

# **ICT for Development: Latin America in the digital era**

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# Presentación

- I. The digital paradigm:**
  - A. Diffusion**
  - B. impact**
- II. Development of ICT (hardware, software, *telecoms*, *IP*)**
- III. ICT for development : applications and content**
- IV. Policies for development with ICT**

# Why study ICT?

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- Main objective: contribute to generate the **consciousness** of the importance of ICT for development and to identify the solutions to develop an information society in Latin America and the Caribbean countries.
- Provide information to **better understand** the process and support **ICT policy** design that facilitate its diffusion and adoption.
- **Evolutionary perspective** of technical progress, related to National Innovation systems and techno-economics paradigm concepts.

# ICT and digital paradigm

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- ICT are a general purpose technology, which allow them to generate a new **technical and economical paradigm**, based on the process digitalization. Their cross-cutting characteristics have enabled them to serve as a tool to promote development in various areas of economic and social activity.
- Digitalization permit to generate efficiencies that contribute to **economic and social development**.
- The efficiencies are due to innovation in productive process, business models, management and services.
- Both the magnitude of the economic impact of ICTs and the effects of their various applications depend on **capacities**, efficiency and effectiveness in their use and the supply of **complementary** goods and services.

**How we manage with the digital paradigm today determine the economic and social progress of my society in the long run.**

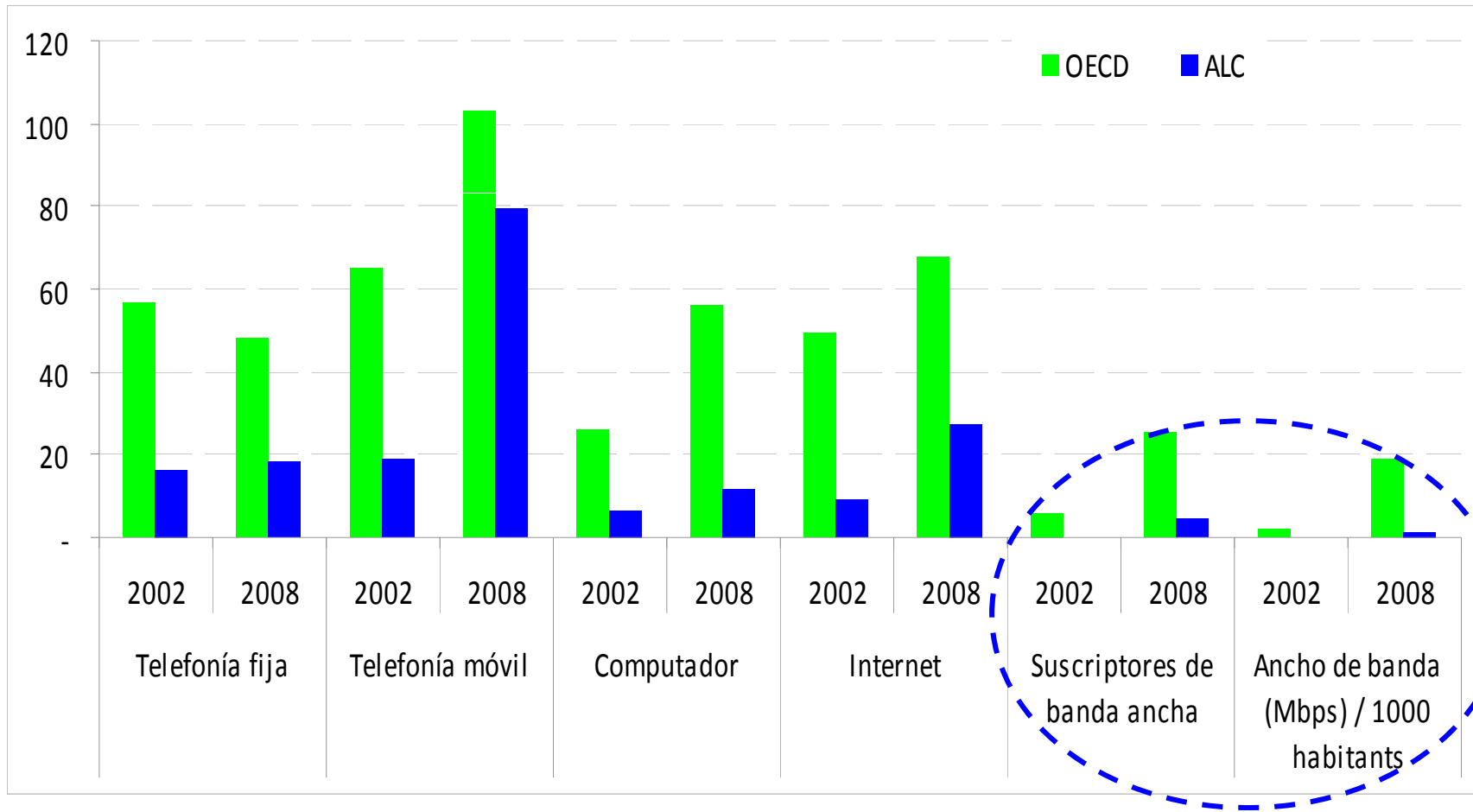
# International Divide

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- The digital divide has **more than one dimension**. There is not only gap a between countries in “access”, but also in the “quality of the access”:
  - while a 256 Kb connection is categorized as broadband in the region, in the developed countries this term is applied to connections of 1 Mb or over.
- The **digital divide that matters**, therefore, is in the ability to work with information.

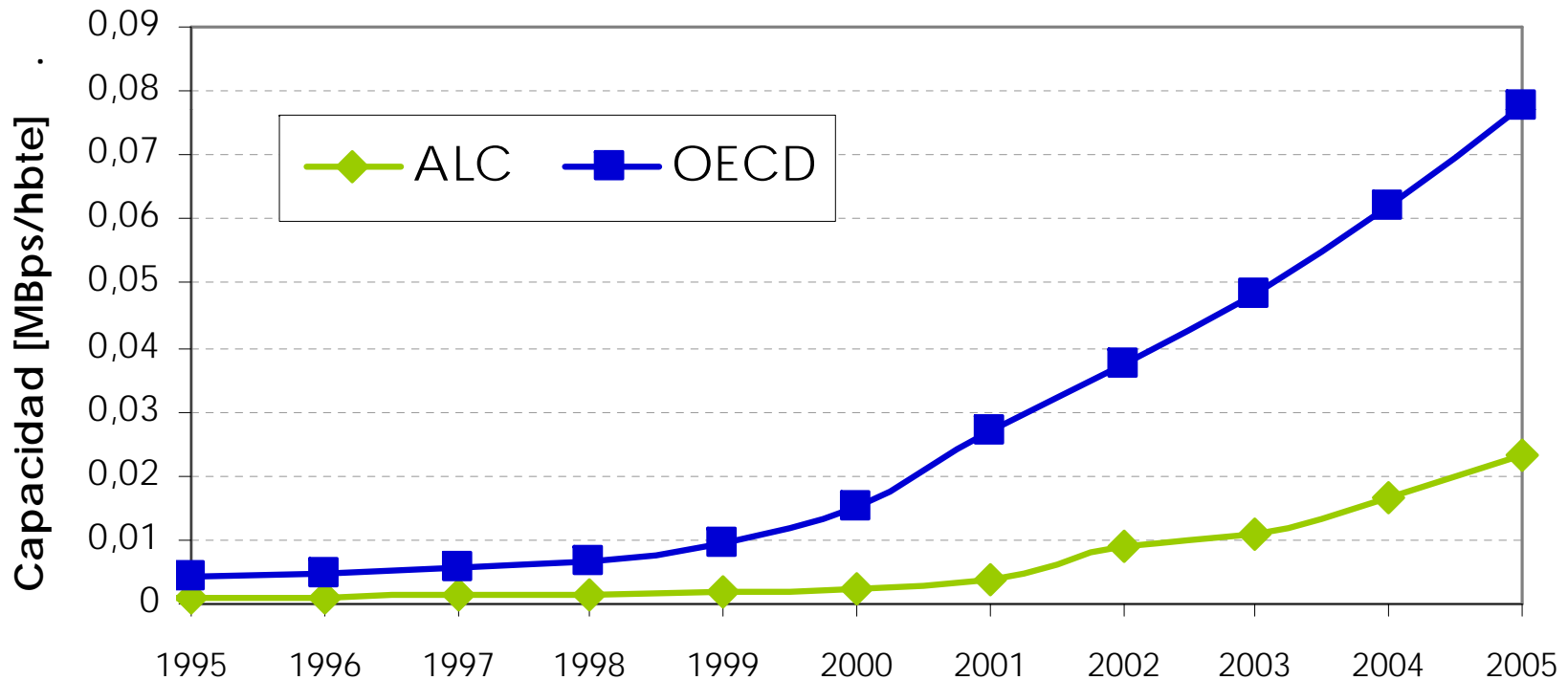
# Access: the international divide

ICT penetration 2002-2008  
(%)

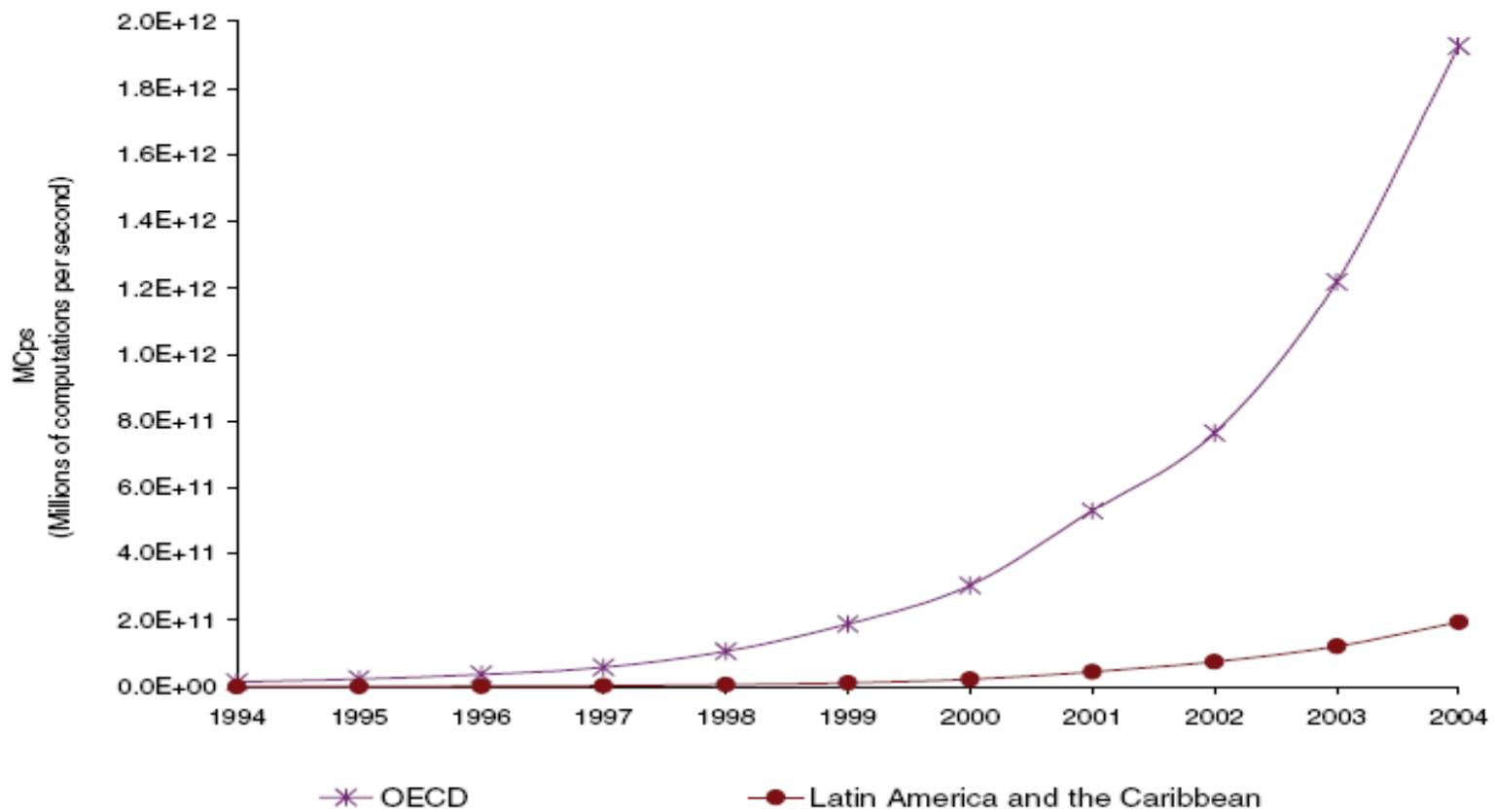


# Capacity: another gap

## CAPACITY FOR COMMUNICATION VIA FIXED-LINE AND MOBILE TELEPHONY AND THE INTERNET (Megabytes per second per capita)



## INFORMATION PROCESSING CAPACITY OF COMPUTERS AND MOBILE TELEPHONES (Millions of computations per second per capita)



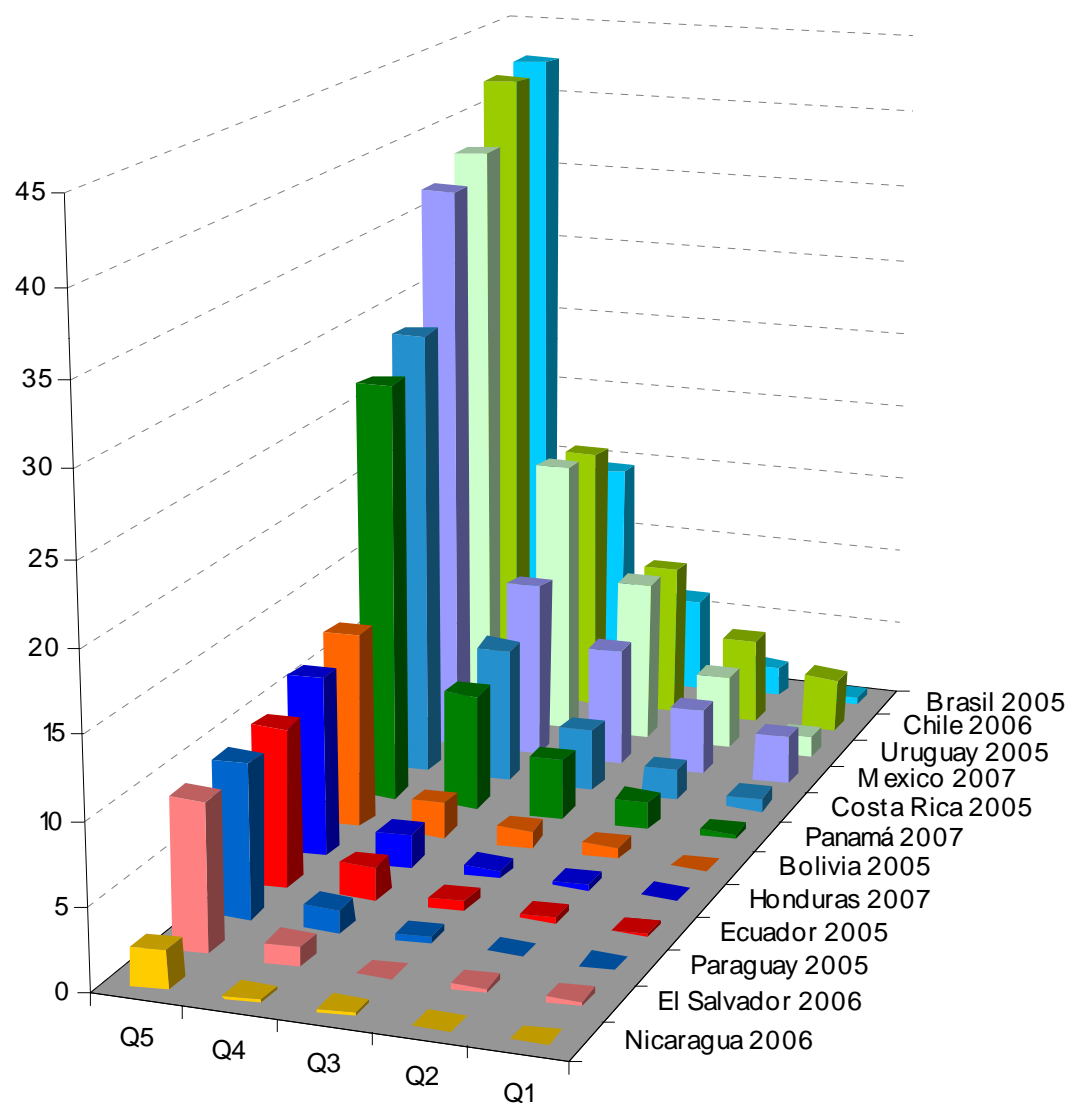
# Internal Divide

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- The digital divide within a country stems from existing economic and social inequalities in areas such as **income, education**, gender, ethnic origin, geographical location.
- These determinants are extremely related but with own effects.

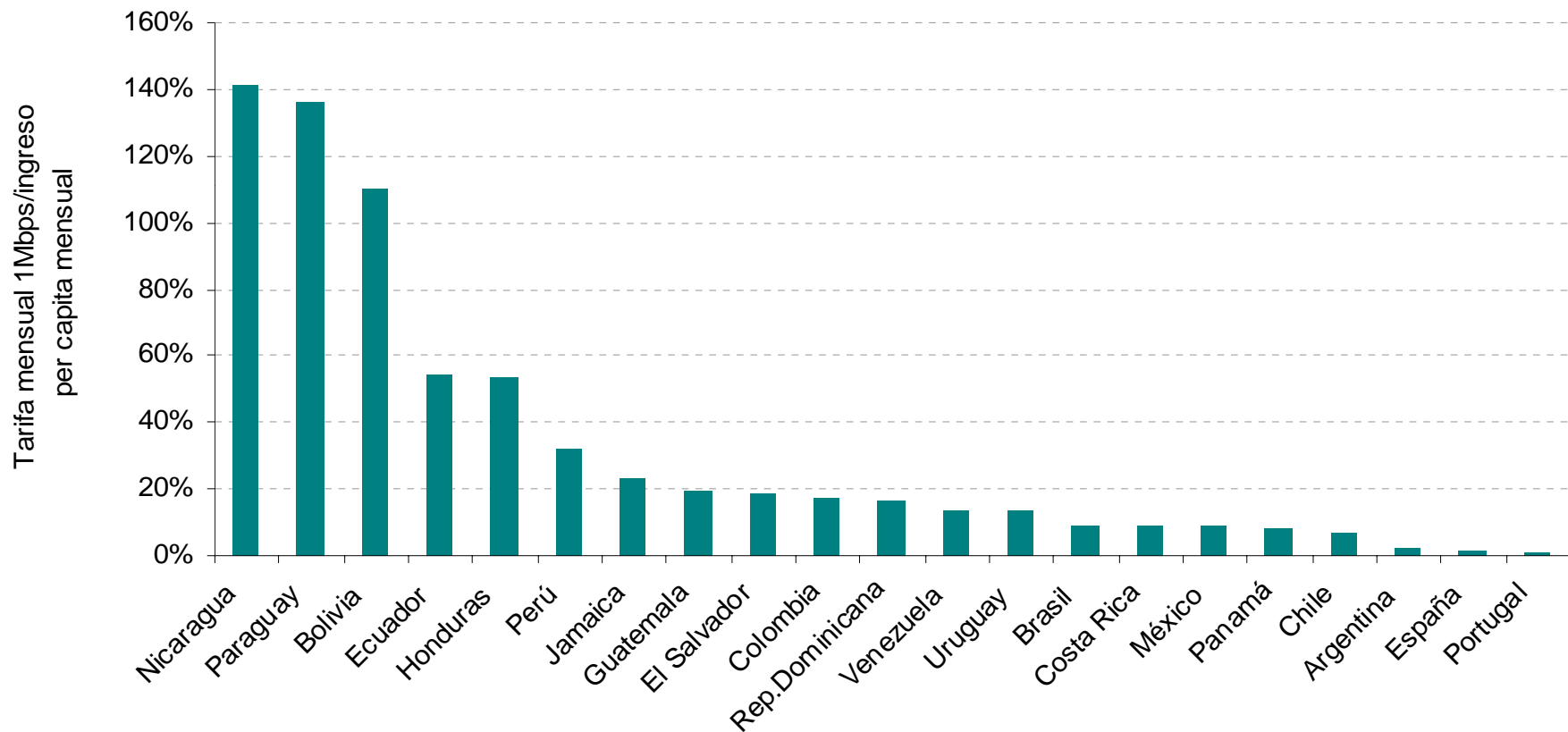
# Access: the internal divide

## Porcentaje de hogares con Internet según quintil de ingresos



Fuente: CEPAL, Sistema de Información OSILAC, sitio oficial en línea <http://www.cepal.org/SocInfo/OSILAC>.

# ADSL connection tariff (1MBPS) with respect to GDP per capita

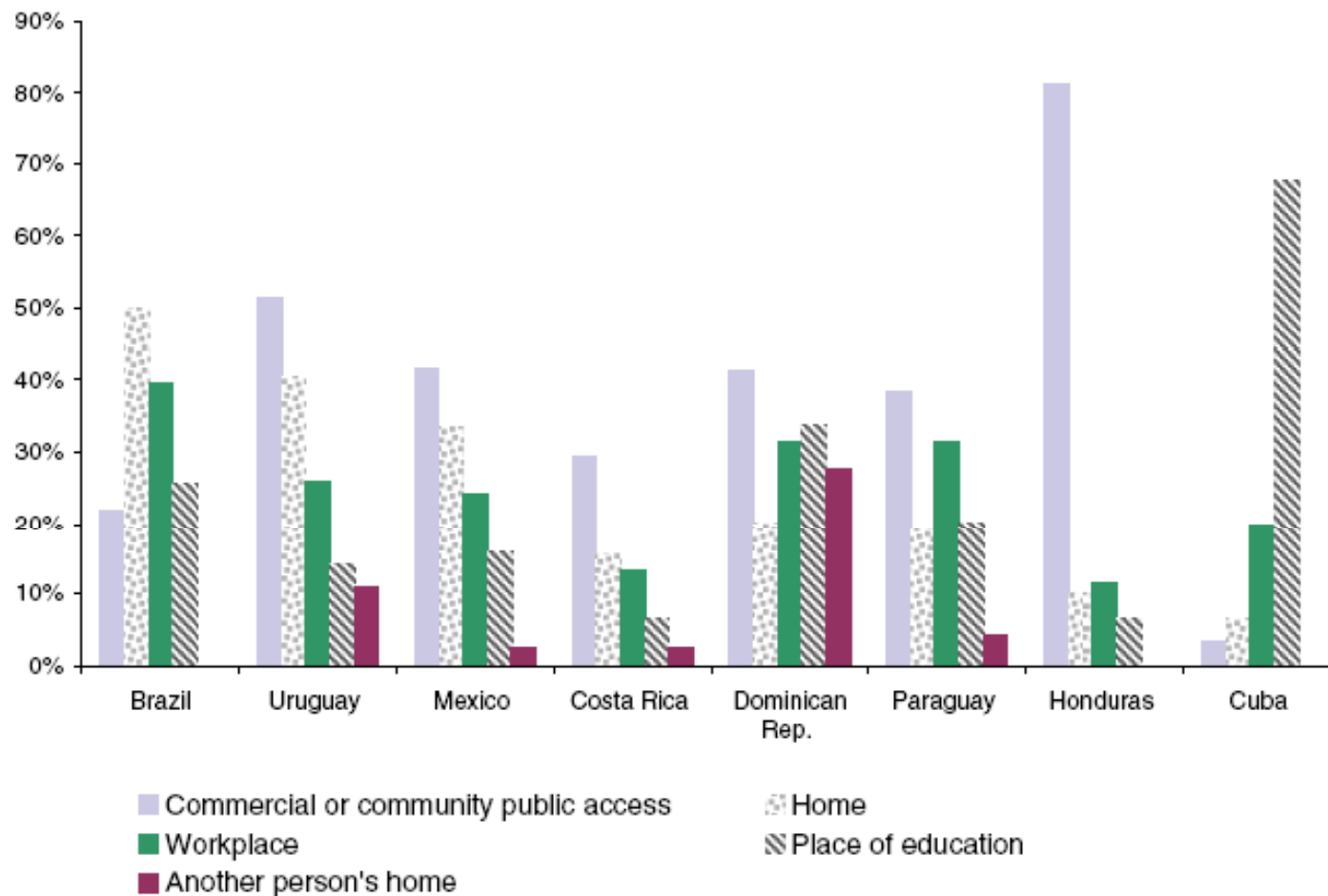


Fuente: La economía del conocimiento. Espacios Iberoamericanos, 2008.

# Community access: a short term solution

Apart from solutions like One Laptop per Child, others solutions must be implemented...

**PLACE OF INTERNET USE, 2005-2006**

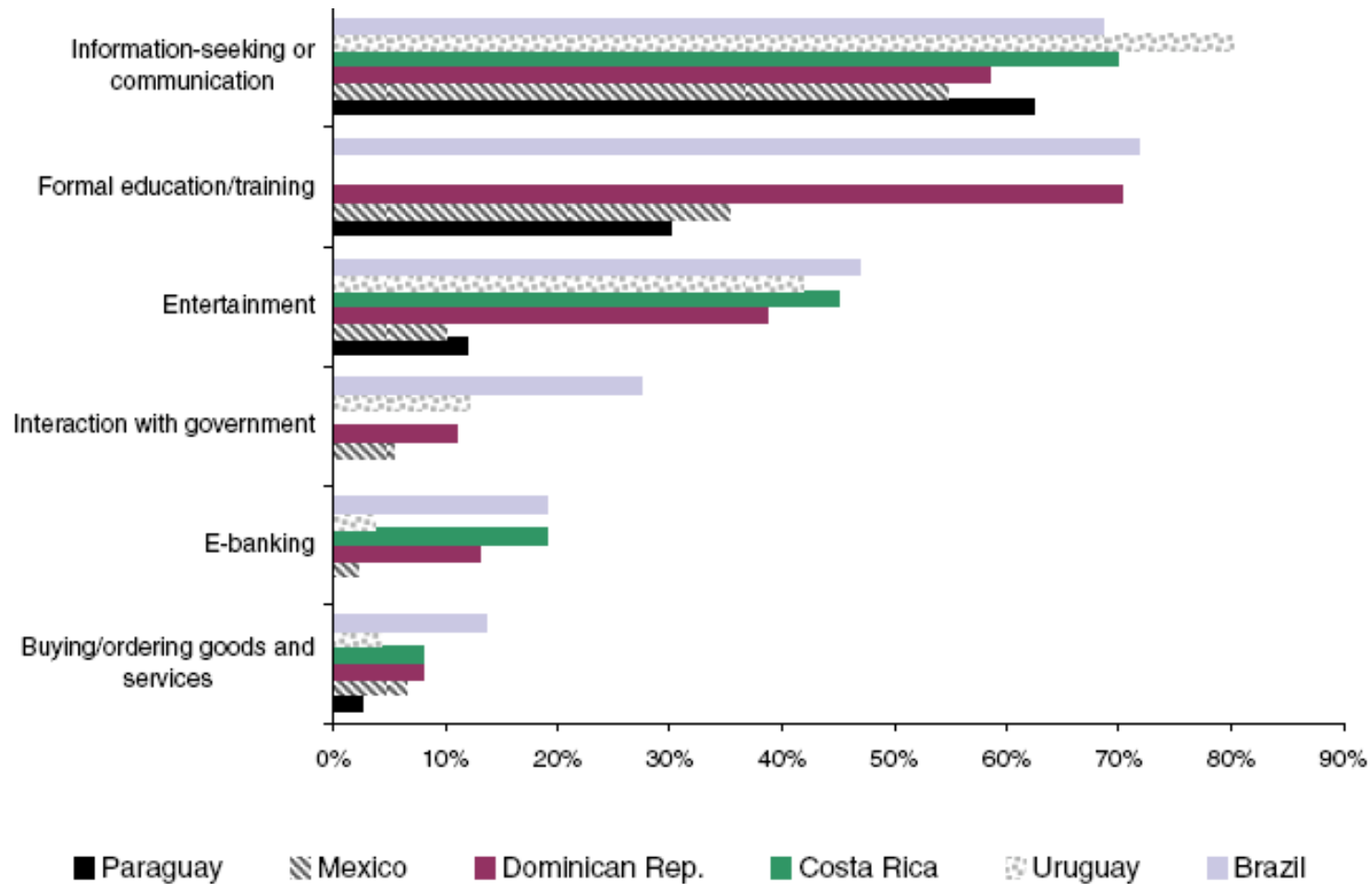


## But access is not all...

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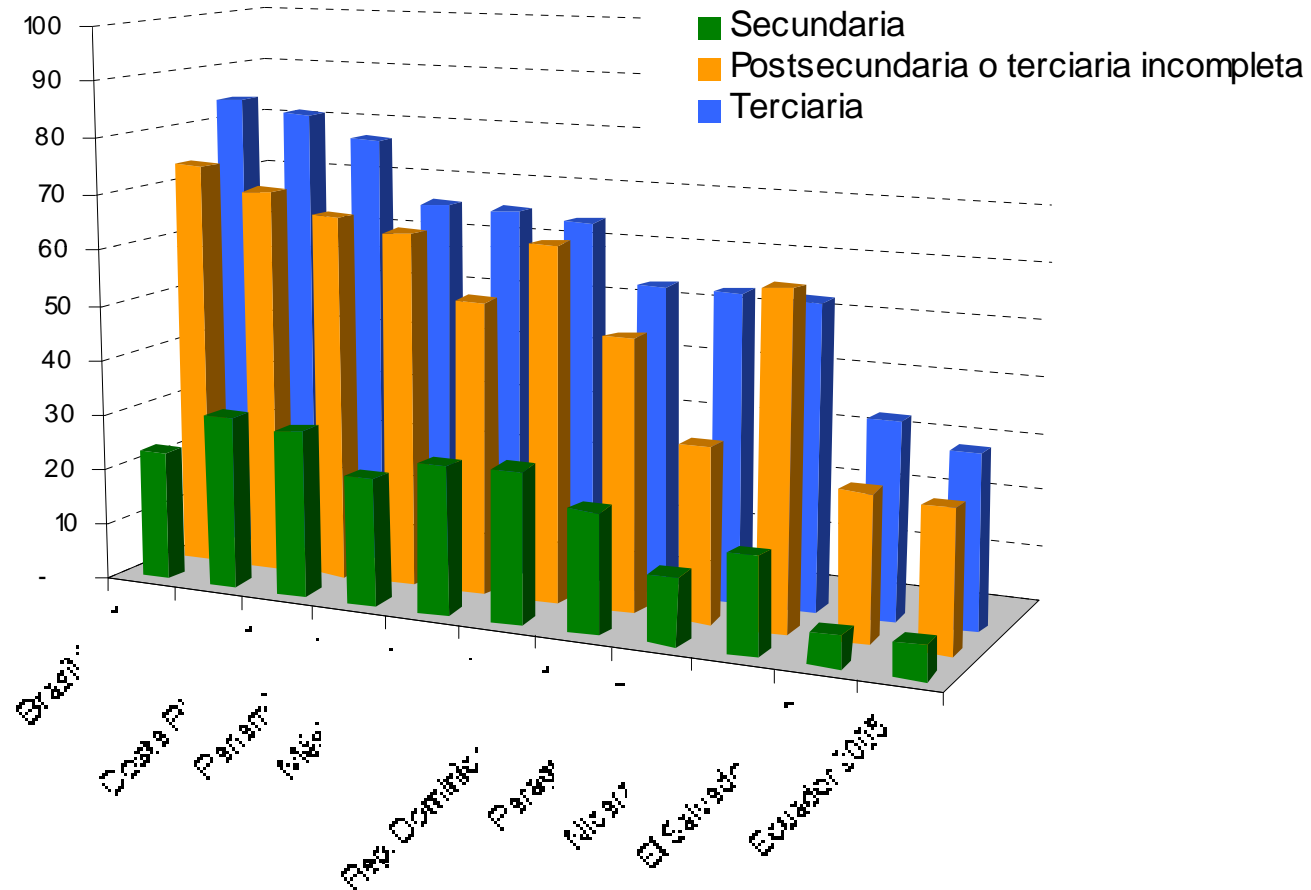
- ICT access is only the first step toward participation in the IS
- The adoption and use of these technologies require a learning process which generally starts with simple activities before moving on to more sophisticated types of interaction.
- The learning curves involved are determined by personal or contextual factors such as skill levels and habits, the legal framework and the content available on networks

- In LAC ICTs are employed mainly to communicate and obtain information and that they are not yet used on a large scale for online transactions



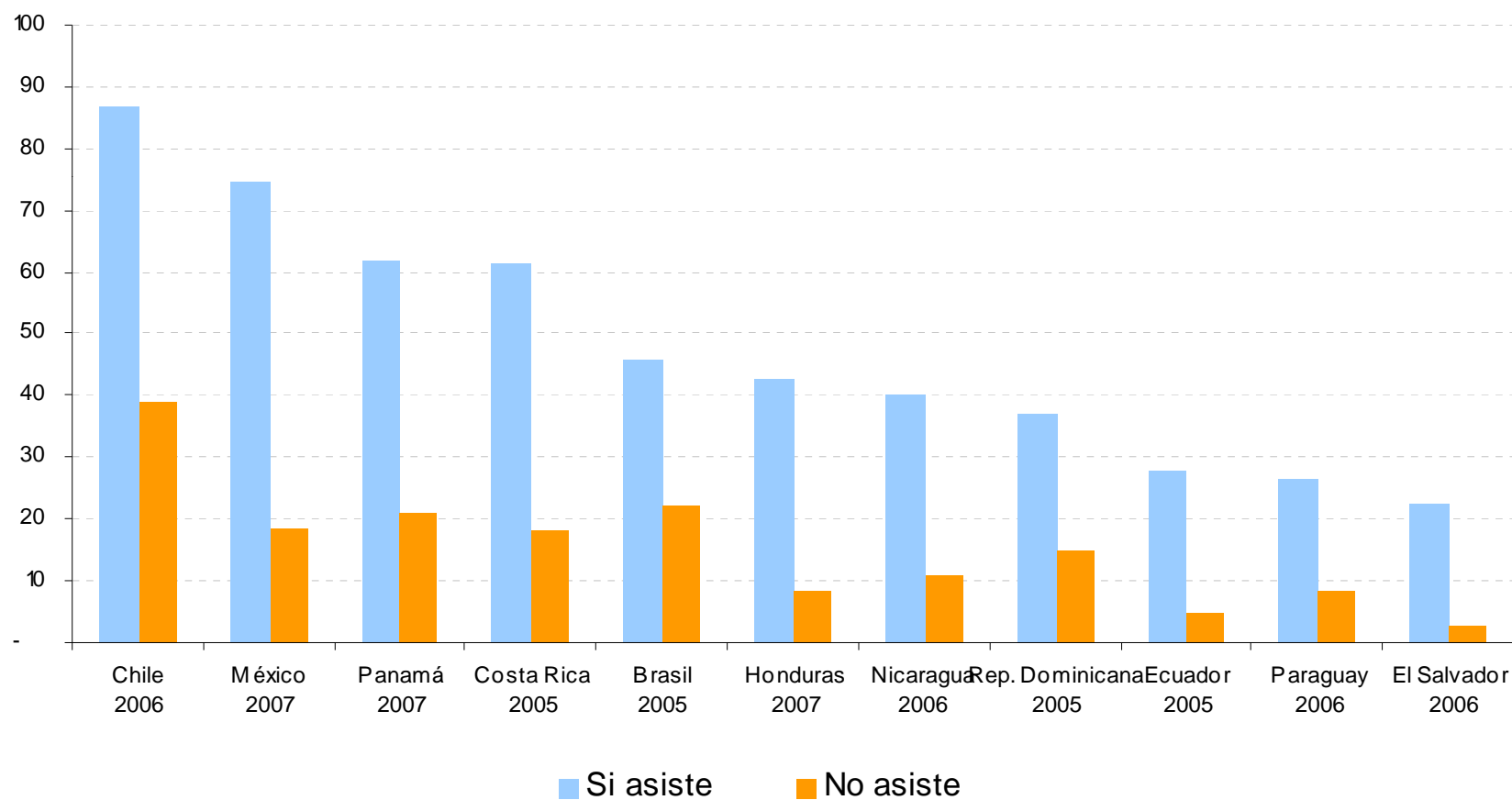
# Usage: the importance of education on the digital divide

Percentage of Internet users between 15 - 74 years, due to educational level



# Educational Centers promote ICT usage

Internet users 15 - 29 years due to assistance to the school (en porcentajes)



# Message about ICT penetration

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- The gap is closed in the cheaper technologies; but is increasing in the more expensive ones, specially access to internet and broadband
- The different in the capacity to access to information is still increasing in absolute terms.
- The internal divide depends on 2 main variables: income and educational level.

**The digital divide is a moving target which is changing faster and farther**

# How ICT affect economic growth?

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- Prices decreasing (market spillovers)
  - First Order effects: investment possibilities, incentive to introduce new machineries and equipments, and related activities with ICT, increasing productive capacities, etc.
  - Second Order effects: due to a rising in the demand of this products/services, new sectors, business and activities are created.
- At the knowledge level (knowledge spillovers)

## 2 Methodologies to study economic impact of ICT

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- Growth accountability from a standard production function.
- Technology trajectories analysis from labor productivity and ICT expenditures

# Growth accountability

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(porcentajes)

<b>Grupos de países</b>	<b>1989-1995</b>	<b>1995-2000</b>	<b>2000-2004</b>
Mundo (110 economías)	9,6	14,7	11,2
Grupo de los Siete	17,8	25,2	21,6
Asia en desarrollo	1,9	5,6	6,8
No miembros del G7	6,7	10,7	9,3
<b>América Latina</b>	<b>4,9</b>	<b>14,2</b>	<b>9,3</b>
Europa oriental	-1,4	10,1	6,5
África Subsahariana	6,4	7,1	7,2
África septentrional y Oriente Medio	3,8	7,7	9,8

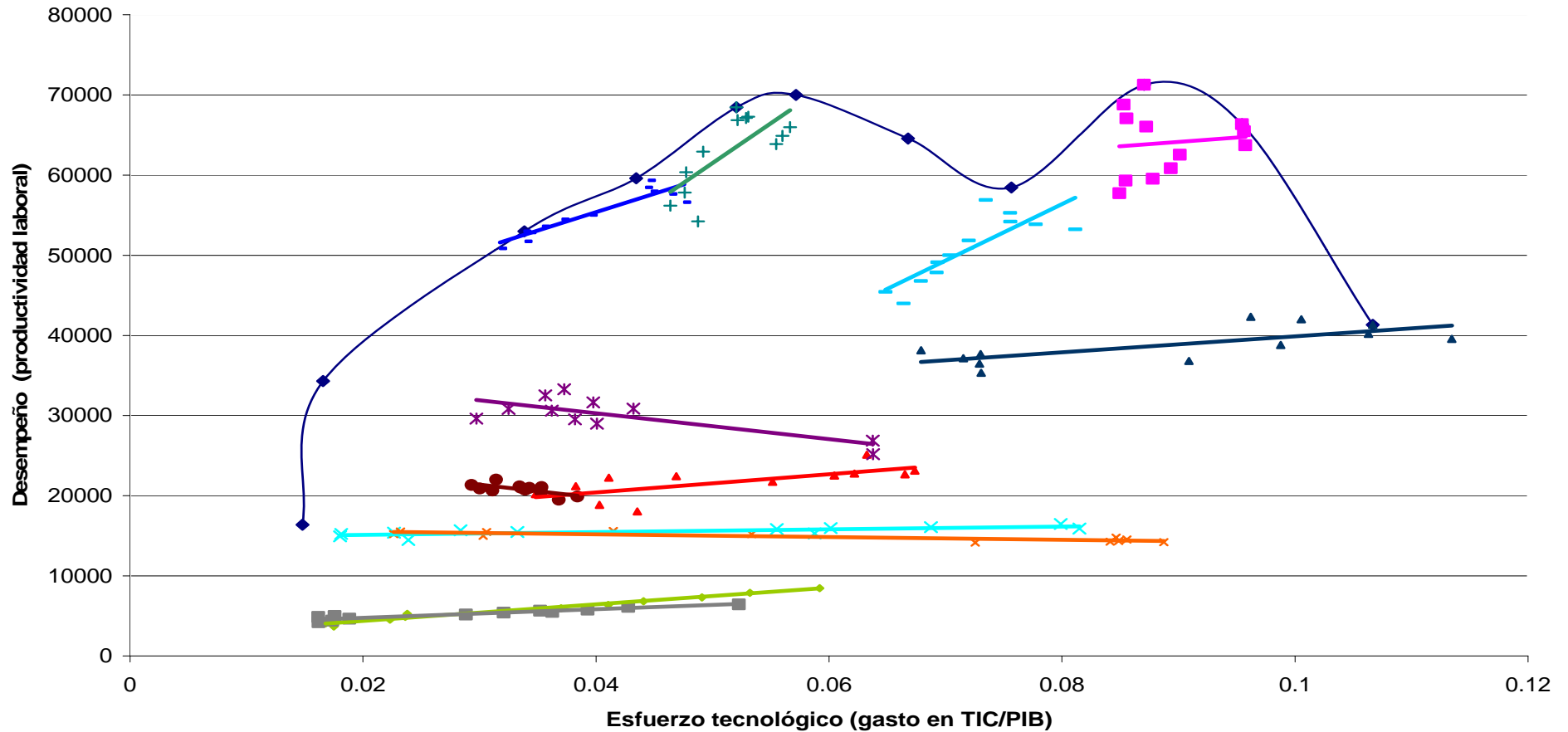
# Technological trajectories analysis

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- 44 países; 1993-2004
- Relation between ICT effort (ICT/GDP) and labor productivity
- Results: non-deterministic relationships, what shows the importance of others factors. ICT not always succeed in increasing countries productivity
- 3 grupos:
  - un grupo de países que determina la frontera tecnológica, en los cuáles se observa una relación positiva entre las variables (EEUU, Bélgica, Noruega, Canadá, etc.)
  - Un segundo grupo (LAC y otros) en donde un aumento de las TICs no necesariamente se relaciona con un incremento de la productividad)
  - Tercer grupo que aceleraron su proceso de cierre de la brecha con la frontera tecnológica (Rep de Corea, Singapur, Nueva Zelanda, y otros)

# ICT expenditure efficiency

(1993-2004)



# ICT and knowledge

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- Knowledge is important to explain economic growth
- The economic impact of ICTs has differed widely among countries, even those which have access to the same technology
- Investing in ICTs may produce no significant results in terms of productivity unless there is a minimal level of complementarity to make possible their effective use.
- A necessary condition for increasing that impact is the development of initiatives to complement ICTs in areas such as education, research and development, the legal system and the productive base.
- Technology has a much greater impact if it is considered as an integral part of social and productive organization, rather than merely an additional sector

# Message from economic impact analysis

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- ICT's are a complement, not a substitute of the knowledge base of a country.
- A necessary condition for increasing that impact is the development of initiatives to complement ICTs in areas such as education, research and development, the legal system and the productive base.

**There must be an equilibrium between ICT's expenditure and complement factors. Capacities are a main element to use them efficiency.**

### **III. TIC para el desarrollo: aplicaciones y contenido**

# ICT for Development: challenges

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- **Appropriation:** Professionals and sectors must appropriate of ICT's, and adequate them to their own needs and incorporate them in the organizational process.
- **Digitalization:** Advance in the *front-office* (*web pages*), but a major challenge in the *el back-office* (data bases interconnectivity) considering the complexity of the interoperability (common standards).
- **Complementarities:** At the same time develop the infrastructure, improve human capacities, innovation system, applications, etc.

## **IV. Policies for development with ICT**

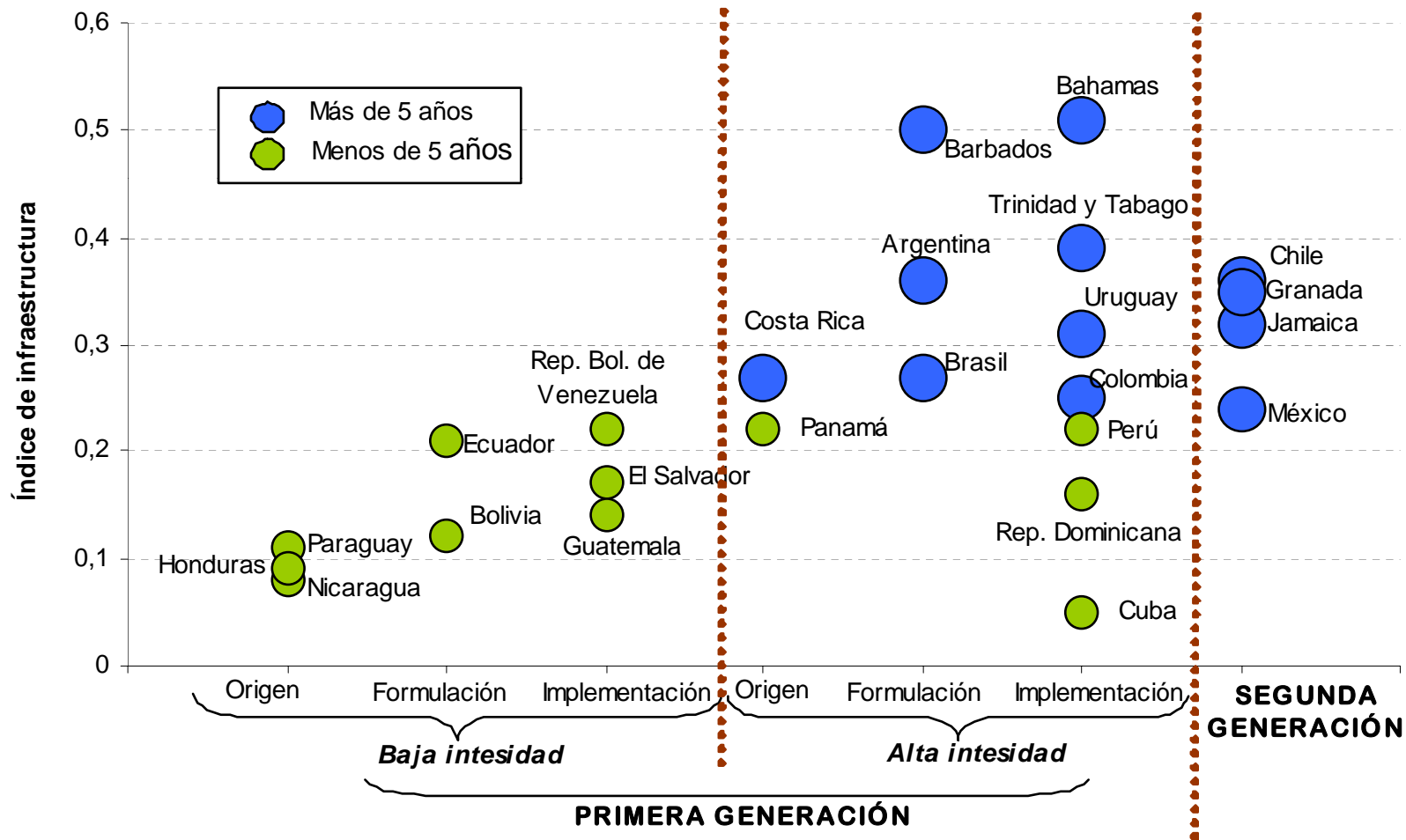
# Digital National Strategies

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- National strategies are being consolidated in the countries of the region with a greater degree of ICT maturity.
- In this new phase, digital strategies have been part of countries' national development plans and thus are higher on the list of political priorities.
- The issues receiving the most attention continue to be increasing access and e-government, as well as capacity generation.
- In the smaller economies such as those of the Caribbean, major strides have been made in increasing access, but growth in the development of e-government remains sluggish.
- In the larger countries (Argentina, Brazil, Colombia and Mexico), the opposite can be observed.

# ICT for development: políticas

Grado de desarrollo de la infraestructura en 2005/2006, y estado de las políticas digitales e intensidad y tiempo de maduración de actividades relativas a TIC, 2008



# At the regional level...eLAC

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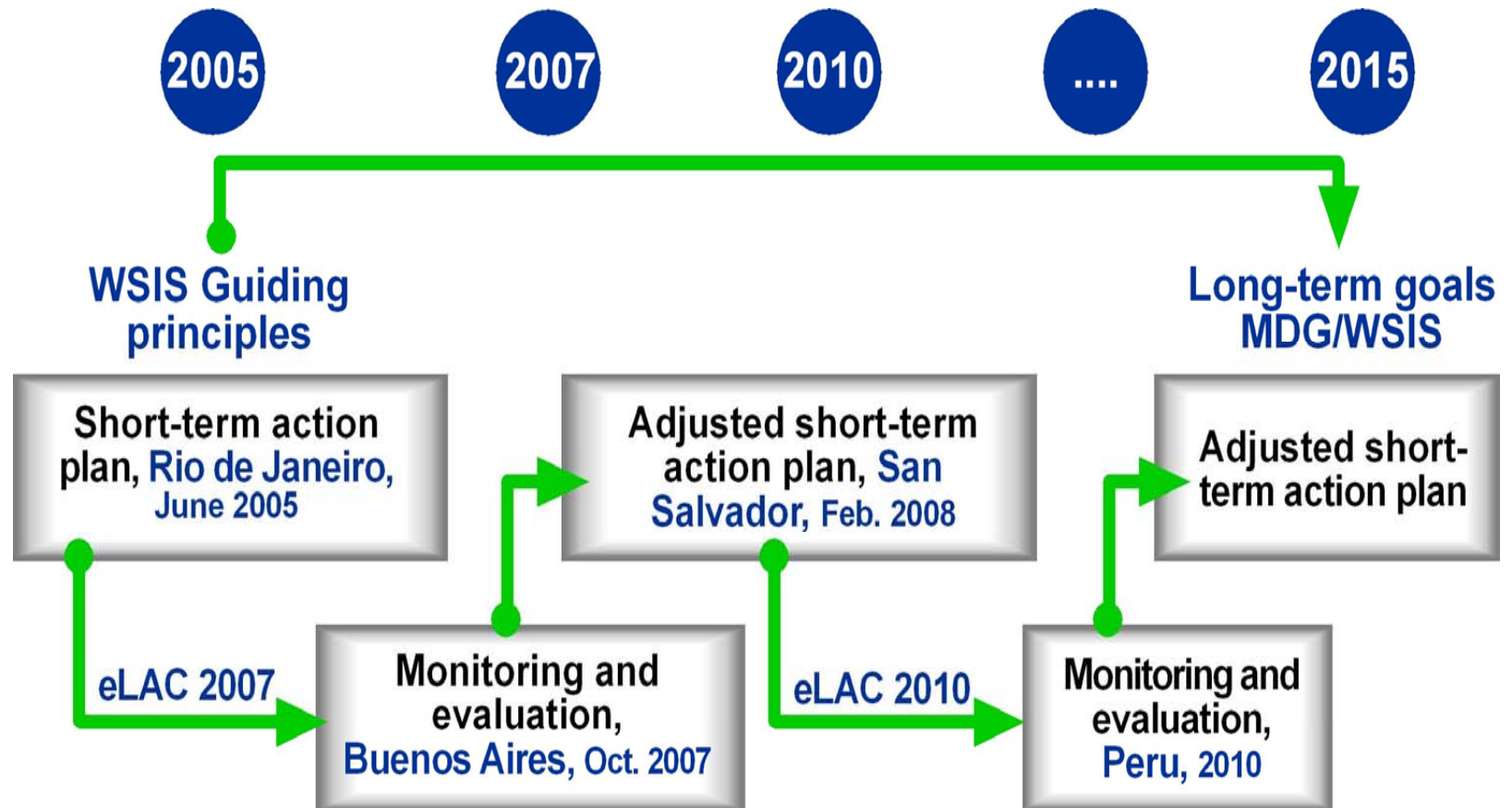
- the Regional Plan of Action, eLAC, has been a tool for matching the urgent needs of the countries of Latin America and the Caribbean with the global Millennium Development Goals adopted for the year 2015
- eLAC constitutes a “metaplatform” for the coordination of public-private initiatives
- eLAC2007: 30 goals and 70 activities (2005-2007)
- eLAC2010: 83 goals (2008-2010)

# eLAC Objectives

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- Support the countries of Latin America in the elaboration, **implementation and follow-up** of national, regional and subregional Information Society strategies, particularly the eLAC Regional Action Plan
- Analyze and disseminate **best practices** and progress in the various sectors of the Information Society:
  - e-Education
  - e-Health
  - e-Inclusion
  - e-Impact on Productivity and Growth
  - e-Government and Regional Integration
- Strengthen **dialogue and cooperation**, both South-South as well as between Europe and Latin America, on political, technical and social aspects of the Information Society, with an end to encouraging R&D

# The eLAC process



# eLAC 2010 Content

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- **Sectores**

- Educación

- Infraestructura

- Salud

- Gestión pública

- Producción

- **Áreas**

- Entorno

- Acceso

- Capacidades

- Aplicaciones y contenido

- **Metas e instrumentos**

- Metas de acción

- Metas cuantitativas

- Metaplataforma público-privada

- Grupos de trabajo

- Coordinación regional

# ECLAC Recommendations

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- Latin America and the Caribbean must increase their efforts to reduce the digital divide in terms of access and quality of access and must step up
- The use of ICTs in order to continue their advance towards the construction of information societies.
- Complementarities must be developed in order to realize the potential impact that ICTs can have on economic performance and social integration.
- Coordination of resources and initiatives underway in countries must be achieved or strengthened, as the case may be, in order to achieve synergy and thus avoid duplications, time lags and even incompatibility of goals.
- New initiatives for intra-regional cooperation based on the different degrees of ICT advance in the countries of the region must be pursued,
- Consolidated or implemented.
- ICT decision-makers must be motivated to gradually take the lead in adopting policies in this respect.
- A positive approach would consist in focusing attention on strengthening instruments and building institutions for implementing regional initiatives and national and sectoral ICT policies.