



**USAID** | **FACILITANDO COMERCIO**  
DEL PUEBLO DE LOS ESTADOS  
UNIDOS DE AMERICA

# Peru and Andean Trade Capacity Building (PATCB) Project

## Final Inception Report: Telecommunications

November, 2010

This publication was produced for review by the United States Agency for International Development. It was prepared by Mr. Bruno Vianni on the Peru Trade Capacity Building Project (USAID IQC Contract No. EEM-I-00-07-00009-00. Task Order No. AID-527-TO-10-00002). The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

# Contents

<b>Contents</b>	<b>i</b>
<b>Introduction</b>	<b>1</b>
First Visit	1
<b>Technical Approach and Activities</b>	<b>3</b>
Work plan	4
Activity 1. Preliminary Activity: Review of work plan and Inception report	5
Activity 2. Analysis of International Best Practices on Telecommunications Regulations	5
Activity 3 Development of Human Capital in the Economics of Telecommunications regulation	10
Activity 4 Analyze and propose changes on regional regulations	11
Schedule of Tasks	13
Deliverables	14

# Introduction

The telecommunications component is the sixth component within The Peru and Andean Trade Capacity Building Program (PATCB). The PATCB Program started activities in June of 2010. This final Inception Report covers a summary of the initial visit along with the amended work plan product of the discussions in the validation meetings held in Lima.

The bases for the work plan presented in this report is the draft inception report submitted on Oct. 1, 2010 and the validation meetings held in Lima between October 4<sup>th</sup> and Oct. 7<sup>th</sup> with representative from the *Organismo Supervisor de Inversión Privada en Telecomunicaciones* (OSIPTEL), the Ministry of Transport and Communications (MTC), private sector stakeholders and with USAID/Peru.

Within the PATCB Program, the strategic objective for the Telecommunications component is:

- Increased competition of telecommunications in Peru through improved regulation.

The expected outcomes of this component are:

- International regulation best practices proposed for implementation;
- Telecom competition landscape improved.

A brief description of the agenda for the first visit is presented below.

## First Visit

The purpose of the first visit was to present the draft work plan to the main stakeholders, discuss it at length, and adjust it to ensure that it meets their needs.

Prior to the visit, Dr. Viani submitted a draft version of the Inception Report. This draft proposal was discussed in meetings with representatives from the *Organismo Supervisor de la Inversión Privada* (OSIPTEL), the Ministry of Transport and Communications (MTC), and the USAID.

The program was prepared in close consultation with Elena Conterno, Chief Of Party (COP) for the PATCB Program, and with Mr. Eduardo Garcia-Godos, Lead of the telecommunications component.

# Technical Approach and Activities

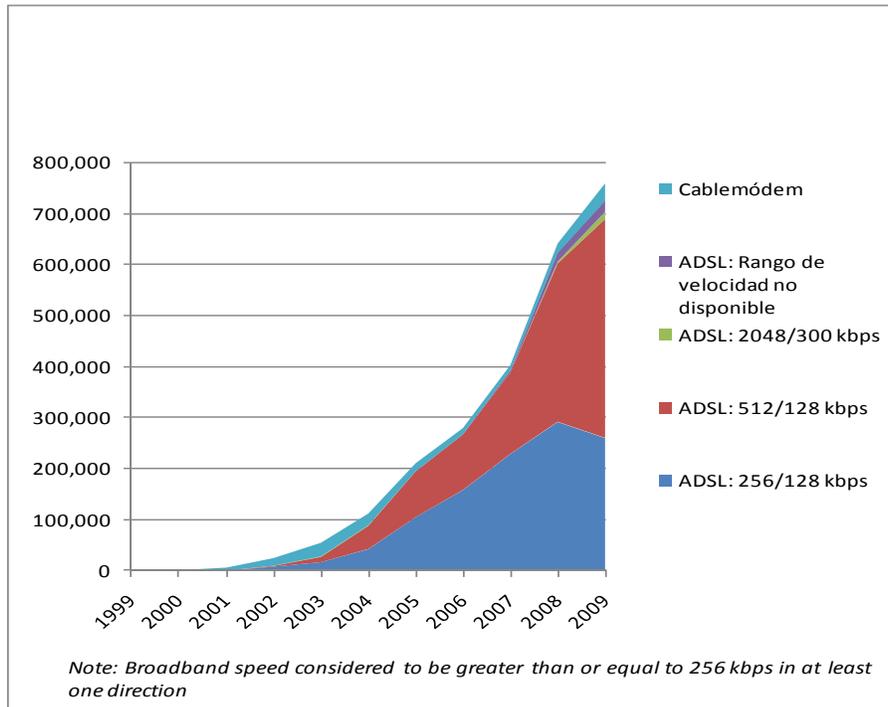
Telecommunication services increasingly influence the provision of goods and services, and competition among telecommunication service providers spurs efficiency that lowers service costs and prices for consumers and businesses. Peru has taken steps to heighten competition in the country's telecommunications sector. OSIPTEL has reduced barriers to market entry and the number of competitors has since increased. And since approval of a new concession law and bylaws in 2006, operators need to follow only one concession procedure instead of multiple procedures. Still, the telecommunications market remains highly concentrated. For example in mobile telephony, the market share of Telefónica móviles increased from 51.9 percent in 2004 to 63.2 percent in 2009 after Telefónica Móviles acquired Comunicaciones Móviles. Table 1 shows the market share of the mobile service providers. Notice how industry concentration increased between 2004 and 2009 measured by the Herfindahl-Hirschman Index.

**Table 1**  
*Market concentration in mobile telephony*

Firm	2004	2009
Telefonica Moviles	51.9%	63.2%
Nextel	4.5%	3.4%
Comunicaciones móviles	16.6%	0%
América Movil	26.9%	33.5%
Herfindahl-Hirschman Index	3,718	5,121

Broadband deployment has also increased rapidly with liberalization, propelled also by the strong performance of the domestic economy in the past ten years (see Figure 1). However, unlike the US, there is very little competition between platforms in the provision of broadband service. Broadband is dominated by ADSL which is primarily provided by Telefónica. Competition from cable modem and wireless broadband is very limited.

**Figure 1**  
Fixed Broadband subscribers by technology (1999-2009)



Source: OSIPTEL

To advance competitiveness and competition in Peru's telecommunications sector, our team will not only increase OSIPTEL's technical capacity to implement sound regulations and fulfill the Peru Trade Promotion Agreement (PTPA) commitments but also proposed regulatory changes to introduce best practices in several key regulatory areas.

In following the work plan detailed below, Nathan Associates' in-house telecom expert, Dr. Bruno Viani, will draw on the talents of Nathan's pool of international telecom experts and local telecom consultants. Local coordination and reporting will be managed by Component Leader Mr. Eduardo Garcia-Godos.

## Work plan

The following work plan encompasses all the activities under the telecommunications component; this include the preliminary activities to agree on a work plan and the validation meetings held in Lima (activity 1). To achieve the intended objective of this component we have divided our work plan into 4 activities consisting of 12 tasks and 13 deliverables.

## **ACTIVITY 1. PRELIMINARY ACTIVITY: REVIEW OF WORK PLAN AND INCEPTION REPORT**

In this preliminary activity Nathan Associates would reach an agreement with the stakeholders on the work to perform in the months ahead.

### *1.1 Draft inception report*

Dr. Viani submitted a draft inception report that was circulated among the main stakeholders. This report included a draft work plan with a timeline and a detailed list of deliverables.

### *1.2 Validation meetings*

In the first week of October Dr. Viani travelled to Lima and joined Mr. Garcia-Godos in the meetings with representatives from the *Organismo Supervisor de la Inversión Privada* (OSIPTEL), the Ministry of Transport and Communications (MTC), and the USAID. In addition, Nathan Associates' representatives (Team Nathan) held meetings with private sector representatives (see Table 1).

We received valuable feedback during the validation meetings and agreed with the stakeholders to make slight changes to the work plan so that it reflects more closely the present needs of OSIPTEL and the MTC while keeping consistency with the intended objectives of this component.

### *1.3 Final Inception report and work plan*

In this final report, Team Nathan incorporates into the work plan the comments received during the validation meetings in Lima.

## **ACTIVITY 2. ANALYSIS OF INTERNATIONAL BEST PRACTICES ON TELECOMMUNICATIONS REGULATIONS**

- *Expected result:* Increase knowledge of international best practices to provide guidelines for regulatory improvements.
- *Indicator:* delivery of international best practice studies and workshop on findings.

Nathan Associates will lever its in-house expertise on telecommunications regulations with external consultants to bring into Peru the latest findings from international telecommunications experts on the kinds of regulations that best achieve the intended outcome of increased competition and increased use of telecommunications services.

Our validation meetings with OSIPTEL, the MTC, and other stakeholders in Lima allowed us to identify four regulatory themes of interest to the Peruvian authorities; (1) unbundling of network elements, (2) inter-sectoral infrastructure for telecommunications, (3) radio spectrum licensing, and (4) radio spectrum pricing. Based on this we outline the following tasks.

## 2.1 International Best Practices on Unbundling of Network Elements

The U.S. experience on mandating that essential network elements owned by the dominant local telecommunications firms<sup>1</sup> be disaggregated (unbundled) and leased at reasonable prices to competing firms can provide valuable lessons for the regulation of telecommunications in Peru.

The impetus for unbundling regulations was the belief that effective competition in the provision of telecommunications services would not materialize unless the incumbent local service provider is forced to share elements of its network at reasonable regulated prices. This rationale was based on the assumption that strong network effects and economies of scale will prevent entry of competitors in the market for fixed broadband service.

The initial rules for unbundling of network elements set by the U.S. Federal Communications Commission (FCC) in 1996 were far reaching. The FCC required incumbent local exchange carriers (ILECs) to provide competing firms (the so-called CLECs) a menu of unbundled network elements that would allow the CLECs to provide the same services as the incumbents (the ILECs) without the need to collocate terminal equipment, routers, switches, and other equipment at the incumbent's central office.<sup>2</sup> These rules were perceived by the ILECs as damaging to their business and provoked court battles that lasted years. After several court setbacks, the FCC substantially scaled back its unbundling mandates in 2005. The US experiment on unbundling regulations can provide important lessons to Peru.

Nathan Associates proposes to conduct a thorough review of the empirical evidence that link changes in unbundling regulations to changes in market outcomes. For example, there is a growing literature linking changes in unbundling regulations to changes on broadband investment, broadband prices, and quality of service indicators for broadband.<sup>3</sup> We will classify and tabulate the results of these analyses; in particular, for each study we will,

- specify the dependent variable (e.g. broadband subscribers, broadband investment; broadband prices, and so on);
- whether there was a positive or negative effect resulting from changes on particular unbundling regulations;
- the method used in the study to test an hypothesis (e.g., descriptive/case study, econometric, event study); and

---

<sup>1</sup> These are referred in the U.S. as incumbent local exchange carriers, or ILECs for short.

<sup>2</sup> A central office is a building that house inside plant equipment like switches. Typically central offices connect trunk lines with the local distribution network.

<sup>3</sup> See for example Scott Wallsten. "Broadband Penetration: An Empirical Analysis of State and Federal Policies." Working Paper 05-12. AEI Brookings Joint Center for Regulatory Studies. June 2005; George Ford and Lawrence Spiwak. "The Positive Effect of Unbundling on Broadband Deployment." Phoenix Center Working Paper. 2004 .

- the magnitude of the effect in case it's available.

Based on this review, we will draw conclusions regarding the current state of knowledge on the effect on unbundling regulations on broadband service. To the extent possible we will also bring into the analysis the evidence from unbundling regulations in Europe and countries from the Organization of Economic Cooperation and Development (OECD). The report of this activity will end with a summary of the current understanding of what constitute international regulatory best practices to attract investment in broadband infrastructure. Dr. Viani working together with a researcher from the US will produce the report for this task.

## *2.2 Intersectoral Infrastructure for Telecommunications*

Team Nathan will conduct a review of the international experience regarding regulations that enable the sharing of infrastructure for telecommunications purposes. For example, in the US it is now common to use existing power lines to place cellular mobile antennas, or to attach overhead cables for telecommunications services. This sharing of infrastructure lowers the costs of expanding telecommunications services as the fixed costs of power lines/poles are spread over more uses. In the U.S. the rate at which utility poles are shared between private parties is regulated by state and federal law. Nathan Associates will document the current state of rate regulation for sharing of infrastructure facilities; often referred as pole attachment regulations. In particular we will document how rates are set and the process involved in regulating these rates.

In similar fashion, access to right-of-way has been identified as a key issue hindering the deployment of broadband infrastructure in the U.S. A report by the California Public Utilities Commission stated that:

“The process of obtaining Right of Way (ROW) permits for construction of broadband infrastructure in California is lengthy, expensive, inconsistent and is cited as one of the most significant barriers to broadband deployment.”<sup>4</sup>

A study by Scott Wallsten found that states that instituted laws guaranteeing right-of-way to telecommunications companies exhibit higher level of broadband penetration after controlling for several economic and demographic variables.<sup>5</sup>

Nathan Associates' telecommunications experts will document the U.S. experience in regulating the prices at which utility poles are shared between private firms. We will put special attention to the procedures to share infrastructure and the methods used to estimate reasonable regulated rates for the sharing of utility poles. In addition, Nathan's experts will

---

<sup>4</sup> See California Public Utilities Commission. “Draft Report: Broadband Deployment in California.” Feb. 1, 2005 (page 44).

<sup>5</sup> Scott Wallsten. “Broadband Penetration: An Empirical Analysis of State and Federal Policies.” Working Paper 05-12. AEI-Brookings Joint Center for Regulatory Studies (June 2005).

document the empirical evidence thus far on the effect of alternative right-of-way regulations on broadband deployment in the US and to the extent that data exists, in other countries as well.

### *2.3 Best Practices on Spectrum Licensing*

Spectrum licenses grant rights to use a particular set of radio frequencies to provide wireless communications in a certain geographic area. Radio frequencies are a necessary input in the production of wireless communications. Without a spectrum license a firm cannot legally use radio frequencies.

We propose to study different features of spectrum licenses in several countries and compare the relative strength of the rights conferred using various dimensions. For examples, some countries allow flexibility on the kind of services a license holder can offer while others do not. Another important feature is the ability of license holders to transfer or lease the rights conferred by the license. These features will be analyzed for each country.

Although spectrum licenses produce benefits by reducing (or eliminating) the externality that arises when radio frequencies are used, they also hinder competition by retarding the entry of firms in the marketplace and delay the deployment of new services.

Some analyst suggests that the burden imposed by a restrictive licensing system may outstrip the benefits. For example, Prof. Hausman estimates the losses on U.S. consumer surplus due to delay of entry on cellular telephony to be around \$50 billion per year.<sup>6</sup> Prof. Hazlett estimates that the licensing system in the U.S. delayed the deployment of digital cellular telephony by 5.5 years and that of satellite television by 15 years.<sup>7</sup>

In the past two decades, the rapid increase in the demand for wireless services had induced policy makers to re-evaluate the traditional spectrum licensing system. Progress has been uneven but some bright spots of innovation exist. For example, in 1997 Guatemala and El Salvador changed their telecommunications laws and implemented a simple system of spectrum user rights to replace the traditional licensing system. These changes produced a tremendous growth on the availability of mobile telephony in these countries.<sup>8</sup> From having less than on-third of the average cellular penetration in Latin America, Guatemala and El Salvador ended 2006 with a penetration rate higher than the average Latin American country.

---

<sup>6</sup> Hausman, Jerry A. 1997. "Valuing the Effect of Regulation on New Services in Telecommunications." *Brookings Papers on Economic Activity*. Vol. 20 Issue (1997-1): 1-54.

<sup>7</sup> Hazlett, Thomas. 2001. "The Wireless Craze, The Unlimited Bandwidth Myth, the Spectrum Auction Faux Pas, and the Punchline to Ronald Coase's Big Joke. An Essay on Airwave Allocation." *Harvard Journal of Law and Technology*. Vol. 14 (2): 335-469.

<sup>8</sup> Ibarguen, Giancarlo. 2004. "Spectrum Management for a Converging World: Case Study on Guatemala." *International Telecommunications Union*. <http://www.itu.int/osg/spu/casestudies/#spectrum>. See also Hazlett, Thomas. 2001. "The Wireless Craze, The Unlimited Bandwidth Myth, the Spectrum Auction Faux Pas, and the Punchline to Ronald Coase's Big Joke. An Essay on Airwave Allocation." *Harvard Journal of Law and Technology*. Vol. 14 (2): 335-469. Viani, Bruno. 2003. "The Problem of Interference in Wireless Communications. The U.S. Regulatory 'Solution' and the Property Rights Alternative." *Apuntes*. (I Semestre-2002 [2003]) No. 50 (1):61-79. Universidad El Pacifico, Lima, Peru.

The rapid growth on mobile telephony services is explained by an increase in competition due to lower barriers to entry and the increase of available spectrum for this service. Prior to 1997, there was just one mobile telephony provider in Guatemala, three years later Guatemala had four mobile operators. The increased availability of spectrum from 20 megahertz before the reform to 120 megahertz two years later reduced the required capital investment needed and increased the usage of mobile communications.<sup>9</sup> Similar changes occurred in El Salvador.

Other countries had also simplified their licensing system (albeit, to a lesser degree) giving freedom to license-holders on the kind of services they can provide or in the kind of technology they can use. In the US, the cellular PCS licenses gave the holders considerable freedom to choose the technology to use or to lease these frequencies to third parties. We propose to study a sample of countries with different spectrum licensing regimes to provide an ample range of practices and drawing examples for best practices exemplified by a set of verifiable criteria. Some countries we plan to consider include those with innovating licensing practices such as Guatemala, El Salvador or Australia, in addition to the U.S.

To the extent that data exists, we will investigate whether different licensing regimes can explain differences in the availability of wireless services across countries and will draw conclusions applicable to Peru.

#### *2.4 Radio spectrum pricing*

In addition to spectrum license best practices, there was unanimous sentiment during the validation meetings in Lima that the current system of spectrum fees (known as *Canon del espectro*) for the use of radio frequencies needed much improvement. The international experience with user fees can provide valuable lessons to Peru. The initial spectrum fees (for mobile operators) in Peru were based on the number of subscribers. This had the unintended effect of discouraging the expansion of the mobile network and increasing the final costs to the consumers. The rate setting formula was changed to a temporary regime in which spectrum fees were drastically reduced. According to a major mobile telephony operator, despite this reduction, spectrum fees account to more than one percent of total revenue. In addition, the temporary nature of the new rate setting formula increases the uncertainty of doing business which discourages further investment.

It was agreed that the Nathan Team will undertake a major review of the existing systems for spectrum pricing used internationally and summarize the pros and cons of each regime. To the extent possible, the team will gather evidence from different countries on the impact of different spectrum pricing regimes on the availability of mobile services.

---

<sup>9</sup> To a certain degree capital and spectrum (megahertz) are substitutes in the production of communications. Holding all else constant an increase in megahertz will produce an increase in output.

### *2.5 Seminar to Present Results of Studies on Best Practices*

The results of the four studies describing best practices in telecommunications regulations will be presented in a seminar to the members of OSIPTEL, the MTC, and other stakeholders in Lima.

### *2.6 Policy Recommendations*

Based on the studies on international best practices and the feedback received at the seminar in task 2.5, Nathan Associates will develop a draft white paper of policy recommendations and coordinate with OSIPTEL its circulation among the main stakeholders for comments. As part of this consultation process, Nathan will coordinate with OSIPTEL the organization of at least one consultation round table to discuss the draft white paper. Nathan's Lead for this component, Mr. Eduardo Garcia-Godos will play a principal role in this task. Based on the roundtable discussions and feedback received, a final white paper will be prepared and submitted to the stakeholders.

## **ACTIVITY 3 DEVELOPMENT OF HUMAN CAPITAL IN THE ECONOMICS OF TELECOMMUNICATIONS REGULATION**

- *Expected result:* Strengthened technical fundamentals to improve telecom regulation.
- *Indicator:* 20 staff from OSIPTEL/MTC participated in training

### *3.1 Visiting Program of US Telecommunications Experts to OSIPTEL*

Nathan Associates proposes to implement this task by sending economists with international regulatory experience to OSIPTEL for a period of one week. During that time the US experts will provide in-house training to OSIPTEL's staff on the regulation of telecommunications. This will take the form of structured seminars primarily for economists and market analysts in OSIPTEL. For best results, we propose the technical training to include two main components. One component will consist of formal seminars where the visiting expert will present on a topic to be determined. The second component would allow a two-way-communication between the visiting expert and OSIPTEL's personnel by permitting the staff of OSIPTEL share information with the visitor on a particular regulatory issue OSIPTEL faces and let the visitor provide input in the form of suggestions or recommendations.

We propose to send four experts each visiting for a period of one week. We propose to send the first visiting expert during the last quarter of this year and the others during 2011. The expert will be housed in OSIPTEL and will be provided with office space to perform their work during their stay. At the end of each visit we will circulate evaluation forms to let the staff from OSIPTEL evaluate the visitor, the choice of topics, and receive feedback on how to improve this experience for subsequent visits. This will allow us to fine tune the visitor's

program to make each visit as productive as possible for OSIPTEL's staff and if relevant, for the staff from the MTC.

During the experts' visits Nathan Associates will also schedule a presentation to representatives of the private sector in Lima, namely through AFIN.

#### **ACTIVITY 4 ANALYZE AND PROPOSE CHANGES ON REGIONAL REGULATIONS**

- *Expected result:* Increased awareness that local/regional regulations need to be streamlined to promote telecommunications investment.
- *Indicator:* delivery of assessment of local/regional regulations that promote/hinder telecommunications infrastructure and seminars/roundtables on findings.

##### *4.1 Study of Regional Regulations Affecting Communications*

We propose to conduct an exploratory study to identify key municipal or regional regulations that hinder the deployment of telecommunications infrastructure. We will put special emphasis of local/regional regulations that are not directly related to telecommunications services but that may affect indirectly the deployment of services.

During the validation meetings it was mentioned that obstacles from municipalities and local authorities can take a wide array of forms; from delays to get the approval from the *Instituto Nacional de Cultura (INC)*, to widespread opposition by inhabitants fearing harmful radiation from the cellular towers, to more subtle obstacles such as delays on issuing construction permits due to popular opposition to a proposed tower site.

To the extent possible Team Nathan will characterize and classify the nature of the opposition/obstacle and identify municipalities where these obstacles are more frequent.

The results of these assessments will be presented and discussed in roundtables with the participation of representatives from local/regional governments. With the feedback received, Team Nathan will produce a white paper with recommendations for changes in regulations/policies to overcome these obstacles.

Following the schedule of tasks and deliverables is presented.





## Deliverables

Deliverables	QIII-2010			QIV-2010			QI-2011			QII-2011			QIII-2011			QIV-2011			QI-2012			QII-2012			
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
1. Draft Inception report with draft work plan			★																						
2. Final Inception report with final work plan				★																					
3. Report best practices on unbundling network elements												★													
4. Report on intersectoral transport infrastructure												★													
5. Report best practices on spectrum licensing US and beyond												★													
6. Report spectrum pricing best practices														★											
7. Seminar to present results of studies																	★								
8. Draft report on policy recommendations																		★							
9. Consultation roundtables																			★						
10. Final report policy recommendations (best practices)																				★					
11. Report local /regional regulations and its effect on telecommunications																				★					
12. Roundtables to present results of local/regional regulations																					★				
13. Mentoring/trainig of telecoms expert						★					★											★			