Unión Internacional de Telecomunicaciones

Broadband Access development. A multidimensional focus project

Regional seminar on costs and tariffs for LAC countries

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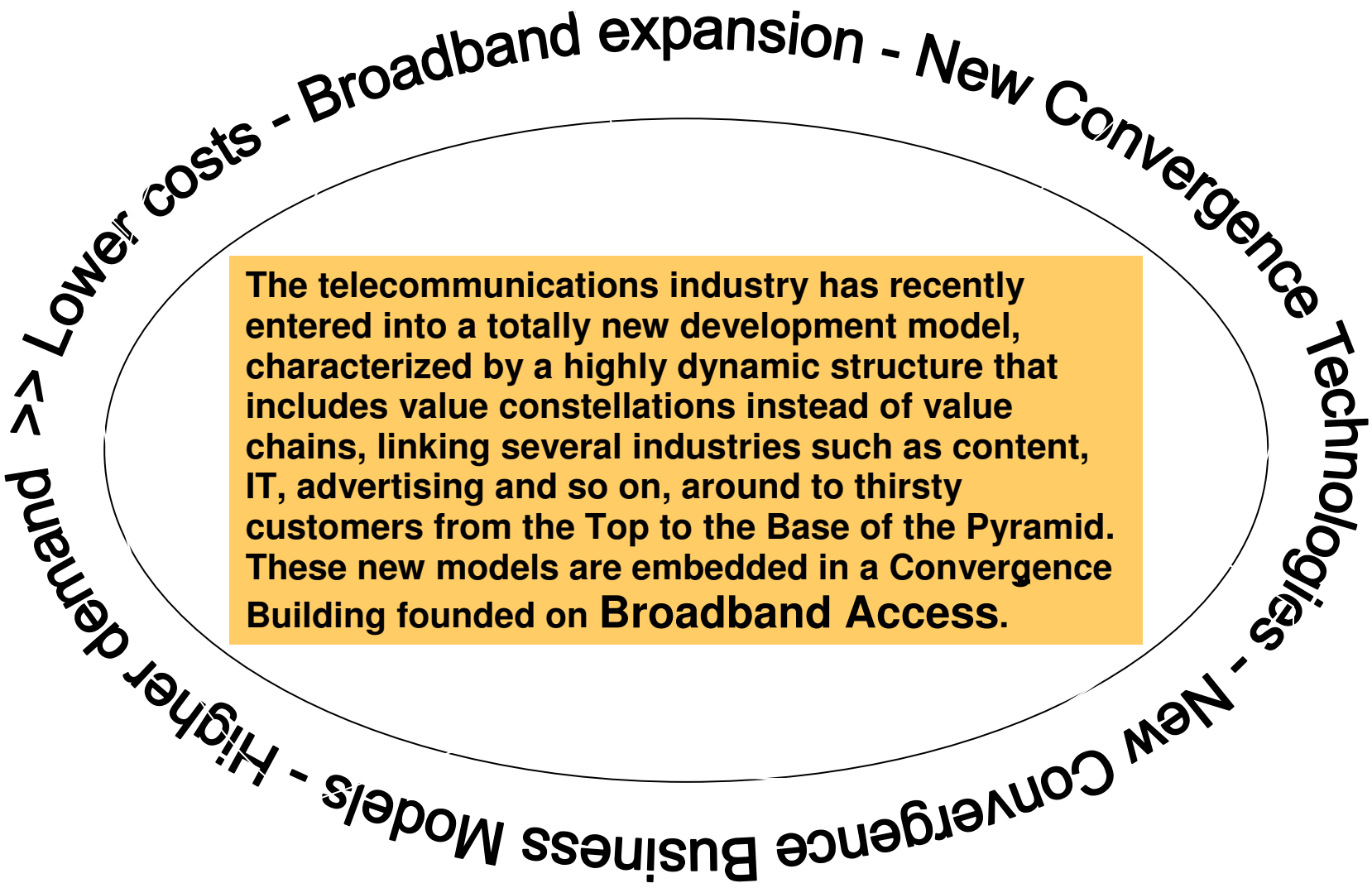
Agenda

- Brief introduction to Convergence and Broadband (C&B).
- ITU Project Framework.
- New technologies for Convergence and Broadband.
- New business models.
- Relevant ITU documentation on Broadband development.
- Regional analysis on current situation.
  - Technologies
  - Regulation
  - Broadband teledensities
  - Economics
- Conclusions

Convergence and Broadband (C&B)

Development correlation



The telecommunications industry has recently entered into a totally new development model, characterized by a highly dynamic structure that includes value constellations instead of value chains, linking several industries such as content, IT, advertising and so on, around to thirsty customers from the Top to the Base of the Pyramid. These new models are embedded in a Convergence Building founded on Broadband Access.

ITU Project Framework

Brief description

- This project was coordinated by the ITU Regional Office for the Americas, the Telecommunications Technologies and Networks Development Unit and the area office in Honduras.
- Its scope is rooted in and aligned with the regional initiatives approved at the ITU World Telecommunication Development Conference, held in Doha in March 2006.
- In particular, under Regional Initiatives in the Americas Region, Resolution 17 (Rev. Doha, 2006), "Implementation of regionally approved initiatives at the national, regional, interregional and global levels", includes in Annex 1, Section 3 "Support to administrations in the design and implementation of policies and programs for large-scale development of broadband access, with a view to meeting national universal service objectives".
- It focuses on residential broadband as this is the main reference service for ICT development and Universal Service.

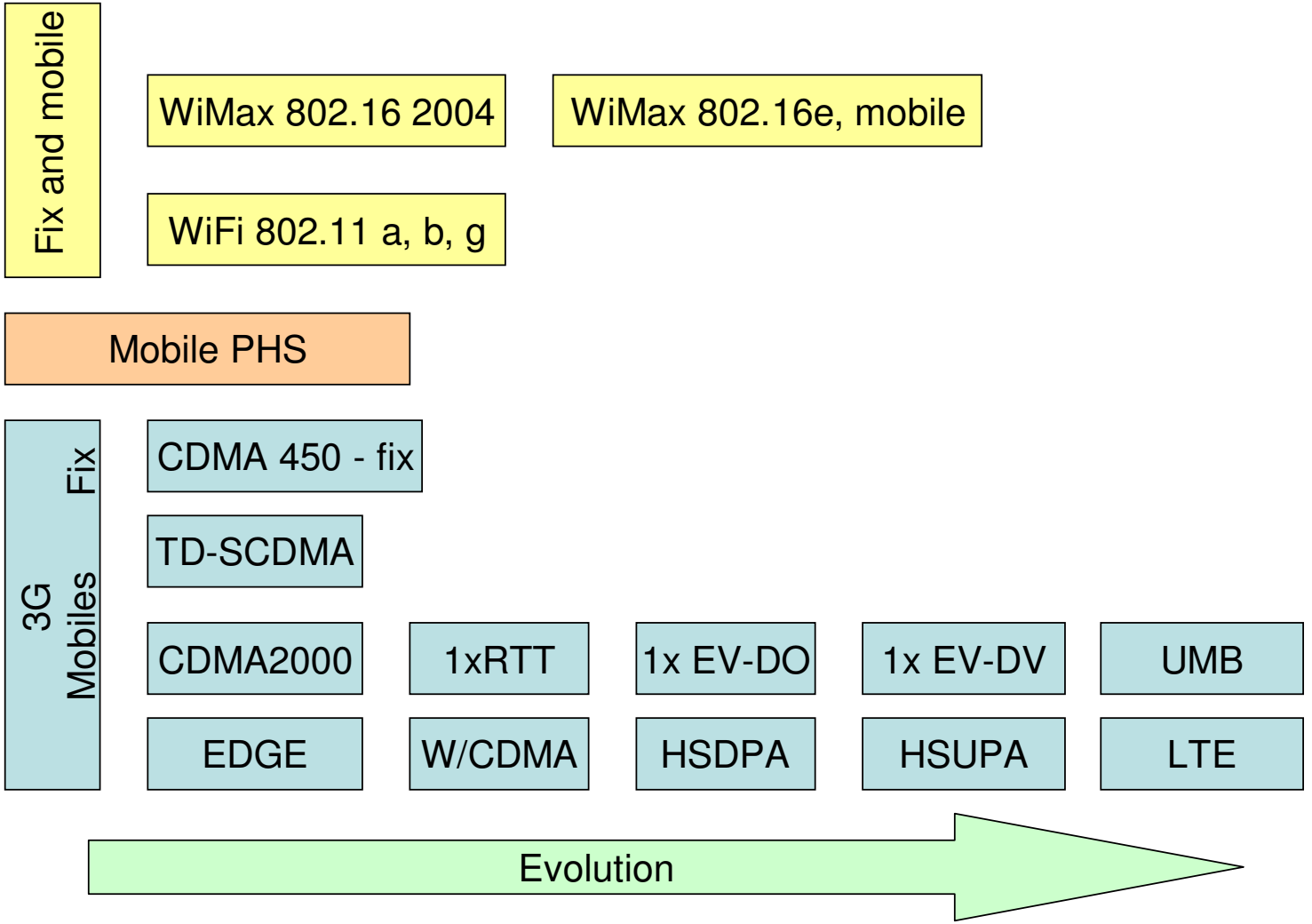
New technologies for C&B I

Cabled technologies.

- **Copper Pair.** Several known technologies can be applied to this physical access, including, among others, ADSL (up to 8 Mbps. and 3 Kms.), ADSL2 (12 Mbps.), ADSL2+ (24 Mbps.) and VDSL (up to 100 Mbps. as fibre extension to the premise). It forms the basis of several broadband services such as IPTV.
- **Broadband on the Power Line.** This technology can reach from about 2 to 80 Mbps. but is not currently well developed.
- **Fibre Optics.** : Fibre to the Cabinet (FTTCab), Fibre to the Curb (FTTC), Fibre to the Building (FTTB) and Fibre to the Premise / Home (FTTH). Each one extends the fibre closer to the CPE (Customer Premise Equipment). Up to the highest TX hierarchies are used.
- **Hybrid Fibre Cable (HFC).** This is an extended kind of access that uses the Cable TV network through the use of Cable modems. 27 to 38 Mbps. are obtained for 6 MHz channeling.

New technologies for C&B II

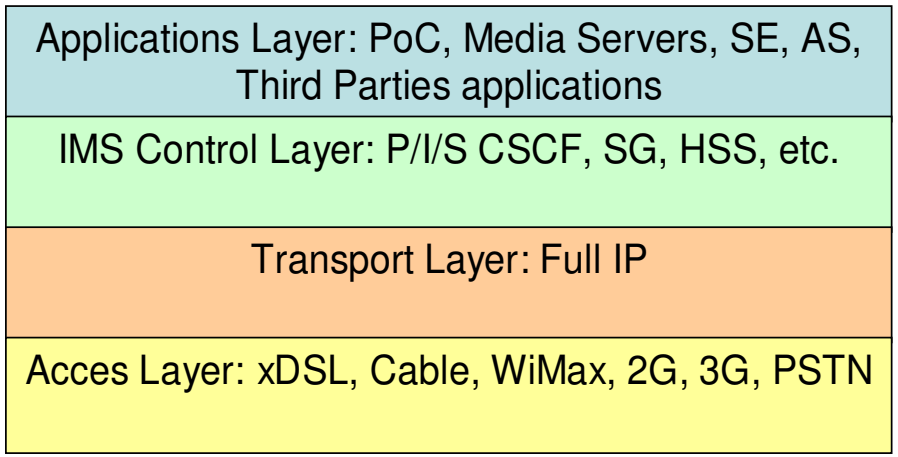
Wireless.



New technologies for C&B III

Specific for Convergence. Main examples.

- **IMS, MMD y TISPAN. Architectures for Convergence.**
- **Parlay. It enables the development of applications that operate across converged networks, through technology-independent application programming interfaces (APIs). It is a secure, measured, and billable interface.**
- **UMA – 802.21. It allows seamless Multi media Independent Handover (MIH) through different wireless technologies networks such as GSM, WiFI, WiMax, Bluetooth, etc.**



New layer structure for Convergence

New business models

Main development vectors

- The telecommunication market is competitive and changes continuously. This includes close business relationships between traditional telecommunication operators, broadcasting and cable TV operators, and companies from different industries.
- These relationships result in a review of the traditional value chain, as long as different companies are developing new business models in which the traditional access and transmission services are merging and driving operators into progressive revenue sharing with other operators or companies, mainly from the IT and content industries.
- Under this umbrella a lot of new services are offered: IPTV over Fibre or xDSL, mobile telephony roaming across different networks, context-sensitive mobile services (nearer preferred restaurants, etc.), interactive television, unified communications, seamless enterprise – mobile communications, niche mobile TV content providers, Mobile Virtual Network Operators (MVNO), mobile applications (sales force support, etc.)

Relevant ITU documentation and efforts on Broadband development

These are the latest documents produced by ITU, in addition to a large number of reports, results and recommendations, in its effort to develop broadband, and as the foundation for the Access to the Information Society. This documentation was used as a basis for this project, in conjunction with other ITU and documentation from regional associations.

- The World Telecommunication Development Conference (Doha, 2006) *Final Report*.
- *Birth of Broadband.* ITU Internet Reports. ITU. September 2003.
- Seventh edition of Trends in Telecommunication Reform, *Regulating in the Broadband World*. ITU. 2006.
- Eighth edition of Trends in Telecommunication Reform, *Road to Next-Generation Networks*. ITU. 2007.

Regional analysis on current situation I
Technologies

- Cable modem and xDSL are widely deployed and competing.
- WiMax is mainly entering into the fixed access niche.
- Fibre Optics is still a commercial service with almost no residential users.
- 3G and 3,5G are well developed and most countries have either one technology or the other (EDGE, EV-DO, HSDPA and so on).
- Satellite and LMDS, among others, are scattered throughout the region with no prevalence in the broadband market.

Regional analysis on current situation II

Regulation Trends and Region 1

- In an environment of rapidly changing market conditions, telecommunication policies and regulation play an important role in the promotion or restriction of convergence and broadband development.
- Being well aware of this situation, countries with the most advanced regulation frameworks have made further profound changes, through the following main drivers.
- For each we briefly present the general situation in the region.
- Access to the Information Society.
- General Regulation:
  - Prospective and competition-oriented regulation frameworks are the main principles to be applied to all issues of regulation. There is a general though weak trend toward the application of both principles.
  - New Access and IX rules taking into account convergence and the layered structure of the market. No changes perceived in this issue.
  - Follow up on markets that are evolving into competitive markets, for instance the “Local Access Market”. No country was found to be following up these changes.

Regional analysis on current situation II

Regulation Trends and Region 2

- **Grandfathering. There is a strong respect for the acquired rights.**
- **Consider the merging of different industries into the traditional telecommunication industry. No formal issues about this.**
- **Symmetrical regulation between telecommunications and broadcasting and Cable TV operators. Strong trend towards this unless restrictions applied to IPTV in several countries.**
- **Light Touch Regulation. No trend towards this was noted.**
- **Widely applied cost orientation on regulated prices, regulation fees, etc. Most countries apply this orientation.**
- **New structures for National Regulatory Authorities oriented to new market structures and behaviors. Not perceived yet.**
- **Regional harmonization oriented toward traditional issues (avoid interference, same technical standards, etc.) and new issues such as those that strengthen economies of scope and scale in the "regional market". Strong harmonization through ITU and CITEL but no perceived trend toward looking for economies of scale in the regional market.**

Regional analysis on current situation II

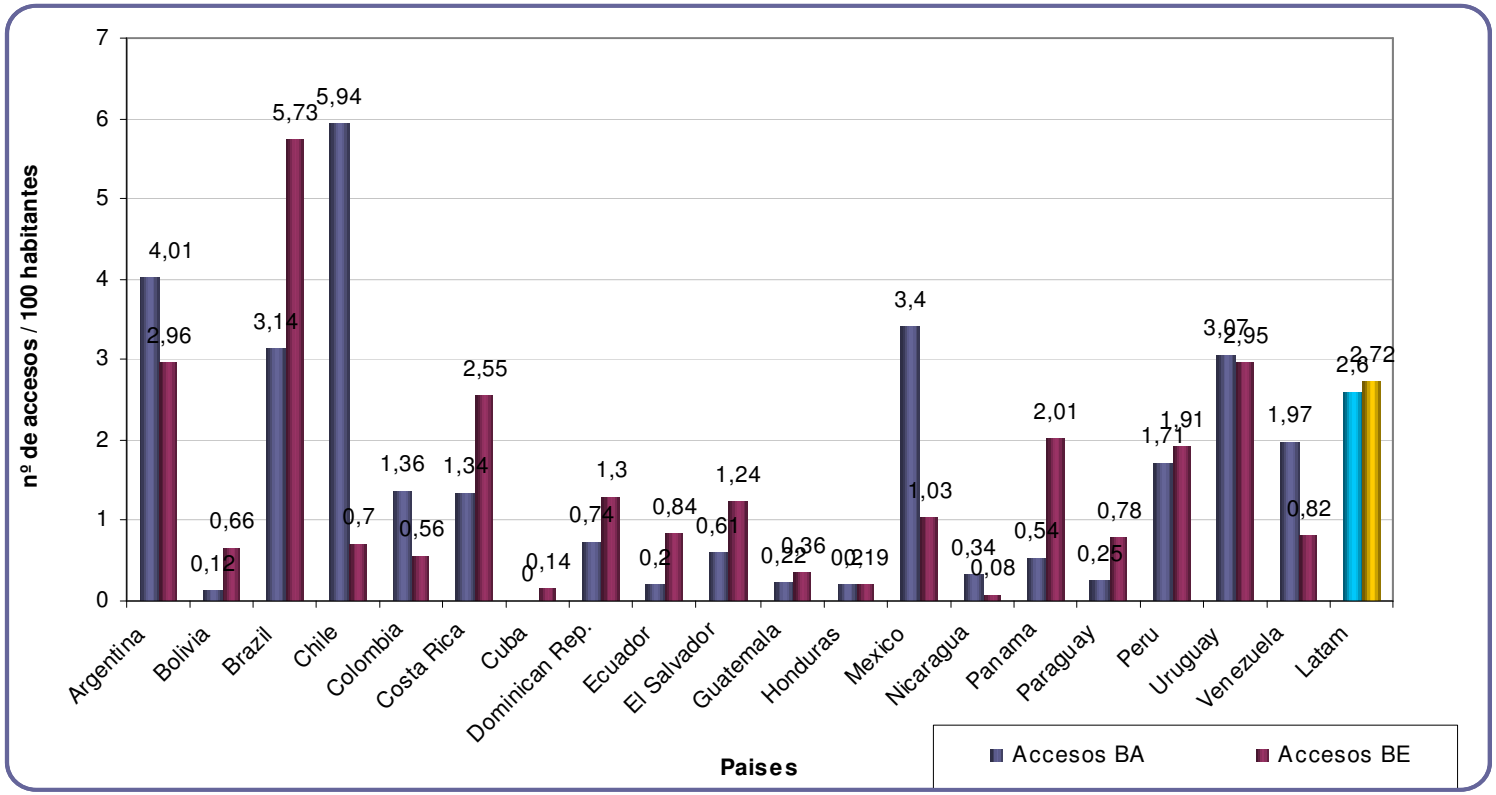
Regulation Trends and Region 3

- **Spectrum management specific issues:**
  - **Spectrum liberalization general principle. Some movement towards this principle.**
  - **Progressively leaving the "Command and Control" model moving towards competition oriented models of "Exclusive Rights" and "Common and Open Access". Not at all. A few countries allow the transfer of use of a band and some countries analyzing it. Exceptions are El Salvador and Guatemala.**
  - **Spectrum Trading in secondary markets. Not at all. It seems to be far from full spectrum trading that allows the right of use as a kind of property right. Exceptions are El Salvador and Guatemala.**
  - **Technology and Services neutrality. Technology neutrality is a generalized situation. Service neutrality is still generally restricted.**
  - **Progressively leave Spectrum Cap conditions. This is a complex issue in the region that is being maintained even with highly competitive markets with HHI as those of the most competitive markets.**

Regional analysis on current situation III

a) Broadband Latam Teledensity *ITU-ICT statistics*

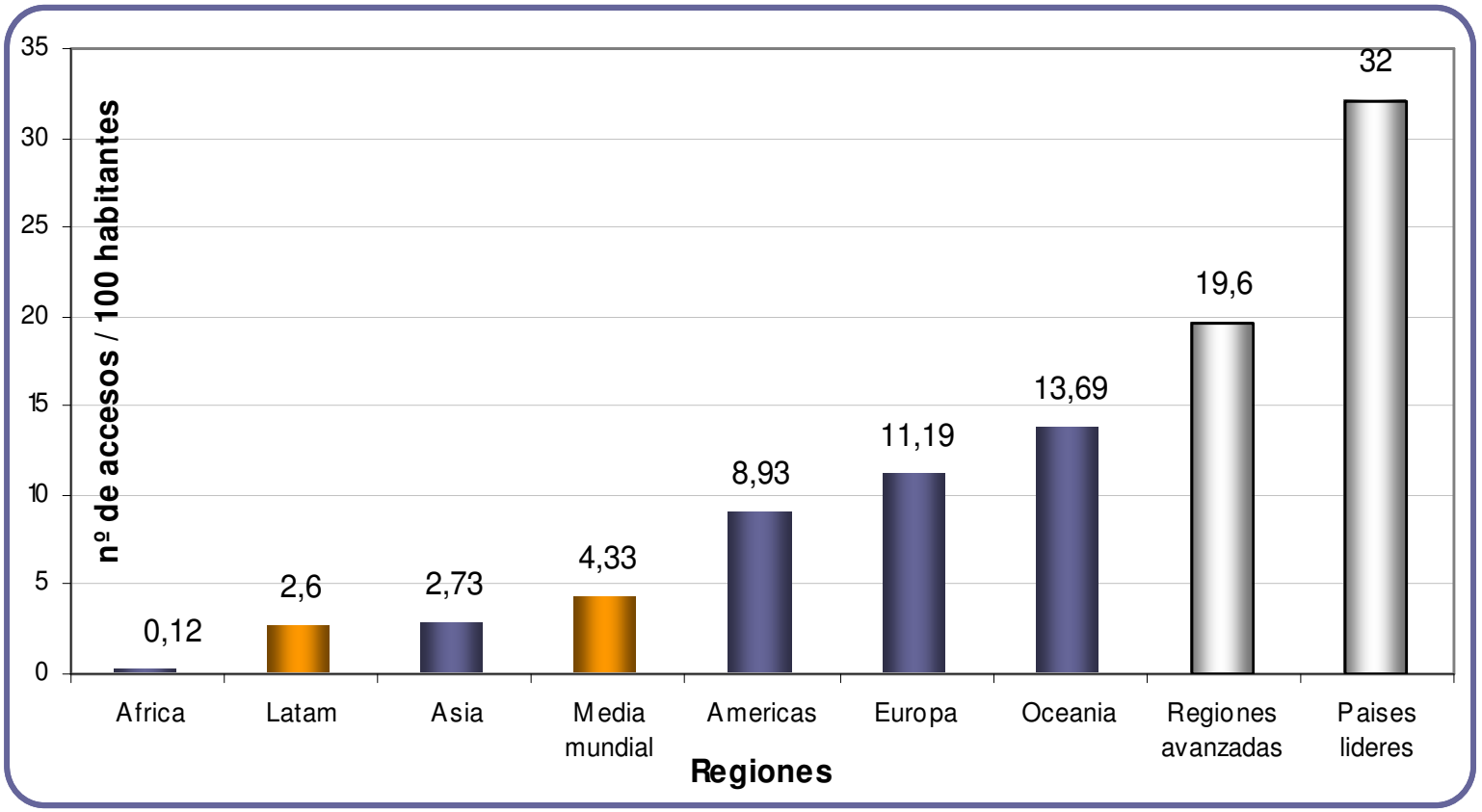
End of 2006. Broadband vs. Narrowband teledensity varies greatly among countries.



Regional analysis on current situation III

b) Broadband World Regions Teledensity *ITU-ICT statistics*

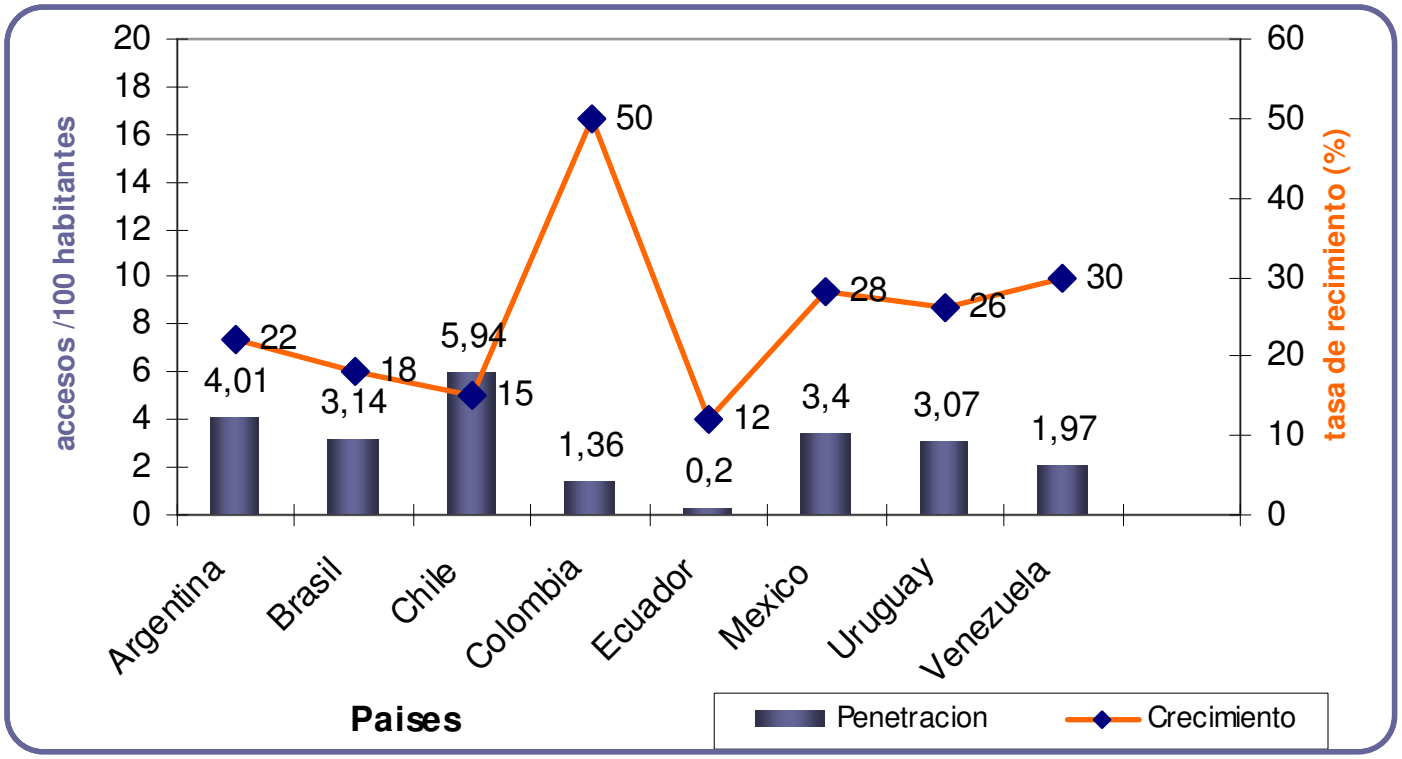
End of 2006. Broadband regions teledensity shows big differences between them.



Regional analysis on current situation III

c) Broadband Teledensity Growth Rates *ITU-ICT statistics*

By the end of 2006 our region shows high growth rates that demonstrate that it is moving towards teledensity values of well developed countries. These rates continue during 2007.



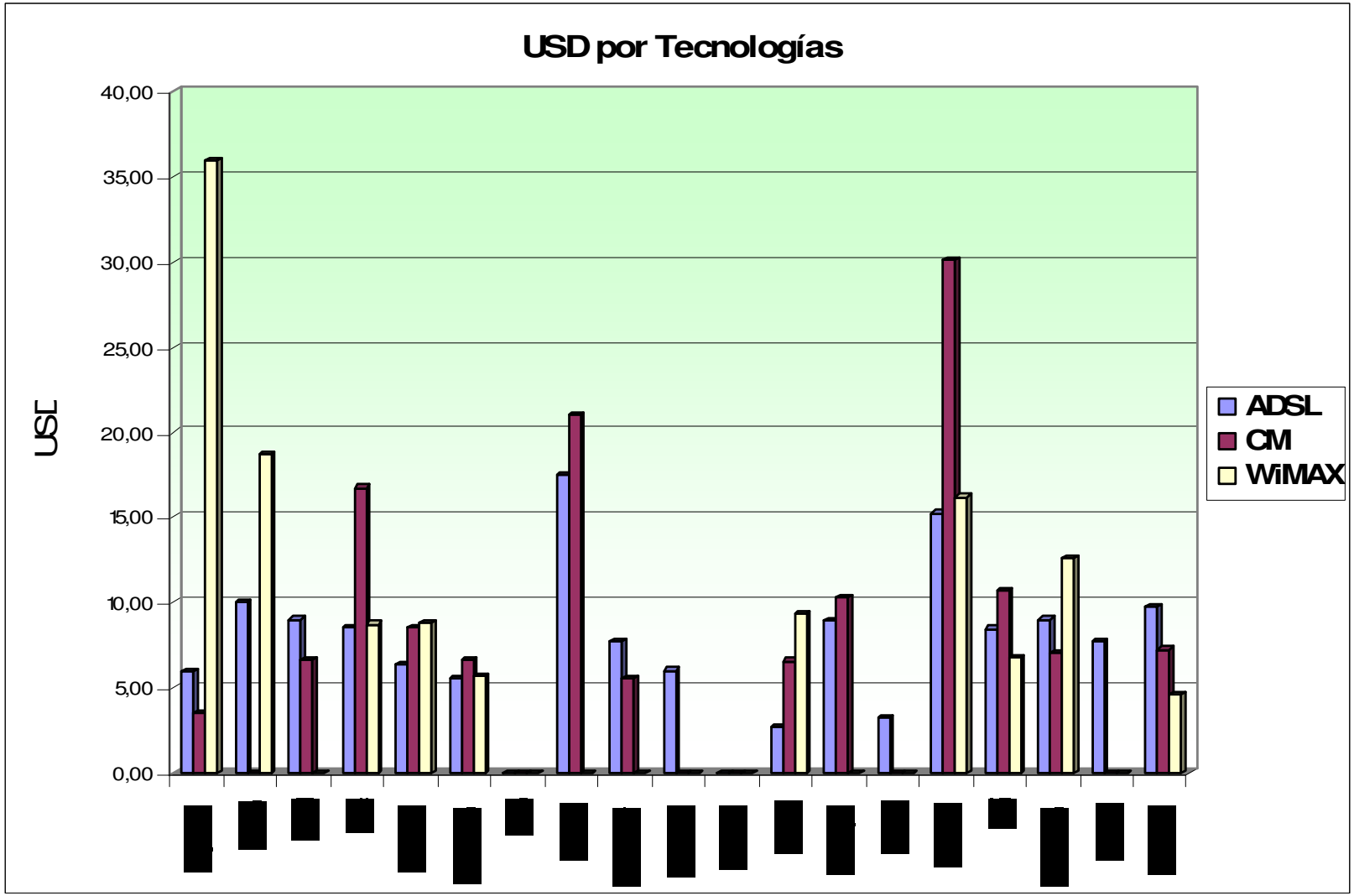
Regional analysis on current situation IV

Economics 1 – Main trends in the Region

- This analysis was undertaken using the latest primary sources from the web pages of all the operators in all the countries analyzed.
- Prevalent technologies, xDSL and Cable Modem, are competitors on prices and commercial conditions. They can be considered in the same "Relevant market".
- WiMax is entering the same market but through an unstable relation between price and conditions.
- Mobile broadband is an extremely variable market from the point of view of technologies, peak rates, average rates and so on. In this project we consider all broadband access as comparable because mobility is its main characteristic.
- Other technologies have no significance in the broadband market.
- Following comparisons are made on the basis of the nearest to 512 Kbps. downstream broadband service.

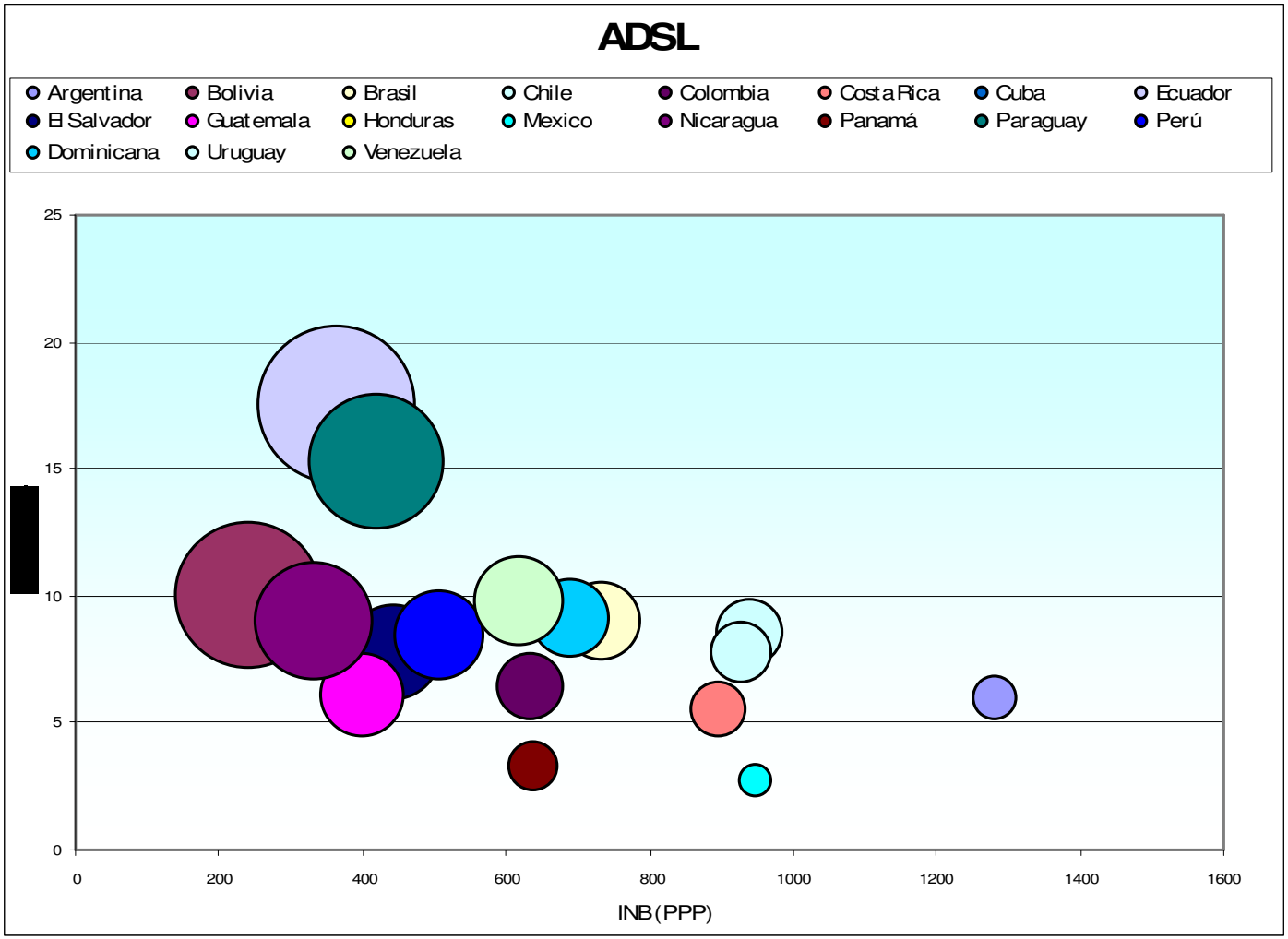
Regional analysis on current situation IV

Economics 2 – Lowest Prices comparison on USD per 100 Kbps.



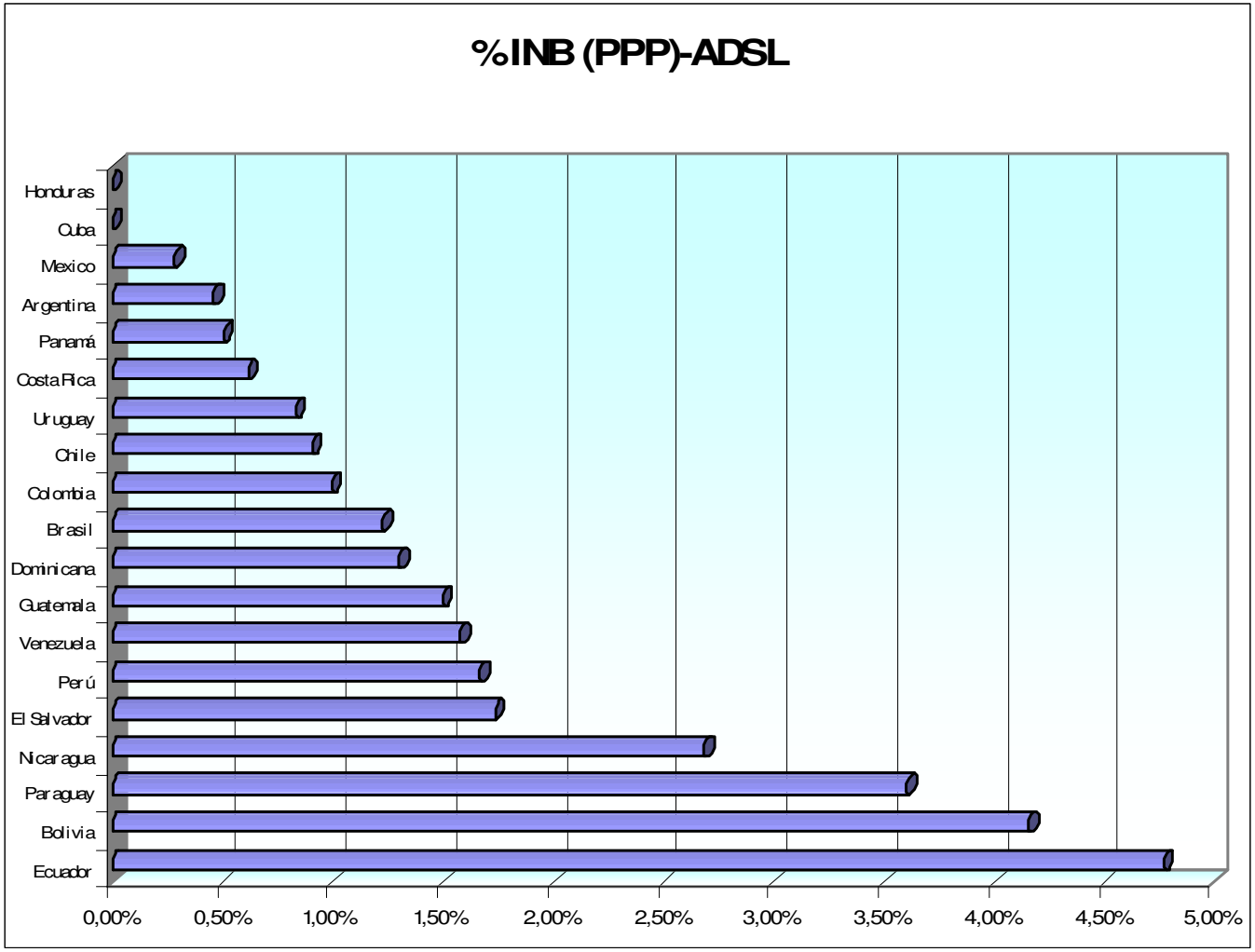
Regional analysis on current situation IV

Economics 3 – ADSL – USD / 100 Kbps vs. GNI and % GNI PPP



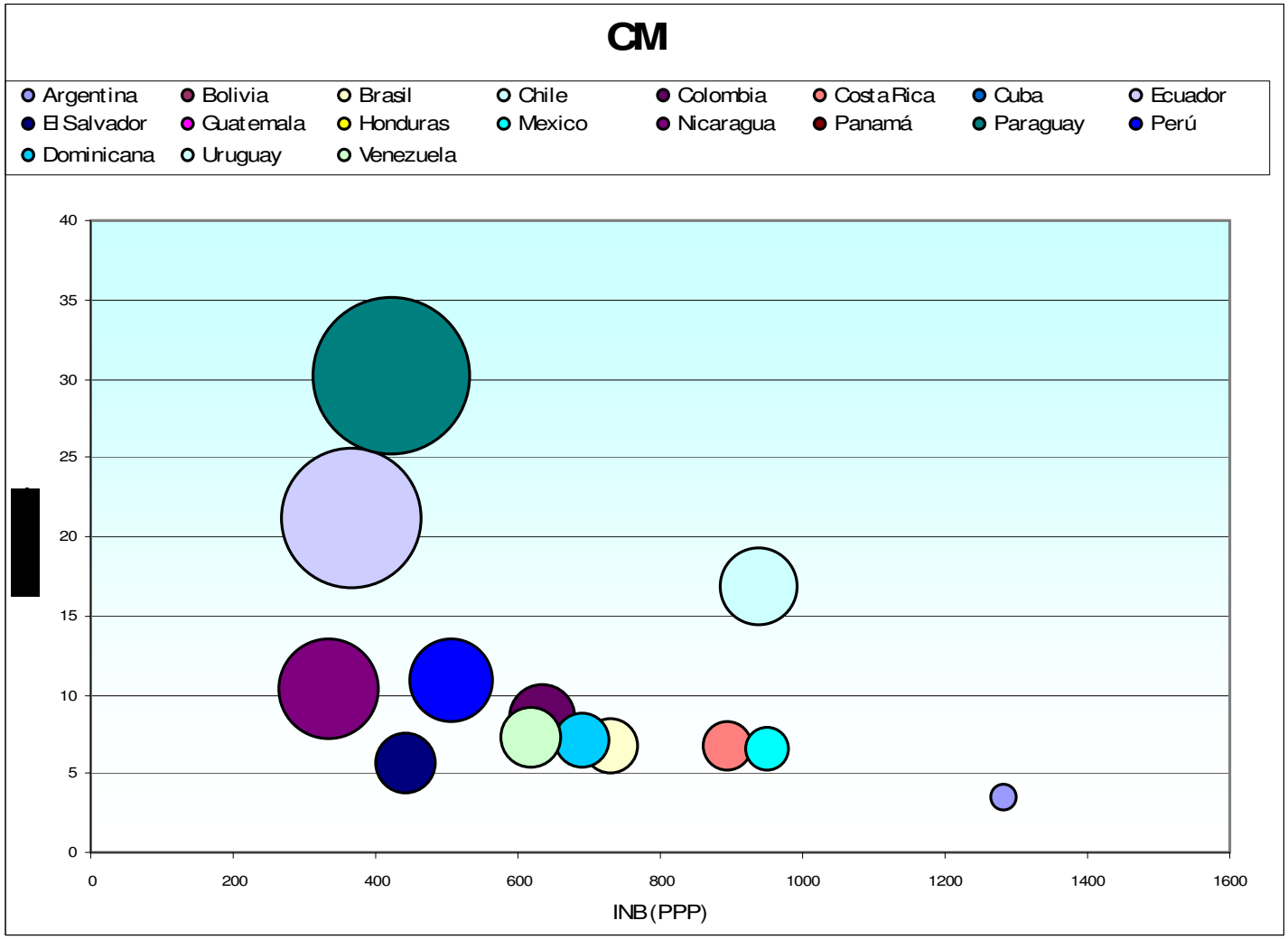
Regional analysis on current situation IV

Economics 4 – ADSL – USD / 100 Kbps as a % GNI PPP



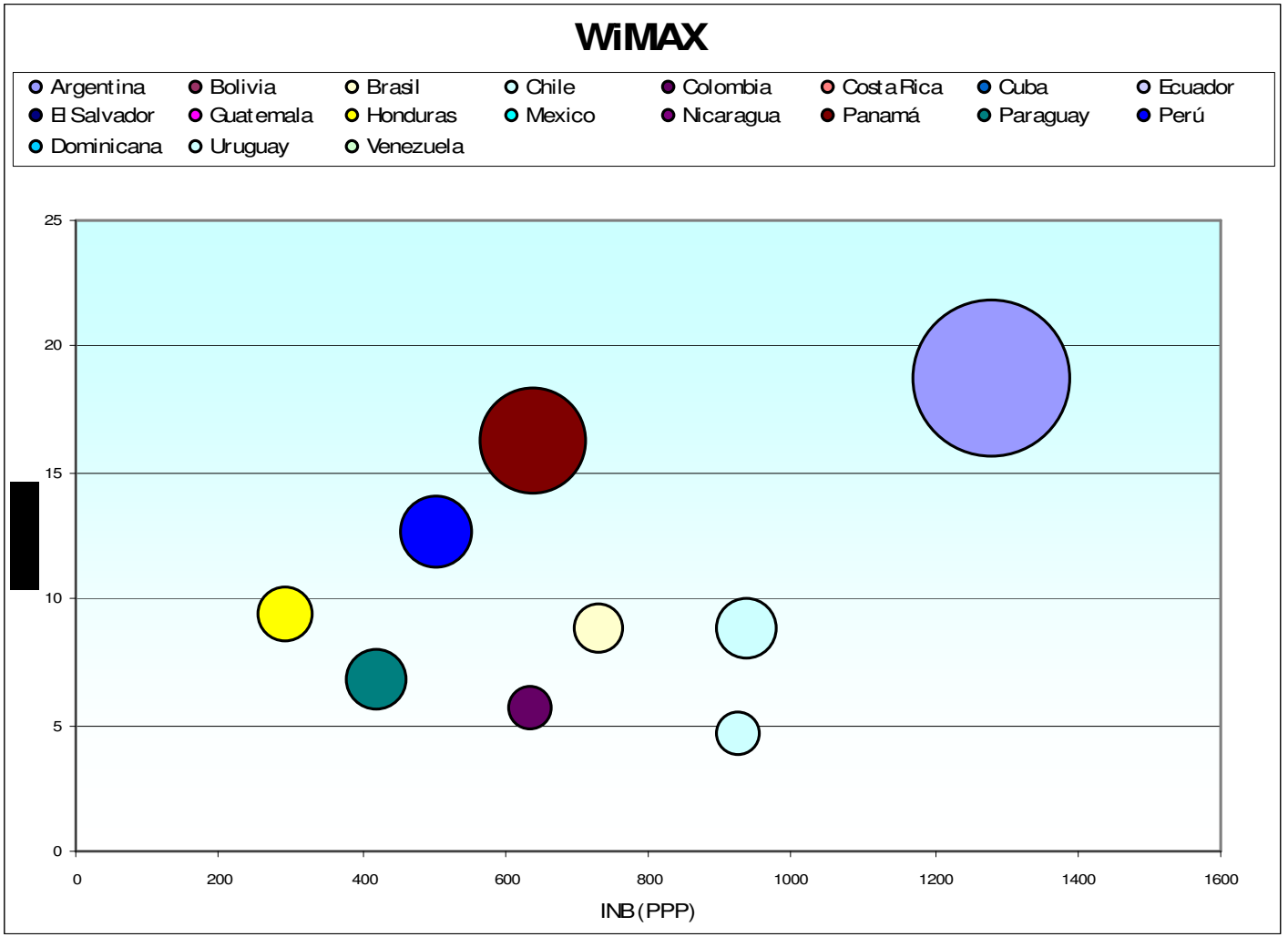
Regional analysis on current situation IV

Economics 5 – CM – USD / 100 Kbps vs. GNI and % GNI PPP



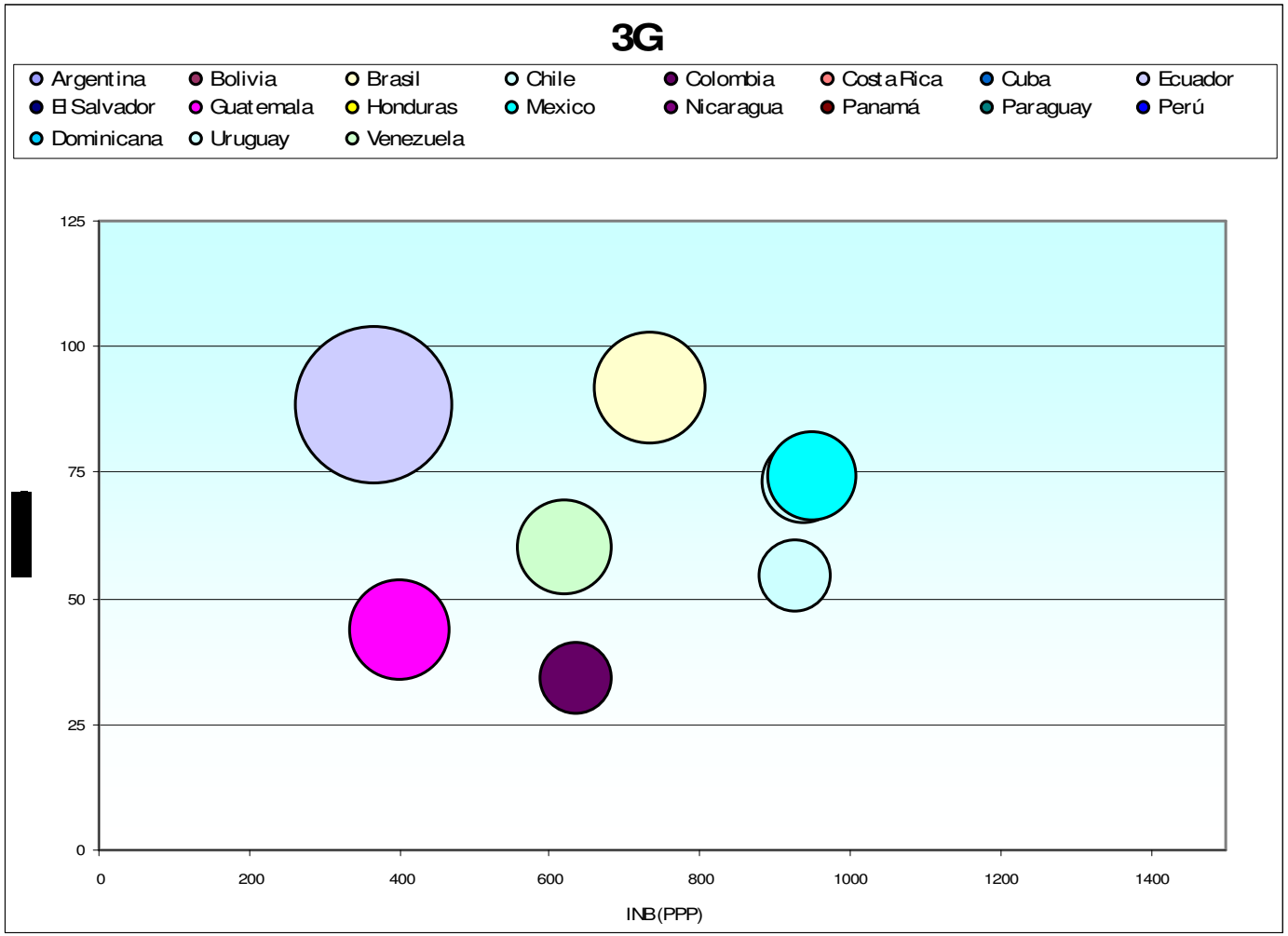
Regional analysis on current situation IV

Economics 6 – WiMax – USD / 100 Kbps vs. GNI and % GNI PPP



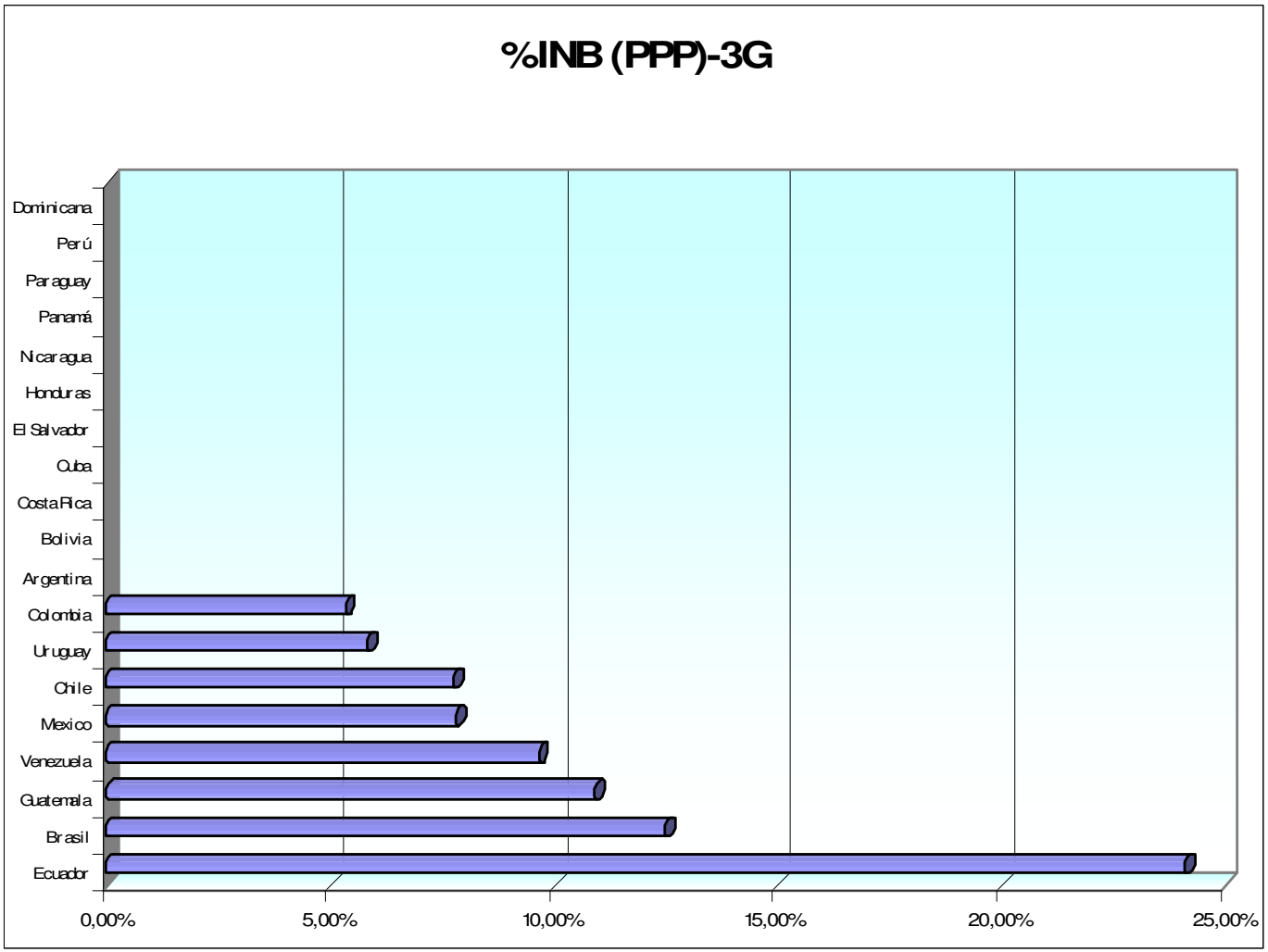
Regional analysis on current situation IV

Economics 7 – Unlimited 3G – USD vs. GNI and % GNI PPP



Regional analysis on current situation IV

Economics 8 – Unlimited 3G – USD as a % GNI PPP



Regional analysis on current situation IV

Economics 9 – Conclusions

- xDSL, Cable Modem and WiMax prices are roughly in the order of USD 5 -10 per 100 Kbps.
- Analyzing these prices as percentages of Gross National Income (GNI) per country, gives a better understanding of regional affordability differences.
- Those countries with lower GNI are in a weaker position to access broadband services, as a basis for Access to the Information Society.
- Mobile access to 3G and 3.5G is in a weak position as prices for unlimited access are several times higher than those for fixed technologies on a USD per 100 Kbps. basis. Nevertheless these services have mobility plus.

Conclusions

Technologies

All the most advanced technologies are being widely used in the Region, except Fiber Optics as FTTx.

Market forces

Trends are toward a faster increase of teledensities. Operators are prepared to invest and users are "hungry".

Economics

xDSL / CM / WiMax are competitive access at similar/higher prices than in developed countries. Different GNIs produce affordability problems.

Conclusions

Regulation and Public Policies

On these issues the Region is behind the more forward-looking countries but is moving toward more advanced regulations.

Conclusions

- The Region is ready to expand its broadband infrastructure: operators and users are prepared for it.
- Prices are close to being internationally aligned but GNIs are challenging affordability.
- Stronger policies for Information Society seems to be required.
- Regulation should align as soon as possible with those of the more advanced countries.

Thank you for your attention

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