

A vertical strip of five small images on the left side of the slide. From top to bottom: a person sitting at a desk, a satellite dish, a close-up of fiber optic cables, a person in a white coat looking at a screen, and a close-up of a keyboard with a red ribbon.

# **National Plan Proposal for Broadband Development in Peru. OSIPTEL's Role and Learned Lessons.**

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**Telecommunications Regulatory Agency –  
OSIPTEL**

**Seminar on Economic and Financial Aspects of  
Telecommunications – SG3RG-LAC - ITU**

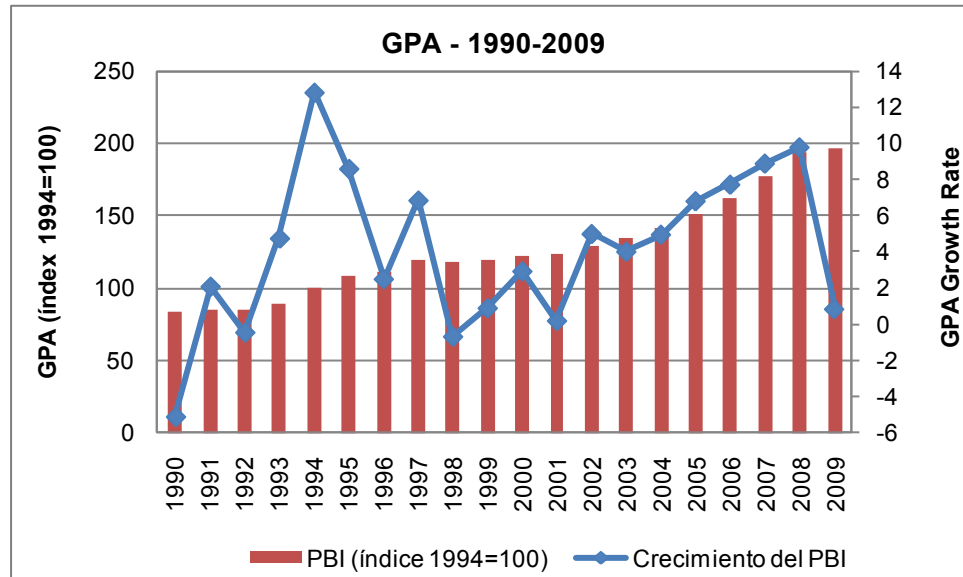
**San Salvador, February 2011**

# PERU



- 2009 Population: 29,13 million
- 2009 GPA: US\$ 124,8 billion
- 2009 per capita GPA: US\$ 4 283

# PERU



- ✓ Good macroeconomic performance in the last years:
  - Sustained economic growth: 6,2% annual average growth in 2003-2009.
  - Last quarters growth: 6,2% (2010-I), 10,2% (2010-II) and 9,7% (2010-III).
  - Controlled inflation: 0,25% (2009).
  - Responsible and sound fiscal policy.
  - Continuous improvement in country risk qualifications.
  - Good stock indexes performance.
  - Good trade balance performance, significant surplus.
  - Active role of public investment, specially through infrastructure promotion.

# Importance of Broadband for Economic and Social Development

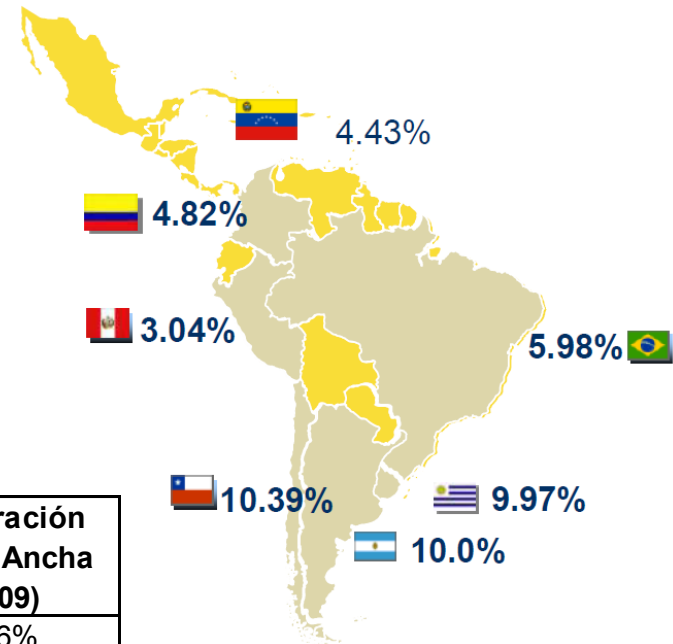
- ✓ Broadband is an important economic keystone, allowing:
  - Enhance economic development.
  - Improve competitiveness and productivity levels.
  - Promote social inclusion.
  - Generate a basis for developing the Information Society: e-Government, Tele-Education, Tele-Health
  - Convergence and advanced services.
  - Support insertion into globalized economy.
  - Create jobs.

## Broadband's Worldwide attention:

- ✓ Several countries have recognized broadband as a keystone for development.
- ✓ Some of them have made, or are preparing, national broadband plans.
- ✓ South Korea has been one of the first countries in which broadband was considered as a country goal, betting for several platforms deployment.
- ✓ USA has made a National Broadband Plan -which is being discussed- with very ambitious goals: achieving, at least, 100 million household connections, with a speed of 100 Mbps.
- ✓ Broadband Commission for Digital Development, ITU-UNESCO.

# Latin America Broadband Penetration

- ✓ Regional broadband leaders in penetration, are:
  - Chile (10,4%)
  - Argentina (10,0%)
  - Uruguay (10,0%)
  - Mexico (9,2%)
  
- ✓ Peru has a penetration of 3,0%.



Pais	Penetración Banda Ancha (2009)
Bolivia	0.96%
Ecuador	3.20%
Peru	3.04%
Venezuela	4.43%
Colombia	4.82%
Brasil	5.98%
Mexico	9.20%
Uruguay	9.97%
Chile	10.39%
Argentina	10.00%



# Peruvian Telecommunications Evolution in Recent Years



## Strategy and Regulatory Vision in Recent Years

- ✓ OSIPTEL strategy has been focused in policies for promoting (in order of priority) :
  - Indirect competition: unattended areas, focusing policies on promoting competition for new users.
  - Direct competition: population that already has access to telecommunication services; target consumers are basically commercial and household users in high-density urban areas.
  - Appropriate convergence adoption.
- ✓ "Guidelines for Developing and Strengthen Competition and Growth of Telecommunication Services in Peru", Ministry of Transport and Communications (MTC) - 2007.
- ✓ Strategic Plan 2007-2011 – OSIPTEL.



## Relevant Policies in Recent Years (1/2)

- ✓ Policies implemented in recent years have led to significant communications growth, accomplishing significant achievements in services such as mobile telephony.
- ✓ Besides, it has stimulated the establishment of a healthy environment for the future development of broadband in Peru.
- ✓ Some measures driven by OSIPI TEL:
  - Substantial and gradual reduction in termination charges on mobile networks in 2005, and recently, in such regulation review, in 2010.
  - Regulation of wholesale bitstream access to broadband DSL , revised in 2008.
  - Price cap regulation for leased long distance lines (E1).

## Relevant Policies in Recent Years (2/2)

- Establishment of the formula for fixing the payment for access and sharing of public use infrastructure (poles).
  - Establishment, in the Quality Service Regulation, that Internet access providers may not discriminate traffic according to the type of service.
- ✓ Some measures that were driven together by OSIPTEL and the Ministry are:
- Gradual reduction of tariffs on imports of telecommunications equipment, achieving its elimination in 2007.
  - Changing the payment structure of the radio spectrum usage, removing an artificial barrier that affected the growth of the service.
  - Coordination with regional and municipal governments.

# Working with international consultants (2009)



## **Optimal Regulatory and Competition Policies Design in a Telecommunications Convergence Scenario**

Developed with Analysys Mason. Analyzes the challenges and implications of convergent technologies and services, from the standpoint of technology, utility regulation and competition promotion.



## **Next Generation Networks Interconnection**

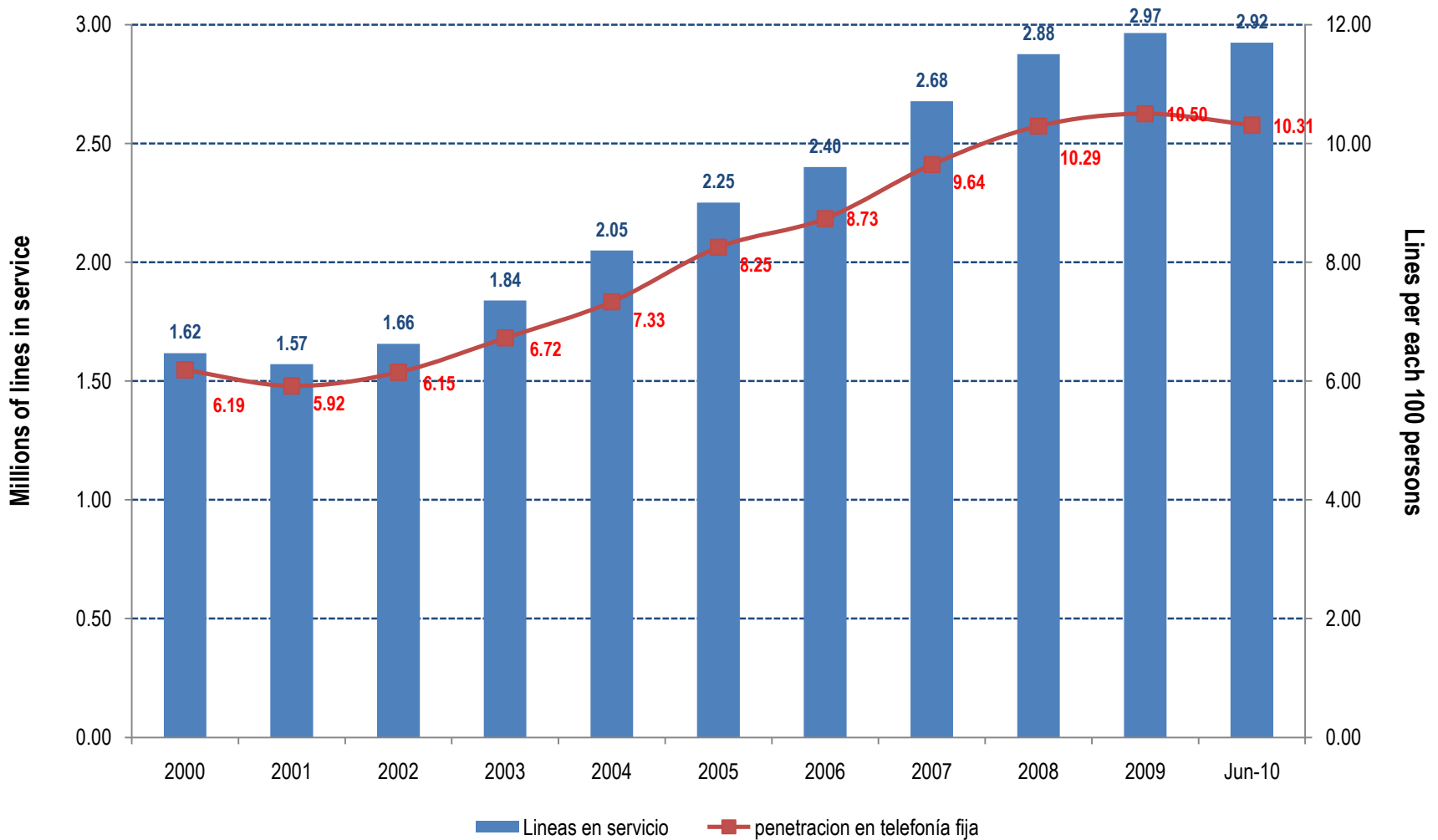
Developed with WIK Consult GmbH. Analyzes interconnection schemes in convergent IP networks and how this concept can be incorporated in Peruvian legal framework.



## **Cost Models for Access Network Deployment**

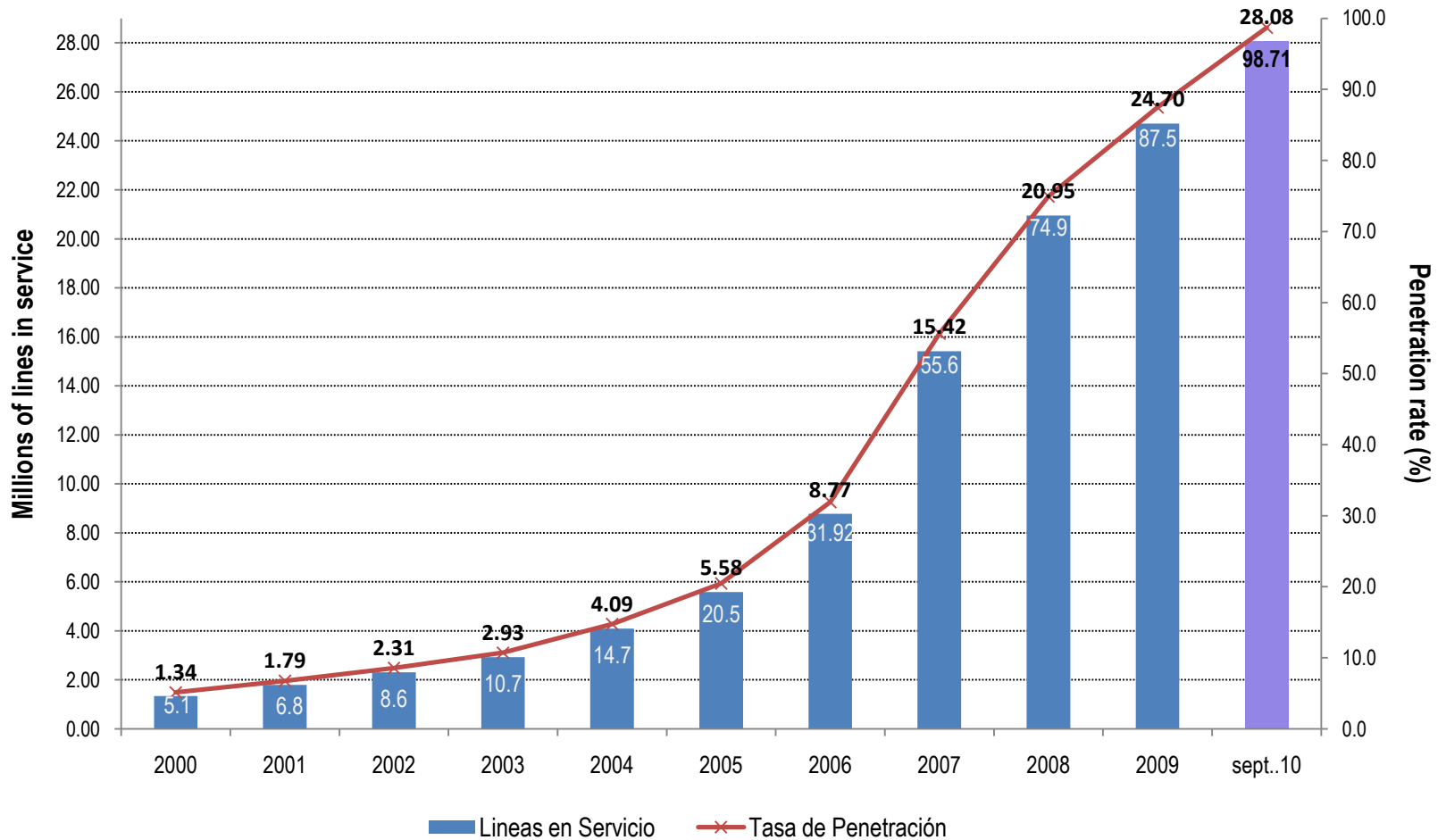
Developed with Detecon International GmbH. Develops cost models that allow evaluating expansion policies, competition, price regulation and establishment of differentiated charges, taking into account the latest access technologies.

# Fixed Telephony Evolution

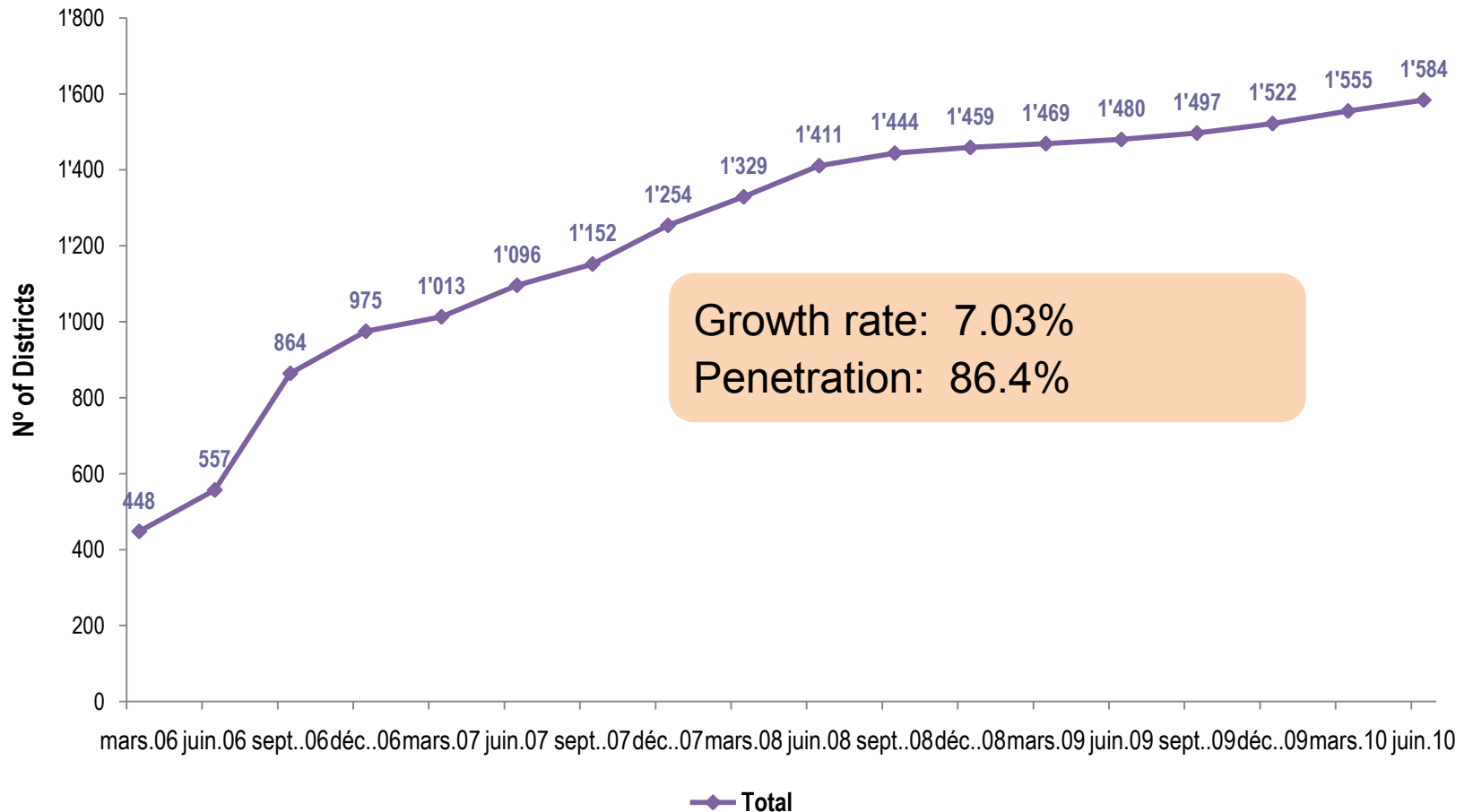


Source: Network operators. Elaboration: OSIPTEL

# Mobile Telephony Evolution

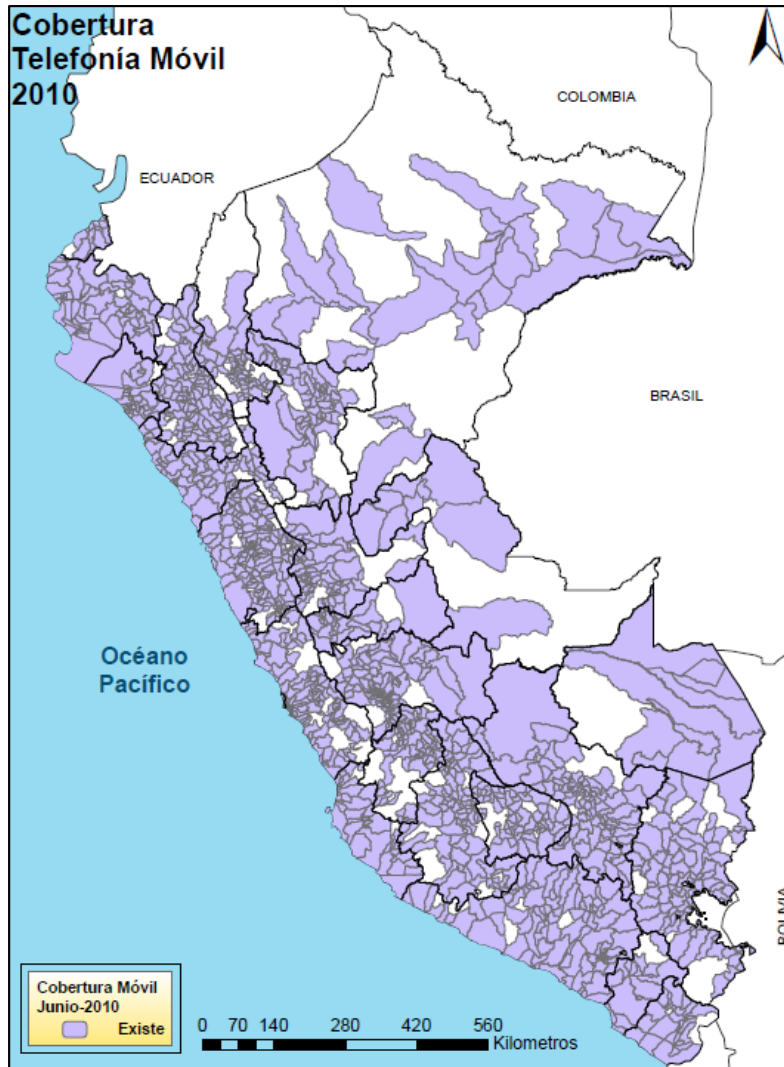


# Mobile Telephony Coverage





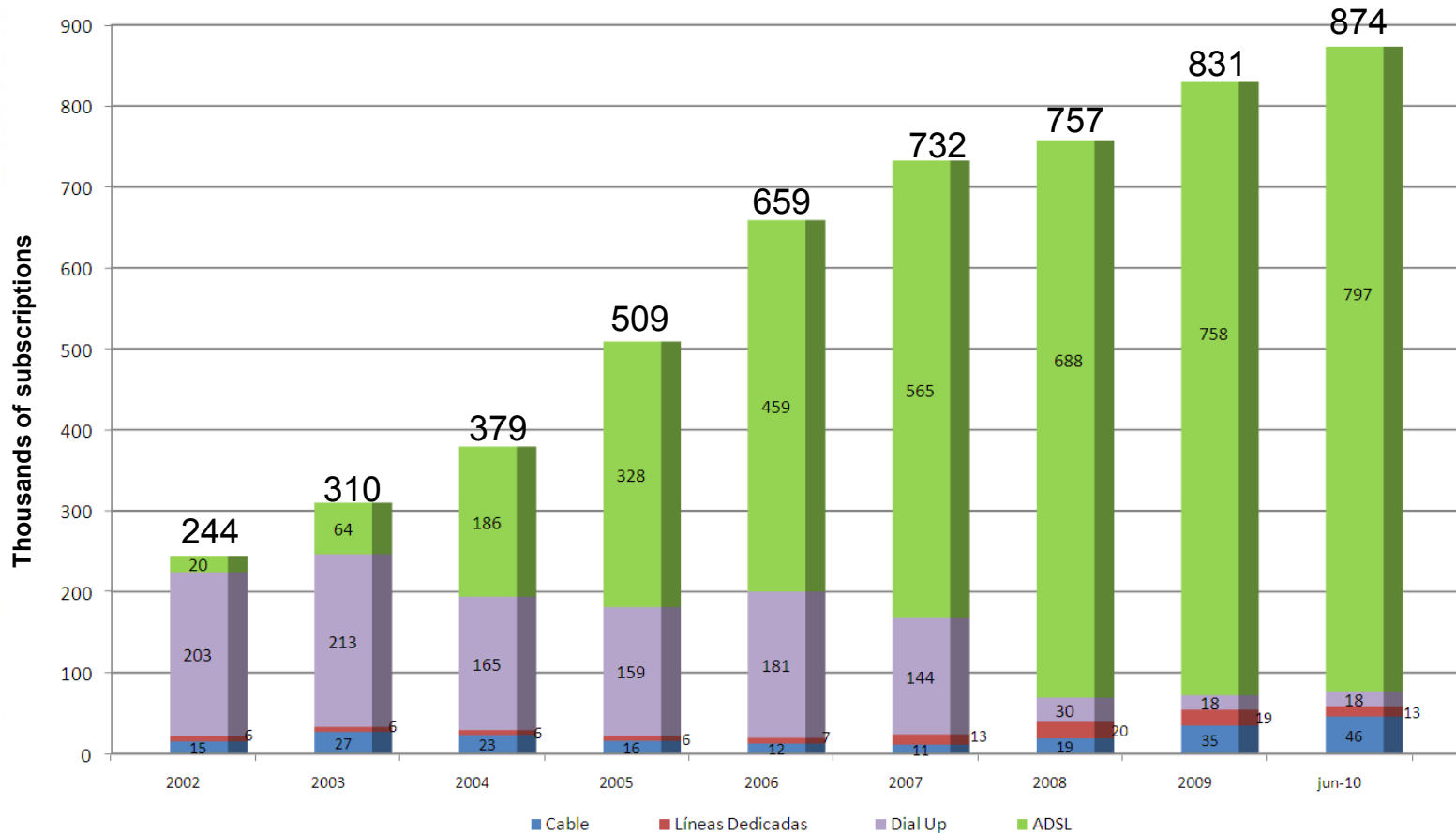
# Mobile Telephony and 3G Coverage



Source: Network operators. Elaboration: OSIPTTEL



# Fixed Broadband evolution



Elaborated by GPRC- OSIPTEL

- In June 2010, there were 874 thousand Fixed broadband connections, which corresponds to a country's teledensity of 3.1%.
- Telefónica del Perú (ADSL) serves 92.6% of the Internet market, and Telmex 5.9% (cable HFC and WiMAX).

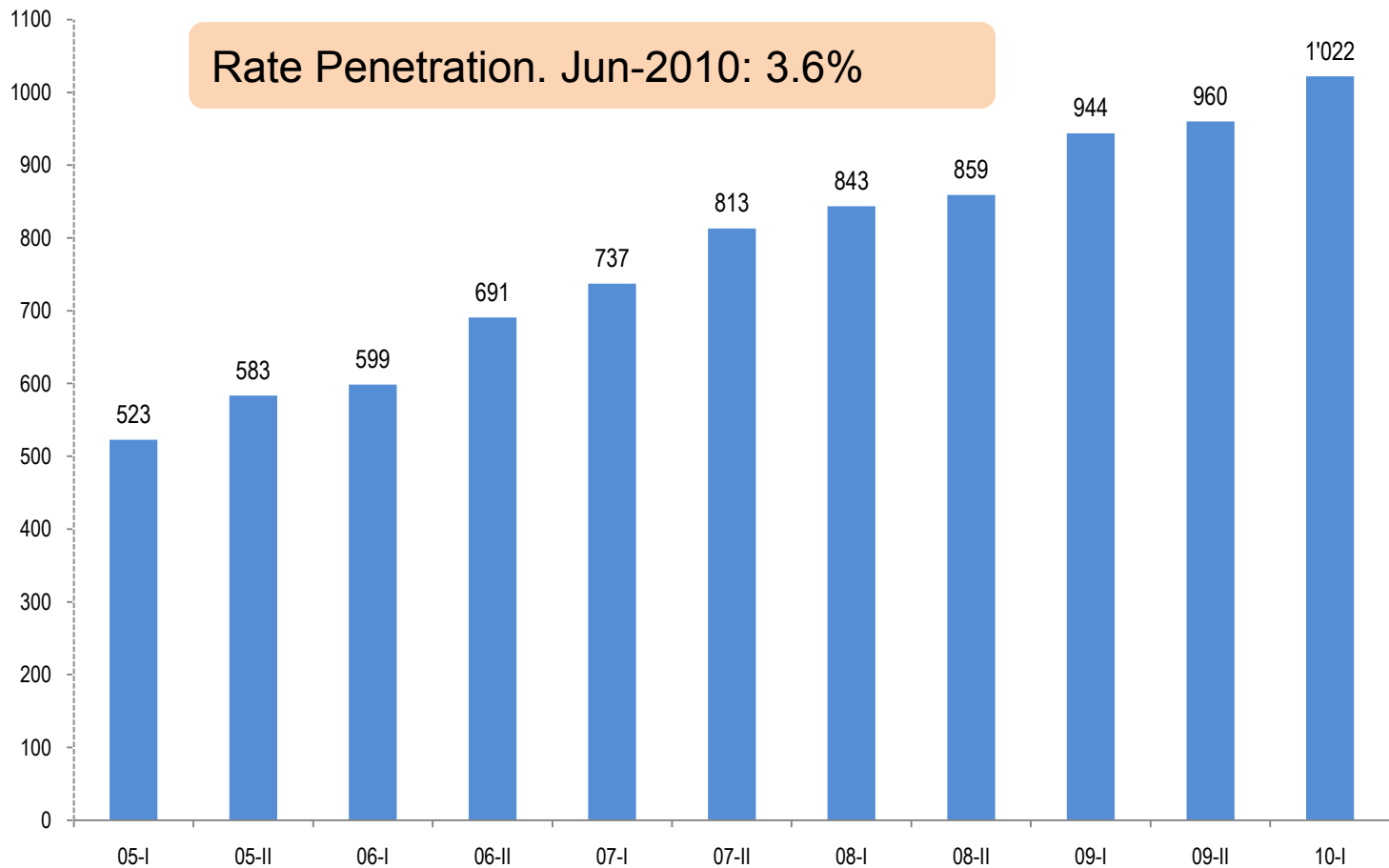
# Fixed Telephony and Fixed Broadband coverage (Telefónica del Perú)



Source: Telefónica del Perú

Elaborated by OSIPTEL.

# Pay TV Evolution



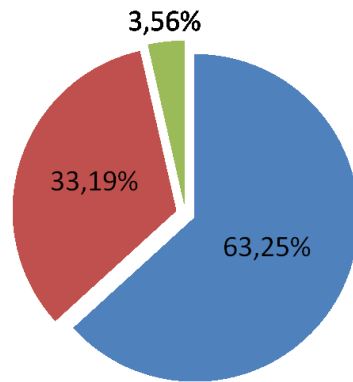
Source: Empresas Operadoras

Elaborated by OSIPTEL.

■ Thousands of subscriptions

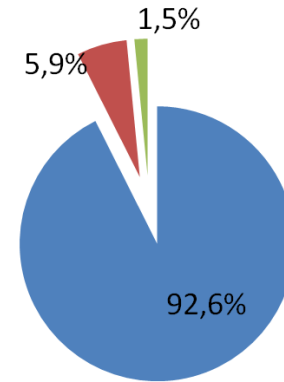
# Market Share (Jun-2010)

## Mobile Telephony



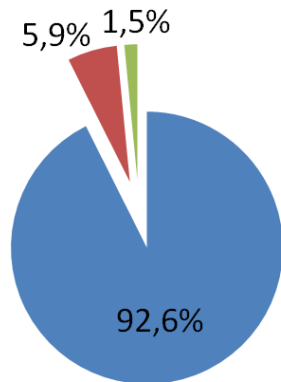
■ Telefónica Móviles ■ América Móvil ■ Nextel

## Fixed Telephony



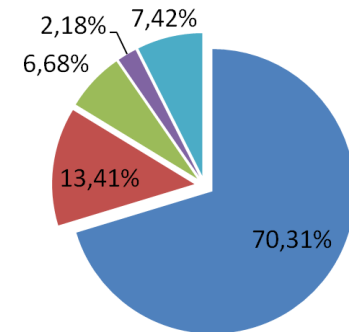
■ Telefónica del Perú ■ América Móvil ■ Otros

## Fixed Broadband



■ Telefónica del Perú ■ América Móvil ■ Otros

## Pay TV



■ Telefónica del Perú ■ Telmex  
 ■ DIRECTV ■ CATV Systems  
 ■ Otros

# Broadband: National Policy



# Multisector Commission responsible for working up National Broadband Plan

✓ Through Supreme Resolution N° 063-2010-PCM released on march 04<sup>th</sup> , 2010, the “Temporal Multi-sectorial Commission” was set up to elaborate the “National Plan to develop Broadband in Peru”, which is comprised by:

- The Deputy Minister of Communications, who presides it;
- The General Director of Regulatory and International Affairs in Telecommunications
- One regular member and one alternate member from OSIPTEL;
- One regular member and one alternate member from INICTEL.

✓ Through Supreme Resolution N° 261-2010-PCM released on September 24<sup>th</sup>, 2010, the deadline was extended and new members were incorporated:

- National Bureau of Electronic Government and Informatics (ONGEI), and
- Association for National Infrastructure Promotion (AFIN).

# Road map- Multisectoral Commission

March 2010: Creation of the Commission to prepare the National Plan for the development of broadband..

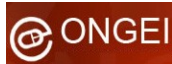
Working meetings with stakeholders:  
Operators, Suppliers, Consultants, Universities, Civil Society, Users Associations, etc.

Report 1: Diagnosis.  
Report 2: Barriers.  
Report 3: Guidelines, strategies and actions.

Workshops.  
Publication of reports for comments

August 2010: Publication of drafts.

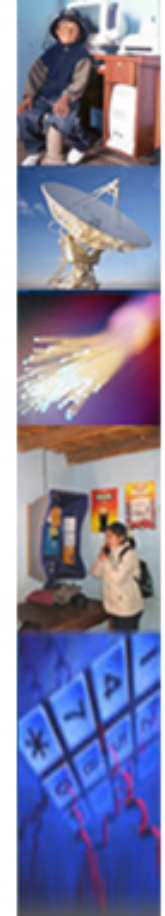
Multi-sectorial | participation



Currently the Commission is in its second stage of work, which will end in March 2011.

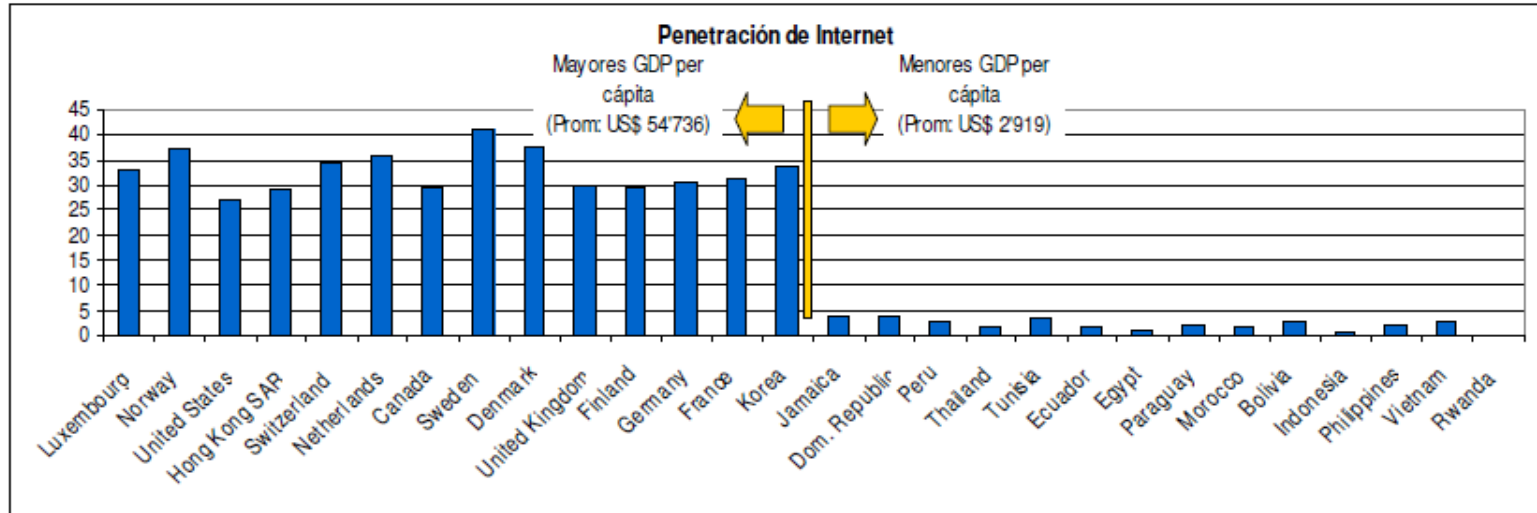


# Diagnostic



# Broadband: International Comparison

Broadband comparison between developed countries and developing countries



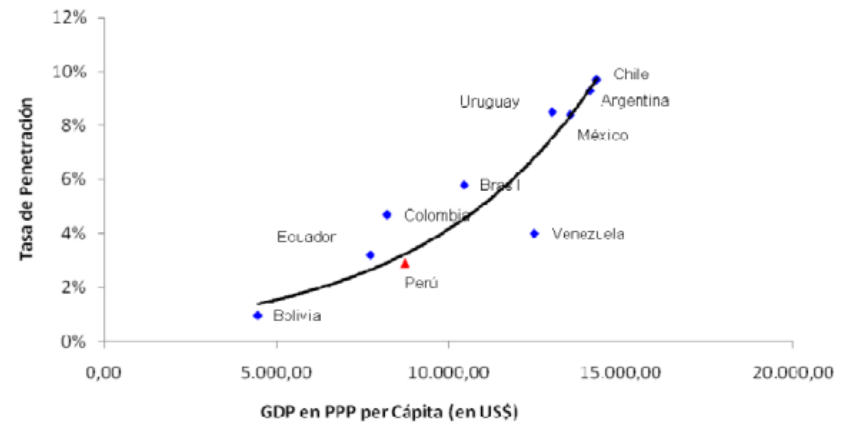
Elaborated by GPRC-OSIPI TEL  
Source: ICT Statistics Database ITU 2009

## Broadband Penetration in Latin America



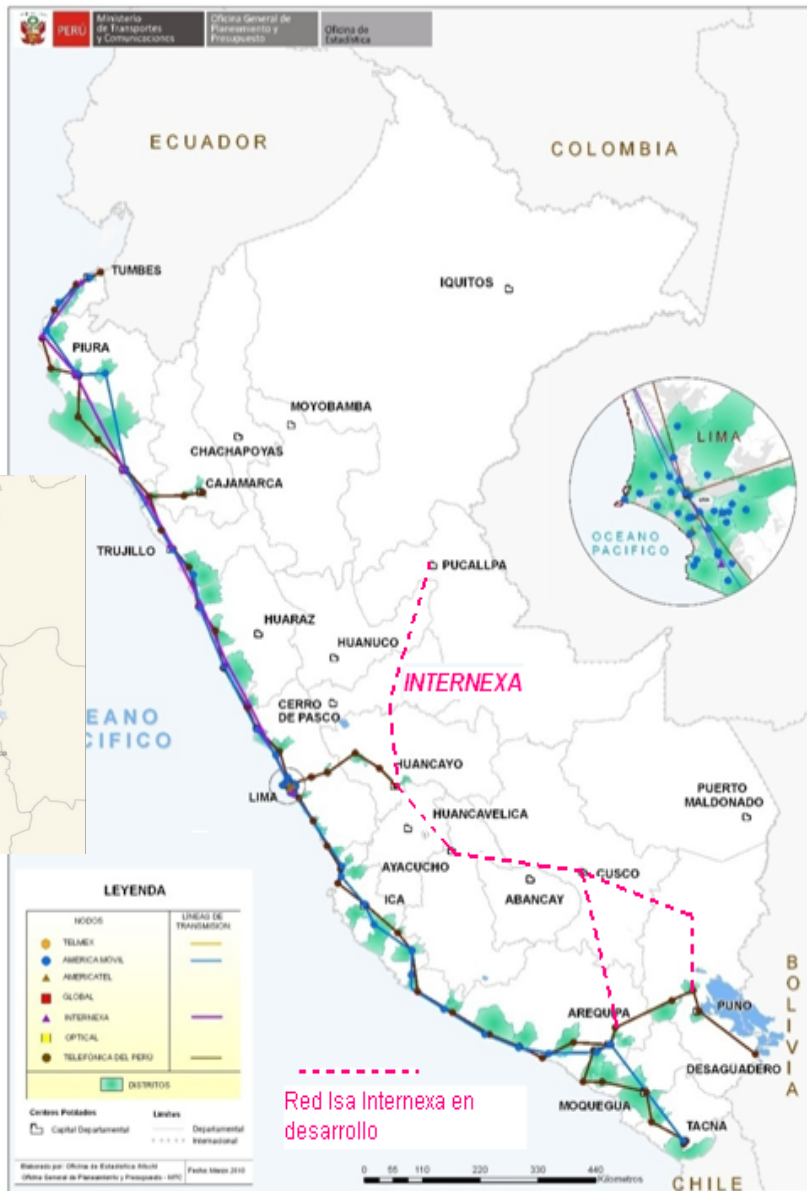
Source: Barómetro de Cisco de Banda Ancha (Dic 2009)

## Broadband Penetration vs GDP per capita (USD)



Elaborated by GPRC-OSIPI TEL  
Source: ICT Statistics Database ITU-2009. World Economic Outlook Database, FMI

# Transport: Limited deployment of Fiber backbone...



Current state

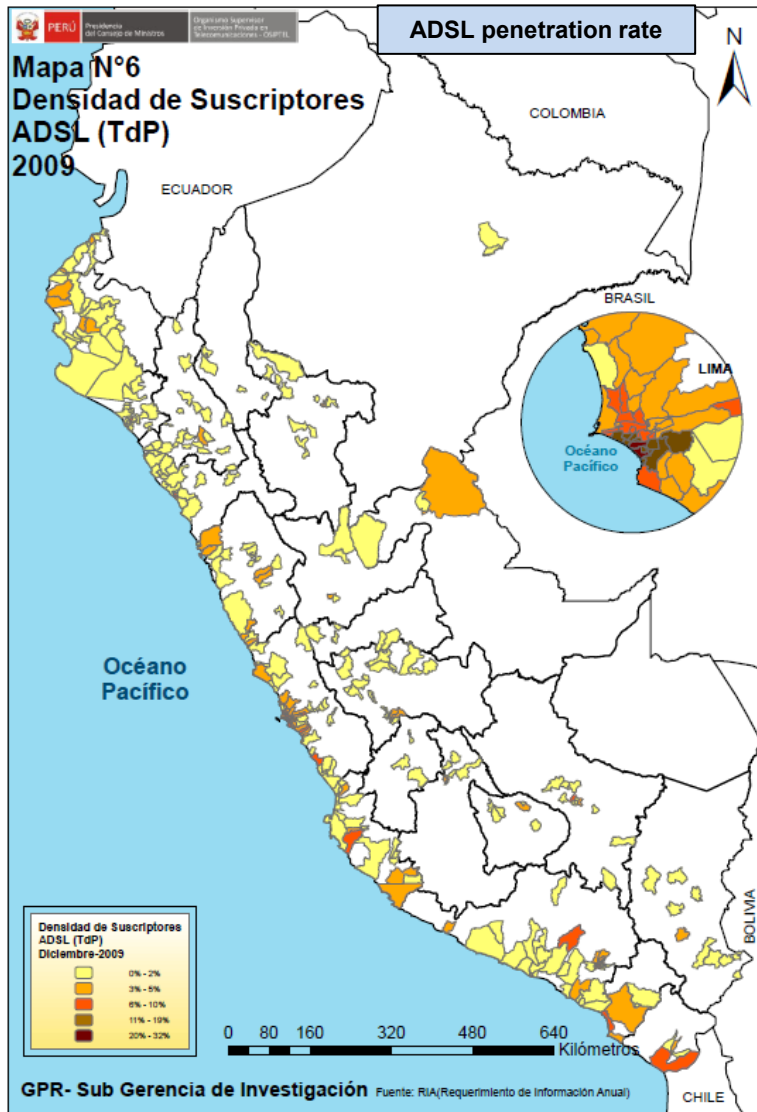
Fiber-optic deployed (Km)

Company	Length(Km)
Telefónica del Perú	4,008
Telmex Perú/ América Móvil	3,225
ISA Internexa (Colombia)	1,293
Global Crossing	252
Americatel Perú	92
Optical IP	63
<b>TOTAL</b>	<b>8,933</b>

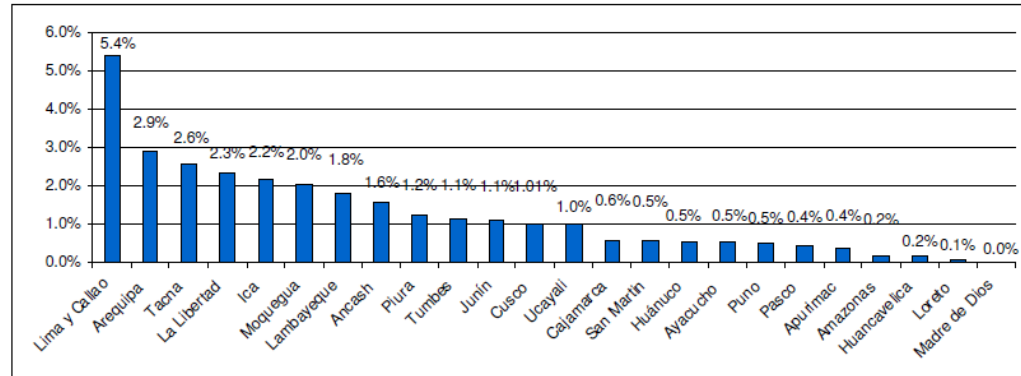
- ✓ High concentration in Cost Region.
- ✓ Limited coverage of fiber networks in Mountain Region.
- ✓ Only satellite access in the jungle.
- ✓ Legal vacuum on access controversies among different sectors operators (telecommunications, electric, etc).

# Inequality in access to broadband by department

ADSL Density



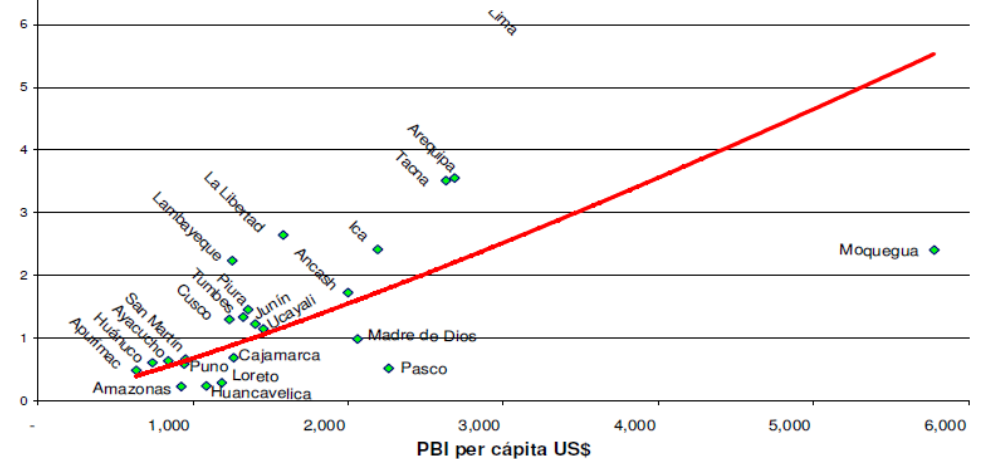
ADSL Penetration by department



Elaboración: DGRAIC – MTC.  
 Fuente: Empresas operadoras.

Conexiones de Banda Ancha cada 100 habitantes

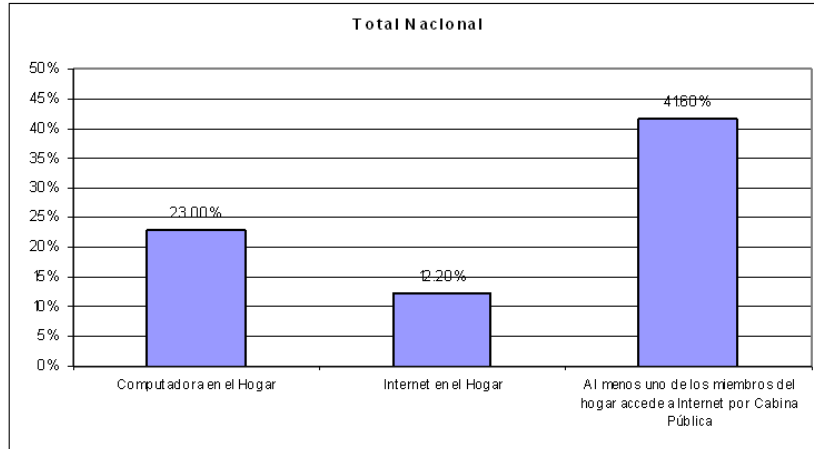
Broadband Penetration versus GDP per capita (USD)



Elaboración: DGRAIC – MTC

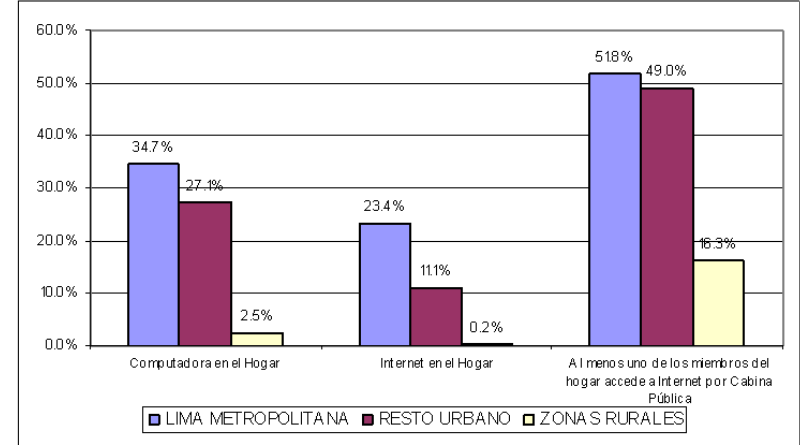
# There is a gap between the use and access to the Internet at households level

% Internet access at home, cybercafé and computer penetration



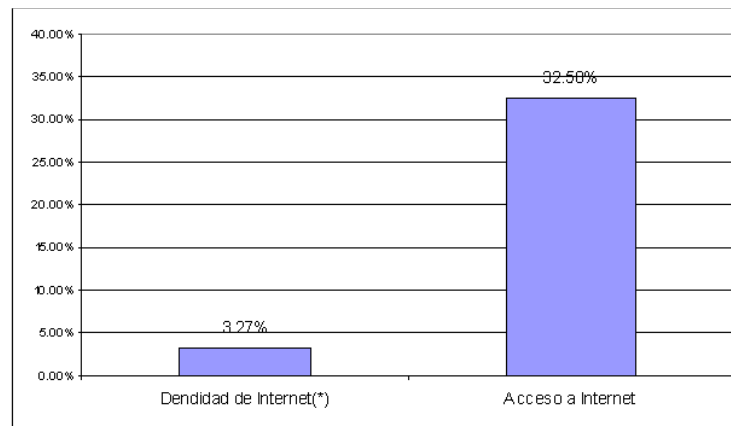
Elaboración: DGRAIC- MTC.  
Fuente: ENAHO 2010-I

% Internet access at home, cybercafé and computer penetration



Elaboración: DGRAIC- MTC.  
Fuente: ENAHO 2010-I

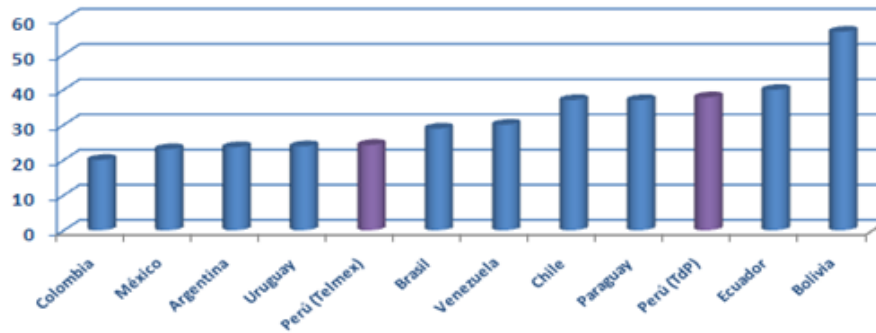
% Internet users versus Internet penetration rate



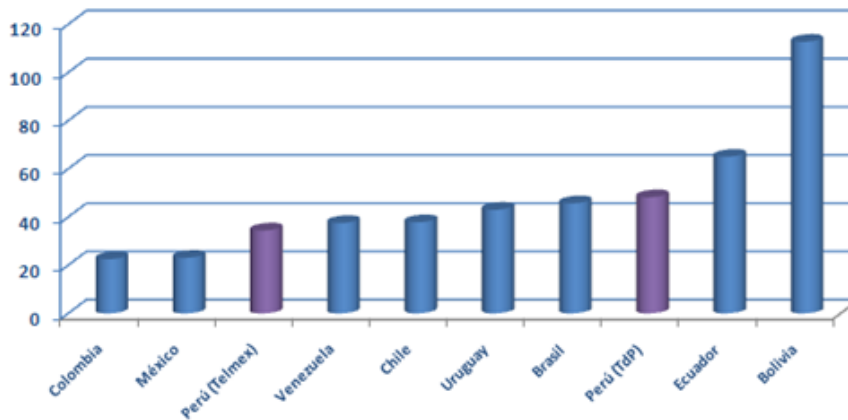
Elaboración: DGRAIC- MTC.  
Fuente: ENAHO 2010-I, empresas operadoras a marzo de 2010\*.  
(\*) Cifra preliminar

# Relatively high tariffs for broadband access ( monthly rate, USD)

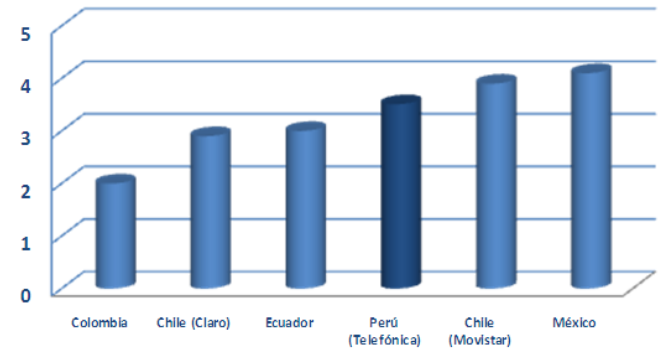
**Monthly Rate. Fixed broadband.  
(500Kbps, in USD)**



**Monthly Rate. Fixed broadband.  
(1Mbps, in USD)**



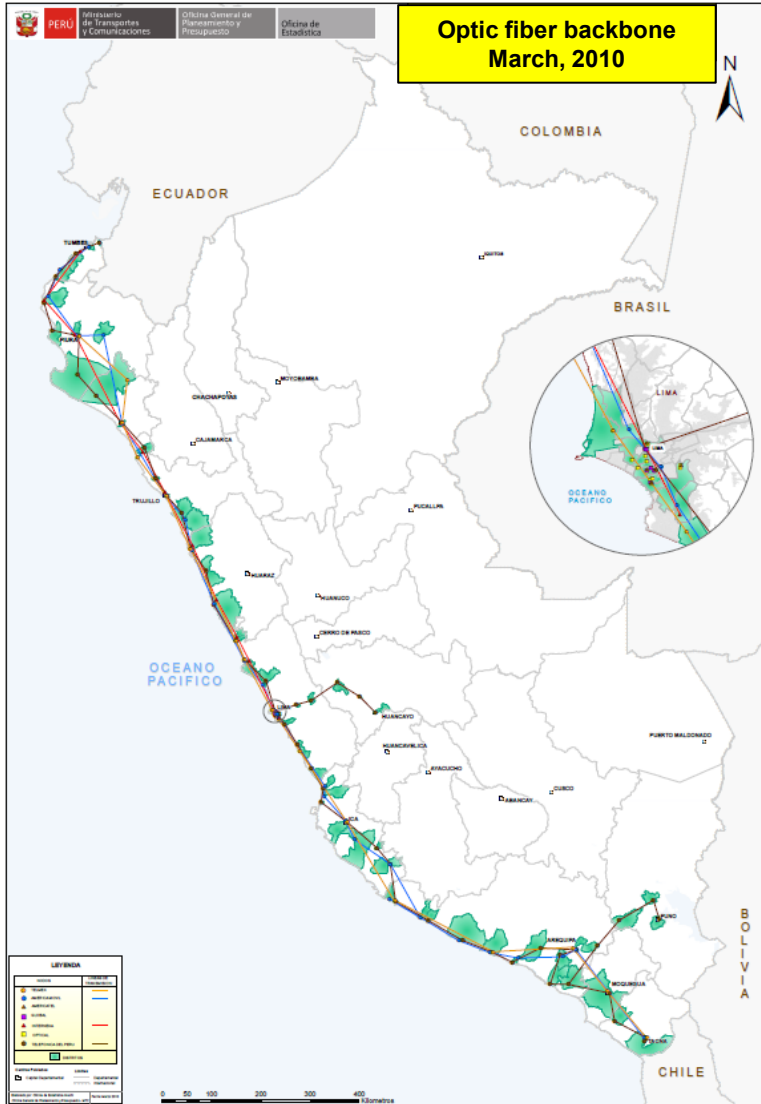
**Mobile broadband rates by day at 700Kbps**



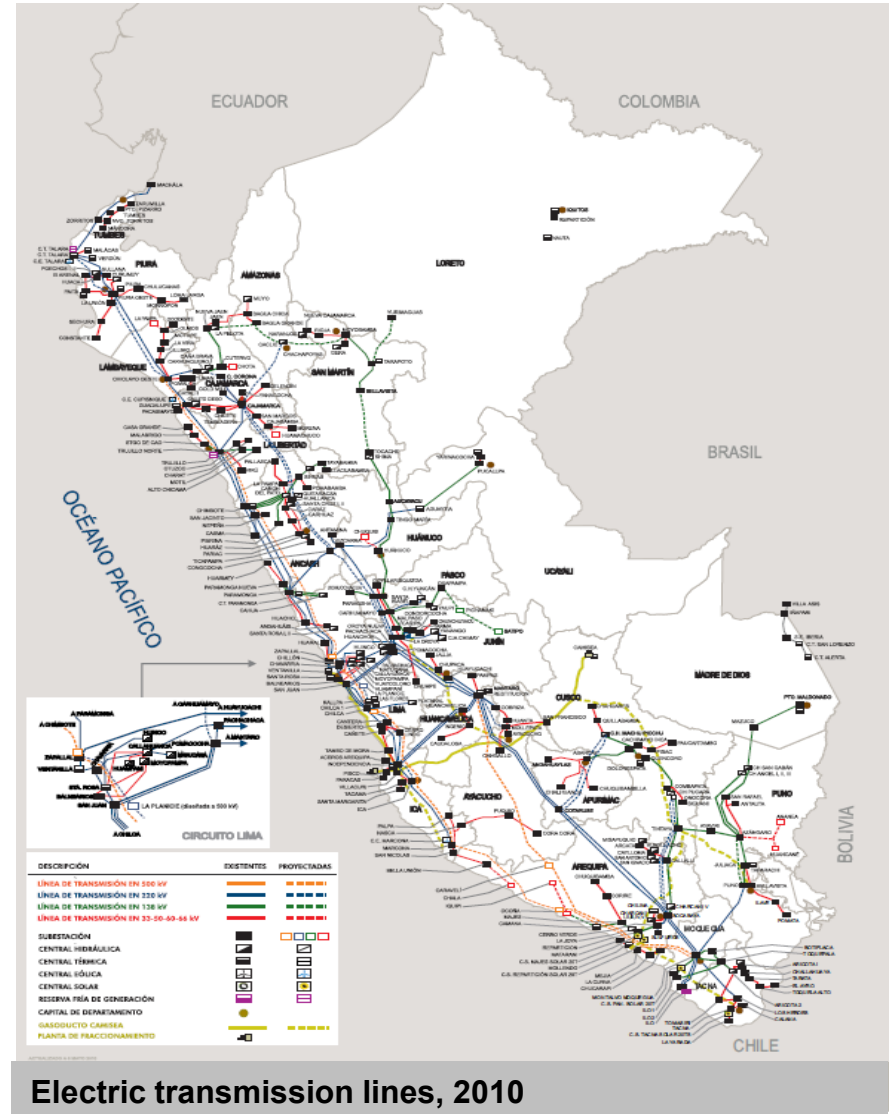
Fuente: Oferta comercial a mayo de 2010.  
Elaboración: GPR - OSIPTEL.



# Lack of extensive national fiber backbone



Source: Ministerio de Transportes y Comunicaciones



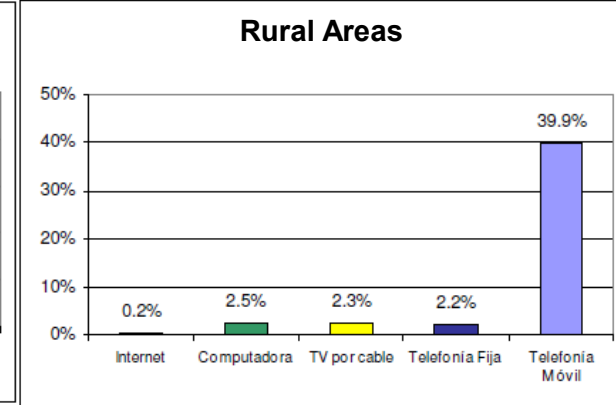
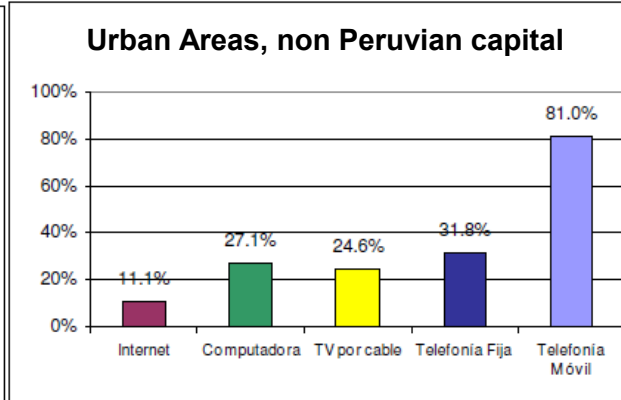
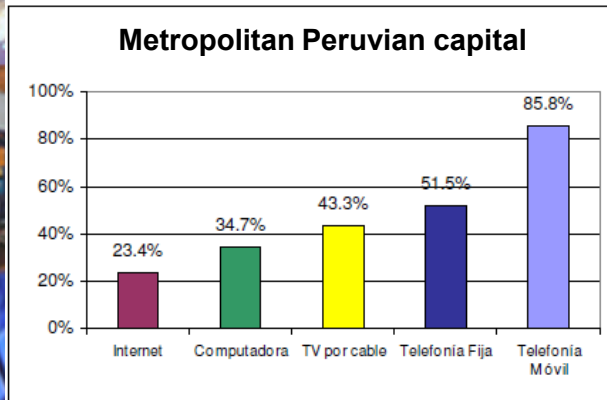
Electric transmission lines, 2010

Source: Ministerio de Energía y Minas



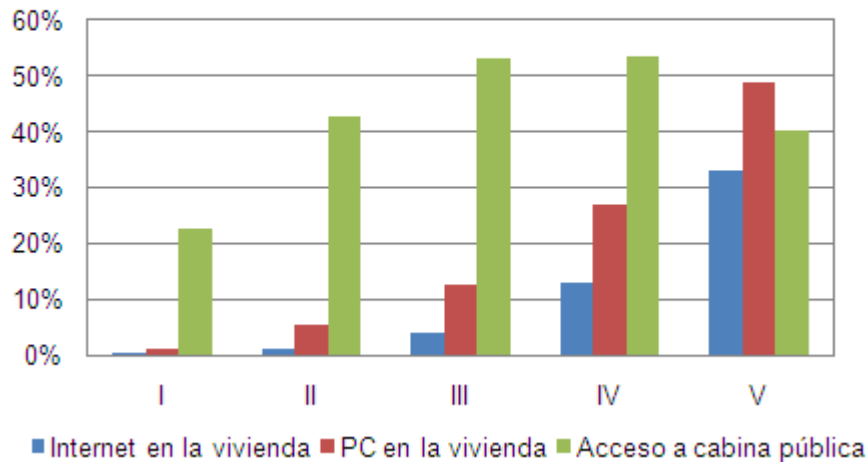
# Low density of terminals and low population purchasing power

Access to computers and telecommunications services (% households)



Elaboración: DGRAIC – MTC  
Fuente: Encuesta Nacional de Hogares (ENAH) 2010-I.

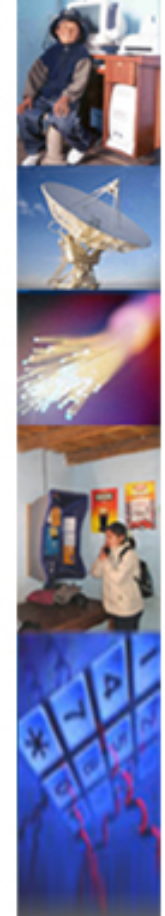
## Access to Internet, PC and cybercafé, according to income level.



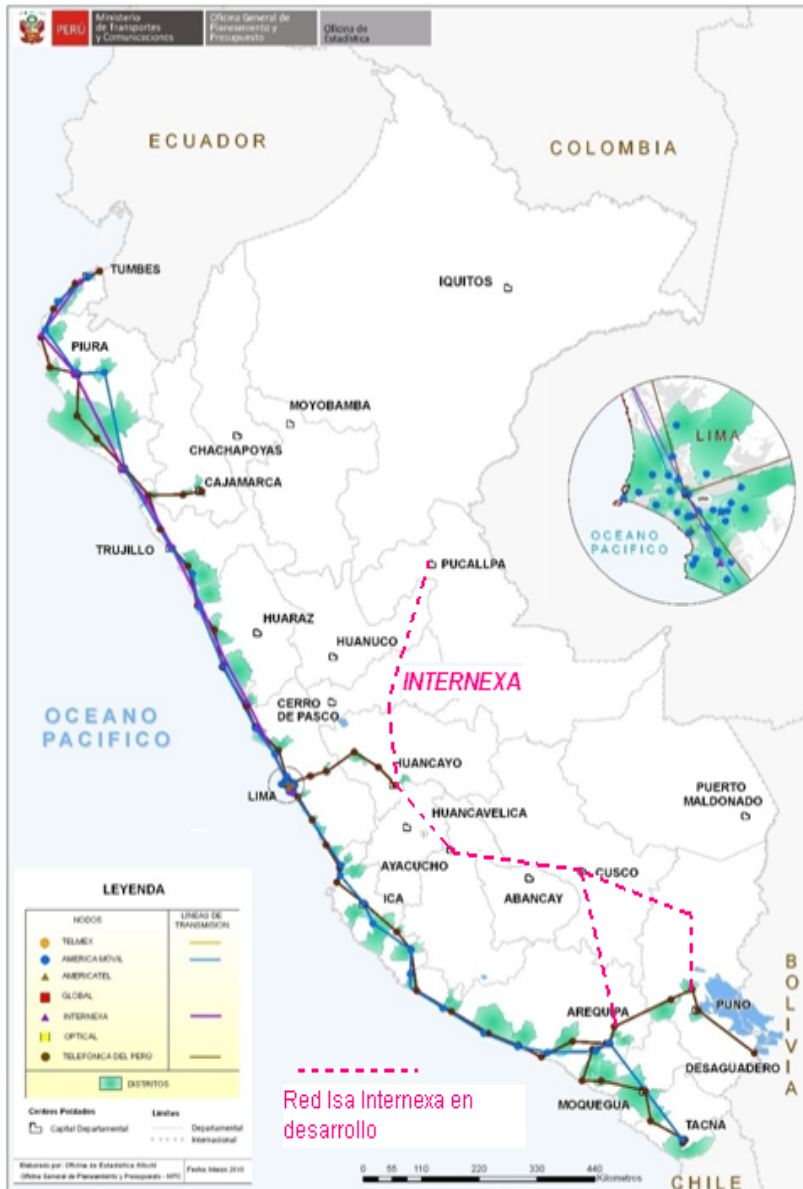
Elaborated by GPRC-OSIPTEL.

Source: Encuesta Nacional de Hogares (ENAH) 2009.

# Limitations and barriers to the development of broadband in Peru



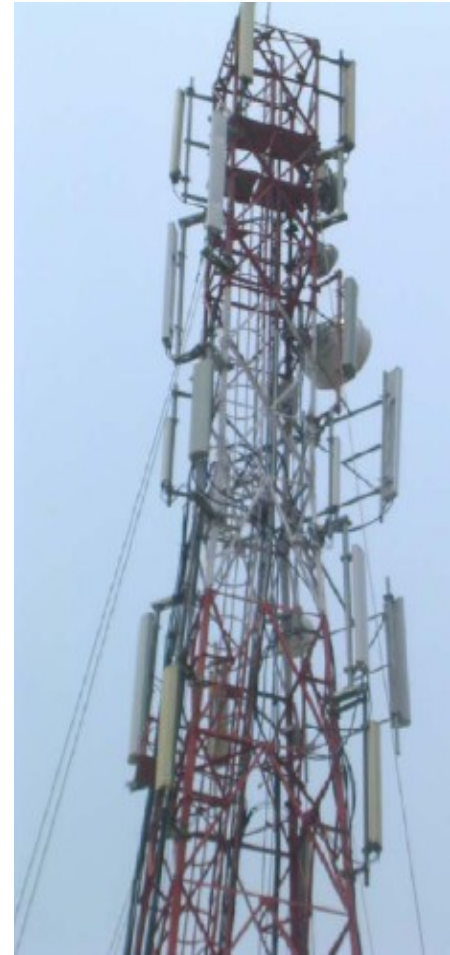
# Barriers that limit the deployment of transport networks



- ✓ Limitations of Universal Access Framework.
- ✓ Non-observance of rules that force to install ducts in roads (D.S. No. 024-2007-MTC).
- ✓ Disincentives to fiber deployments using the Right of ways of the National Road Network.
- ✓ Limitations of infrastructure sharing rules with other sectors.

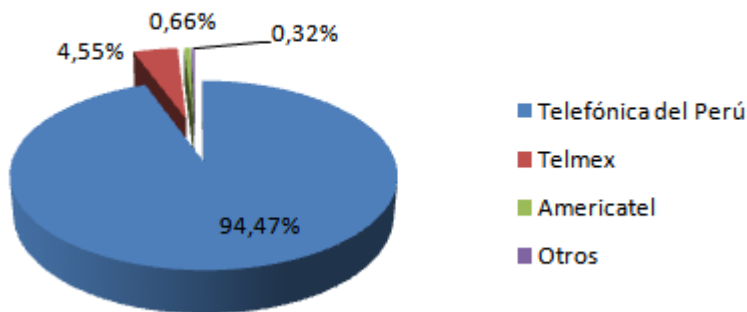
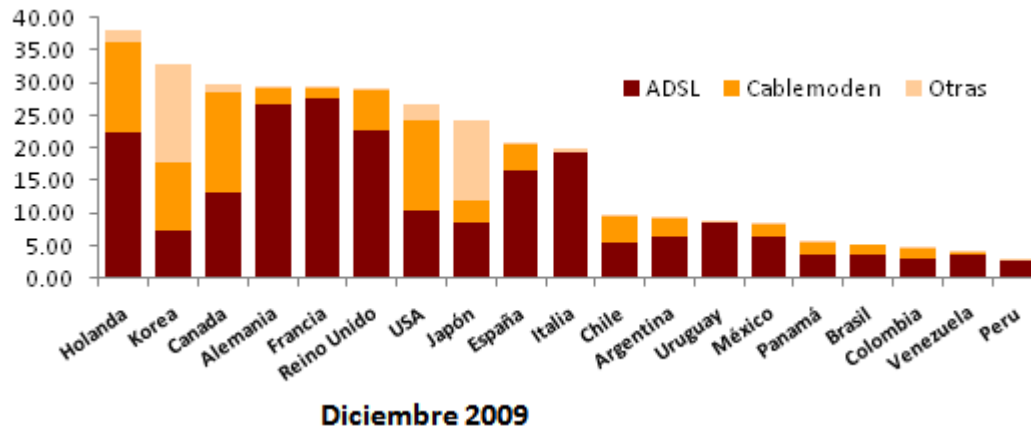
# Barriers that limit the deployment of access networks

- ✓ Municipal District and Provincial level:
  - Non-observance of Law 29022 (Act to expand telecommunications infrastructure):
    - Excessive and not explained Taxes.
    - Deadlines higher than expected.
    - Excessive Requirements.
    - Arbitrary prohibitions and obligations.
  - Risk perception of population about cellular base station radiation.
  - Prohibition of aerial wiring and obligation of underground rewiring.
- ✓ Limitations of National Building Regulations related to wiring for more than one operator in new buildings.
- ✓ Regulatory Framework of the National Culture Institute.
- ✓ Spectrum availability to mobile broadband.
- ✓ Apparent intensive regulation in rural areas.



## Barriers that affect competition levels

- ✓ Exists limited inter-platform competition. A great percentage of broadband is provided using the cooper network (ADSL), and it is still a dominant platform.



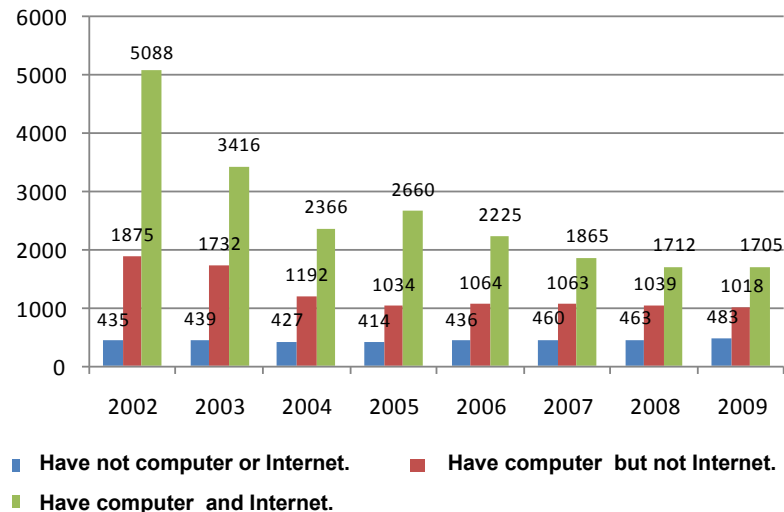
- The incumbent cable network is not being used to provide broadband services.
- Limited use of access policies in force: broadband wholesale access regulation (Bitstream)
- “Naked DSL” nor Local Loop Unbundling have been implemented.

- ✓ Market concentration limit retail competition.

# Barriers that restrict users access to broadband Internet

- ✓ Budgetary restrictions on access to computers and telecommunication services.

REAL PER-CAPITA INCOME ACCORDING HOME INTERNET ACCESS AND COMPUTER ACCESS TO POPULATION OVER 14 YEARS ( S/.)



Elaborated by GPRC-OSIPTEL.

Source: Encuesta Nacional de Hogares (ENAH) 2001 – 2009.

- ✓ Limited production of digital content and applications.
- ✓ Limited skills and capabilities of parts of the population to make better use of broadband.
- ✓ Misuse of broadband service (informal resale)



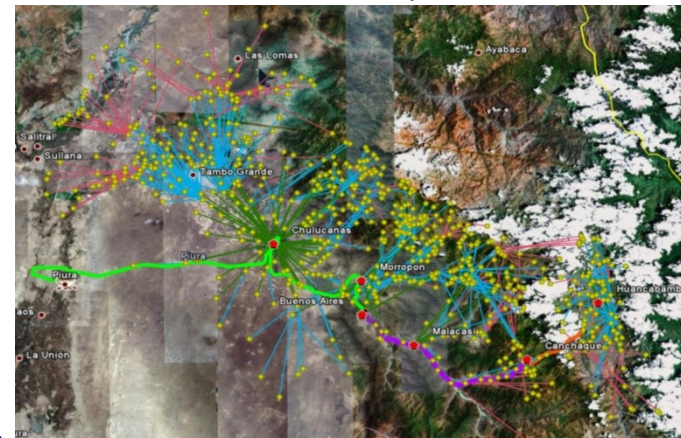
# Other aspects that could have restrained broadband deployment

- ✓ Coherence in the vision of FITEL's rural telecommunications projects involving fiber deployment.
- ✓ Limitations in current leased lines regulation, which only addresses long distance E1s.
- ✓ Lack of 'merges and acquisitions' policies for the Peruvian telecommunications sector.
- ✓ Spectrum management issues:
  - Spectrum assignment doesn't seem to consider competition factors.
  - Spectrum hoarding in some bands.
  - Inefficient use, non-fulfilment of goals and speculation in some bands.
  - Spectrum fee is non cost-based (ITU's recommendation).

FITEL Project: Juliaca Puerto Maldonado



FITEL Project : Buenos Aires – Canchaque

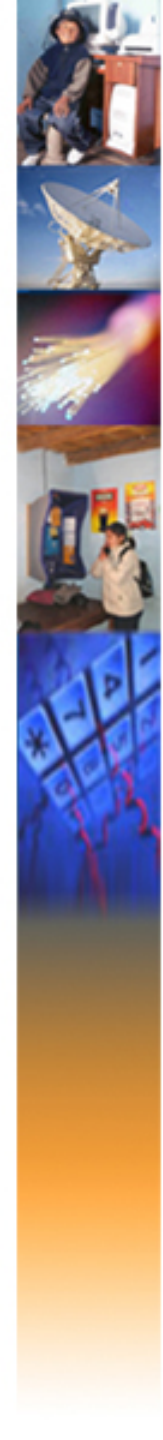






# **Vision, Goals and Policies Proposals for Broadband Deployment in Peru**

## Medium term goals (2016)

A vertical strip of four images on the left side of the slide: a person sitting at a desk, a satellite dish, a bundle of fiber optic cables, and a person in a white coat looking at a screen.

100% of schools and health facilities in urban areas must have broadband connections, preferably at the technically available highest speed in the area.

100% of districts of Peru must have Broadband coverage to at least connect to the municipality, schools and major public health facilities in the district.

Reach 4 million broadband connections nationwide, with speeds of 512 Kbps, which is an increase of about 400% in the current number of connections.

Reach half million broadband connections, with speeds greater than 4 Mbps.

## Multi-sectorial Committee: Strategies and policy recommendations

1. GENERAL OBJECTIVE N° 1: Promote infrastructure and appropriate service offers for the development of nationwide broadband.
2. GENERAL OBJECTIVE N° 2: Stimulate demand and the inclusion of the population in the Information Society.
3. GENERAL OBJECTIVE N° 3: Strengthen the Institutional Framework and direct it to a converged environment of Information Technology and Communication.

A vertical strip on the left side of the slide containing five small images: a person sitting at a desk, a satellite dish, a bundle of fiber optic cables, a person at a computer workstation, and a grid of financial symbols.

## Pillars for the success of the National Plan for Development of Broadband

**Macroeconomic Environment**

**Commitment of the involved participants**

**Suitable Institutional Framework**

## STRATEGIES AND POLICY RECOMMENDATIONS

**1.- GENERAL OBJECTIVE N° 1:** Promote infrastructure and appropriate service offers for the development of nationwide broadband.

**First Recommendation:**

Boost the construction of a fiber-based nationwide backbone.

**Second Recommendation:**

Improve the regulations that rule infrastructure sharing issues.

**Third Recommendation:**

Facilitate the use of road's right of ways for the deployment of telecommunications infrastructure.

**Fourth Recomendación:**

Remove local government's barriers for the deployment of infrastructure of telecommunications.

**Fifth Recomendación:**

Speed up the procedures for cutting off fraud services.

## STRATEGIES AND POLICY RECOMMENDATIONS

**1.- GENERAL OBJECTIVE N° 1:** Promote infrastructure and appropriate service offers for the development of nationwide broadband.

**Sixth Recommendation:**

Adapt existing regulations to the special conditions under which services are delivered in rural areas.

**Seventh Recommendation:**

Amend the National Building Regulations to facilitate the installation of telecommunications networks.

**Eighth Recommendation:** Review of issues related to radio spectrum management.

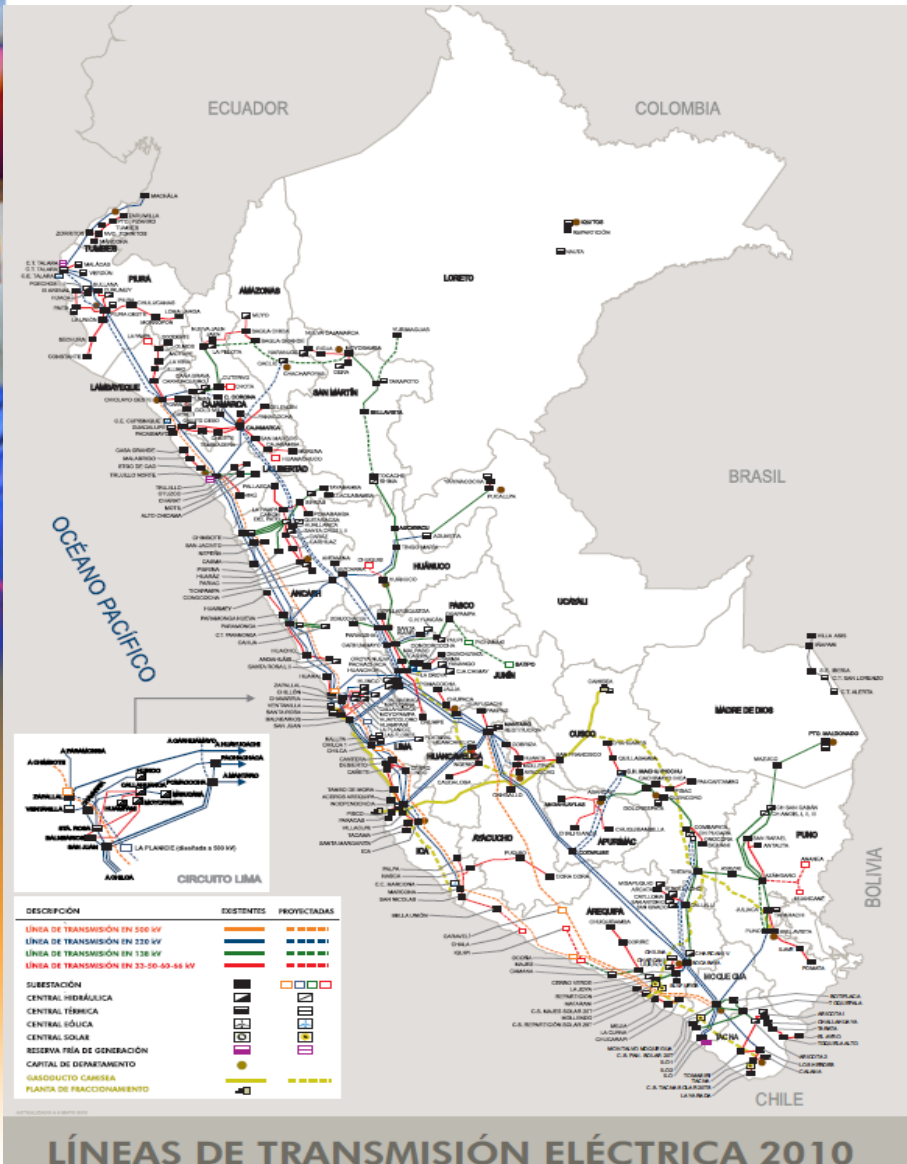
**Nineth Recommendation:**

Measures to promote competition.

# For an efficient development of a fiber-based backbone, infrastructure of other networks can be used ...

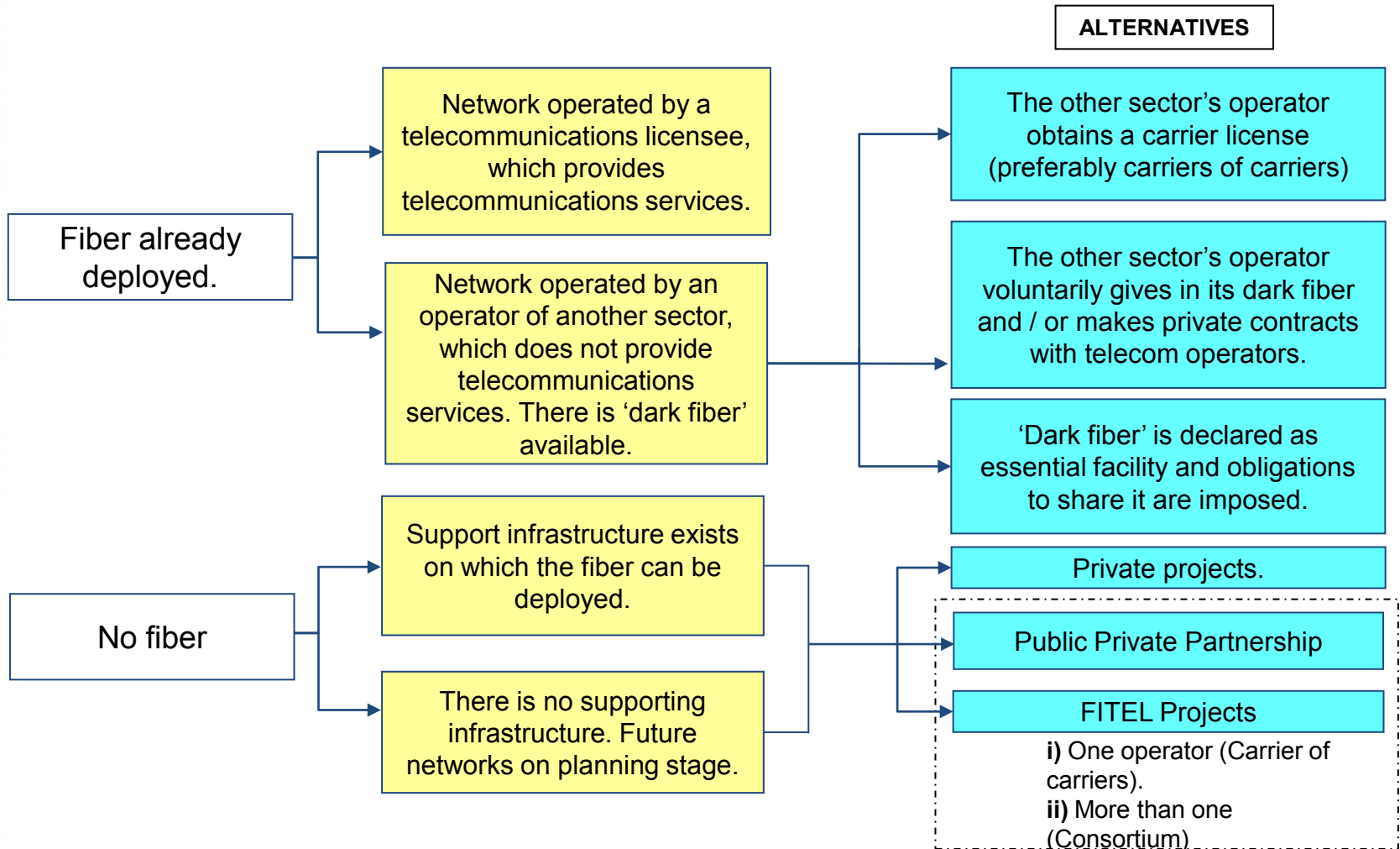
✓ 'Deploy a backbone fiber-based' was established as National Policy (DS 034-2010-MTC) which also dictated:

- Obligation to install fiber optic in new electrical, transport, and hydrocarbons projects, as well as ducts and chambers in all new road projects.
- The optical fiber and ducts and chambers shall be owned by the State, except those necessary to operate the licensees' services.
- Obligation to issue the legal framework with the terms and conditions for granting concessions to use fiber and ducts.
- Create a Permanent Multi-sectorial Committee responsible for monitoring the mandates of DS N° 034-2010-MTC.





# Scenarios and alternatives for deploying fiber infrastructure



# Strategies for the development of a fiber backbone

## ✓ Guidelines to promote Public-Private Partnership (PPP) Schemes:

- Promote expansion and competition
- Ensure neutral access.
- Evaluate "Carrier of Carrier" and "Consortium" schemes .
- Consider dark fiber as an essential facility.
- Reserve capacity for the State.
- Operation areas (eg, Operator A to the north, and Operator B to the South).



# PPP schemes for funding the deployment of fiber

	<b>Carrier of Carriers: The State associated with a company responsible for operating and maintaining infrastructure.</b>	<b>Consortium: The state associated with a consortium of operators present also in the retail market.</b>
Advantages	<ul style="list-style-type: none"> <li>• Neutral Operator: Vertical disintegration, does not operate in retail final services. No conflict of interest.</li> <li>• Inherent Safeguards to not generate anti-competitive behaviors.</li> <li>• Facilitates the entry of retail operators.</li> <li>• There are international experiences.</li> </ul>	<ul style="list-style-type: none"> <li>• Most major operators are involved equally.</li> <li>• Operators internalize the capex and opex of the network, which is reflected in their pricing and coverage decisions.</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• Operators may not be interested in operating only the backbone.</li> <li>• If there are variable charges on the use of backbone, retail operators can pass these charges to the final customer.</li> <li>• Under certain conditions, the neutral operator could become a dominant operator.</li> </ul>	<ul style="list-style-type: none"> <li>• Difficulty of coordination's between operators, competing interests.</li> <li>• Entry processes of new operators can involve lengthy and costly procedures.</li> <li>• If prices are not regulated there would be possibility of collusion.</li> <li>• Little international experience.</li> </ul>

## More active participation of municipalities in the deployment of infrastructure can be promoted .

- ✓ Municipalities could install the needed civil works, improving the competitiveness of their communities.
- ✓ Business models:
  - Open access to multiple retail operators, and
  - Provision of dark fiber.
- ✓ Allows a more dynamic deployment.





## STRATEGIES AND POLICY RECOMMENDATIONS

### First Recommendation

Sales Tax Exemption for lower price personal computers.

### Sixth Recommendation

Propose a strategic training plan aimed at developing national capacities and skills in using ICT.

### Second Recommendation

Providing connectivity to health facilities and schools.

### GENERAL OBJETIVE N° 2:

To stimulate demand and the inclusion of the population in the Information Society.

### Fifth Recommendation

Strengthen partnerships between the State and the business sector and nongovernmental organizations to develop digital content and applications.

### Third Recommendation

Implementation of effective policies to achieve higher stages of development in electronic government.

### Fourth Recommendation

Encourage the creation and development of innovative digital content and applications in the country.

## STRATEGIES AND POLICY RECOMMENDATIONS

### GENERAL OBJETIVE N° 3:

To strength the Institutional Framework oriented to the convergent environment of Information and Communication Technologies

#### First Recommendation:

Modify the institutional framework in order to integrate public policies and strategies.

#### Second Recommendation:

Redesign adequate indicators to measure the development of broadband.

To integrate levels of planning, design, implementation and evaluation of public policies and strategies.

**Objective:** observance of the National Policy for the development of broadband that will bring benefits to all sectors.

# Conclusions





# Conclusions

- ✓ Broadband is essential for growth and competitiveness. Peru has undertaken the challenge of harmonizing their efforts on a Broadband Development National Plan.
- ✓ Different sectors medium and long term objectives should be harmonized towards a National Policy.
- ✓ It is imperative to have a national fiber backbone, and since the investments are very high, investment efficiency should be promoted (synergies with other sectors) and implemented through public-private partnerships.
- ✓ When deploying backbone infrastructure with public funds, allocation mechanisms should promote criteria such as: sustainability, competition, non-discriminatory access to other operators: Carrier of carriers with vertical disintegration, and consortia schemes to be evaluated.
- ✓ Competition policies should be harmonized with expansion policies.
- ✓ Fair sharing use might be ensured, without discouraging investment.
- ✓ In Peru, most of the access infrastructure is the incumbent's. Shared use and access should be promoted.
- ✓ Demand should be encouraged through various measures that lower the cost of use of broadband and create value to users.