National Plan Proposal for Broadband Development in Peru. OSIPTEL’s Role and Learned Lessons.

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- 2009 Population: 29,13 million
- 2009 GPA: US$ 124,8 billion
- 2009 per capita GPA: US$ 4 283
Good macroeconomic performance in the last years:

- 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.
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.
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%.

Source: Cisco Broadband Barometer, december 2009.
Peruvian Telecommunications
Evolution 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.


Strategic Plan 2007-2011 – OSIPTEL.
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 OSIPTEL:

- 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).
• 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.
**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

[Graph showing the evolution of mobile telephony from 2000 to 2009, with bars indicating millions of lines in service and a line showing penetration rate percentage.]

Source: Network operators. Elaboration: OSIPTEL
Mobile Telephony Coverage

Growth rate: 7.03%
Penetration: 86.4%

Source: Network operators. Elaboration: OSIPTEL
Mobile Telephony and 3G Coverage

Source: Network operators. Elaboration: 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

Rate Penetration. Jun-2010: 3.6%

Source: Empresas Operadoras
Elaborated by OSIPTEL.

Thousands of subscriptions
Market Share (Jun-2010)

**Mobile Telephony**
- 63,25%
- 33,19%
- 3,56%

**Fixed Telephony**
- 92,6%
- 5,9%
- 1,5%

**Fixed Broadband**
- 92,6%
- 5,9%
- 1,5%

**Pay TV**
- 70,31%
- 13,41%
- 7,42%
- 6,68%
- 2,18%

Source: Empresas Operadoras. Elaborated by OSIPTEL
Broadband: National Policy
Multisector Commission responsible for working up National Broadband Plan

Through Supreme Resolution Nº 063-2010-PCM released on march 04th, 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 Nº 261-2010-PCM released on September 24th, 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.

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-OSIPTEL
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-OSIPTEL
Source: ICT Statistics Database ITU-2009, World Economic Outlook Database, FMI
Current state

Fiber-optic deployed (Km)

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

- 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

Source: Telefónica del Perú. Elaborated by OSIPTEL
There is a gap between the use and access to the Internet at households level.
Relatively high tariffs for broadband access (monthly rate, USD)

Mobile broadband rates by day at 700Kbps

Mothly Rate. Fixed broadband. (500Kbps, in USD)

Mothly Rate. Fixed broadband. (1Mbps, in USD)

Source: Empresas Operadoras.
Elaborated by OSIPTEL
Lack of extensive national fiber backbone

Optic fiber backbone
March, 2010

Electric transmission lines, 2010

Source: Ministerio de Transportes y Comunicaciones
Source: Ministerio de Energía y Minas
Low density of terminals and low population purchasing power

Access to computers and telecommunications services (% households)

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

Elaborated by GPRC-OSIPTEL.
Source: Encuesta Nacional de Hogares (ENAHO) 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.

Source: Ministerio de Transportes y Comunicaciones
Barriers that limit the deployment of access networks

✓ Municipal District and Provincial level:
  ▪ Non-observance of Law 29022 (Act to expand telecommunications infrastructure):
    o Excessive and not explained Taxes.
    o Deadlines higher than expected.
    o Excessive Requirements.
    o 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.
- 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).

Source: FITEL
Vision, Goals and Policies
Proposals for Broadband Deployment in Peru
Medium term goals (2016)

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.
1. GENERAL OBJECTIVE Nº 1: Promote infrastructure and appropriate service offers for the development of nationwide broadband.

2. GENERAL OBJECTIVE Nº 2: Stimulate demand and the inclusion of the population in the Information Society.

3. GENERAL OBJECTIVE Nº 3: Strengthen the Institutional Framework and direct it to a converged environment of Information Technology and Communication.
Pillars for the success of the National Plan for Development of Broadband

- Macroeconomic Environment
- Commitment of the involved participants
- Suitable Institutional Framework
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.
1. **GENERAL OBJECTIVE Nº 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 Nº 034-2010-MTC.
**Scenarios and alternatives for deploying fiber infrastructure**

- **Fiber already deployed.**
  - Network operated by a telecommunications licensee, which provides telecommunications services.
  - Network operated by an operator of another sector, which does not provide telecommunications services. There is ‘dark fiber’ available.
  - Support infrastructure exists on which the fiber can be deployed.

- **No fiber**
  - There is no supporting infrastructure. Future networks on planning stage.

**ALTERNATIVES**

- The other sector's operator obtains a carrier license (preferably carriers of carriers).
- The other sector's operator voluntarily gives in its dark fiber and/or makes private contracts with telecom operators.
- ‘Dark fiber’ is declared as essential facility and obligations to share it are imposed.
- Private projects.
- Public Private Partnership
- FITEL Projects
  - i) One operator (Carrier of carriers).
  - ii) More than one (Consortium).
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 (e.g., Operator A to the north, and Operator B to the South).
# PPP schemes for funding the deployment of fiber

<table>
<thead>
<tr>
<th>Carrier of Carriers: The State associated with a company responsible for operating and maintaining infrastructure.</th>
<th>Consortium: The state associated with a consortium of operators present also in the retail market.</th>
</tr>
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<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td><strong>Disadvantages</strong></td>
</tr>
</tbody>
</table>
| • Neutral Operator: Vertical disintegration, does not operate in retail final services. No conflict of interest.  
• Inherent Safeguards to not generate anti-competitive behaviors.  
• Facilitates the entry of retail operators.  
• There are international experiences. | • Operators may not be interested in operating only the backbone.  
• If there are variable charges on the use of backbone, retail operators can pass these charges to the final customer.  
• Under certain conditions, the neutral operator could become a dominant operator. |
| **Disadvantages** |  |
| • Most major operators are involved equally.  
• Operators internalize the capex and opex of the network, which is reflected in their pricing and coverage decisions. | • Difficulty of coordination's between operators, competing interests.  
• Entry processes of new operators can involve lengthy and costly procedures.  
• If prices are not regulated there would be possibility of collusion.  
• Little international experience. |
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.

Second Recommendation
Providing connectivity to health facilities and schools.

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.

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

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

GENERAL OBJECTIVE N° 2:
To stimulate demand and the inclusion of the population in the Information Society.
GENERAL OBJECTIVE Nº 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.