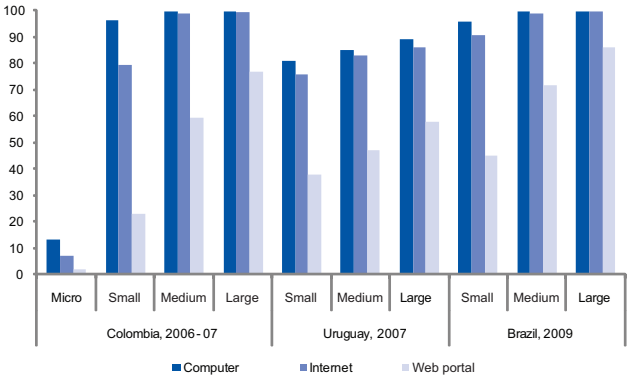
# A. Increase ICT access and use among firms (goals 49, 52, 57 and 58)

## Unequal and insufficient progress with ICT access and use in the region

- The goals of the eLAC2010 Plan include increasing ICT access and use among firms, with special emphasis on the dissemination of ICT among microentreprises and small and medium-sized enterprises.

- In terms of firms' access to ICT, even though access to computers or connection to the Internet has not yet achieved 100%, there have been major strides forward in the region in recent years. However, progress has been patchy, depending on the size of the firm and the sector of activity. For the selected countries in figure VII.1, notwithstanding differences between countries, average access and use of computers and the Internet in large enterprises were close to 100%, but lower in microenterprises and small businesses.

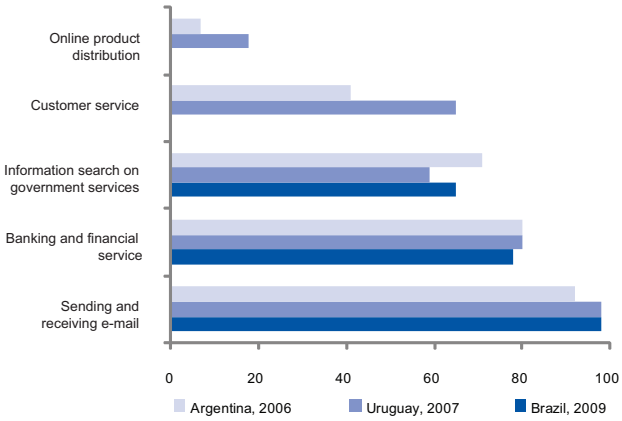
FIGURE VII.1
LATIN AMERICA (3 COUNTRIES): ICT ACCESS AND USE BY FIRMS, AROUND 2009 (percentages)




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

- Firms make similar use of the Internet (see figure VII.2), with an average of around 96% using it as a means of communication. Eighty percent of firms use the Internet for financial and banking services, 65% for government services or transactions with the Government, 53% for customer service and only 13% for online product distribution or the provision of online services

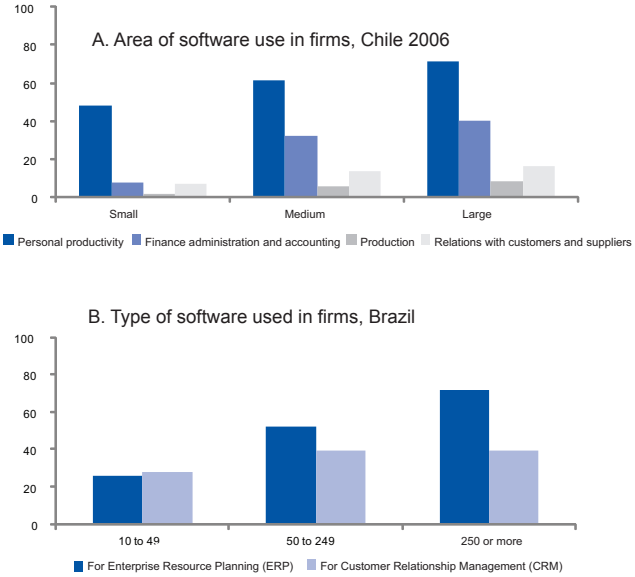
FIGURE VII.2
LATIN AMERICA (3 COUNTRIES): TYPE OF INTERNET USE BY FIRMS, AROUND 2009 (Percentages)




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

- As regards the type of software used in firms, the information available shows that, in Chile, the greatest use of software is in the area of human resources, whereas only 3% of firms use it for production processes (see figure VII.3). In addition, wide disparities can be seen between firms of different sizes in both Chile and Brazil; the same applies to the use of Enterprise Resource Planning (ERP) management software. In 2009, the average use of ERP in Brazil was 31% for the entire sample, although use was 72% in the case of large enterprises and 26% for small enterprises. The use of software for customer relations, such as customer relationship management (CRM), appears to be spread evenly among large and medium-sized enterprises, with a usage rate of between 30% and 40%.

**FIGURE VII.3**
**CHILE AND BRAZIL: AREA OF SOFTWARE USE AND TYPE OF SOFTWARE USED IN FIRMS, 2006 AND 2009 (Percentages)**




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official figures.

- Telework is one of the new working arrangements that have arisen in service industries using ICT platforms. In Mexico, it is estimated that at least 2.5% of the economically active population is engaged in telework. While Chile and Colombia already have regulations on telework, bills are being tabled in Argentina, Brazil, Mexico and Peru (see table VII.1).

**TABLE VII.1**
**LATIN AMERICA (9 COUNTRIES): LEGISLATION ON TELEWORK**

| | Legislation | Planned legislation |
|---|---|---|
| Argentina | No | Bill tabled by the telework commission of the Ministry of Labour, Employment and Social Security , 2 July, 2007 |
| Brazil | No | Bill, 2008 |
| Chile | Law 19759/2001 | |
| Colombia | Law 1221/2008 | |
| El Salvador | No | No |
| Mexico | No | Reform tabled by the Secretariat of Labour and Social Welfare (STPS) and approved by the executive |
| Peru | No | Labour Bill (Proyecto de Ley General del Trabajo) |
| Dominican Republic | No | No |
| Uruguay | No | No |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official information and Regional Dialogue on the Information Society Network (DIRSI), Telecapacitados. Teletrabajo para la inclusión laboral de personas con discapacidad, Buenos Aires, 2009.

- In view of the need for firms to use advanced ICT, Governments have developed a variety of ICT-incorporation programmes for promoting technological innovation and boosting competiveness. An example of such initiatives is Colombia's 'MiPyMe Digital' plan, which incorporates associated ICT programmes for microenterprises and SMEs into the area of business competitiveness.[1] In Brazil, the ICT incentive programme in microentreprises and SMEs incorporates tools for supporting the development of technological solutions and for facilitating the search for such solutions using an online catalogue.[2]

- Web portals are used as a tool for disseminating policies concerning micro-, small and medium-sized enterprises and for facilitating access to information on financing and on sharing experiences. Existing initiatives in the region include the Ibero-American Programme of Institutional Cooperation for the Development of Small and Medium-Sized Enterprises (IBERPYME).[3]

- The agricultural sector has been stepping up its use of ICT. Progress has been made in the area of traceability, with the introduction of information systems including databases with records for the identification and historical trace-back of animals, their movements, the establishments to which they belong and other factors (see table VII.2).

- With regard to animal identification, countries of the region have advanced with livestock standardization and codification. Radio-frequency identification (RFID) is one of the technology tools used.

**Challenge:** To incorporate more technologically sophisticated tools, as well as to develop complementarities between sectors in order to expand the use of ICT, all of which must be supported by policies for incorporating ICT into firms. The challenge is to improve the institutional framework for promoting technological development among small and medium-sized enterprises and to incorporate ICT policies into the national innovation strategy, promoting training for firms.

[1] Plan TIC Colombia "Programa MiPyME digital: tecnología para crecer"[online] http://www.colombiaplantic.org.co/index.php?tipo=52&sec=13&min=7, 2009.
[2] See Programa de estímulo ao uso de tecnologia da informação em micro e pequenas empresas (PROIMPE), "Catálogo nacional de TI" [online] http://www.catalogodesoftware.com.br/.
[3] See Programa Iberoamericano de Cooperación Institucional para el Desarrollo de la Pequeña y Mediana Empresa (Ibero-American Programme of Institutional Cooperation for the Development of Small and Medium-Sized Enterprises) (IBERPYME) [online] www.iberpymeonline.org.

TABLE VII.2
LATIN AMERICA (6 COUNTRIES): LIVESTOCK PROGRAMMES AND INITIATIVES INCORPORATING ICT

| | Description of programme |
|---|---|
| Argentina | - Integrated Animal Health Management System (SIGSA), where the Animal Movement Document (DTA) can be issued in electronic form via the Internet (DT-e).<br>- National Cattle Identification System (Sistema Nacional de Identificación del Ganado Bovino), Resolution 103/2006, where the information is centralized in the database of the National Health and Agrifood Quality Service (SENASA).<br>- Single Livestock Identification Code (CUIG) |
| Brazil | - Brazilian Cattle and Buffalo Identification and Certification System (SISBOV), 2006.<br>- Animal Movement Permit (GTA), which can be issued via the Internet. |
| Chile | Official Animal Health Traceability Programme (Programa Oficial de Trazabilidad Sanitaria Animal), which includes the Official Livestock Information System (SIPEC). The information recorded in the SIPEC database includes the register of official individual identification devices (DIIO), the register of livestock establishments (where each establishment is identified by a single national registration number (Rol Único Pecuario, or RUP), livestock record book (total stock and variations). Exemption resolution No.3423 of 2008 of the Agriculture and Livestock Service (SAG). |
| Colombia | - National Cattle Information and Identification System (SINIGAN), designed to identify, track and register cattle, cattle products and establishments, from the source to the end producer. In 2008-2009, the system operated at nine locations in the country. |
| Paraguay | - Paraguayan Traceability System (SITRAP), Resolution 1578/2008 of Paraguay's National Animal Quality and Health Service (SENACSA), a database of auditable livestock information that contains individual information and historical records on each animal, including health and nutrition activities.<br>- Regional Office Management System (SIGOR), a group traceability system that comprises a national database with records and codification of establishments and livestock, designed to provide such information as animal stocks, location and movements. Version three of SIGOR was launched in May 2010. |
| Uruguay | - Programme by the Ministry of Livestock, Agriculture and Fisheries and the Inter-American Development Bank to support the productivity and development of new livestock products (1643/OC-UR, MGAP-BID), where the indicators include an information system that issues reports on the production chain.<br>- National Livestock Information System (SNIG), Law 17996 of 2006.<br>- Electronic Information System for the Meat Industry (SEIIC).<br>- Manual on the operation of video auctions by the General Department of Livestock Services of the Ministry of Livestock, Agriculture and Fisheries (DGSG/RG/N78/008). |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of national information; ECLAC, "Avances en el acceso y el uso de las tecnologías de la informacón y la comunicación en América Latina y el Caribe 2008–2010", Project documents (LC/W.316), Santiago, Chile, 2010, p. 64; ECLAC, "Impacto de las TIC en la productividad del sector agrícola Latinoamericano", unpublished; Colombia, "Sistema Nacional de Información e Identificación del Ganado Bovino (SINIGAN)" [en línea] p://www.sinigan.gov.co; Sector productivo.com.py, "Paraguay se posiciona en la región en tecnología de control pecuario" [online] http://www.sectorproductivo.com.py/ganaderia/noticias?fontstyle=f-smaller&start=95, 19 May 2010; C. Pedretti, "Sistema de Trazabilidad del Paraguay (SITRAP)" [online] http://www.inventiva.net/paginas.php?pagina=trazabilidad; and Ministry of Livestock, Agriculture and Fisheries of Uruguay, "Programa de apoyo a la productividad y desarrollo de nuevos productos ganaderos" (MGAP-BID 1643/OC-UR), Inter-American Development Bank, 2009.

## B. Promote capacity-building and innovation (goals 50, 51 and 55)

### Modest progress with innovation and specialist human capital

- The goals of the eLAC2010 Plan discussed in this section refer to capacity-building for promoting technology firms, and encouraging innovation by promoting adaptation to ICT and their innovation capacity.

- The region continues to make modest efforts to improve its innovation capacity. In 2007, research and development (R&D) expenditure represented a mere 0.67% of GDP, compared with 2.3% in the OECD countries and over 3% in countries such as Finland, Japan, Republic of Korea and Sweden.[4]

- According to the Ibero-American Network for Science and Technology Indicators (RICYT), in 2007, the region had two researchers for every 1,000 inhabitants, compared with seven per 1000 in the OECD, 16 in Finland, 10 in the United States and 11 in Japan.[5]

[4] For further information on regional statistics, see the Ibero-American Network for Science and Technology Indicators (RICYT) [online] www.ricyt.org and for the OECD countries, "OECD.StatExtracts" [online] http://stats.oecd.org.

[5] See OECD, Science, Technology and Industry. Scoreboard, 2009.

- Some countries are promoting R&D investment in the ICT sector to boost national innovation capacity, human resource training and industry–university interaction. For instance, Brazil's Informatics Law encourages local hardware manufacturers to finance R&D activities in their own or others' laboratories. The law provides for a tax incentive for firms investing 5% of their turnover in R&D activities, with the proviso that 40% of these resources must be invested in duly accredited academic and technology institutions.[6]

- The service industry based on ICT platforms (global services) has seen strong growth in the region as a result of an expanding international market for offshore services, the new foreign investment strategies of ICT firms and the gradual development of the region's ICT industry. In this context, most countries are offering tax incentives, such as free zones, or incentives associated with such areas as human resource training, territorial development (promoting clusters) or investment promotion by attracting foreign investors.[7]

- One noteworthy initiative was Chile's creation, in 2007, of a public-private partnership to develop the global services industry (software, information technology services and knowledge services) as part of its National Strategy of Innovation for Competitiveness. The aim of the partnership is to achieve exports worth US$ 1 billion by 2010 and US$ 5 billion by 2015. The partnership is working on an integrated plan of action, encompassing initiatives in the fields of human resource training, international promotion and attraction of investment, promotion of domestic supply and improvement of the regulatory framework.[8]

- The technological development of firms and investment in the ICT sector itself rely on training specialist human resources. This constrains expansion of the software and ICT services industry in the region. Gaps between supply and demand for skilled labour are evident when comparing the flow of ICT-trained graduates with demand from firms. A recent study conducted in Brazil shows the difficulties that arise (see table VII.3).

**TABLE VII.3**
**BRAZIL: ICT TRAINING FOR EMPLOYEES, 2009**
**(Percentages)**

| | Small enterprise | Medium-sized enterprise | Large enterprise | Industry total |
|---|---|---|---|---|
| Hiring of ICT specialists | | | | |
| Attempted to hire | 15 | 29 | 42 | 18 |
| Did not manage to hire | 2 | 4 | 5 | 2 |
| Did not need to hire | 82 | 67 | 53 | 79 |
| Difficulties with hiring | | | | |
| Lack of specific training | 44 | 51 | 60 | 47 |
| Lack of skilled workers | 43 | 51 | 55 | 45 |
| Lack of experience in the sector | 43 | 47 | 56 | 45 |
| High salary expectations | 43 | 39 | 43 | 42 |
| None | 34 | 26 | 20 | 31 |
| ICT personnel | | | | |
| Comes from outside the firm | 49 | 55 | 60 | 50 |
| ICT training for staff | | | | |
| Basic computer and Internet use | 28 | 43 | 58 | 31 |
| Advanced training: for ICT specialists | 15 | 29 | 49 | 18 |
| Other | 68 | 50 | 30 | 64 |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of the Centre for Studies on Information and Communications Technologies (CETIC) of Brazil, "Pesquisa sobre o uso das tecnologias da informação e da comunicação no Brasil" [online] http://www.cetic.br/, 2009.

[6] References on the Latin American hardware market may be found in Economic Commission for Latin America and the Caribbean (ECLAC), "The information and communications technology hardware industry in Latin America: investments and business strategies", *Foreign Investment in Latin America and the Caribbean*, 2007 (LC/G.2360-P), Santiago, Chile, 2008.

[7] See G. Gereffi, M. Castillo and K. Fernández-Stark, "The offshore services industry: a new opportunity for Latin America", Policy Brief, No. IDB-PB-101, Washington, D.C., Inter-American Development Bank (IDB), 2009; and Economic Commission for Latin America and the Caribbean (ECLAC), "Foreign direct investment in offshore business services in Latin America and the Caribbean", *Foreign Investment in Latin America and the Caribbean, 2008* (LC/G.2406-P), Santiago, Chile, 2009.

[8] See Production Development Corporation (CORFO), "El nacimiento de una nueva industria", Servicios Globales, Santiago, Chile, March 2010.

- A further obstacle related to human resource training for the ICT sector is a shortage of professionals and technicians with English language skills. To remedy this situation, the Production Development Corporation (CORFO) of Chile has set up a National English Register, which now has around 40 000 certified professionals and an English Training Programme for ICT Professionals and Technicians, under which grants have been awarded to around 5 000 people during the period 2008–2010.[9]

- Online training is a useful means for increasing significantly the beneficiary population. One example is Mexico's Distance Learning Programme for Workers (PROCADIST), which trained more than 20 000 workers from more than 10 000 firms between 2006 and the first quarter of 2010. The online platform provides training in digital literacy, together with senior management and other courses.[10]

**Challenge:** To speed up ICT adoption in the region's production and service processes and to promote ICT training and the accreditation of ICT skills for professionals. Where required, to make organizational changes to boost the use of technology in production processes.

## C. Strengthen the region's software industry (goal 59)

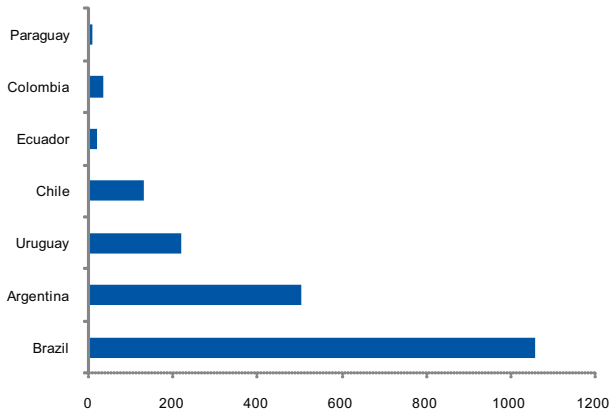
### Progress towards a supply of competitive exports from the region

- Part of goal 59 of eLAC2010 is to develop internationally competitive software.

- The international trend has been to shift resources away from the developed countries and towards emerging markets and the countries of the region have managed to increase their share of the software industry. Based on exports from Argentina, Brazil, Uruguay and Paraguay, the region increased its export total eightfold in less than a decade: from US$ 200 million in 2000 to US$ 1.783 billion in 2008 (see regional information in figure VII.4).

- Software exports have grown exponentially in a number of countries in the region.[11] At the start of the decade, Argentina exported software worth US$ 50 million but, by 2008, this figure had increased to US$ 504 million; in 2000, Uruguay exported software worth US$ 80 million, but by 2008, the figure had risen to US$ 219 million; in Brazil exports of software grew by a factor of more than 14 during the same period, from US$ 72 million in 2000 to US$ 1.056 billion in 2008.[12]

FIGURE VII.4
LATIN AMERICA (7 COUNTRIES): SOFTWARE EXPORTS FROM THE REGION, 2008
(Millions of US dollars)




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of International Data Corporation (IDC), "Observatory on the Global Services Industry in Chile", Santiago, Chile, 2009; A. Ruffinatti, "Crecen las exportaciones de software del Mercosur" [online] http://www.ieco.clarin.com/notas/2009/06/17/01940847.html, 17 June 2009; and presentations from Argentina, Ecuador, Colombia and Chile at the seminar "Oportunidades de negocios IT en Latinoamérica y España", Buenos Aires, Federation of Associations of Information Technology Entities of Latin America, the Caribbean and Spain (ALETI), [online] www..cessi.org.ar, 27–28 April 2009.

[9] See Production Development Corporation (CORFO), InvestChile [online] www.investchile.com.
[10] For further information, see Government of Mexico, Online distance training programme "Aula virtual" [online] http://procadist.stps.gob.mx.
[11] See A. Ruffinatti, "Crecen las exportaciones de software del Mercosur" [online] http://www.ieco.clarin.com/notas/2009/06/17/01940847.html, 17 July 2009.
[12] According to information from SOFTEX, exports of software and ICT services stood at US$ 3 billion in 2009, corresponding to applications, platforms and offshore services, See Brazil, "Propostas da Indústria Brasileira de Software e Serviços de TI. O valor estratégico de tecnologia da informação" [online], http://www.softex.br/portal/softexweb/uploadDocuments/IBSS%20-%20Texto%20entidades%20FINAL.pdf.

- With respect to the destination of the region's exports, according to the latest information available, trade flows are mainly intraregional. However, countries of the region are diversifying their exports to reach out to markets such as North America and Europe, and are just starting to expand into Asia and Africa.

- To increase synergies within the sector, initiatives have been implemented to create clusters in the software industry and information technology (IT) services. Argentina, the Bolivarian Republic of Venezuela, Brazil, Mexico and Uruguay all have cluster initiatives.[13] Competitiveness and foreign promotion initiatives have also been launched. An example of these is the Brazilian programme for enhancing processes that certify software products and professionals.[14]

- Policies to support the software industry in the region sometimes form part of industrial policy (e.g. Brazil), or the ICT policy (e.g. Colombia) or, in the case of Mexico, its Programme for the Development of the Software Industry (PROSOFT). In addition, there are specific policies for promoting the sector, such as Argentina's software promotion act.

**Challenge:** To continue promoting the incorporation and linking of policies in order to develop a supply of exports that can compete in international markets.

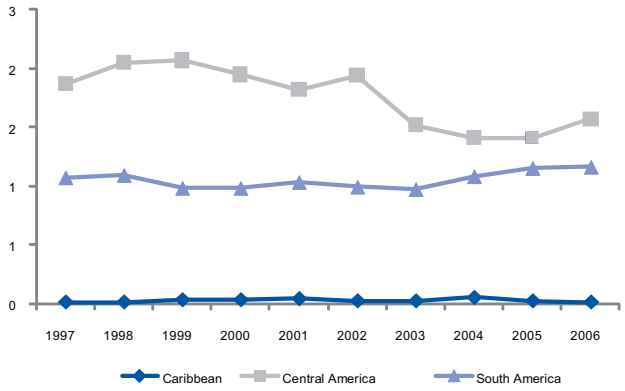
## D. Promote the region's creative and content industries (goal 54)

### Although the region's supply has increased, opportunities exist for further local expansion

- The aim of eLAC2010 with regard to the creative and content industries is to support the establishment of a regional observatory and the promotion of local content production.

- The creative industries supply global content and, according to the Global Databank on Creative Economy and Industries of the United Nations Conference on Trade and Development (UNCTAD), the region accounted for an average of 1% of total global trade in this sector, compared with the 59% share held by the industrialized countries in 2006 (see figure VII.5).

FIGURE VII.5
LATIN AMERICA AND THE CARIBBEAN: SHARE OF WORLD TRADE BY THE CREATIVE INDUSTRIES IN 1997–2006 (Percentages)




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from the United Nations Conference on Trade and Development (UNCTAD), Creative Economy [online] www.unctad.org.

[13] See cluster initiatives at: Argentinean Software and IT Services Chamber of Commerce (CESSI) [online] www.cessi.org.ar, Association of Brazilian Information Technology Companies (ASSESPRO) [online] www.assespro.org.br, Mexican Association of the Information Technology Industry (AMITI) [online] www.amiti.org.mx, Uruguayan Chamber of Information Technologies (CUTI) [online] www.cuti.org.uy, and Venezuelan Chamber of Information Technology Companies (CAVEDATOS) [online] www.cavedatos.org.ve.

[14] See Capacitação e Empreendedorismo. Melhoria de Processos de Software Brasileiro (MPS.Br) [en línea] http://www.softex.br/mpsbr.

- Transnational groups in the region with a share in the world creative industries trade have succeeded in forming strategic alliances to market their products beyond the borders of Latin America. Argentina's media conglomerate, Grupo Clarín, has penetrated the United States and European markets by means of partnerships. Further examples are Brazil's television networks, Rede Globo and Rede Record, Colombia's advertising group, Grupo Latino de Publicidad, and Mexico's media conglomerate, Grupo Televisa.[15]

- Table VII.4 summarizes the situation regarding the region's content production and exports with reference to 11 countries. Only five countries produce electronic games, three of which export them. Content production for Internet Protocol television (IPTV) was under development in three countries. As regards the export of services alone, five countries export television services, two export music services, and three export publishing services.

- Table VII.5 summarizes the data on the production and release of national cinematographic material for 16 countries in the region, in 2003 and 2009. New releases of local material increased by an average of 52% in these countries.

**TABLE VII.4**
**LATIN AMERICA (11 COUNTRIES): CONTENT PRODUCTION AND EXPORT**

| | Electronic games | | Internet Protocol television (IPTV) | Export of content | | |
|---|---|---|---|---|---|---|
| | Production | Export | Production | TV | Music | Publishing |
| Argentina | Yes | Yes | Under development | Yes | n.a. | Yes |
| Bolivia (Plur. State of) | n.a. | n.a. | n.a. | No | No | No |
| Brazil | Yes | Yes | Under development | Yes | Yes | No |
| Chile | Yes | n.a. | Under development | No | No | No |
| Colombia | n.a. | n.a. | n.a. | Yes | n.a. | No |
| Ecuador | n.a. | n.a. | n.a. | No | No | No |
| Mexico | Yes | n.a. | n.a. | Yes | n.a. | Yes |
| Paraguay | n.a. | n.a. | n.a. | No | No | No |
| Peru | n.a. | n.a. | n.a. | No | No | No |
| Uruguay | Yes | Yes | n.a. | No | No | Yes |
| Venezuela (Bol. Rep. of) | n.a. | n.a. | n.a. | Yes | Yes | No |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of C. Castro, Industrias de contenidos en Latinoamérica. Meta 13: informe sobre industrias de contenidos en América Latina y el Caribe, Santiago, Chile, 2008.

- An indication of the web-based market for local content is the number of visits to local portals. In Argentina, the Bolivarian Republic of Venezuela, Uruguay, Brazil and Paraguay, at least 20% of all the websites visited by Internet users are local. In Argentina, 32% of the web pages visited are local, whereas in the Bolivarian Republic of Venezuela the percentage is 30 out of every 100 users.[16]

- Within a regional perspective, the momentum towards the adoption of standards for the development of digital television is opening up opportunities for the region's content industry to supply interactive and interoperable digital content and services (see map VII.1).[17]

[15] See C. Castro, Industrias de contenidos en Latinoamérica. Meta 13: informe sobre industrias creativas en América Latina y el Caribe, Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), 2008.

[16] See J. Crettaz, "Los contenidos on line locales, preferidos en Argentina, Venezuela y Brasil", *Latin American Media & Entertainment Observatory,* 19 January 2010.

[17] For more details on the characteristics of the content industry in the region, see C. Castro, "Metodologías para pensar medios digitales interactivos y cambios sociales", 2010, unpublished.

## TABLE VII.5
## LATIN AMERICA (16 COUNTRIES): NATIONAL FILM PRODUCTION AND RELEASES, 2003 AND 2009

| | 2003 | | 2009 | |
|---|---|---|---|---|
| | Production | New release | Production[a] | New release |
| Argentina | 67 | 47 | 46 | 101 |
| Bolivia (Plur. State of) | 3 | .... | 7 | ..... |
| Brazil | 27 | 26 | 82 | 84 |
| Colombia | 5 | 7 | 8 | 11 |
| Costa Rica | 3 | | 0 | |
| Cuba | 6 | 5 | 6 | |
| Chile | 8 | 8 | 12 | 15 |
| Guatemala | 4 | | 1 | |
| Honduras | 1 | | 0 | |
| Mexico | 29 | 25 | 63 | 54 |
| Panama | 0 | | 1 | |
| Paraguay | 1 | | 4 | |
| Peru | 7 | 7 | 6 | 9 |
| Dominican Republic | 5 | | 3 | |
| Uruguay | 2 | | 2 | |
| Venezuela (Bol. Rep. of) | 3 | 1 | 14 | 6 |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Portal del Cine y el Audiovisual Latinoamericano y Caribeño [online] http://www.cinelatinoamericano.org/cifras.aspx.
Note: Production data is from the most recent year, as follows: 2008 (Argentina, Brazil, and Colombia); 2007 (Chile, Cuba, Peru and Plurinational State of Bolivia); 2006 (Bolivarian Republic of Venezuela, Paraguay and Uruguay); 2005 (Costa Rica, Dominican Republic, Guatemala, Honduras and Panama).

## MAP VII.1
## SOUTH AMERICA: ADOPTION OF DIGITAL TELEVISION STANDARD, JUNE 2010


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of official information and Chile's daily newspaper El Mercurio, "El mapa de la TV digital en Sudamérica", 4 June, section 'Cuerpo A', 2010, p. 7.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.
Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

**Challenge:** To increase the incorporation and creation of local content, respecting cultural and language differences. To promote innovation and research by creating centres for the production of interactive and interoperable digital content on different technology platforms.

## E. Increase regional cooperation (goals 51, 53, 54, 56 and 59)

### Despite progress in the region, there is still room to increase regional cooperation

- As defined in the eLAC2010 goals, cooperation is important for achieving common objectives. In the production sphere, this means exploiting tripartite public sector–private sector–academia links, not only for sharing successful experiences, but also for ensuring that the adoption of technology and technological innovations result in greater productivity and competiveness among firms, regardless of their size or location.

- The Ibero-American Network on Science and Technology Indicators promotes the development of instruments for measuring and analysing science and technology in the region. Its activities include international comparative analyses, information sharing, and training and extension activities.[18]

- One of the regional initiatives aimed at preserving the digital heritage is the Digital Library of the Caribbean (dLOC), which relies on government and university collaboration.[19]

- The World Association of Community Radio Broadcasters (AMARC) is an example of a cooperation and regional community coordination body. The association promotes free expression in the region and has offices in Brazil, Mexico, Uruguay and Nicaragua.[20]

- The objective of the Federation of Associations of Information Technology Entities of Latin America and the Caribbean and Spain (ALETI) is to foster the use, development, sharing and marketing of technologies for the promotion and creation of information society policies.[21] It achieves its objective by organizing events and conducting trade missions and projects. Projects mentioned in the ALETI portal include:

  - AproTECH LatAM, for promotion and cooperation.
  - SALA+, for fostering international cooperation in the area of networked electronic media.
  - FIRST, for fostering international cooperation in the areas of Future Internet and ICT components between Europe and Latin America; and
  - Observatory, for measuring various aspects in the region.

- The Observatory for the Information Society in Latin America and the Caribbean (OSILAC) has been working to promote cooperation and harmonization of ICT indicators to facilitate decision-making by firms on ICT policies.[22]

**Challenge:** To disseminate the benefits of ICT use and continue sharing experiences and good practices, as well as to harmonize and build networks for research and the development of regional indicators.

[18] For further information see Ibero-American Network of Science and Technology Indicators (RICYT) [online] www.ricyt.org.
[19] See Digital Library of the Caribbean (dLOC) [online] http://web1.dloc.com/ufdc/.
[20] See World Association of Community Radio Broadcasters (AMARC) [online] http://www.amarc.org/.
[21] See Federation of Information Technology Entities of Latin America, the Caribbean and Spain (ALETI) [online] www.aleti.org.
[22] For further information see Observatory for the Information Society in Latin America and the Caribbean (OSILAC), "Compendium of practices on the implementation of ICT questions in household and business surveys in Latin America and the Caribbean (LC/W.340), Economic Commission for Latin America and the Caribbean (ECLAC), Santiago, Chile, 2010.

# VIII. Policy instruments and strategies

eLAC2010 underscores the crucial role policies on the information society in any strategy for regional development. Most countries have now progressed with the design and implementation of national and/or sectoral digital policies, albeit with varying scope, hierarchical levels and structuring. At the same time, in addition to the sectoral issues referred to above, this chapter presents a set of goals, which can be considered as part of policy evaluation. One of these goals relates to the production of local content for different platforms, in which some significant progress has been recorded. In some cross-cutting issues, such as Internet governance and legal frameworks for the development of the information society, several countries are putting forward interesting, although incomplete, initiatives. On another front, concern is starting to emerge for the proper management of electronic waste, which should form part of a wider concern about the link between ICT and the environment.

# A. Strengthen policies for the information society (goals 60 and 63)

## Disparate situations in the countries of the region

- Latin American and Caribbean countries have been conducting information society policies for more than five years, which are at varying stages of maturity. The majority of national agendas consider ICT as tools for effecting sectoral developments. They also take a social approach aimed at overcoming poverty and inequalities and promoting social rights and inclusion. Table VIII.1 shows the main characteristics of current policy documents, prior documents and the institutional framework in which they operate.

- Digital policies are increasingly being geared to correct the growing lag in the region with respect to access to high-speed broadband connection, As stated in the chapter on infrastructure, several countries have launched initiatives to promote the development and dissemination of broadband using different models: direct public investment, public-private partnerships, incentives to private investors, regulatory changes and others. For example, Brazil established its National Broadband Plan in 2010.

- In spite of the progress made in formulating and implementing national strategies for the information society, major challenges have emerged in the institutional, policy implementation and impact assessment spheres. With growing cross-sectoral complexity and the need to scale up policies in order to achieve critical mass, it is becoming ever more necessary to improve coherence and coordination among the institutions involved, as well as in the allocation of public budgets and in policy implementation and evaluation. In many cases, despite having political backing, the bodies responsible for implementing the various information society initiatives lack the institutional framework and authority to implement cross-cutting programmes affecting diverse sectors of the economy and society. As a result, project teams in most countries are endowed with few human and budgetary resources, experience lack of continuity over time owing to a high turnover rate among professional staff and encounter numerous obstacles stemming from problems of intergovernmental coordination.

- Table VIII.1 presents the institutional public-policy framework in force in the different countries for promoting the information society and contains a description of each country's current policy agenda and the prior documents. The pace of progress is very uneven. There is a crucial need to advance processes for assessing the social and economic impact of strategies and policies, as successful programmes can be scaled up by leveraging new resources and forging strategic alliances with other institutions.

**Challenge:** To ensure that all countries have a properly structured, politically feasible digital agenda as part of their efforts to foster regional cooperation.

## TABLE VIII.1
## LATIN AMERICA AND THE CARIBBEAN (22 COUNTRIES): NATIONAL STRATEGIES FOR THE INFORMATION SOCIETY, 2010

| | Characteristic of the current document | | | Background and status of the process | Institutional framework of the strategy implemented | | |
|---|---|---|---|---|---|---|---|
| | **Document name** | **Period of validity** | **Document type** | **Prior document and year of issue** | **Chief coordinator** | **Strategic management** | **Operational management`** |
| Argentina | Argentina Digital Agenda Strategy 2009 | n.a. | Final | National Programme for the Information Society 2000 | Cabinet and Public Administration Secretariat | Technical Secretariat in the Office of the President | Office of the Under-Secretary for Information Technology and National Information Technology Office (ONTI) |
| Bolivia (Plur. State of) | National Plan for Digital Inclusion 2007–2010 | 2007–2010 | Draft for the next phase | Bolivian ICT Strategy for Development (ETIC) 2005 | Agency for the Development of the Information Society in Bolivia (ADSIB) and Office of the Deputy Minister for Science and Technology in the Ministry of Planning and Development | Inter-agency committee | Technical (inter-agency) committee |
| Brazil | National Broadband Programme – Brasil Conectado | 2010-2014 | Final | Green Paper on the Information Society 2001 | Management Committee of the Digital Inclusion Programme (CGPID) | Management Committee of the Digital Inclusion Programme (CGPID) | Office of the Executive Secretary GPR and related agencies |
| Chile | Digital Strategy 2007–2012 | 2007–2012 | Final | Digital Agenda 2004–2006 | Ministerial Committee for Digital Development | Inter-agency committee | Office of the Executive Secretary in the Ministry of the Economy (inter-agency) |
| Colombia | 'Plan TIC' (ICT Plan) | (ITC Plan) 2008–2019 | Final | Connectivity Agenda | Ministry of Information and Communication Technology | Inter-agency committee | Executive Board chaired by the Ministry of Communications |
| Costa Rica | National Development Plan for Telecommunications (2009–2014) | 2009-2014 | Final | National Plan for Science and Technology 2002–2006 | Office of the Under-secretary for Telecommunications | Ministry of Environment, Energy and Telecommunications | n.a. |
| Cuba | National Programme for the Computerization of Cuban Society | n.a. | Final | Policy for the Computerization of Society | Office for the Computerization of the Ministry of Information Technology and Communications | Council of Ministers | Office for the Computerization of the Ministry of Information Technology and Communications |
| Ecuador | National Connectivity Agenda (2005–2010 Action Plan) | 2005–2010 | Final | No prior document | National Committee for Connectivity | National Committee for Connectivity (Inter-agency) | National Committee for Connectivity through Special Technical Committees |
| El Salvador | National Strategy of the 'e-País' Programme | 2007–2021 | Final | No prior document | National Committee for the Information Society | Office of the President of the Republic | Directorate for Technological and Computer-based Innovation in the Office of the President |
| Guyana | ICT4D Guyana, National Strategy, Final Draft | n.a. | Draft | National Development Strategy 2001–2010, ICT Chapter 6 | Office of the President | Inter-agency committee | Office of the President |
| Guatemala | National Agenda for the Information and Knowledge-Based Society | 2007–2015 | Final | No prior document | Not established | Not established | Not established |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Honduras | No document | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| Jamaica | E-Powering Jamaica 2007–2012 | 2007–2012 | Final | National ICT Strategy 2002–2006 | Central Information Technology Office | Inter-ministerial (Strategy Steering Committee) | Independent, linked with the Ministry of Commerce, Science and Technology |
| Mexico | National Development Plan 2007–2012, National e-Mexico System | 2007–2012 | Final | National Development Plan 2001–2006 | National e-Mexico System | Communications and Transport Secretariat | Communications and Transport Secretariat |
| Nicaragua | No document | n.a. | n.a. | National ICT Development Strategy 2005 | n.a. | n.a. | n.a. |
| Panama | No document | n.a. | n.a. | National Agenda for Innovation and Connectivity 2005 | n.a. | n.a. | n.a. |
| Paraguay | No document | n.a. | n.a. | National Development Plan for the Information Society 2002–2005 | n.a. | n.a. | n.a. |
| Peru | Peruvian Digital Agenda | 2005–2014 | Final | No prior document | Multisectoral (inter-agency) Monitoring and Evaluation Committee | Office of the President of the Council of Ministers | National Office for E-Government and Information Technology (ONGEI) in the Office of the President of the Council of Ministers |
| Dominican Republic | National Strategy for the Information Society, Strategic Plan 2007–2010 | 2007–2010 | Final | No prior document | National Committee for the Information and Knowledge-Based | Society Technical Secretariat in the Office of the President | SocietyTechnical Secretariat Technical Support Unit (UTEA) based at the Dominican Telecommunications Institute (INDOTEL) |
| Trinidad and Tobago | Fast Forward | 2003–2008 | Final | No prior document | Steering Team of the National Information and Communication Technology Plan | Ministry of Public Administration and Information, in coordination with other ministries | Steering Team |
| Uruguay | Uruguay Digital Agenda | 2008–2010 | Final | Uruguay Digital Agenda 2007–2008 | Agency for the Development of Electronic Government and the Knowledge-based Society (AGESIC) | Office of the President of the Republic | Agency for the Development of Electronic Government and the Knowledge-based Society (AGESIC) |
| Venezuela (Bol. Rep. of) | National Plan for Telecommunications, Information Technology and Postal Services 2007–2013 | 2007–2013 | Final | National Information Technology Plan 2001 | National Information Technology Centre | Ministry of Science and Technology | Ministry of Science and Technology |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

## B. eLAC as a mechanism for coordination and follow-up (goals 24, 33, 54, 57, 61, 65, 72–74, 78 and 82)

### Presiding Officers representing all subregions and focal points in every country

- During the period 2008–2010, the Presiding Officers who had been appointed at the Second Ministerial Conference on the Information Society in Latin America and the Caribbean operated as the Regional Follow-up Mechanism for the Regional Plan of Action for the Information Society in Latin America and the Caribbean eLAC2010.
- The Presiding Officers granted observer status to the Association for Progressive Communications (APC) as the representative of civil society organizations and to the Hispano-American Association of Centres of Telecommunications Research and Enterprises (AHCIET) as representative of the private telecommunications sector.
- Each country in the region designated an entity to act as its national focal point for coordinating work with the Regional Follow-up Mechanism and with the Technical Secretariat, the Economic Commission for Latin America and the Caribbean (ECLAC).
- The national focal points appointed representatives from their respective countries for the various eLAC2010 implementation activities, including those conducted by the Technical Secretariat, the working groups and other international forums.

**Challenge:** To strengthen the work of the Regional Follow-up Mechanism by incorporating stakeholders that represent the information society in the subregions.

### The activities of the eLAC2010 working groups have, on the whole, been limited

- The groups have sought to bring together regional and multisector representatives to evaluate and develop joint initiatives relating to specific goals of the eLAC2010 Plan of Action.
- Most of the working groups were organized around a work plan and carried out substantive activities entailing sharing experiences and deepening knowledge by means of seminars and consultations. Many of their coordinators or members participated in forums to publicize the eLAC2010 commitments and to raise the awareness of Governments, academia and private-sector and civil-society organizations concerning the goals of the World Summit on the Information Society (WSIS) by 2015.
- As their experience has shown, the working groups encountered difficulties in planning and implementing their activities and in ensuring wide regional participation. This was because the working groups' objectives and main projects had not been defined clearly enough.
- During the period, the thematic coordinators collaborated with ECLAC on the drafting of newsletters on each eLAC2010 chapter.
- eLAC2010 did not define clearly the role of the thematic coordinators, which constrained their activities in many instances.
- Both experiences were analysed at the Regional Preparatory Meeting for the Third Ministerial Conference on the Information Society in Latin America and the Caribbean with a view to endowing eLAC with increasingly effective working mechanisms.

**Challenge:** To ensure that working groups have defined objectives and effective regional participation.

TABLE VIII.2
eLAC2010: SEMINARS AND SPECIALIST CONSULTATIONS CONDUCTED BY THE WORKING GROUPS, 2009 AND 2010

| Working group | Seminar |
|---|---|
| Health | Follow-up and analysis of regional policies and goals for electronic health and telemedicine (Santiago, Chile, December 2009) |
| Telework | Second telework forum (Buenos Aires, Argentina, 13–14 October 2009) |
| Software | First international seminar on software and information technology services (Sao Paulo, Brazil, February 2010) |
| Interactive digital content | Second international seminar on digital content (Santiago, Chile 2–3, 2009) |
| **Working group** | **Specialist consultations** |
| Internet governance | Study on a regional multi-stakeholder Internet governance mechanism |
| Gender | Gender and information and communication technologies |
| Financing | Study on sources of financing |
| Telework | Study on indicators for measuring telework in the region and legislation on telework |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

## C. Improve the process of information society measurement and strengthen OSILAC (goals63 and 66 - 68)

### Progress with the harmonization of information society indicators

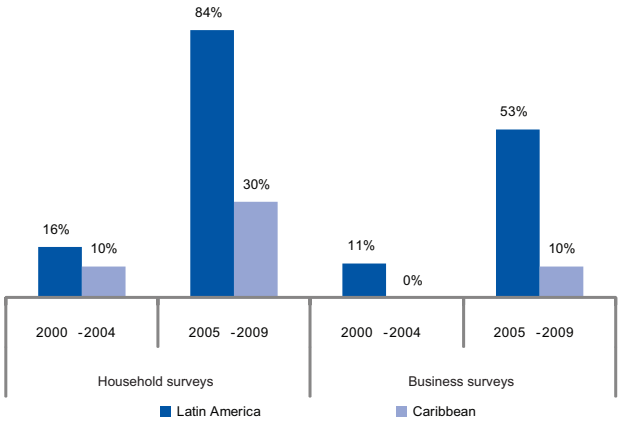
- The Observatory for the Information Society in Latin America and the Caribbean (OSILAC)[1] was set up in 2003 and has played a major role in the harmonization of ICT measurement in the following areas: (a) identification and characterization of the status of information-gathering on ICT at regional level; (b) joint work with national statistical offices and with other members of the Partnership on Measuring ICT for Development to define and consolidate the core indicators on ICT measurement; and (c) compilation of statistics and indicators from national statistical offices for use in producing regional and subregional overviews of progress with the information society in Latin America and the Caribbean.

- OSILAC, in conjunction with the Working Group on Information and Communications Technologies of the Statistical Conference of the Americas of the Economic Commission for Latin America and the Caribbean (ECLAC), provided national statistical agencies in the region with technical and methodological assistance in compiling and analysing harmonized data on ICT access and use.

- OSILAC has organized six regional workshops on information society measurement in Latin America and the Caribbean. The sixth was held with support from the Institute for Connectivity in the Americas (ICA)/International Development Research Centre (IDRC) and the Inter-American Development Bank (IDB) and in conjunction with the National Statistics Institute of Uruguay, the Agency for the Development of Electronic Government and the Knowledge-based Society (AGESIC) and the Statistics and Economic Projections Division of ECLAC. The workshop was attended by 84 participants from 26 Latin American and Caribbean countries, including representatives from 19 national statistical offices, representatives from 13 countries and five national institutions responsible for drawing up, coordinating or promoting the development of ICT statistics in their respective countries, representatives from three international agencies and representatives from academia and non-governmental organizations.

[1] OSILAC is a project of the Economic Commission for Latin America and the Caribbean (ECLAC), with the support of the Institute for Connectivity in the Americas (ICA) of the International Development Research Centre (IDRC). For further information see OSILAC [online] http://www.cepal.org/socinfo/osilac/.

FIGURE VIII.1
LATIN AMERICA AND THE CARIBBEAN: PERCENTAGE OF COUNTRIES THAT MEASURE CORE INDICATORS ON ICT IN THEIR HOUSEHOLD AND BUSINESS SURVEYS, 2000–2004 AND 2005–2010




Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC).
Note: Core indicators are those that have been approved by the Partnership on Measuring ICT for Development.

- The OSILAC online ICT Statistical Information System was launched in May 2009. It enables the public to process data on ICT access and use in the region on the basis of household surveys. The data have been harmonized for comparison purposes, in accordance with the indicators agreed by the Partnership on Measuring ICT for Development. The online Statistical Information System currently contains 92 surveys from 17 countries.

- The 2010 revision of the compendium of practices on the implementation of ICT questions in household and business surveys was presented at the sixth Workshop on information society measurement in Latin America and the Caribbean. . The compendium compiles information on progress with the measurement of ICT in households and businesses in Latin America and the Caribbean, documents the principal methodology and harmonization standards for the implementation of ICT indicators, and puts forward recommendations on the development of indicators relating to other eLAC objectives, especially those on education and electronic government.

- In the the Caribbean, the national statistical institutes of Jamaica and of Trinidad and Tobago, with technical support from OSILAC, are carrying out a survey on ICT access and use, including broadband access and use, and mobile access. This initiative has been conducted as part of the project ‘Networks for development: the Caribbean ICT research programme’, a joint initiative by the University of the West Indies and ECLAC, supported by Canada’s International Development Research Centre (IDRC). The aim is to extend the survey to other countries in the region.

Challenge: To continue to move forward with the implementation of core ICT indicators. To encourage inter-agency cooperation in the region in promoting the use of ICT indicators in working out and monitoring public policy

## D. Regional cooperation for Internet governance (goal 72)

### Regional initiatives for Internet governance on the increase

- The United Nations Working Group on Internet Governance (WGIG) was set up at the 2003 World Summit on the Information Society to research and propose actions on the issue of Internet governance, which spans such aspects as the coordination of technical standards, regulations and legislation, and the operation and development of critical infrastructure and resources, such as domain names.

- In July 2005, under phase two of the World Summit on the Information Society, the policy proposal for Internet management included the creation of an Internet Governance Forum (IGF). IGF is a mechanism for dialogue involving civil society, the private sector and Governments, with the objective of proposing recommendations to the international community in the different Internet governance spheres.

- In accordance with its mandate, IGF took the form of annual meetings between 2006 and 2010. However, its success has led to proposals to ensure its continuity beyond this period, as well as prompting the development of regional initiatives for debating issues and requirements specific to each region of the world.

- In Latin America and the Caribbean, the Association for Progressive Communications (APC), together with the Research, Studies and Training Institute in Brazil (NUPEF) and the Latin American and Caribbean Internet Addresses Registry (LACNIC), have been spearheading the process of regionalizing the IGF forum since 2008, when they held the first preparatory meeting of Latin America and the Caribbean in Montevideo, Uruguay. The second preparatory meeting was held in Rio de Janeiro, Brazil, in August 2009 and the third, in Quito, Ecuador, from 3 to 5 August 2010.
- The objective of these forums is to inform stakeholders in the region about global issues and trends to enhance their understanding of the challenges of Internet governance. The forums have also become a space for the discussion and adoption of a concerted position that represents the region's special requirements and characteristics in the world debate.

**Challenge:** To deepen regional coordination and broaden the region's participation in international Internet governance forums.

TABLE VIII.3
UNITED NATIONS WORKING GROUP ON INTERNET GOVERNANCE: INTERNATIONAL AND REGIONAL PARTICIPATION IN MEETINGS, 2004–2006

| Date | Title | Number of participants | Participants from the region | Participants from the region as a proportion of all participants |
|---|---|---|---|---|
| 20–21 September 2004 | Consultation on the creation of the Internet Governance Group | 185 | 30 | 16% |
| 23–25 November 2004 | First meeting | 104 | 9 | 9% |
| 14–18 February 2005 | Second meeting | 124 | 14 | 11% |
| 18–20 April 2005 | Third meeting | n.a. | n.a. | n.a. |
| 15–17 June 2005 | Fourth meeting | 184 | 7 | 4% |
| 30 October–2 November 2006 | First Internet Governance Forum (IGF) – Athens, Greece | 1193 | 38 | 3% |
| 12–15 November 2007 | Second IGF – Rio de Janeiro, Brazil | 1662 | 379 | 23% |
| 3–6 December 2008 | Third IGF – Hyderabad, India | 1202 | 33 | 3% |
| 15–November 2009 | Fourth IGF – Sharm El Sheikh, Egypt | 1480 | 74 | 5% |

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of the Internet Governance Forum (IGF) [online] www.intgovforum.org

## E. Legal framework of the information society (goal 78)

### More progress with electronic transactions and electronic signature than with cyber crime

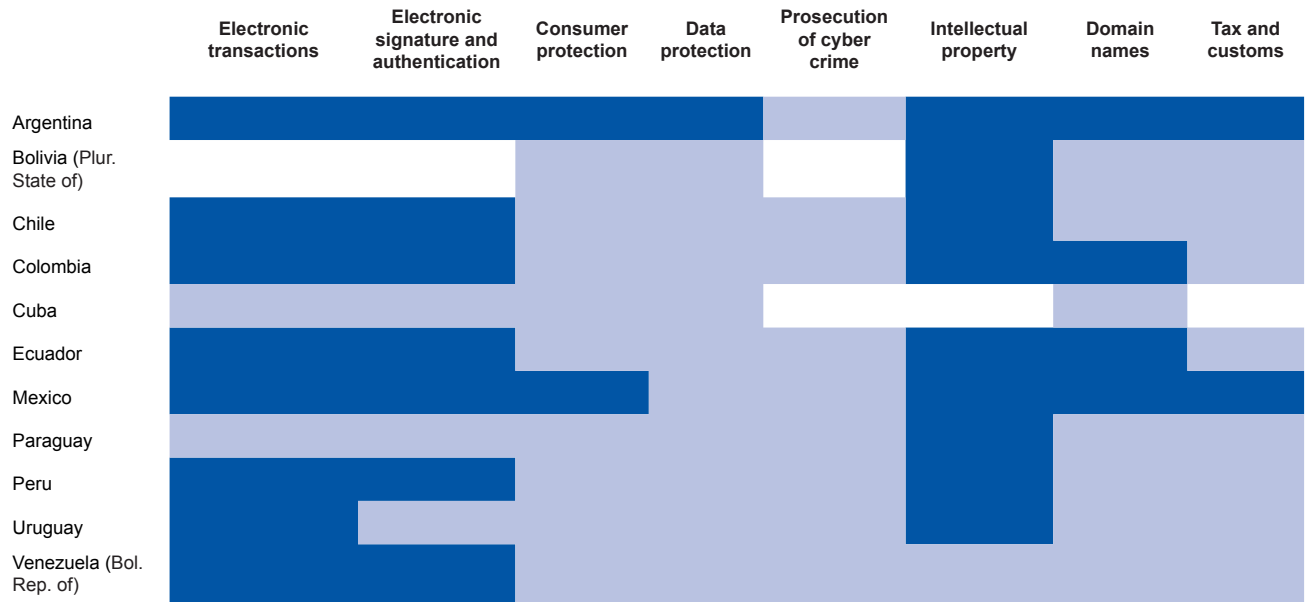
- Goal 78 of eLAC2010 proposed to renew the mandate of the working group on the information society's legal framework to facilitate dialogue and the coordination of various regulatory initiatives at the regional and local levels that may contribute to the region's regulatory harmonization.

- Table VIII.4 shows the progress made with regulatory harmonization, according to the UNCTAD study on prospects for harmonizing cyberlaws in Latin America.

- The greatest progress has been made in the areas of electronic transactions, electronic signature and intellectual property. The former have been based on the model laws of the United Nations Commission on International Trade Law (UNCITRAL). In relation to intellectual property, several countries of the region have concluded treaties administered by the World Intellectual Property Organization (WIPO). Table VIII.4 shows that less progress has been made with regulatory harmonization in the areas of consumer protection, protection of personal data, prosecution of cyber crime, domain names, tax and customs.

**Challenge:** To make more progress with harmonizing laws on consumer protection, protection of personal data, cyber crime, domain names and tax and customs.

TABLE VIII.4
LATIN AMERICA (11 COUNTRIES): STATUS OF CYBERLAW HARMONIZATION, 2009




Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of the United Nations Conference on Trade and Development (UNCTAD), *Estudio sobre las perspectivas de la armonización de la ciberlegislación en América Latina* (UNCTAD/DTL/STICT/2009/1), New York, June 2009.
Note: the colours indicate the status of cyberlaw harmonization: complete (blue); partial (violet) or non-existent (clear).

## F. Mainstreaming the gender perspective into eLAC2010 (goal 73)

### Few initiatives exist for mainstreaming the gender perspective into digital policies

- eLAC2010 proposed that a regional working group should be set up to guide the process of mainstreaming the gender perspective into eLAC2010 implementation.

- The eLAC2010 gender and ICT working group has forged close links with the Regional Conference on Women in Latin America and the Caribbean, a subsidiary body of ECLAC. At the eleventh session of the Regional Conference, held in Brasilia from 13 to 16 July 2010, the working group staged a side event entitled 'Women and information and communications technologies in the economy and at work and their empowerment in Latin America and the Caribbean'. At this event, the eLAC2010 goals were disseminated to all national mechanisms responsible for gender policies. The hope is that they will take on the task of mainstreaming the gender perspective into the digital policies of countries in the region.

- One example of mainstreaming the gender perspective is an initiative by Uruguay's National Women's Institute (INMUJERES). This institute realized that gender considerations had not been mainstreamed into the course content of 'Plan Ceibal', which aims to provide all primary school pupils with computers, and that it reproduced society's prevailing gender roles. INMUJERES, together with the Technology Laboratory of Uruguay (LATU), which centralizes Plan Ceibal with support from the United Nations Development Fund for Women (UNIFEM), is working to rectify this shortcoming. It has devised digital course material designed to challenge existing gender roles within the family and to promote family co-responsibility in the division of labour, based on gender equity and a reflection on stereotypes.

- Numerous women's organizations in the region are using ICT to promote gender equality. For instance, the Women's Networking Support Programme of the Association for Progressive Communications (APC WNSP) is implementing a project through the Dutch MDG3 Fund: Investing in Equality. Four countries are participating in this initiative: Argentina, Brazil, Colombia and Mexico.

- The organization Telecentre.org has set up a group entitled 'Gender and telecentre', for sharing experiences on the need to mainstream the gender perspective into the work of telecentres. The aim is to promote equal opportunities for women and men in ICT access and use, as well as to exploit the advantages and opportunities afforded by ICT for personal and community growth.

**Challenge:** To mainstream the gender perspective into all information society policies.

## G. Proper management of technological waste (goal 82)

### Slow adoption of national strategies and scant legislation

- The increasing penetration of ICT into the region is making it necessary to manage flows of waste electrical and electronic equipment. eLAC2010 set a goal to promote the design of national strategies and regulation of technological waste management to deal with the environmental impact of such waste and take advantage of their potential in recycling and reconditioning programmes.

- Few national strategies and regulations exist in the region on technological waste management. At present, most countries apply laws and regulations governing solid and hazardous wastes which are inappropriate for electronic waste.[2]

- However, there have been significant advances in some countries, which deserve to be highlighted. In Costa Rica, the National System for the Integrated Management of Electronic Waste (SINAGIRE) and the Executive Committee of this System were established by virtue of the Regulations for the Integrated Management of Electronic Waste. These

[2] See U. Silva, *Gestión de residuos electrónicos en América Latina*, Santiago, Chile, Ediciones SUR/International Development Research Centre (IDRC), 2009.

Regulations define the functions and responsibilities of each stakeholder and also establish the first list of electronic equipment and devices that are the subject of regulations in this country. On 13 July 2010, Brazil adopted Law Nº 8839, which establishes the regulatory framework for the country with respect to waste. This instrument identifies the Ministry of Health as the governing body and determines specific functions for the municipalities in terms of the integral management of wastes. It also defines planning instruments: the National Plan on Wastes, municipal plans for waste management, sectoral plans on wastes or based on the nature of the waste, programmes on waste by source. Lastly, the Law establishes monitoring mechanisms enhanced by a national information system on integrated management of solid wastes. Similar initiatives are under discussion in a number of other countries (table VIII.5).

- At regional level, the Regional Platform on Personal Computer Electronic Waste in Latin America and the Caribbean (RELAC Platform) of the Centre for Social Studies and Education (SUR) is working jointly with the International Development Research Centre (IDRC) on harmonizing guidelines and principles for the management of electronic waste.

**Challenge:** To develop national strategies for the management of electronic waste.

TABLE VIII.5
LATIN AMERICA (6 COUNTRIES): LEGAL INITIATIVES FOR THE MANAGEMENT OF ELECTRONIC WASTE

| Country | Legal initiative | Stage |
|---|---|---|
| Argentina | Law Nº S-0934/10 of 2010 on the management of waste electrical and electronic equipment. Procedures for the disposal of disused electrical and electronic equipment and management of the associated waste. Drafted. Creation of the National Plan for the Sustainable Management of Waste from Electrical and Electronic Equipment (PNMSRPAEE). Management of electrical and electronic equipment. Minimum budgets for the environmentally sound management of waste from the mobile communications sector. Regulatory framework for firms managing waste electrical and electronic equipment. | Bill |
| Brazil | Bill on the collection, recycling and disposal of disused electrical household appliances and waste electrical and electronic equipment. | Approved |
| Costa Rica | Law Nº 8839 on integrated solid waste management published in the official gazette. Regulation Nº 35933 on integrated electronic waste management' (GIR). Regulation creating the national electronic waste management system. | Published in the official gazette |
| Colombia | Bill setting the guidelines for a national public policy on electrical and electronic waste. | Bill |
| | Resolution laying down obligations for the collection and environmental management of waste from computers and peripherals and adopting other provisions. | Bill |
| Mexico | Law on waste prevention and integrated management. | Approved, but the law is not specific to electronic waste. |
| Uruguay | Electronic waste management. | Bill |

Source: Centre for Social Studies and Education/International Development Research Centre (SUR/IDRC), "Plataforma RELAC" [online] www.residuoselectronicos/net.

## Positive initiatives for computer reconditioning, limited recycling and introduction of extended producer responsibility

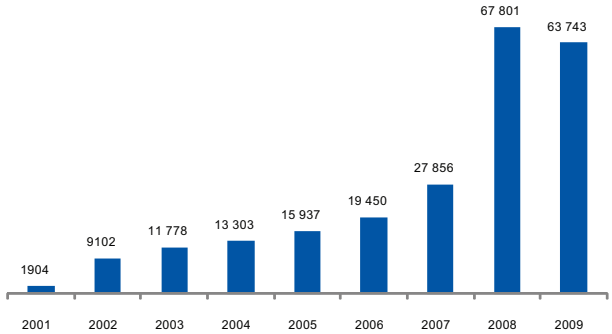
- In Latin America and the Caribbean, computer reconditioning is carried out mainly by social projects. As reconditioning requires advanced professional expertise, only a handful of institutions have completed such projects successfully.

- One of the most successful of these is Colombia's 'Computadores para educar' (computers for schools) programme, which, by 2009, had handed over 260,000 reconditioned computers for use by 5 million students in Colombia. Further initiatives are listed in table VIII.6.

- In Latin America and the Caribbean, recycling of electronic products is in its infancy. For it to be a profitable business, large volumes of waste equipment are required. Given the legal ambiguity and lack of clarity surrounding the requirement to recycle electronic waste, businesses in the sector often work informally and fail to comply fully with sound environmental processing methods.[3]

- In Latin America and the Caribbean, extended producer responsibility (EPR) is still in the very early stages and is meeting with problems very specific to ICT penetration in the region, including the large proportion of computers in existence with an unknown manufacturer. One example of EPR is the conclusion, in 2010, of a public-private agreement on the sustainable management of computer waste between the Government of Chile —represented by Chile's environmental regulator CONAMA (National Environmental Commission)—, the RELAC Platform of the Centre for Social Studies and Education/International Development Research Centre (SUR/IDRC) and leading multinationals in the sector. Through this agreement, signatory firms have made a voluntary commitment to implement extended producer responsibility, under which they take responsibility for the end-of-life management of all products that they place on the market.

FIGURE VIII.2
COLOMBIA: COMPUTER EQUIPMENT DELIVERED BY THE 'COMPUTADORES PARA EDUCAR' PROGRAMME, 2001–2009 (Number of computers)




Source: Ministry of Information and Communications Technologies, "Computadores para Educar" [online] http://www.computadoresparaeducar.gov.co.

TABLE VIII.6
LATIN AMERICA (4 COUNTRIES): COMPUTER RECONDITIONING INITIATIVES, 2010

| Country | Name of the initiative | Department in charge |
|---|---|---|
| Argentina | 'Reciclado para el aula' | Ministry of Education |
| Brazil | 'Computadores para Inclusão' [computer recycling for distribution to digital inclusion initiatives throughout Brazil] | Ministry of Planning |
| Chile | 'Chilenter' | Office of the President of the Republic |
| Colombia | 'Computadores para Educar' | Ministry of Information and Communications Technologies |

Source: Centre for Social Studies and Education/International Development Research Centre (SUR/IDRC), "Plataforma RELAC" [online] www.residuoselectronicos.net.

[3] Ibid 1.

## H. Stimulate the local production of digital content (goal 83)

### Progress in raising awareness among different stakeholders in the region

- Goal 83 of eLAC2010 mandated the eLAC interactive digital content working group to promote the creation of national centres of excellence for digital content, and a regional centre for the production of digital content.

- The working group has raised the awareness of representatives of Governments, the media and academia on the economic and social importance for their countries of producing content on different media and in different areas: education, information, public services, culture, health, citizenship, fact and fiction.

- It has also publicized the importance of creating national centres for the production of digital content and the possibilities for regional cooperation.

- During this awareness-raising process, the working group has emphasized that a strategic regional project of this magnitude must take into consideration the varying circumstances of Latin American and Caribbean countries. While it is possible for some countries to develop content for digital television and radio, mobile phones or video games, others can participate in the development of applications and software to facilitate usability and accessibility or of interactive projects that encourage audience participation on a variety of platforms. Yet other countries could participate in the business chain for exporting audiovisual content.

**Challenge:** To create the conditions and build capacity for the local development of interactive digital content.

### Further progress needed with the local creation of digital content

- Currently, 70% of content existing on the Internet and used in the region is produced elsewhere. Hence the need for stronger efforts to boost the local creation of interactive digital content for different platforms. Initiatives have been launched to encourage new stakeholders to enter this sector of activity.

- Brazil's national centre for the production of interactive and interoperable digital content (Centro Nacional de Produção de Conteúdos Digitais Interativos e Interoperáveis do Brasil) was launched in 2008. It is currently in the implementation stage under the responsibility of the Ministry of Science and Technology. It is one of five networks in the National Support Programme for Research, Development and Innovation in Digital Information and Communication Technologies (PROTIC). The objective of this centre is to promote the production of digital audiovisual content nationwide in an integrated and coordinated manner. The measures the centre uses to achieve this objective include coordinating action with all ministries in formulating content applications and in promoting university training for multidisciplinary professionals and training for intermediate-level content developers in telecentres distributed throughout the country.

- Another noteworthy initiative is the establishment by the Government of Colombia of five centres for the production of digital content for education.

- The technological poles programme for the promotion of content for digital television, recently initiated in Argentina, provides for the creation of nine production units in different regions in which the links will be fostered between universities and different civil society actors involved in the audiovisual sector. The objective of these poles is to foster local production of audiovisual content and reduce asymmetries between the different regions of the country.

**Challenge:** To replicate the successful experiments of production centres that produce digital content.

## TABLE VIII.7
## LATIN AMERICA (3 COUNTRIES): INITIATIVES INVOLVING CENTRES FOR THE PRODUCTION OF DIGITAL CONTENT

| | |
|---|---|
| Brazil, 2008 | First exhibition of interactive digital content for digital television (TV) and video games developed in Brazil.<br>Announcement of the creation of Brazil's National Centre for the Production of Interactive and Interoperable Digital Content. |
| Colombia, 2009 | Launch of five provincial centres for the production of digital content for education. |
| Chile, 2009 | Creation of the Specialization in Digital Content Production at the Chilean university, Universidad Mayor, with the participation of experts from different countries. |
| Brazil, 2009 | Exhibition of interactive digital content and services on free software produced for digital TV and video games. |

Source: Economic Commission for Latin America and the Caribbean (ECLAC).

# Annex 1

## eLAC2010 Action Plan

| | Chapter I: Education, our first priority |
|---|---|
| Framework | 1 Develop school curricula that cover data, information and knowledge management and that strengthen teamwork, learning capacity, and problem-solving ability.<br>2 Conduct annual studies on the impact of ICT use in the educational system, which, inter alia, address the following: the impact of technologies on teaching-learning processes in public and private educational centres, the level of use of ICTs by teachers as a complement in their classes and the state of development of educational software. |
| Access | 3 Connect 70% of public educational institutions to the Internet, preferably via broadband connections, or triple the current number. |
| Capacities | 4 Ensure that, by the time they complete school, 90% of students have used computers for educational purposes for at least 100 hours, or double the current number. Such use requires appropriate training according to the type and level of education and should contribute to students' job skills.<br>5 Train 70% of teachers in the use of ICTs or triple the current number.<br>6 Train 70% of teachers and civil servants in the education sector in the use of ICTs for the development of school curricula, or triple the current number. |
| Applications and content | 7 Ensure that all national education portals meet the eligibility requirements for full membership in such portals' regional networks.<br>8 Seek to establish a regional market for digital services and content, to include the implementation of forums, through a public-private partnership with commercial providers.<br>9 Increase the exchange of experiences and high-quality content in regional networks of education portals, including Web 2.0 applications and other distribution channels such as television and radio.<br>10 Disseminate experiences with the use of virtual reality tools as ICT applications in educational curricula designed to foster cultural diversity and tolerance and to combat discrimination on the basis of, inter alia, race, gender, religion, ethnic origin, illness and/or disability. |

| | Chapter II: Infrastructure and access, our second priority |
|---|---|
| Framework | 11 Promote and foster ICT quality while ensuring ICT sustainability and access for persons with disabilities with a view to the genuine social, educational, cultural and economic inclusion of all social sectors, especially vulnerable groups. |
| | 12 Strengthen and support the development of community-based network initiatives such as, for example, communication centres, training centres, telecentres, and community-based radio and television stations, to include the use of traditional and new technologies while respecting prevailing legal frameworks. |
| | 13 Support the implementation of regional and subregional initiatives which take advantage of the economies of scale and scope of the relevant countries, particularly in order to serve those sectors that have been marginalized from technological progress, such as @LIS, RedCLARA, C@ribNET, Puebla-Panama Plan Meso-American Information Highway. |
| | 14 Promote the development of infrastructure in each country and in the region, fostering the deployment of traffic nodes, the installation of copies of root servers and local content hosting, with the object of improving the network's quality and stability and reducing access costs. |
| | 15 Carry out actions geared towards promoting the adoption of the IPv6 protocol at the public and private levels with a view to making all public services offered via the IP protocol, as appropriate, available on IPv6 and ensuring that the main State infrastructure and applications are IPv6-compatible. Actions to be implemented will, to the extent possible, include the early implementation of requirements to ensure that government procure equipment and applications that are IPv6-compatible. |
| Access | 16 Provide coverage for 70% of the population in urban areas with a reliable, preferably highcapacity, network, or double existing coverage. |
| | 17 Provide coverage for 60% of the population in rural areas with a reliable, preferably highcapacity, network, or double existing coverage. |
| | 18 Increase the number of ICT access centres serving the community, including libraries and other facilities, in order to halve the average ratio of potential users per centre, or achieve a ratio of 1,750 people per centre, regardless of whether it is public or private. |
| | 19 Connect 80% of research and educational centres, particularly centres of higher education, to advanced data communications networks for research and education, such as RedCLARA and C@ribNET, or triple the current number. |
| | 20 Develop advanced networks in the Caribbean for education and research within the framework of C@ribNET, in coordination with RedCLARA, with consideration for their sustainability and scalability in all cases. |
| | 21 Conduct biennial studies on the price structure of fixed telephony, mobile telephony and Internet telecommunications services in relation to an international average, to be estimated by common accord, in order to share experiences and develop public policies aimed at achieving universal coverage and affordable prices for all and at improving service quality. |
| | 22 Promote the creation of specially-priced baskets of appropriate-content digital services for socially vulnerable sectors, including, but not limited to, older adults, children, rural communities, indigenous peoples, persons with disabilities, the unemployed, displaced persons and migrants. |
| | 23 Review the functionality, design and purpose of universal ICT access funds, and execute at least 80% of those funds. |
| | 24 Maintain the working group on infrastructure, which will support the preparation of studies at the national and regional levels to define the best options for the development of infrastructure to meet the requirements of local or regional traffic flow more efficiently, ensure the continuity of interconnection services and exchange experiences regarding the impact of ICT convergence. |

| | |
|---|---|
| Capacities | 25 Identify and support projects that have produced good results, index existing regional portals and exchange experiences regarding community Internet access centres with a view to increasing their effectiveness and improving their sustainability, while also considering exchanges with other regions of the world. |
| Applications and content | 26 Strengthen and interconnect regional platforms for electronic disaster management in areas such as prevention, identification, management and mitigation, including training in their use in cases of emergency, and promote collaboration among these systems through the adoption of international agreements and standards. |
| | 27 Promote agreements involving, in particular, geographically and demographically small and medium-sized countries, under which neighbouring countries provide infrastructure to underpin emergency disaster-management systems. |
| | 28 Offer response systems such as, inter alia, victim databases and emergency-response resource management systems, that are developed with public funds, and promote their use in countries of the region at national and local levels. |
| | **Chapter III: Health, the third priority** |
| Framework | 29 Promote the proper integration of information and communications technologies into the health sector, fostering the adoption of public policies that provide for people-centred content production and consumption attitudes and practices that focus on service continuity. |
| Access | 30 Establish electronic health services, including Internet-based services, in 70% of public health centres and 80% of public hospitals or double the current number. |
| Capacities | 31* Train 80% of public health professionals in the use of ICTs or double the current number. |
| Applications and content | 32 Promote the inclusion in the training of health professionals, particularly decision-makers, of issues relating to the planning and operation of ICT-based health services. |
| | 33 Establish, among other follow-up mechanisms in the area of health, a working group to undertake a situational baseline study, identify regional challenges and best practices, as well as issue recommendations that facilitate the transfer of knowledge and the adoption of standards in this area in order to support processes related to health services in the region. |
| | 34 Ensure that 70% of health centres and hospitals work with process-planning and management software or applications, ensuring their interoperability, or double the current number. |
| | 35 Link up national health portals with a view to establishing a regional network that can be used to share experiences, exchange content and promote their development, adaptation and relevance, taking into account the need for appropriate data protection. |
| | 36 Promote improvements in regional health networks through the adoption of standards that will permit digital systems' interoperability, software exchange, interactive applications, the interconnection of applications, and the interconnection of virtual health-related libraries and portals. |
| | **Chapter IV: Public management** |
| Framework | 37 Strengthen means of exchange on e-government services, developing regional cooperation for the exchange or transfer of technologies, platforms, applications and software and the corresponding knowledge, skills and best practices. Use these networks to implement interoperability standards for e-government services. |

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| | 38 Promote the interoperability of standards-based e-government systems in Latin America and the Caribbean and continue with the development of a regional interoperability platform and standards for e-government services in order to ensure that the option of interconnecting services within a single jurisdiction or across different jurisdictions remains open, taking into account recommendations relating to work in this area such as the white book on e-government interoperability. |
| Access | 39 Ensure that 80% of local governments interact with citizens and other branches of the public administration via the Internet, or double the current number. |
| | 40 Ensure that 70% of national and local public entities are connected using the "one-stop window" approach for citizen transactions, or double the current number, as appropriate. |
| Capacities | 41 Train 80% of civil servants, particularly decision-makers, in national, regional and local governments in the use of ICTs, in line with their levels, in such a way as to have a positive impact on their performance of their functions, or triple the current number. |
| | 42 Promote and/or facilitate training in the use and application of ICTs for the purpose of generating new capacities and skills on the part of members of civil society organizations, socially based organizations, other stakeholders and final users in general. |
| | 43 Contribute to the use of electronic documents and electronic and/or digital signatures having evidential weight in government procedures by both civil servants and citizens. |
| | 44 Promote the adoption or development of electronic means of payment in order to encourage the use of electronic transactions with the State. |
| Applications and content | 45 Ensure that 50% of the entities making up the public administration post relevant, useful and timely information on their portals, including information about decisionmaking processes, in order to facilitate the government's relationship with citizens and other stakeholders, or double the current number. |
| | 46 Establish accessibility mechanisms for government portals that guarantee transactions and ensure access for the majority of citizens, eliminating communicational and other barriers. |
| | 47 Promote electronic contracting mechanisms in the public sector. |
| | 48 Promote the creation of mechanisms for the standardization and consolidation of georeferenced information in order to provide government, the private sector and all other stakeholders with decision-making tools. |

| | Chapter V: Production sector |
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| Framework | 49 Facilitate access to the necessary resources and capacities for the introduction of ICTs into the production processes of micro-, small and medium-sized enterprises in order to improve their competitiveness in order to generate decent employment. |
| | 50 Facilitate access to the necessary resources and capacities for the development of echnology enterprises (hardware, software, content and services) and stimulate innovation in existing enterprises, with particular priority being placed on micro-, small and medium-sized enterprises. |
| | 51 Promote cooperative networks and links among scientific and technological institutions in order to strengthen the adaptation of ICTs and their innovative capacities. |
| | 52 Identify, develop and promote initiatives to provide access to information and communications technologies (including the Internet, fixed and cellular telephony, and media such as radio and television) and permit their use in the production sector in general and in micro-, small and medium-sized enterprises in particular with a view to strategic and operational management, increased value added, competitiveness and improved working conditions. In addition, promote or further develop existing initiatives that facilitate individuals' access to ICT devices and the Internet at affordable prices. |
| | 53 Encourage a regional dialogue with the aim of fostering the development of complementary equipment and services for use with products or equipment of extraregional origin so that new technologies will be accessible to small and mediumsized radio broadcasters and new reception equipment will be accessible to the most disadvantaged classes. |
| Capacities | 54 Maintain the working group on creative and content industries, take up its proposal for the establishment of an observatory for content industries in the region and promote the search for means of financing its operation. Devise other regional cooperation mechanisms for addressing common challenges, such as those posed by the need to protect cultural heritage, strengthen national identities, finance intangible goods and increase the production capacity for local content that respects cultural diversity and identity. |
| | 55 Promote the development of nationally accredited instructional curricula, as appropriate, for employment-oriented ICT training and promote their adoption by vocational training institutions through the press, radio, television, the Internet and other media within a framework of regional cooperation. |
| | 56 Promote cooperation among universities, vocational training institutions and the private sector in order to deepen scientific knowledge and strengthen the ICT industry in the region. |
| Applications and content | 57 Promote the creation of telework, mobile work and other forms of employment via electronic networks, particularly for the most vulnerable groups, including persons with disabilities, by means of appropriate equipment (software and digital services), certified training and the validation of experience. Maintain the working group on telework so that suggestions may be made regarding ways of attaining a normative and administrative framework which includes dispute settlement mechanisms. |
| | 58 Promote the development of a regional portal to provide information on practices in ICT use in micro-, small and medium-sized enterprises and seek resources for its financing. |
| | 59 Create regional networks using various types of public-private partnerships to promote the development of internationally competitive software, taking into special consideration the local requirements of local productive and social organizational processes, and foster digital inclusion. |

| | Chapter VI: Policy instruments and strategies |
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| Framework | 60 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. |
| | 61 Nominate or confirm and maintain an entity or mechanism to coordinate national strategies for the information society in all the countries of the region and to act as a national focal point. |
| | 62 Prepare comparative studies on the economic and social impacts of ICTs in terms of agendas and policies. |
| | 63 Actively seek out formulas for horizontal and triangular cooperation for the benefit of the countries of the region. |
| | 64 Create links among centres engaging in ICT research and development in order to increase investment in this field. |
| | 65 Continue with the tasks of the working group on financing in order to contribute to the attainment of more and better financial resources for the development of information societies, taking into account the findings of the study entitled “Alternatives for ICT Financing” and the particular defining characteristics of each country in the region. |
| | 66 Continue to carry out work and hold annual technical seminars on ICT statistics, with the participation of national and regional statistical agencies, in order to improve the measurement of information societies in the region in close connection with international advances in the field. |
| | 67 Develop indicators, in consultations with the Governments, on progress made in terms of the multi-participatory approach in national policy processes aimed at the development of the information society. |
| | 68 Request OSILAC to continue the monitoring of activities as a means of identifying best practices, and facilitate the exchange of experiences among public-sector authorities in the region. |
| | 69 Promote concrete actions aimed at affording solidarity and assistance in order to facilitate access to the benefits of the information society for the region’s less developed countries, small island developing States and others faced with special obstacles in their attempts to implement their national strategies for the development of the information society. |
| | 70 Formulate concrete regional initiatives and proposals to overcome obstacles to the effective execution of national strategies for the development of the information society stemming from the current international economic, trade and financial order by exploring formulas such as debt relief for the promotion of investments to enhance infrastructure development and training in ICT use and development. |
| | 71 Request the eLAC Follow-up Mechanism to consult with ITU and relevant regional organizations on a periodic basis regarding activities geared towards the appropriate use of the radioelectric spectrum in the interest of the public and of diversity in accordance with the principle of legality and in full compliance with the relevant international laws and agreements, as well as national and international regulations. |

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| Framework | 72 Assist the region's various stakeholders to make progress towards fulfilling the principles adopted at the World Summit on the Information Society, particularly those relating to multilateralism, transparency and democracy in e-governance, and maintain the regional working group on e-governance with a view to playing a more active role in international processes and debates and achieving the following objectives:<br>• Promote dialogues for regional cooperation regarding experiences and best practices in e-governance at the national and regional levels. Strengthen spheres of collaboration and cooperation between existing governmental, intergovernmental and non-governmental organizations to enhance capacity-building and information exchange among national and regional stakeholders.<br>• Promote the participation of governments, the private sector, civil society and regional organizations in existing international forums on e-governance with a view to gaining influence and playing an active role in the decision-making processes of those forums.<br>• Strengthen the regional dialogue on aspects of public policy related to egovernance for the benefit of the region based on a people-centred, developmentoriented and inclusive vision of the Internet. |
| | 73 Set up a regional working group for the purpose of facilitating an exchange of different social actors' experiences and visions with respect to the relationship between gender and ICTs so as to encourage the formulation of proposals for the development of national and regional ICT initiatives based on a gender perspective that will serve to guide the mainstreaming of the gender perspective in the implementation of eLAC2010. |
| | 74 Renew the mandate of the regional working group on software and maintain the same objectives as those for which it was created. |
| | 75 Design and execute policies to foster the proper development of e-commerce, including policies designed to inform providers and consumers about their rights and obligations. |
| | 76 Promote the progressive allocation of resources for ICT development and for research and development in this area in the region. |
| | 77 Promote the greatest possible access for citizens to public information on a timely basis while respecting cultural, linguistic, disability and other differences in accordance with international standards. |
| | 78 Renew the mandate of the working group on the information society's legal framework to facilitate dialogue and the coordination of various regulatory initiatives at the regional and local levels that may contribute to the region's regulatory harmonization. |
| | 79 Update and expand the PROTIC database in order to facilitate synergies and the sharing of experiences. |
| | 80 Invite countries that have not yet ratified or acceded to the Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations to consider the possibility of ratifying or acceding to that convention. |
| | 81 Invite countries to consider the possibility of ratifying or acceding to the Council of Europe Cybercrime Convention and its Additional Protocol as an instrument to facilitate our integration and regulatory adaptation in this area within the framework of principles of protection of the right to privacy. |
| | 82 Promote the design of national strategies and regulation of technological waste management to deal with the environmental impact of such waste and take advantage of their potential in, inter alia, recycling and rehabilitation programmes, as well as to create a working group to address this subject. |
| | 83 Stimulate the production of interactive and interoperable digital content based on existing initiatives or the creation of new instruments, such as national centres of excellence, attempting to ensure that such initiatives are interoperable in the region, use high-speed networks and generate information available through various channels (cellular telephony, fixed telephony, television, radio, computers, film and others). These initiatives and instruments will seek regional coordination, offering environments in the countries of Latin America and the Caribbean for the development of and experimentation with interactive digital content, studies, analyses and evaluations of the programmes pursued, arrangements, programme linkages, and technology exchange for the production of digital content. Content production includes exchanges with universities, research and development institutes, and other public or private institutions for the development of educational content, e-health services, ejustice, e-government, e-trade, entertainment and others. It is also proposed that training be provided for stakeho ders involved in the formation of new centres of excellence. |

Source San Salvador Commitment. Adopted at the Second Ministerial Conference on the Information Society in Latin America and the Caribbean (LC/R.2144), San Salvador, 6 -8 February 2008.

# Annex 2

**TABLE A.1**
**LATIN AMERICA AND THE CARIBBEAN (19 COUNTRIES): INDICATORS ON ICT ACCESS BY HOUSEHOLDS, 2000–2009**
**(Percentages)**

| Country | Year | Radio | Television | Fixed-line telephone | Mobile telephone | Computer | Internet |
|---|---|---|---|---|---|---|---|
| **Bolivia (Plur. State of)** | 2000 | 69 | 61 | n.a. | n.a. | n.a. | n.a. |
| | 2001 | 68 | 58 | n.a. | n.a. | 7 | n.a. |
| | 2002 | 66 | 57 | n.a. | n.a. | 7 | n.a. |
| | 2005 | 67 | 63 | 19 | 39 | 12 | 4 |
| | 2007 | n.a. | n.a. | 21 | 57 | n.a. | 3 |
| **Brazil** | 2001 | 88 | 89 | 51 | 31 | 13 | 9 |
| | 2002 | 88 | 90 | 53 | 35 | 14 | 10 |
| | 2003 | 88 | 90 | 51 | 39 | 15 | 11 |
| | 2004 | 88 | 90 | 49 | 48 | 16 | 12 |
| | 2005 | 88 | 91 | 48 | 59 | 19 | 14 |
| | 2006 | 88 | 93 | 47 | 63 | 22 | 17 |
| | 2007 | 88 | 94 | 45 | 67 | 27 | 20 |
| | 2008 | 89 | 95 | 44 | 76 | 31 | 24 |
| **Chile** | 2000 | n.a. | n.a. | 54 | 40 | 18 | 8 |
| | 2003 | n.a. | n.a. | 51 | 68 | 25 | 13 |
| | 2006 | n.a. | n.a. | 47 | 84 | 33 | 19 |
| **Colombia** | 2003 | n.a. | 83 | 55 | 18 | 11 | 5 |
| | 2004 | n.a. | 77 | 49 | n.a. | 12 | 6 |
| | 2005 | n.a. | 80 | 51 | n.a. | 15 | 6 |
| | 2006 | n.a. | 86 | 49 | 65 | 16 | 7 |
| | 2007 | n.a. | 68 | 47 | 71 | 15 | 7 |
| | 2008 | n.a. | 88 | 44 | 84 | 23 | 13 |
| **Costa Rica** | 2000 | n.a. | 85 | 58 | 13 | 14 | 4 |
| | 2001 | n.a. | 87 | 61 | 17 | 17 | 5 |
| | 2002 | n.a. | 90 | 62 | n.a. | 20 | 7 |
| | 2004 | n.a. | 90 | 64 | 43 | 24 | n.a. |
| | 2005 | 85 | 91 | 65 | 49 | 27 | 10 |
| | 2006 | 84 | 93 | 65 | 56 | 28 | 10 |
| | 2007 | 82 | 94 | 65 | 60 | 31 | 12 |
| | 2008 | 79 | 94 | 65 | 68 | 34 | 15 |
| | 2009 | 76 | 94 | 65 | 68 | 37 | 18 |
| **Ecuador** | 2003 | 81 | 90 | 47 | 34 | 18 | 4 |
| | 2006 | 73 | 87 | 35 | 64 | 18 | 2 |
| | 2008 | 71 | 83 | 37 | 70 | 23 | 7 |
| | 2009 | 68 | 83 | 36 | 74 | 23 | 7 |
| **El Salvador** | 2000 | 83 | 74 | 32 | 10 | 3 | 1 |
| | 2001 | 83 | 76 | 37 | 11 | 5 | 2 |
| | 2002 | 82 | 77 | 38 | 12 | 5 | 2 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2003 | 81 | 76 | 36 | 13 | 5 | 2 |
| | 2004 | 82 | 78 | 37 | 24 | 6 | 2 |
| | 2005 | 82 | 79 | 41 | 35 | 7 | 2 |
| | 2006 | 82 | 82 | 41 | 45 | 8 | 2 |
| | 2007 | 81 | 83 | 40 | 65 | 9 | 3 |
| | 2008 | 80 | 83 | 37 | 78 | 11 | 4 |
| **Guatemala** | 2000 | 78 | 54 | 15 | 10 | 4 | 1 |
| | 2006 | 83 | 69 | 19 | 55 | 11 | 2 |
| **Honduras** | 2002 | 83 | 56 | 16 | n.a. | n.a. | n.a. |
| | 2003 | 82 | 57 | 17 | 13 | 5 | n.a. |
| | 2004 | 79 | 57 | 17 | 15 | 5 | 1 |
| | 2005 | 76 | 61 | 20 | 22 | 6 | 2 |
| | 2006 | 81 | 64 | 29 | 41 | 8 | 1 |
| | 2007 | 81 | 66 | 34 | 58 | 10 | 2 |

Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of the data from household surveys; most recent year for which data were available [online] http:///www.cepal.org/tic/flash/. For Guyana, Jamaica and Nicaragua: International Telecomunications Union (ITU) "World Telecommunication/ ICT indicators database 2010", 2010.

## TABLE A.2
## LATIN AMERICA AND THE CARIBBEAN (13 COUNTRIES): INDICATORS ON ICT USE BY INDIVIDUALS AGED 15 TO 74, 2000–2009 (Percentages)

| Country | Year | Computer[a] | Internet[a] | Mobile telephone | Internet at home | Internet at a public access facility[b] | Internet at work[b] | Internet at another person's home[b] | Internet at a place of education[b] |
|---|---|---|---|---|---|---|---|---|---|
| **Brazil** | 2005 | n.a. | 21 | 40 | 51 | 26 | 46 | 30 | 22 |
| | 2008 | n.a. | 34 | 59 | 60 | 35 | 37 | 19 | 15 |
| **Chile** | 2000 | 29 | 17 | 20 | 39 | 1 | 29 | n.a. | 28 |
| | 2003 | 35 | 25 | 44 | 46 | 9 | 33 | n.a. | 34 |
| | 2006 | 39 | 34 | 63 | 44 | n.a. | 29 | 26 | n.a. |
| **Costa Rica** | 2005 | n.a. | 25 | 37 | 32 | 47 | 32 | 5 | 16 |
| | 2008 | 41 | 34 | 56 | 38 | 40 | 36 | 6 | 10 |
| **Dominican Republic** | 2005 | 26 | 15 | 55 | 21 | 44 | 35 | 27 | 32 |
| **Ecuador** | 2006 | n.a. | 7 | 41 | n.a. | n.a. | n.a. | n.a. | n.a. |
| | 2008 | 40 | 29 | 49 | 25 | 70 | 26 | 7 | 29 |
| | 2009 | 32 | 27 | 52 | 34 | 62 | 25 | 7 | 26 |
| **El Salvador** | 2005 | n.a. | 6 | n.a. | 18 | 46 | 20 | 2 | 14 |
| | 2006 | n.a. | 6 | n.a. | 25 | 39 | 22 | 1 | 13 |
| | 2007 | n.a. | 7 | n.a. | 27 | 45 | 17 | 1 | 10 |
| | 2008 | n.a. | 11 | n.a. | 31 | 45 | 12 | 2 | 9 |
| **Honduras** | 2004 | n.a. | 7 | n.a. | 16 | 57 | 20 | n.a. | 15 |
| | 2005 | n.a. | 8 | n.a. | 16 | 68 | 18 | n.a. | 9 |
| | 2006 | n.a. | 15 | 23 | 9 | 69 | 10 | n.a. | 6 |
| | 2007 | 17 | 12 | 36 | 17 | 77 | 21 | n.a. | 13 |
| **Mexico** | 2001 | 18 | 9 | n.a. | 46 | n.a. | 31 | 5 | 25 |
| | 2002 | 22 | 14 | n.a. | 36 | n.a. | 25 | 5 | 11 |
| | 2004 | 24 | 16 | n.a. | 39 | n.a. | 25 | 5 | 10 |
| | 2005 | 28 | 20 | n.a. | 32 | 41 | 29 | 2 | 12 |
| | 2006 | 29 | 21 | n.a. | 35 | 39 | 30 | 2 | 14 |
| | 2007 | 30 | 23 | n.a. | 36 | 46 | 26 | 2 | 8 |
| | 2008 | 32 | 25 | n.a. | 39 | 39 | 29 | 3 | 10 |
| | 2009 | 34 | 29 | n.a. | 47 | 35 | 25 | 3 | 8 |
| **Nicaragua** | 2006 | 17 | 14 | 48 | 5 | 64 | 25 | 1 | 21 |
| **Panama** | 2006 | n.a. | 23 | 46 | 25 | 40 | 22 | 4 | 9 |
| | 2007 | 31 | 24 | 51 | 31 | 41 | 33 | 5 | 14 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Paraguay** | 2005 | n.a. | 9 | n.a. | 19 | n.a. | 36 | 4 | 17 |
| | 2006 | n.a. | 9 | n.a. | 20 | n.a. | 28 | 2 | 13 |
| | 2007 | n.a. | 12 | n.a. | 28 | n.a. | 24 | 3 | 12 |
| | 2008 | n.a. | 16 | n.a. | 39 | n.a. | 24 | 6 | 13 |
| **Peru** | 2007 | n.a. | 29 | n.a. | 19 | n.a. | 15 | n.a. | 6 |
| | 2008 | n.a. | 30 | n.a. | 23 | n.a. | 16 | n.a. | 5 |
| | 2009 | n.a. | 31 | n.a. | 28 | n.a. | 18 | n.a. | 5 |
| **Uruguay** | 2006 | 38 | 31 | n.a. | 43 | 50 | 32 | 10 | 9 |
| | 2008 | 47 | 39 | n.a. | 55 | 39 | 34 | 20 | 12 |
| | 2009 | 46 | 40 | 78 | 65 | 25 | 33 | 17 | 10 |

Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of the most recent data from household surveys [online] http://www.cepal.org/tic/flash/.
[a] Indicators calculated on the basis of the total population.
[b] Indicators calculated on the basis of all users.

## TABLE A.3
## LATIN AMERICA AND THE CARIBBEAN (13 COUNTRIES): INDICATORS OF TYPE OF INTERNET USE BY INDIVIDUALS AGED 15 TO 74, 2000–2009 (Percentage of all users)

| Country | Year | e-Banking | Shopping | Communication | Education | Interaction with the Government | Entertainment | Health |
|---|---|---|---|---|---|---|---|---|
| **Brazil** | 2005 | 22 | 16 | 70 | 69 | 31 | 70 | n.a. |
| | 2008 | 16 | 18 | 84 | 63 | 18 | 80 | n.a. |
| **Chile** | 2000 | n.a. | 2 | 37 | n.a. | n.a. | 12 | n.a. |
| | 2003 | n.a. | 2 | 42 | n.a. | n.a. | 12 | n.a. |
| | 2006 | 9 | 8 | 67 | 13 | 13 | 50 | n.a. |
| **Costa Rica** | 2005 | 22 | 9 | 76 | 55 | n.a. | 43 | n.a. |
| | 2008 | 27 | 9 | 85 | 53 | n.a. | 56 | n.a. |
| **Ecuador** | 2006 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| | 2008 | 8 | 5 | 53 | 62 | 2 | 35 | n.a. |
| | 2009 | 7 | 3 | 48 | 62 | 3 | 37 | n.a. |
| **El Salvador** | 2005 | 2 | 2 | 17 | 61 | 1 | 3 | 2 |
| | 2006 | 3 | 4 | 18 | 55 | 0 | 3 | 2 |
| | 2007 | 1 | 2 | 18 | 64 | 0 | 3 | 1 |
| | 2008 | 0 | 1 | 23 | 63 | 1 | 2 | 1 |
| **Honduras** | 2004 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| | 2005 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| | 2006 | n.a. | 1 | 52 | 40 | n.a. | 16 | n.a. |
| | 2007 | n.a. | 5 | 75 | 57 | n.a. | 37 | n.a. |
| **Mexico** | 2001 | n.a. | 8 | 75 | 31 | n.a. | 32 | n.a. |
| | 2002 | n.a. | 4 | 71 | 24 | n.a. | 20 | n.a. |
| | 2004 | n.a. | 4 | 71 | 24 | n.a. | 20 | n.a. |
| | 2005 | 2 | 4 | 56 | 26 | 3 | 13 | 6 |
| | 2006 | 3 | 4 | 53 | 30 | 6 | 16 | 10 |
| | 2007 | 2 | 7 | 54 | 36 | 4 | 15 | 8 |
| | 2008 | 2 | 7 | 60 | 37 | 4 | 19 | 5 |
| | 2009 | 2 | 6 | 64 | 28 | 3 | 27 | 4 |
| **Nicaragua** | 2006 | 5 | 3 | 79 | 56 | n.a. | 56 | n.a. |
| **Panama** | 2006 | n.a. | 1 | 20 | n.a. | n.a. | 3 | n.a. |
| | 2007 | 1 | 1 | 19 | 1 | 0 | 3 | n.a. |
| **Paraguay** | 2005 | n.a. | 3 | 48 | 25 | n.a. | 10 | n.a. |
| | 2006 | n.a. | 1 | 62 | 18 | n.a. | 13 | n.a. |
| | 2007 | n.a. | 2 | 56 | 41 | n.a. | 7 | 2 |
| | 2008 | n.a. | 2 | 54 | 47 | n.a. | 15 | 2 |
| **Peru** | 2007 | 5 | 2 | 82 | 9 | 3 | 28 | 9 |
| | 2008 | 6 | 3 | 82 | 10 | 4 | 39 | 9 |
| | 2009 | 9 | 4 | 84 | 16 | 7 | 56 | n.a. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Dominican Republic** | 2005 | 14 | 9 | 61 | 68 | 12 | 56 | 23 |
| **Uruguay** | 2006 | 5 | 5 | 84 | 42 | | 36 | |
| | 2008 | 7 | 8 | 88 | 41 | | 52 | |
| | 2009 | 8 | 9 | 89 | 41 | | 54 | |

Source: Observatory for the Information Society in Latin America and the Caribbean (OSILAC), on the basis of the most recent data from household surveys [online] http://www.cepal.org/tic/flash/.