OSIPTEL

DIAGNOSTIC REPORT ON INTERNATIONAL ROAMING BASED ON THE QUESTIONNAIRE ON INTERNATIONAL ROAMING SERVICES

Comisión Interamericana de Telecomunicaciones
Inter-American Telecommunication Commission

DIAGNOSTIC REPORT ON INTERNATIONAL ROAMING BASED ON THE QUESTIONNAIRE ON INTERNATIONAL ROAMING SERVICES

(Item on the Agenda: 3.1.3)

(Document submitted by the Rapporteur on Roaming,
Gonzalo Martín Ruiz Díaz, of the delegation of Peru)

CONTENTS

Gonzalo Ruiz
Rapporteur
Roaming Rapporteurship
Working Group on Policies and Regulation
Permanent Consultative Committee I
CITEL

Toward Greater Transparency and Accessibility in Roaming Services in the Region

The problem of roaming services is a permanent concern to CITEL. On the one hand, administrations have been forced to deal with the problems of users, victim of unexpected and disproportionate increases in their bills for these services; and, on the other hand, solutions to the so-called "inadvertent roaming," which affects users who reside in border areas of the countries, are being sought.

CITEL's Permanent Consultative Committee I consists of four working groups, one of which, the Working Group on Regulation Policies, is developing its agenda through six rapporteurships. Peru, a country leading Roaming Rapporteurship, has intended to cope with the problems mentioned above from an eminently technical perspective, using information tools, such as technical folders, rate databases, as well as diagnostic documents, among others; which may allow administrations to better understand the problems, thus generating solutions ranging from regulation itself to self-regulation of mobile service markets.

We would like to especially thank those administrations which have contributed and provided the necessary information for the development of this document. We would also like to especially thank CCPI Chair for its decisive and permanent support to the work developed by the delegation of Peru in charge of this rapporteurship.

We hope that this document, which intends to contribute to understanding the problems of roaming in the region, may become an important reference to design policies related to the *roaming* of the different administrations of CITEL.

OSIPTEL

Héctor Mario Carril
Alternate Chairman
Permanent Consultative Committee I:
Telecommunications/ICT (PCC.I)

The "REPORT ON DIAGNOSTIC OF INTERNATIONAL ROAMING," prepared by the Permanent Consultative Committee I: Telecommunications/ICT (PCC.I), presents to us relevant information on the international roaming service and its impact on the user.

Prepared based on the information provided by Member States and from studies conducted on this topic, this document, which is made available to all those interested in the sector, deals, among other aspects, with the topic on data roaming, the double taxation faced by users in the region, the transparency of the information provided by operating companies, as well as the capacity to determine the cost of this service and, consequently, the bases for the application of the charges applied to users.

A topic which is also addressed in this work is the problem of "cross-border" roaming and the possible solutions analyzed by countries to reduce the negative impact due to the involuntary activation of the service between the users residing in border areas. This is a challenge that the Consultative Committee has to face to guarantee the quality of the services offered and their effective provision.

Arranging the international roaming service must be one of our priorities, so this Report presents a set of recommendations to standardize the information mechanisms provided to users, as well as to ensure that the service provision of international long distance calls responds to an explicit request from the user. Finally, it has been desired to analyze and evaluate, as competent authorities and Member States of CITEL, the most appropriate mechanisms which allow encouraging operating companies to reduce roaming service prices and mitigating the problem of automatic activation in border areas.

BACKGROUND

By decision PCC.I/DEC.119 (XVIII-11), adopted at the XVIII Meeting of Permanent Consultative Committee I (PCC.I) of CITEL, held in the city of Lima, from March 1 to 4, 2011, a questionnaire was approved to be sent to the Member States of CITEL on international roaming services. The questionnaire is contained in document CCP.I-TIC/doc. 2160.r1/11.

By that decision, the CITEL Secretariat was instructed to send the approved questionnaire to CITEL's Member Administrations for completion in accordance with that commitment. The Rapporteur Group will prepare the corresponding report based on the results received.

By decision PCC.I/DEC.156 (XXI-12), adopted by PCC.I of CITEL at its XXI Meeting, held in San Salvador, from September 11 to 14, 2012, it was decided to continue with the diagnostic study on international roaming in the framework of the Rapporteurship on Roaming. Member States were invited to submit their responses to the questionnaire on international roaming services, or if applicable, to complete and/ or update the responses previously submitted.

To that end, a Workplan for the Diagnostic Study on International Roaming was adopted. The Workplan established the following four activities:

- ▸ Submission of pending questionnaires and/or update of information.
- ▸ Revision of the responses received from the Member States: prepare the diagnostic report.
- ▸ Circulate draft diagnostic report for contributions and comments prior to its presentation at the XXII PCC.I Meeting.
- ▸ Present it to CITEL as a document for the upcoming PCC.I Meeting.

At the XXII Meeting of PCC.I of CITEL, held in Buenos Aires, from May 20 to 23, 2013, the diagnostic report on international roaming contained in document CCP.I-TIC/doc. 2864 c1, was presented, together with some of the data it contained. Given the number of comments received, the Member States were urged to review the document, supplement it with their contributions and, if necessary, update the information.

---

1   The Final Report may be accessed by clicking on the following link:
     http://portal.oas.org/LinkClick.aspx?fileticket=4NSfFiMMzFE%3d&tabid=1382&mid=3316

OSIPTEL

In that context, decision PCC.I/DEC. 170 (XXII-13) was adopted, by which it was decided to extend the deadline so that the Member States could review the diagnostic report on international roaming and submit their comments, contributions, and updates to the information contained therein.

1.   Objective of the Report

The objective of this report is to compile relevant information on the mobile service and international roaming service. The information utilized was provided by Member States as replies to the questionnaire on international roaming services that was forwarded by the Secretariat of CITEL to the Member State Administrations. Information received has also been updated or completed with information obtained directly from the web pages of the operators and regulators, as well as from related studies.

2. Information Submitted by the Member States.

Since the approval of the questionnaire, efforts have been coordinated with the Secretariat of CITEL to follow up on the pending replies from the Member States. To obtain further information, this also entailed direct coordination with officials of Member States that had not yet submitted the duly completed questionnaire. Replies from 15 countries were thus obtained.

Table 1 shows the dates on which Member States forwarded the information contained in the questionnaire.

Table N° 1: Information Included

MEMBER STATES	DATE OF SUBMISSION OF INFORMATION
Canada	27 July 2011
El Salvador	10 August 2011
Venezuela	16 August 2011
Peru*	23 August 2011
Paraguay	23 August 2011
Argentina*	8 March 2012
Brazil	8 March 2012
Dominican Republic	1 May 2012
Chile	23 August 2012
Guatemala	5 September 2012
Honduras	28 January 2013
Panama*	28 January 2013
Costa Rica*	28 January 2013
Ecuador	14 March 2013
Colombia	20 March 2013

Prepared in-house.
Note: Panama, Costa Rica, Argentina, and Peru have updated information.

The information obtained was used to prepare a diagnostic study on roaming at the international level, and activities, studies, and mechanisms were identified for the implementation of measures to optimize access to international mobile roaming in the Americas region.

The information submitted has been classified as information on the mobile and international roaming services provided; information on cross-border roaming; and information for the adoption of regulatory measures on international roaming and on improving the roaming services provided.

OSIPTEL

2.1. Relevant information on mobile services and roaming services provided. CHECKED AGAINST ORIGINAL TO HERE DECEMBER 4, 2013

2.1.1 Conditions in the Mobile Market Environment:

This section is a compilation of information submitted by the countries on general mobile market conditions, and describes the radio frequencies allocated, the country's zoning for the establishment of rate areas, and the main technologies envisaged for implementation in each country.

Ten countries[2] forwarded information on the current frequency allocation. For the other countries shown in Table 2, and for the updates, information from Cullen International and from the report on inadvertent roaming prepared by Mr. Rafael Gold for Regulatel was used.

Note that the main bands allocated to the mobile service are the 800 MHz and 1900 MHz bands, since the 12 countries shown in Table 2 use these bands for mobile telephony. Another band that in most countries is allocated to mobile telephony is the 900 MHz band, since seven of the 12 countries use it for that purpose. In different countries, a variety of other bands are also allocated. Table 2 shows the frequency bands which, according to the replies forwarded and the information obtained by OSIPTEL are being used in mobile telephony services.

Table 2: Radio Frequencies Used in Mobile Telephony – 2012

MHz	PERU	BRAZIL	EL SALVADOR	VENEZUELA	CHILE	GUATEMALA	HONDURAS	PANAMA	COSTA RICA	ECUADOR	COLOMBIA	ARGENTINA	TOTAL %
800	x	x	x	x	x	x	x	x	x	x	x	x	100
900	x	x	x	x	x	x					x		58
1700	x	x		x	x				x	x			50
2100	x	x			x				x	x			42
1900	x	x	x	x	x	x	x	x	x	x	x	x	100
1800		x	x	x	x		x		x				50
2600					x					x	x		25

Source: Replies submitted by countries / Information from Cullen International / Report on inadvertent roaming (R. Gold). Prepared in house.

---

2   Peru, El Salvador, Venezuela, Brazil, Chile, Guatemala, Honduras, Panama, Costa Rica, and Ecuador.

Table 3 shows projections regarding the call for bids for the free bands in each country. The bands soonest to be tendered in several countries are the 1.7 GHz, 2.1 GHz, and 2.5 GHz bands The Table also shows whether future calls for bids will be for an expansion of bands now in use or whether they will be for bands tendered for the first time.

Table N° 3: Projections Based on the Call for Bids for Bands for Mobile Telephony – 2012

MHz	PERU (*)	BRAZIL (*)	EL SALVADOR	VENEZUELA	CHILE	GUATEMALA	HONDURAS	PANAMA	COSTA RICA	ECUADOR	COLOMBIA
450		New	n.i			n.i.				n.i.	
700	New	New			New			New			New
1700				Expansion	Expansion		New		New		New
2100					Expansion		New				
1800				Expansion							
1900							New	New			Expansion
2600	New	New		New	New						Expansion
3500		New		New							

Source: Replies submitted by countries / Information from Cullen International / Report on inadvertent roaming (R. Gold).
(*) Peru and Brazil as of 2013.
Prepared in house.

Additionally, the replies forwarded by six countries[3] on zoning in the country for the establishment of rate areas indicated that the existence of flat rate national mobile plans. Chile and Peru indicate that they have a single national area because they have implemented a Virtual Mobile Area, replacing the domestic long distance concept.

Venezuela is a special case: although there is a single national zone for the mobile service, MOVILNET, the state operator, has divided the country into four rate areas. However, no reasons or details were provided.

Interestingly, none of the countries that submitted information have internal borders, so that logically, they would not have national roaming, as will be described below. Ecuador and Chile are the only exceptions. Colombia also reports that UNE (a virtual mobile operator in that country which, since 2010, has had spectrum in the 2.6 GHz band) has national roaming, but no details were provided.

---

3   Panama, Paraguay, Chile, Venezuela, Brazil, and Colombia.

OSIPTEL

As to country projections regarding new technologies soon to be implemented, eight countries[4] reported that LTE technology would soon enter the mobile telephony market. Some countries, such as the Dominican Republic, went even further and reported that some operators in its country were already testing this technology, and Chile indicated that LTE technology would be used in the 2.6 GHz and 700 MHz bands.

On the other hand, countries such as Argentina, Guatemala, and Honduras reported that this information was unavailable to operators and Peru even indicated that such information was confidential.

Lastly, regarding the management of stolen terminals, information is equally disparate, but it may be said that, in general, the countries indicated concern regarding this issue and have systems for recording information on stolen terminals, whether centralized, such as in Brazil, Colombia, Panama, Peru, and Ecuador, or decentralized information of operators, but that these operators were obliged to share this information, such as in El Salvador, Venezuela, and Guatemala. Venezuela also indicated its intent to create a unified database.

Additionally, by Andean Community Decision 786[5] was adopted a regulatory framework for regulating the exchange of information on lost, stolen, and recovered mobile terminals, and their blocking or unblocking among mobile telecommunication operators in the Andean Community, which imposes an obligation on said operators to exchange this information through the different existing operational platforms for the different access technologies (CDMA, GSM, and their technological evolutions).

2.1.2 Specific Mobile Telephony Market Conditions

This section provides further details on the information submitted by countries on specific conditions of their mobile telephony markets to determine the potential market for roaming market. Described for each country are mobile market size, measured as the number of mobile lines; mobile penetration, indicated by the number of mobile lines per 1,000 inhabitants; and market concentration and growth prospects for this market.

---

4   Dominican Republic, El Salvador, Venezuela, Brazil, Chile, Panama, Ecuador, and Colombia.
5   Issued on April 24, 2013.

Figure 1 shows information on mobile market size in 15 countries that submitted information, Brazil being the country with the largest mobile market and 216 million lines in service in 2011, while Costa Rica has the smallest mobile market with only 6 million lines in service that year.

Figure 2 below shows mobile penetration by country, complementing the preceding indicator and providing a complete analysis of the development of the internal mobile telephony market for each country. This figure shows, for example, that although Panama is one of the countries with the smallest mobile telephony market, it is also the country with greatest mobile penetration, indicating that although it is a "small" market in terms of absolute number of lines, it is a market that covers and encompasses the country's entire population, so that, relatively speaking, it is a highly developed market.

Whereas Figure 1 shows the absolute size in terms of number of lines, Figure 2 shows the development of the market vis-à-vis the number of inhabitants.
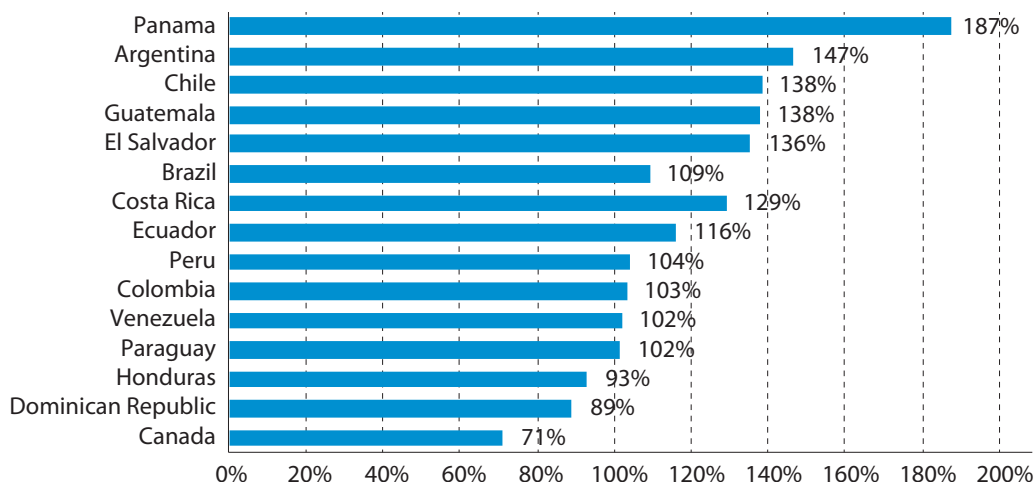
Figure N° 1: Size of Mobile Telephony Market – 2012
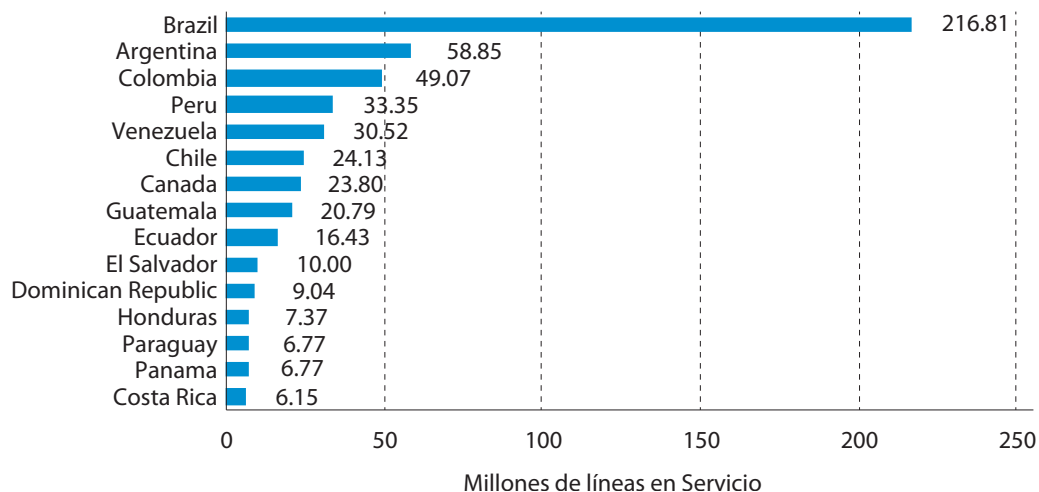
Source: Replies submitted by countries / web pages of each country's regulators.
Prepared in house
Note: Peru is updated to March 2013

OSIPTEL

Figure N° 2: Mobile telephony penetration - 2012

Country	Penetration
Panama	187%
Argentina	147%
Chile	138%
Guatemala	138%
El Salvador	136%
Brazil	109%
Costa Rica	129%
Ecuador	116%
Peru	104%
Colombia	103%
Venezuela	102%
Paraguay	102%
Honduras	93%
Dominican Republic	89%
Canada	71%

Source: Replies submitted by countries / web pages of each country's regulators
Prepared in house

Table 4 shows that out of the 15 countries that submitted information on the number of companies and their mobile market share, six countries have only three companies, five have four companies (although Colombia also has the virtual mobile operators (VMO), giving it a total of six operators), two countries have five (although Chile also has five VMO, giving it a total of 10 operators), and, lastly, one country has seven operators and one has nine.

Table 4 also shows that concentration rates in countries with fewer operators are, in general, relatively higher than those in countries with more operators.

According to economic theory, a market is moderately concentrated if its Herfindahl–Hirschman Index (HHI) is above 1500, and is highly concentrated if its HHI is above 2500. As the table shows, all countries in the sample have an HHI above 2500, meaning that they are highly concentrated. The case of Costa Rica would be the most critical, since its HHI is above 6500. The market of Brazil is the least concentrated; its concentration index is only slightly above 2500, i.e., only slightly more than moderate concentration.

Table N° 4: **Number of Mobile Telephony Companies and Mobile Telephony Market Concentration – 2012-2013**

	NUMBER OF COMPANIES	CONCENTRATION (HHI)
Honduras	3	5266
Venezuela	3	3677(*)
Argentina	3	3344
Guatemala	3	3786
Costa rica	3	6530(*)
Ecuador	3	5606
Peru	4	4298
Paraguay	4	4074(*)
Dominican Republic	4	3545(*)
Panama	4	3386(*)
Colombia	4(2)	4583(*)
El Salvador	5	2632(*)
Chile	5(5)	3352(*)
Brazil	7(2)	2535
Canada	9	n.d.

Source: Replies submitted by countries / web pages of each country's regulators
Prepared in house

NOTE: The information on Peru, Chile, and Honduras is updated to March 2013.
The information on Ecuador, Dominican Republic, Paraguay, Colombia, Brazil, and Canada is updated to December 2012.
The information on Guatemala is as of September 2012. And for the other countries, the information could not be updated.
(*) This information was compiled from the web pages of each country's regulatory entities or ministries.

Lastly, only three countries mentioned growth expectations for the mobile telephony markets. Brazil expected to have 420 million active lines by 2020. The Dominican Republic expected to achieve 100% density by 2012,[6] and Panama expected no growth in the next few years since its mobile market density was already 178.1 %[7].

---

6   Although according to data taken from its web page and as shown in Figure 2, this figure has not yet been reached.

7   However, we see that growth was generated, rising from 178.1% in 2011 to 187.2% in March 2013.

OSIPTEL

2.1.3 Roaming Services conditions

This section describes out-bound[8] and in-bound[9] roaming services, their operation, and network elements used to provide roaming services, with the aim of providing concise information for comparison of each item from member state to member state so that recommendations can be based thereon.

According to the replies on roaming services submitted by five countries describing roaming services, the available out-bound and in-bound services are voice and data (SMS and Internet). Peru indicates that it also provides supplementary services (caller identification, call waiting, and usage alerts), and Ecuador indicates that the additional services are call forwarding and voice mail.

Information on how roaming operates was submitted by seven countries and is extremely diverse. As shown in Table 5, only Honduras described how the roaming service operates there, while the remaining countries offered only some details of their roaming service. With the exception of Ecuador, Chile, and Colombia, none of the other countries has national roaming. In Chile, national roaming is provided only when an operator has no coverage in a given area within the country, while in Ecuador national roaming is the feasibility of switching from one mobile operator to another within the country and only takes place in those areas where there is no coverage. And Colombia has a virtual mobile operator, UNE.

---

8   I.e., incoming or outgoing traffic generated by a home country operator user under the coverage of other visited operators.
9   I.e., incoming or outgoing traffic generated by a user of another operator in the home country operator's network.

Table N° 5: How Roaming Operates

	HONDURAS	COLOMBIA	VENEZUELA	PERU	CHILE	GUATEMALA	ECUADOR
DESCRIPTION OF ROAMING OPERATION	1. The user tries to connect to network other than his own. 2. The mobile device connects to the local VLR, which asks the HLR if the roaming service is active. 3. The HLR tells the VLR whether or not the mobile device is authorized to perform some type of event. 4. If the roaming service is active the VLR authorizes the connection, but if it is not, the VLR does not allow the connection.		Roaming takes place when a subscriber uses the service through the network of an operator other than the one to which he is subscribed.				The ability to access mobile telecommunication services outside the local service area of the user's own operator, i.e., within the service area, during a user's visit to another country, using the network of a foreign operator
SPECIFIC DETAILS	The voice roaming service is provided utilizing GSM technology and data transmission is supported by GRPS.	Avantel offers trunked roaming only with operators utilizing IDEM technology.	Operators provide global roaming on CDMA, GSM, and UMTS platforms	Roaming services are provided for mobile telephony, personal communications, and multiple channel selection (trunking).	In some situations, the user must request international roaming, and in others, international roaming is activated by default.	Roaming service is available to both prepaid and post-paid users.	Roaming service is available to both prepaid and post-paid users.

Consolidated information is not available on the specific technical description of communications via roaming, nor are details of the technical elements used in communications.

As regards information on taxation for roaming services, this is also highly disparate, and specific conclusions cannot be drawn. For example, Dominican Republic only mentions that a customer using roaming pays taxes on incoming calls and/ or for making calls (the originating operator makes the payments on behalf of its customer). Venezuela says that there are no taxes specifically on roaming. Chile indicates that VAT is imposed on roaming but provides no further details.

OSIPTEL

However, the study *"Doble Tributación del IVA en el Roaming Internacional en la Región Américas,"*[10] [Double VAT Taxation in International Roaming in the Americas Region] prepared by Ms. Catalina Díaz-Granados Tribín for Regulatel, confirms that a problem of double charging of value added taxes exists in the vast majority of roaming relationships in the region.

Among other things, that report shows that three situations exist:

▸ The countries imposing VAT, both wholesale and retail are: Argentina, Bolivia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Panama, Peru, and Uruguay.
▸ The countries imposing VAT in the retail, but not the wholesale, market are: Brazil, Colombia, and Dominican Republic.
▸ The country imposing VAT in the wholesale but not the retail market is: Uruguay.

The study also indicates that in most roaming relationships (71% of routes) in the sample countries, VAT is charged twice, except in those where Brazil, Colombia, and Dominican Republic are part of the wholesale relationship, where that tax is not charged twice. It shown that in the roaming relationships between Brazil, Colombia, and Dominican Republic with Uruguay, no tax is imposed in either segment.

As for the costs of providing roaming, the information forwarded does not provide an overview of the costs associated with communications via international roaming. This is primarily because the countries do not have this information or because it is considered confidential.

2.2   Relevant Cross-Border Information.

2.2.1 The Roaming Market:

This section describes the specificities of the roaming market, characterizing the total traffic volume, cross-border traffic, and the average monthly number of terminals using this service in each country.

Note that most countries have no information on the total volume of roaming traffic in the past year, still less specific information on the percentage of this traffic taking place

---

10 February 2013.

in each country's border areas. Chile and Peru even indicated that such information was confidential and could not be submitted.

Only Brazil, Ecuador, and Argentina have these figures. Table 6 shows the average monthly minute figures provided by Brazil, and even gives details of traffic at each main border area.

Table N° 6: Volume and Distribution of Roaming Service Traffic in Brazil - 2011

Traffic	Average monthly minutes	Border Areas	Traffic in minutes per month
Out-bound	9 million		
In-bound	5.5 million 24% USA 25% South America 35% Europe	Argentina	1.1 million
		Uruguay	300 thou
		Colombia	150 thou
		Peru	130 thou
		Paraguay	100 thou
		Venezuela	50 thou
		Bolivia	35 thou
		Suriname	2 thou
		Guyana	1.5 thou

Source: Replies submitted by countries
Prepared in house

Table 7 shows the monthly figures reported by Ecuador for 2012, both minutes per month and text messages and Gb used per month. According to that information, average monthly minutes are 505589, of which 291 correspond to Colombia and 73 to Peru – both countries have border areas of interest to Ecuador; 337800 text messages, and a monthly average of 13.58 Gb.

OSIPTEL

Table N° 7: Overall Volume of Roaming Traffic in Ecuador (2012)

	JAN.	FEB.	MAR.	APRIL	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
Roaming Calls (minutes)	450174	442812	526356	548616	509565	494066	464217	492823	512517	525028	577474	523417
Roaming SMS (messages)	464283	423426	460498	420438	447462	422088	523923	418385	38361	38725	356776	39238
Roaming GPRS (GB)	9.07	10.4	13.96	15.22	14	13.33	12.3	15.64	14.53	15.78	16.46	12.26

Table 8 shows the total volume of Argentina's traffic:

Table 8: Total volume of roaming traffic in Argentina??? (2012)

	TYPE OF USER	VOICE		SMS		TOTAL DATA TRAFFIC (IN KB)	TOTAL NUMBER OF USERS
		ENTRANTE	SALIENTE	ENTRANTE	SALIENTE		
BOLIVIA	Post-paid	503.949	719.891	762.645	696.094	18.864.076	80.250
	Pre-paid / Mixed	108.227	173.193	4.400.825	1.765.003	92.144	511.838
	Subtotal	612.176	893.084	5.163.470	2.461.097	18.956.220	592.088
BRAZIL	Post-paid	3.548.735	6.053.896	6.660.918	7.222.522	601.824.679	881.804
	Pre-paid / Mixed	1.307.281	1.629.364	12.276.476	13.703.425	17.793.774	1.578.719
	Subtotal	4.856.016	7.683.260	18.937.394	20.925.947	619.618.453	2.460.523
CHILE	Post-paid	2.733.286	3.880.808	6.001.695	3.408.678	248.237.085	639.923
	Pre-paid / Mixed	1.128.027	1.045.871	17.253.996	10.162.541	237.880	1.312.519
	Subtotal	3.861.313	4.926.679	23.255.691	13.571.219	248.474.965	1.952.442
PARAGUAY	Post-paid	1.594.843	1.629.532	3.106.183	2.895.433	188.450.965	282.718
	Pre-paid / Mixed	8.495.387	3.496.394	65.013.970	30.949.928	268.937.882	2.643.258
	Subtotal	10.090.230	5.125.926	68.120.153	33.845.361	457.388.847	2.925.976
URUGUAY	Post-paid	10.929.503	17.033.601	12.851.585	12.163.702	1.022.419.592	1.340.833
	Pre-paid / Mixed	4.684.295	5.363.786	25.972.920	24.056.322	439.654.273	2.603.014
	Subtotal	15.613.798	22.397.387	38.824.505	36.220.024	1.462.073.865	3.943.847
Total	**Total**	**35.033.533**	**41.026.336**	**154.301.213**	**107.023.648**	**2.806.512.350**	**11.874.876**

Only five countries provided information on the number of terminals that used roaming in the last year, and projections for coming years. Table 9 includes that information, as well as the monthly average number of terminals that used roaming in 2011, and projections for 2012 and 2016.

Table N° 9: Terminals that accessed roaming services - 2011

	PERU	VENEZUELA	BRAZIL	HONDURAS	ECUADOR
Monthly Average	83,000	9,700	4,000,000	78,169	44,000
2012 projections	n.d.	5% increase	20% increase	9% increase	20% annual increase
2016 projections	n.d.	20% increase	n.d.	n.d.	

Source: Replies submitted by countries
Prepared in house.

2.2.2 Prioritizing Borders

This section contains information on borders accorded priority by each country, including information on existing border areas and those that may be accorded priority to facilitate international roaming, and reports the main destinations of out-bound travelers and the main countries of origin of in-bound travelers. This information assists in designing policies for the implementation of border roaming.

▸ Peru indicates that the establishment of priority border areas for development is State policy. Peru is currently addressing border roaming issues with Brazil, Chile and Ecuador as a priority matter. Peru also indicates that the leading destinations of its out-bound travelers are Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Panama, Spain, and United States. The main countries of origin of in-bound travelers are: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Netherlands, Spain, and United States.

▸ Dominican Republic indicated that it has only one border, with Haiti.

▸ Chile indicated that it was now working on the roaming issue with the Governments of Peru and Argentina. It also reported that the main destinations of its out-bound travelers are: Argentina, Peru, United States, and Brazil. The main countries of origin of travelers visiting Chile are: Argentina, Peru, Brazil, and Bolivia.

▸ Guatemala reports borders with Mexico, Belize, Honduras, and El Salvador and indicates that the departments with borders are: El Petén, Huehuetenango, El Quinché, San Marcos, Jutiapa, Chiquimula, Izabal, and Zacapa. It also reports that the main destinations of its outbound travelers and places of origin of its in-bound travelers are: United States of America, Central America, Mexico, Europe, and South America.

OSIPTEL

▸ El Salvador reports that priority can be given to its border areas with Honduras, Nicaragua, and Guatemala. It indicates that the main destinations of its outbound travelers and countries of origin of its in-bound travelers are: United States of America, Canada, Guatemala, Honduras, and Nicaragua.

▸ Venezuela reports that at present there are no major impacts in border areas. However, owing to its population density, the Colombian-Venezuelan border area could be accorded priority.

▸ Honduras reports that priority can be given to its following border areas: with Guatemala, with El Salvador, and with Nicaragua. It indicates that the main destinations of its outbound travelers and countries of origin of its in-bound travelers are: United States of America, Canada, Guatemala, El Salvador, Spain, Nicaragua, Costa Rica, Panama, and Colombia.

▸ Ecuador reports that the border areas in Northern Ecuador are the provinces of Carchi, Sucumbíos, and Esmeraldas, while in Southern Ecuador, they are the provinces of El Oro, Loja, and Zamora, comprising the parishes and cantons nearest the Colombian and Peruvian departments. It also mentions that the main destinations of its outbound travelers and countries of origin of its in-bound travelers are:

  ✦ Out-bound: Dominican Republic, United States of America, Colombia, Paraguay, Canada, Mexico, Peru, Argentina, Bolivia, Spain, Cuba, and Panama.
  ✦ In-bound: United States of America, Colombia, Mexico, Spain, Peru, and Chile

▸ Brazil indicates that it has borders with French Guiana, Suriname, Guyana, Venezuela, Colombia, Peru, Bolivia, Paraguay, Argentina, and Uruguay. It notes that, among South American countries, the only countries with which it does not have a border are Ecuador and Chile. The main destinations of its outbound travelers and countries of origin of its in-bound travelers, which may vary from month to month, are:

  ✦ Out-bound: United States of America, Argentina, France, Uruguay, Paraguay, Italy, Germany, United Kingdom, Portugal, and Spain.
  ✦ In-bound: United States of America, Argentina, Uruguay, Paraguay, Italy, Portugal, Mexico, Colombia, United Kingdom, and Spain.

▸ Colombia indicates that the operator Movistar has special treatment for cross-border roaming with Ecuador and Venezuela.

✈ Out-bound: United States of America, Mexico, Peru, Ecuador, Venezuela, Panama, Brazil, Argentina, and Spain

✈ In-bound: Spain, Venezuela, United States of America, Brazil, Argentina, Canada, Chile, France, and United Kingdom.

▶ Canada reports that it has a border with the United States of America.

▶ Panama reports that the Central American region, through COMTELCA, is discussing the issue of inadvertent cross-border roaming, since this problem affecting the borders of all Member States. In particular, in the case of Panama, the problems of cross-border roaming arise only on the Costa Rican side since, on the Colombian side, natural barriers exist that prevent the phenomenon from occurring in this area.

▶ Argentina reports that it considers priorities the border areas with all its neighboring countries (Bolivia, Chile, Brazil, Paraguay, and Uruguay), except, for geographic reasons, with Republic of Chile (the presence of the Andes mountains).

✈ Out-bound: Uruguay, Chile, Brasil, Paraguay, Estados Unidos, Canadá, Europa y Bolivia.

It may be noted from the information reported that there is an association of the border areas between Member States with the countries of origin and destination of migration. This may be an element to be taken into account by the Member States in designing their policies for border area development and prioritization of areas for promotion of cross-border roaming.

To supplement the survey information forwarded by the Member States, it was deemed advisable to incorporate a section describing the national borders where inadvertent roaming has an impact. That information may be found in Section 4.3.

2.2.3 Relevant information in adopting international roaming-related regulatory measures on the relationship between operators and users and to improve roaming services provided.

This section contains reported information that may be relevant in adopting regulatory measures on international roaming and improving roaming services

OSIPTEL

provided. To that end, details are provided of the information forwarded on user complaints regarding the roaming service, and the measures taken, which may relate to better protection of users of international roaming services or to promoting competition and technological alternatives to the roaming service for communications by users when traveling abroad.

Regarding the information provided on user roaming-related complaints, it was found that in most countries that reported this information, the main complaints relate to billing, since 100% of the countries indicate that this is the most recurrent issue, followed by problems such as no service when abroad, and problems with the network or service operation. Table 9 provides details of this information, showing the total complaints regarding roaming for 2011[11] and the main recurrent issues.

Table N° 10: Complaints from Customers regarding Roaming

	Peru	Venezuela	Brazil	Argentina	Chile	Honduras	Panama	Costa Rica	Ecuador
Number of complaints	384	n.d.	700	n.d.	794	n.d	54	32	238
Main subjects of complaint	• Billing • Quality • No service when abroad • Reactivation	• High prices • Inaccurate usage charges	• Billing • Problems with the network	• Inaccurate cost information • No service when abroad	• Billing	• Inaccurate usage charges • Faulty service operation	n.d.	n.d.	n.d.

Source: Replies from countries
Prepared in-house

Regarding technological alternatives to the roaming service that may be accessed by users for communication when abroad, eight countries reported their information.

Seven of these countries indicated that one alternative is to use the VoIP service, i.e., to use the Internet as a means of communication, e.g., through applications such as Skype. Three of the countries indicated that SIM cards could be purchased from the country's operators to use their unblocked mobile terminals and for long distance
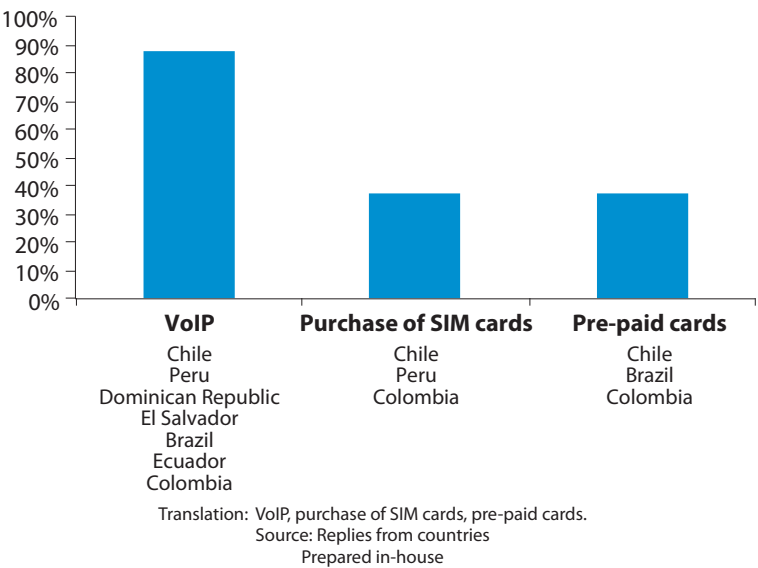
---

11 2012 in the case of the data for Ecuador.

communications. Three other countries indicated that another possibility was to purchase prepaid cards to make long distance calls.

Note that none of these alternatives is an exact substitute for the roaming service since, among other details, although users can communicate with their contacts, they cannot receive calls or SMS from contacts wishing to communicate with them at their usual number. This information is shown in Figure 3.

Figure N° 3: Alternatives to the roaming service for communications by travelers

VoIP
Chile
Peru
Dominican Republic
El Salvador
Brazil
Ecuador
Colombia

Purchase of SIM cards
Chile
Peru
Colombia

Pre-paid cards
Chile
Brazil
Colombia

Translation: VoIP, purchase of SIM cards, pre-paid cards.
Source: Replies from countries
Prepared in-house

Lastly, regarding mechanisms to ensure that consumers have correct information on the roaming service, of the 11 countries that replied, seven indicated that they only monitor information provided by companies on their web pages, brochures, advertising, or welcome to the service messages.

Three countries also indicated that they had made efforts to create guidelines or brochures for potential users of international roaming services. And only Panama reported that they had also made efforts to provide talks in secondary schools regarding the proper use of roaming and other telecommunications services.

Panama also reported in its most recent communication that the GSMA had arranged to launch in September 2012 a Roaming Transparency Plan whose aim was to inform users of this service, and of the tariffs for use of the service in the country visited, all this through text messages (SMS), with all tariff information. It is also wished to implement mechanisms for imposing usage limits on roaming, including alert messages when the customer is close to his roaming usage limit, something never before implemented.

Ecuador also noted that according to Regulatel's final report on the international roaming service in Latin America, prepared by Mr. Arturo Briceño, the information provided by one operator of Ecuador is the most complete. It also indicates that the measures being taken are:

▸ Access to roaming is not preactivated; rather it must be expressly requested prior to travel.
▸ At the time of service activation, the sales representative provides the customer with a detailed explanation of the charges, by operator, for the country he/she wishes to visit.
▸ The information is repeated by e-mail.
▸ The customer service number is available 24/7 for information and complaints. Free call for customers in Ecuador and abroad.
▸ Welcome message sent when connecting via roaming the in destination country
▸ Periodic data usage messages sent.
▸ Notification of suspended data service when the limit of the package contracted has been used.

This information is summarized in Table 11.

Table N° 11: Means of Providing Users with Information on the Roaming Service

	PERU	DOMINICAN REPUBLIC	VENEZUELA	BRAZIL	ARGENTINA	CHILE	COLOMBIA	ECUADOR	GUATEMALA	PANAMA
Information provided by companies (web, welcome SMS, brochures, advertising)	x	x	x	x	x	x	x	x	x	x
User guide or brochures				X					X	X
Other user education efforts										- Talks in secondary schools on proper use of roaming and other telecommunication services - Roaming Transparency Plan

Source: Replies from countries
Prepared in-house

In the case of Peru, as a result of OSIPTEL's evaluation, needs were identified to:

(i) Guarantee and strengthen the rights of users to receive clear and complete information when they request activation of the international roaming service or when using this service, so that they can take adequately informed decisions regarding usage.

(ii) Establish rules to be followed by operators in activating the international roaming service when subscribers haves expressly requested it to safeguard their rights and not harm their economic interests.

In that context, in July 2013, the measure was amended that establishes the rights and obligations of ???cooperators, subscribers, and users of public telecommunication services, both at the time of contracting the service, during its provision, and at the end of the contractual relationship. Specific obligations on international roaming for mobile service operators were included in the measure.

OSIPTEL

Details of these are provided below:

▸ Operators are obliged to provide information free of charge to users or subscribers on the conditions on which international roaming is provided, the applicable tariffs for the most visited destinations and, if applicable, for the border areas, as well as the activation and deactivation procedure, so that they can take appropriate usage decisions.

▸ Bearing in mind the growing importance of the Internet as a consultation tool and since OSIPTEL has established for operators with a web page the obligation to include thereon information deemed necessary and relevant to users and subscribers, consideration has been given to the relevance of also including information on the international roaming service to assist in taking a decision as to whether to activate this service, and for its adequate use and usage. Among information for inclusion on operator web pages is the international roaming service activation and deactivation procedure, the applicable tariffs, and the conditions of service.

▸ Since the international roaming service is used by subscribers in the period during which they are abroad, it also was deemed advisable to enable them to indicate to the operator the time during which they need the service to be active. To that end, an obligation was imposed that at the time subscribers request activation of the service, operators must mandatorily inform them of the possibility of activating the service for a specific period or indefinitely.

▸ It was deemed necessary to establish an operator obligation to provide subscribers requesting the international roaming service activation with information on:

✓ The contractual and usage conditions for the service.
✓ The applicable tariffs (by voice and/or data messaging) for the most visited destinations, also taking into account that if the service is used in border areas, requesters must also be informed of the existence of specific tariff plans for these areas.
✓ Details of service usage included on the payment receipt and, for prepaid subscribers, usage details sent electronically, in the latter case, sending these details to an e-mail account provided by the subscriber or via an IT tool created by the operator on its web page.
✓ How information and assistance may be requested free of charge when roaming.
✓ The electronic link leading directly to the specific information on the

international roaming service, which must be provided on the operator web page.

▸ It was also made mandatory for operators to communicate with subscribers every time their international roaming service is active and they access a network abroad, by telephone and/or by a text message sent or by other similar mechanisms, entirely free of charge, so as to inform them of:

✓ The operating capacity and implementation of the service.
✓ The tariffs to be applied for the voice, messaging, and data services.
✓ The free telephone number operators set up for questions and complaints regarding the international roaming service.

▸ In the corresponding cases, operators must also inform subscribers of the international roaming service usage limits (voice, text messaging, and data), by sending text messages periodically.

▸ As regards the limited usage data service, operators are also obliged to suspend the service when the download capacity contracted by the subscriber has been reached.

Additionally, mobile public service operators have been including access to the international roaming service in their model subscriber contracts, which, if activated by default, enable subscribers to access a network abroad other than that of their operators, without that access having been explicitly requested. This situation has led to various questions and complaints by subscribers to these services, since inclusion of access to international roaming in service contracts does not enable subscribers to opt not to contract this service, since subscriber contracts are entirely non-negotiable membership contracts.

Therefore, it was deemed relevant to establish a subscriber right to request international roaming service activation or deactivation and to stipulate that such requests must be handled within the twenty-four (24) hours after they are made. Another stipulation was that operators could only activate or deactivate international roaming upon express subscriber request, utilizing to that end any contracting mechanism envisaged.

Note that these measures will also help reduce problems of what has been termed "inadvertent or cross-border roaming," which affects subscribers in cities in border

OSIPTEL

areas, whose service, owing to their proximity to a neighboring country, may sometimes access the network of an operator of that country.

Therefore, it is hoped that subscribers living near a border with another country who decide not to contract for activation of roaming will not be impacted by the above-mentioned problems. Note that, unlike contracting for other additional or supplemental services, access to international roaming calls for special rules such as those described above, since tariffs for this service are especially high. This situation has meant that most complaints regarding billing for this service are questions regarding amounts considerably higher than those for tariff plans for the main service contracted.

Lastly, so that subscribers with access to preactivated international roaming are not impacted by unintended usage amounts that may be generated as international roaming, it was stipulated that from October 1, 2013 to March 31, 2014, operators providing international roaming must automatically (by default) inform all subscribers who have activated the service, without a specific contracting mechanism for this service, of:

▸ The date on which the service will be deactivated, i.e., April 1, 2014; and
▸ The possibility of requesting international roaming activation in accordance with the established rules.

Additionally, so as not to affect subscribers who, although they have not properly contracted for access to international roaming, intend to continue using that service, it is stipulated that one year after the above-mentioned period, the operator will deactivate international roaming for those subscribers that have not indicated their consent to activate the service, except those who are abroad at the time. In this last situation, operators must deactivate international roaming when the subscriber returns to national territory, having informed him or her during roaming of the time that deactivation will take place.

3   Additional information on the roaming services in the Member States.

3.1   Information on the service operators provide

To supplement the report with data of interest and provide additional information for analysis of the roaming service information being provided to users, information has been updated that was taken from the *"Informe Final sobre Roaming Móvil Internacional en América Latina: Estrategias de comunicación y desarrollo de estrategias de mejora y estandarización de la información"* [Final report on international roaming in Latin America: Communication strategies and the development of strategies for improving and standardizing information], prepared by Arturo Briceño for Regulatel in 2011.

The information was updated by OSIPTEL to July 2013, so as to have the most recent information on the implementation of transparency of the information provided by operators on their web pages.

Table 12 shows 12 of the 13 items used in that report to evaluate the transparency of information on the web portals of the 75 operators analyzed, of 18 Member States, and of three European Union member countries to take stock of the information provided to users in each of these countries.

OSIPTEL

Table N° 12: Information Items Provided by Operators
on Their Web Pages

	INFORMATION ITEMS PROVIDED BY OPERATORS
Item 1	Roaming service start and end dates
Item 2	Rates by country or zone
Item 3	Incoming and outgoing voice/SMS rates
Item 4	Whether voice, SMS, and data services may be contracted for separately
Item 5	Whether rates include value added tax
Item 6	Whether voice service is billed by the minute or minute fraction
Item 7	Customer service information (free lines, e-mail, etc.)
Item 8	Service activation modalities
Item 9	Service configuration by cellular device model
Item 10	Which operator or operators can be used for roaming in each country
Item 11	Information on the different plans available (prepaid, post-paid, packages)
Item 12	Coverage information (services available in each country)
Item 13	Alerts or notifications to customer on any billing limits

Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

The information items provided most often by the operators are on customer service, tariffs differentiated by country or area, and the different incoming and outgoing voice and SMS rates. Other information items also often provided by operators are service activation modalities, coverage information, and information on operators with which they have commercial agreements for the provision of this service.

Information items provided by approximately 60% of operators are on the different roaming service plans available, type of billing (minute or minute fraction), and the possibility of contracting voice or data packages separately.

Lastly, the information items least often provided by operators are service start and end dates and the existence of alerts when a billing limit has been reached. This information is summarized in Figure 4.

**Figure N° 4: Percentage of operators providing each information item**
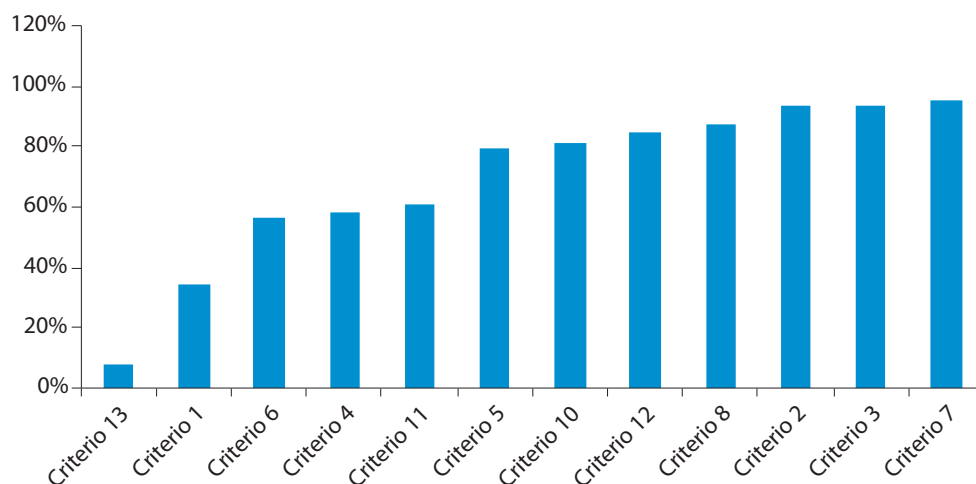
Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

Annex I also contains a description of the number and percentage of operators that provide information on each of the aforementioned 12 information items, for evaluation of the information that should be provided in greater depth in each country. This may also serve as the basis for each country's regulatory bodies, since it makes it possible to note the information provided by the countries providing the highest percentage of information, for the establishment of recommendations in their respective countries.

For its part, Figure 5 shows the percentage of the 12 information items that is provided by each country. It clearly shows that of the 18 Member States included in the analysis, Honduras provides, on average, the fewest information items. It is followed by Guatemala, Bolivia, and Dominican Republic. Chile is on the opposite side of the figure, being country providing on average the highest percentage of information items, followed by Argentina, Uruguay, Paraguay, Peru, and El Salvador.

OSIPTEL

Figure N° 5: Percentage of information items provided by each country
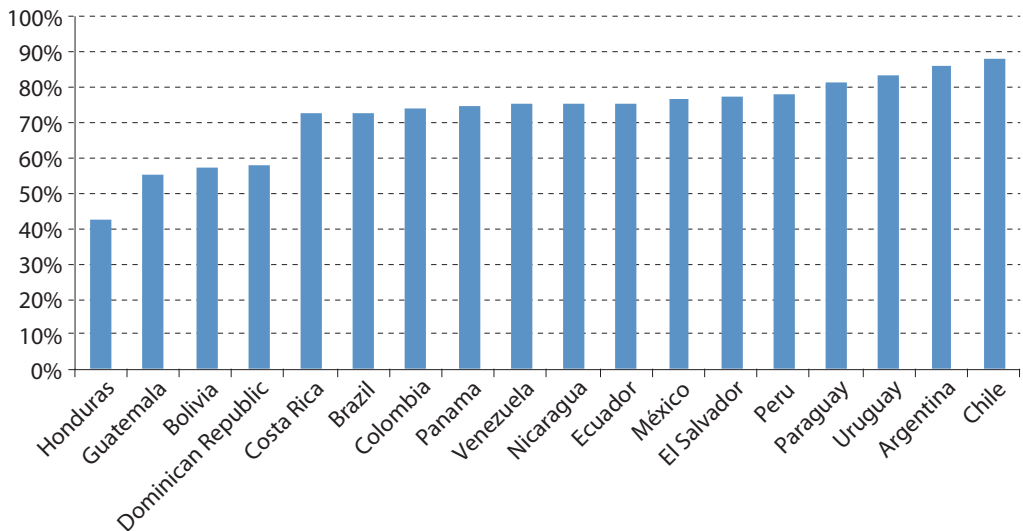
3.2 Rates information.

Among the most important factors hindering the growth of the international roaming market are the high rates users must pay to use the international roaming service. To demonstrate this, provided below is a comparison of tariffs users must pay for the roaming services rather than for an alternative that would, for example, enable them to make long distance calls.

3.2.1 Country comparison of international roaming rates.

A table has been prepared showing per minute rates charged when a user from another country travels to the United States and wishes to call his country utilizing international roaming, compared to the international long distance rates from the same country to the United States (since it is considered that international long distance calls are a alternative to international roaming). And, lastly, a third column has been added showing the extra percentage an international roaming minute costs compared to an international long distance minute.

Note that the tariffs shown in the second column (ILD) correspond to the lowest mobile service tariff found on each country's web pages. Therefore, some downward skewing may be present in the third column, since there are "cheaper" alternatives, such as long distance calls utilizing prepaid cards, or fixed telephony. However, this information was requested of the Member States, but replies were not received or the countries that answered reported that this information was unavailable.

Table 13 shows this information. For example, in Dominican Republic, the cost per minute of a call made via roaming from the United States to the Dominican Republic is US$1.54, while the per minute cost of an ILD call is only US$0.09, so that a call made via roaming costs 1611% more.

The table clearly shows that even in Bolivia, one of the countries with the smallest margin between the cost of roaming and international long distance, the difference is large, roaming costing 326% more.

Countries such as Venezuela, Panama, Guatemala, Honduras, El Salvador, and Dominican Republic have extremely large margins, where the roaming tariff is over 1000% more than the international long distance rate.

OSIPTEL

Table N° 13: Voice roaming charges per minute compared to ILD to the United States– 2013

	PER MINUTE VOICE ROAMING RATE (FROM U.S. TO COUNTRY OF ORIGIN) 2013	ILD RATE TO THE U.S. 2013	PERCENTAGE EXTRA
Paraguay	1	0.64*	56%
Brazil	2.23	0.95*	135%
Bolivia	2.3	0.54	326%
Chile	1.94	0.6	223%
Mexico	0.47	0.19*	147%
Peru	2	0.49	308%
Argentina	1.65	0.22	650%
Ecuador	1.5	0.35	329%
Uruguay	1.37	0.24	471%
Colombia	1.98	0.26	662%
Venezuela	2.03	0.07	2800%
Nicaragua	1.5	0.15	900%
Costa Rica	1.45	0.14	936%
Panama	2.04	0.11	1755%
Dominican Republic	1.54	0.09	1611%
Guatemala	1.64	0.11	1391%
Honduras	2.5	0.13	1823%
El Salvador	1.83	0.11	1564%

Prepare in house.
Note: (*) For Paraguay, Brazil, and Mexico, the ILD information could not be updated.

Figure 6 makes this more explicit, showing as a bar graph the high minute cost in US$ of a voice call via roaming. That figure also shows that Costa Rica, Venezuela, and Brazil have the highest rates and Mexico the lowest[13].

---

13 This information may be skewed because it takes the United States, with its geographic proximity to Mexico, as the base country.

**Figure N° 6:** Tariffs per minute for roaming from and ILD calls to U.S.
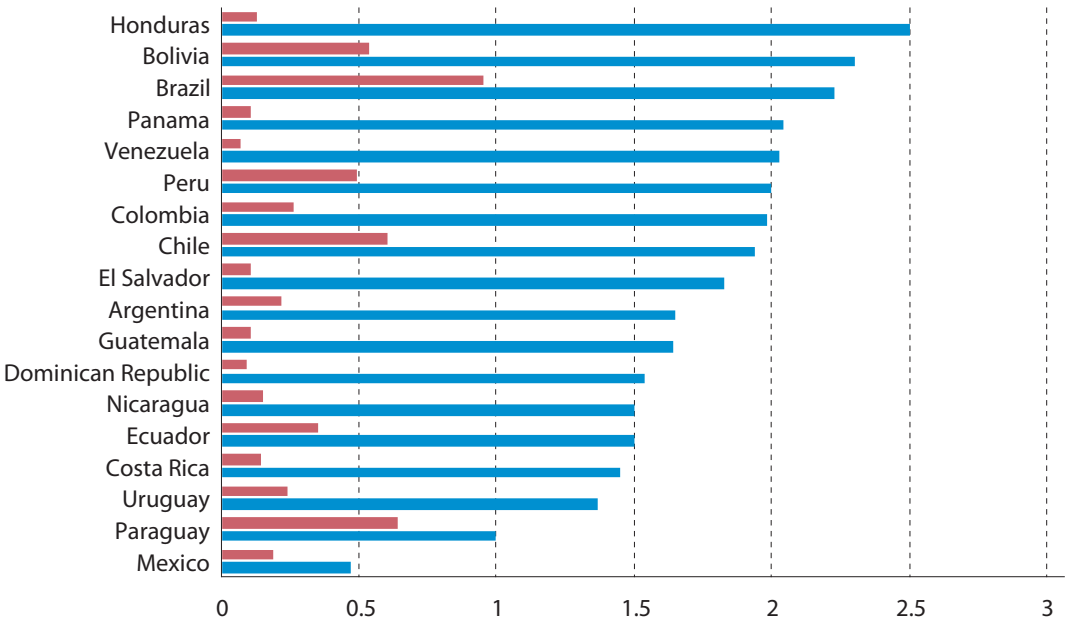
Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

3.2.2 The case of Peru.

Presented below, as illustration, is information on international roaming tariffs imposed by Peru's operators.

Figure 7 shows per minute tariffs in soles, for outgoing calls to Italy, Spain, Germany, and the North, Central, and South American countries for the three operators providing roaming in Peru. Note that the border area warranting greatest attention are in South America, where tariffs are also higher than for the other border areas.

OSIPTEL

Figure N° 7: Per minute tariffs for outgoing roaming calls (in soles)* - 2013
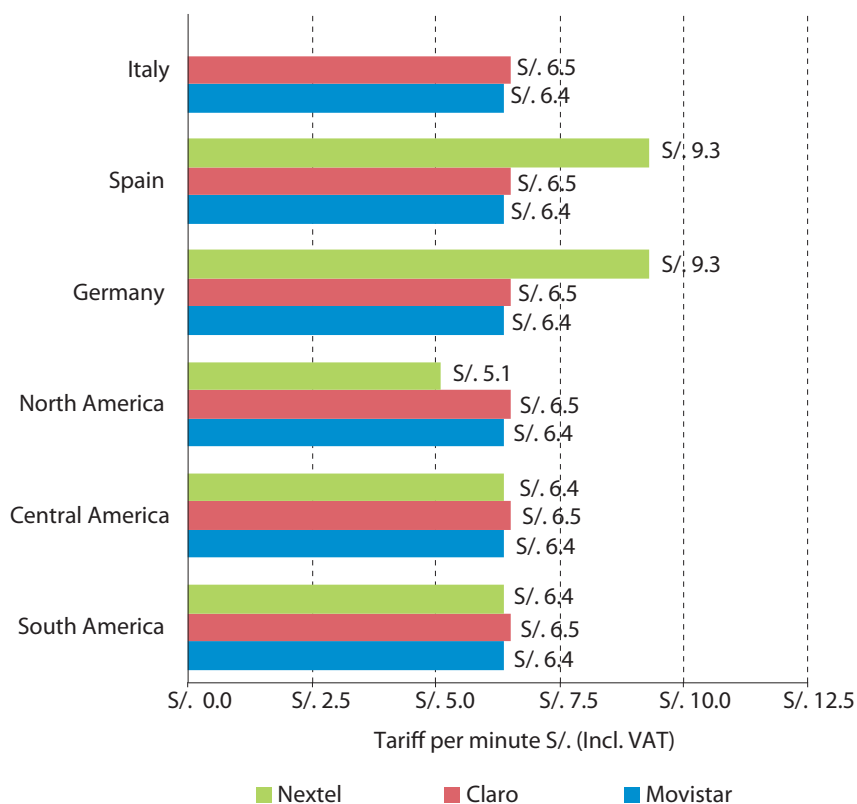
Source: SIRT-Perú
Prepared in-house

* NOTE:

▸ Movistar and Nextel publish their tariffs in US$, for which an exchange rate equivalent to S/. 2.550 was used, corresponding to the simple average of the informal buy and sell rates published by the Central Reserve Bank from January 1 to 31, 2013.

▸ Nextel's tariffs are valid for its "3G International Roaming" service. They are not valid for outgoing roaming calls from Ecuador, Guyana, Belize, or Nicaragua.

▸ Claro's tariffs do not include in South America Bolivia, Guyana, Suriname, or Venezuela, which have a per minute tariff of S/. 10.50. Neither do they include Belize in Central America, whose per minute tariff is S/. 10.50.

▸ Nextel's tariffs do not include Suriname in South America (if the user makes outgoing roaming calls from this country, the outgoing per minute tariff would be S/. 9.31); and in North America do not include Canada and Mexico (if the user makes outgoing roaming calls in these countries, he will be charged an outgoing per minute tariff of S/. 6.37).

Figure 8 shows the per minute tariffs of incoming roaming calls for the same destinations. Note that although they are lower, they are still very high.

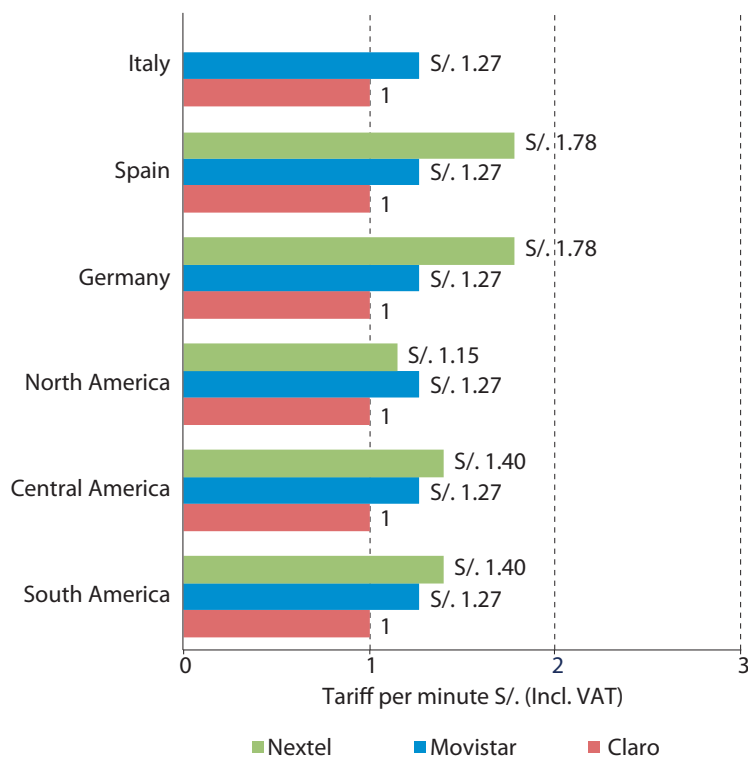**Figure N° 8: Per minute tariffs for incoming roaming calls (in soles)* - 2013**
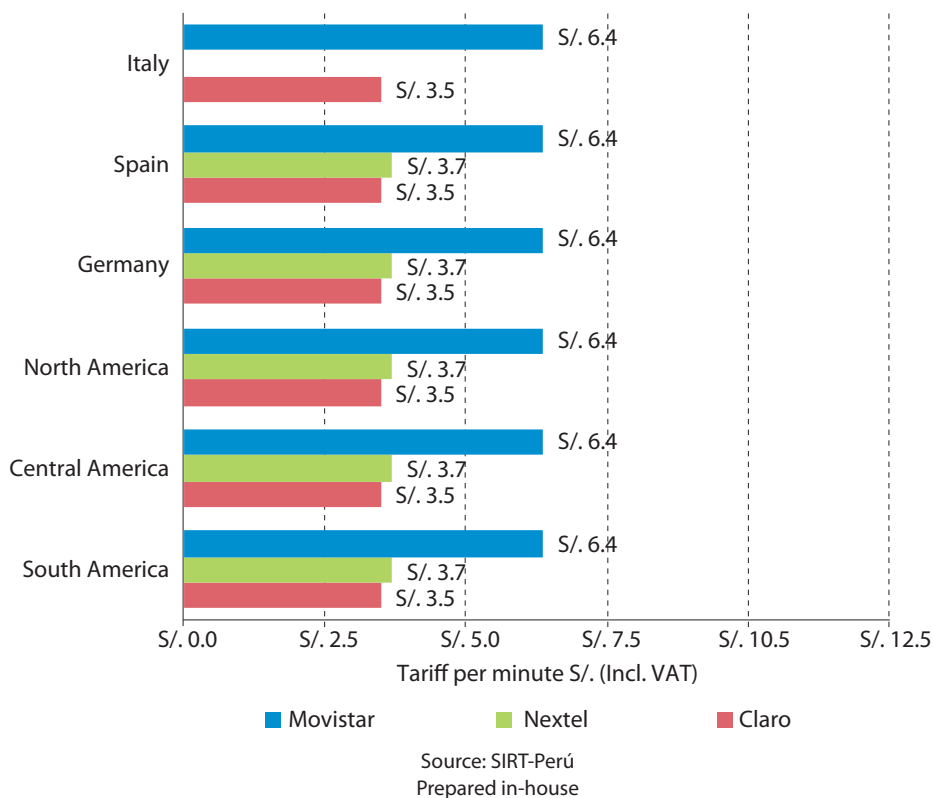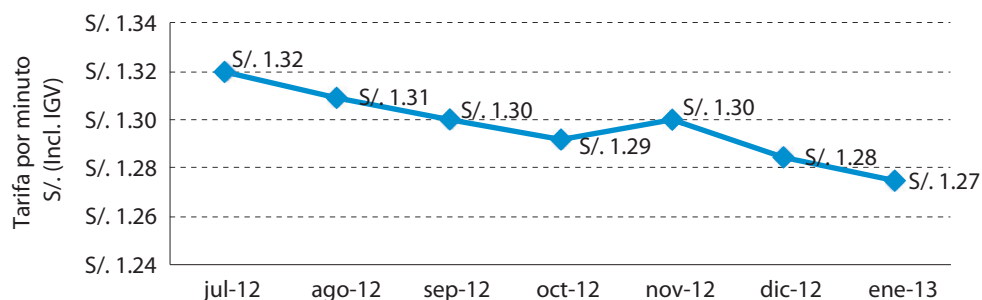

Source: SIRT-Perú
Prepared in-house

* NOTE:
- Movistar and Nextel publish their tariffs in US$, for which an exchange rate equivalent to S/. 2. 550 was used, corresponding to the simple average of the informal buy and sell rates published by the Central Reserve Bank from January 1 to 31, 2013.
- Nextel's tariffs are valid for its "36 International Roaming" service. They are not valid for outgoing roaming calls from Ecuador, Guyana, Belize, or Nicaragua.
- Claro's tariffs do not include in South America Bolivia, Guyana, Suriname, or Venezuela, which have a per minute tariff of S/. 6.50. Neither do they include Belize in Central America, whose per minute tariff is S/. 6.50.

OSIPTEL

Figure 9 shows outgoing roaming text message (SMS) tariffs for the same destinations. Note that no charges are incurred for incoming SMS .

Figure N° 9: Tariffs per outgoing roaming SMS text message (in soles)* - 2013

Source: SIRT-Perú
Prepared in-house

* NOTE:

▶ Movistar and Nextel publish their tariffs in US$, for which an exchange rate equivalent to S/. 2. 550 was used, corresponding to the simple average of the informal buy and sell rates published by the Central Reserve Bank from January 1 to 31, 2013.

▶ Nextel's tariffs are valid for its "36 International Roaming" service. They are not valid for outgoing roaming SMS from Ecuador, Guyana, Belize, or Nicaragua.

▶ Claro's tariffs do not include in South America Bolivia, Guyana, Suriname, or Venezuela, which have an outgoing SMS per minute tariff of S/. 1.50. Neither do they include Belize in Central America, whose outgoing SMS per minute tariff is S/. 1.50.

▶ Nextel's tariffs do not include Suriname in South America (if the user uses roaming SMS from this country, the tariff will be S/. 1.78); and in North America they do not include Canada and Mexico (if the user uses outgoing roaming SMS, in these countries the tariff will be S/. 1.40).

Lastly, an important aspect of the Peruvian roaming market is that since July 2012, one of the country's operators entered into commercial agreements with its neighboring countries of Ecuador and Chile for special tariffs for roaming users. This service was designated as cross-border roaming and applies to customers connected with the operator Movistar in Arica (Chile) or El Oro (Ecuador), and applies both to incoming calls and calls made to Peru or within the country visited, and is only available to post-paid customers.

Data on the trend in these tariffs is shown in Figure 10.

Figure N° 10: Trend in per minute tariffs (S/.) for "cross-border roaming"

Source: SIRT-Perú
Prepared in-house

This shows that progress is being made by the operators themselves to seek a differentiated cross-border roaming service, which may be replicated by the other operators.

Additionally, in Peru, a series of activities have been implemented to promote appropriate international roaming usage and its informed provision at low tariffs potentially promoting its use in border areas. To that end, a bilateral agreement has been concluded with Ecuador and negotiations are under way for the conclusion of agreements with Brazil and Chile.

OSIPTEL

With Ecuador, there was evident need to work on a regulatory framework that promoted providing users with information on international roaming so that users could take informed decisions regarding contracting for and using it. Agreements with Ecuador provide for the preparation of studies for the identification of possible solutions to the problems identified (taxation, tariffs, etc.). This agreement is now being implemented.

As for Brazil, work is being done to conclude an agreement for the design and implementation of a pilot project to provide cross-border roaming at close-to-local tariffs. With Chile, efforts are being made to coordinate the conclusion of an agreement that also includes user information measures and measures to resolve tariff issues, both international roaming and cross-border.

3.3   Inadvertent roaming and national borders

The problem of inadvertent cross-border roaming is well-known in our región. Therefore, to complement the information forwarded by the Member States and to prepare a more in-depth analysis, our review is based on information from the "Report on inadvertent roaming," prepared in March 2013 by Rafael Gold, for Regulatel.

Table 14 shows 45 of the region's borders and specifies whether the incidence of inadvertent roaming is high, low, or only very sporadic. The table also shows whether measures to address problems of inadvertent roaming should be considered a priority.

Lastly, the table provides reasons for according priority to border areas with incidence of inadvertent roaming, or whether the area warrants lower priority.

Table N° 14: National Borders and Incidence of Inadvertent Roaming

	COUNTRY 1	COUNTRY 2	CITY 1	CITY 2	PRIORITY	IR	REASON
1	Mexico	Guatemala	Ciudad Hidalgo	Tecun Uman	Yes	High	Overlapping cities
2	Mexico	Guatemala	Tuxia Chico	El Carmen	Yes	High	Overlapping cities
3	Mexico	Guatemala	Hidalgo border		Yes	High	Overlapping cities
4	Costa Rica	Panama	Canoas border crossing		Yes	High	Overlapping cities
5	Guatemala	El Salvador	There are no border cities or they are very remote		No	None	
6	Guatemala	Honduras			No	None	
7	El Salvador	Honduras			No	None	
8	Nicaragua	Honduras			No	None	
9	Costa Rica	Nicaragua			No	None	
10	Colombia	Venezuela	Cúcuta	Ureña / San Antonio de Táchira	Yes		Cities not separated
11	Colombia	Venezuela	Arauca	Amparo de Apure	No	None	
12	Colombia	Venezuela	Puerto Carreño	Puerto Páez	No	None	
13	Colombia	Ecuador	Tulcán	Ipiales	No	None	
14	Colombia	Peru			No	None	
15	Colombia	Brazil	Leticia	Tabatinga	Yes		Adjoining cities (only one post) Unrestricted movement
16	Ecuador	Peru	Huaquillas	Zarumilla	Yes		Adjoining cities (only one bridge) Commercial traffic
17	Peru	Chile	Tacna -	Arica	No	Low	Separated by a desert (40Km)
18	Peru	Bolivia	Desaguadero border		Yes	High	Adjoining cities (only one bridge) Heavy commercial traffic
19	Peru	Brazil	Iñapari	Assis	Yes		High vehicular traffic (interoceanic)
20	Peru	Brazil	Small remote populations		No	None	
21	Bolivia	Chile	Visviri	Charana	No	Low	Small population (< 4,000 inhab.)
22	Bolivia	Chile	Colchane	Pisiga	No	Low	Small population (< 4,000 inhab.)
23	Bolivia	Argentina	Villanzon	La Quiaca	Yes		Adjoining cities (only one river) Large population (> 60,000 inhab)
24	Bolivia	Argentina	Bermejo	Aguas Blancas	No		Moderately remote cities (>208Km)
25	Bolivia	Argentina	Yacuiba / San Jose de Pocitos	Salvador Mazza	Yes		Large population (> 300,000 inhab.) Major commercial center
26	Bolivia	Brazil	Puerto Suarez	Corumbá	Yes		The region's lead development pole –Main port (of global importance)
27	Bolivia	Brazil	Guayamirin	Guajara Mirim	Maybe		Tourism site
28	Bolivia	Brazil	Cobija	Brasileia	Maybe		Large population (> 60,000 inhab.)
29	Argentina	Chile	Los Antiguos	Chile Chico	No	None	
30	Argentina	Chile	28 de Noviembre	Puerto Natales	No	None	
31	Argentina	Chile	Ushuaia	Puerto Williams	No	None	
32	Argentina	Paraguay	Colorinda	Asunción	Yes		Asunción is the capital and largest city (>2,500,000 inhab.) Cities nearby (4km)
33	Argentina	Paraguay	Rural border areas		Yes	Low	
34	Argentina	Brazil	Ciudad del Este	Foz de Iguazú / Puerto Iguazú	Yes	High	Three borders Large population (>650,000 inhab.)
35	Argentina	Brazil	Rural border areas		Yes	Low	
36	Argentina	Uruguay	Rural border areas		Yes	Low	
37	Brazil	Uruguay	Artigas	Quarai			Adjoining cities (Only one bridge) Major commercial link Large population (> 70,000 inhab.)

OSIPTEL

38	Brazil	Uruguay	Rivera	Santana do Livramento	Yes		Adjoining cities (Share an international square) Unrestricted movement
39	Brazil	Uruguay	Acegua	Acegua	Maybe		Adjoining cities (Only one street)
40	Brazil	Uruguay	Rio Branco	Acegua	Maybe		Adjoining cities (Only one bridge)
41	Brazil	Paraguay	Guairá	Salto del Guairá	Yes		Cities not remote (6km) Large population (> 150,000 inhab.)
42	Brazil	Paraguay	Paranhos	Ypehú	Maybe		Overlapping cities
43	Brazil	Paraguay	Coronel Sapucaia	Capitán Bado	Maybe		Adjoining cities (only one street)
44	Brazil	Paraguay	Punta Pora	Pedro Juan Caballero	Yes		Urban cone Large population (> 200,000 inhab.)
45	Brazil	Paraguay	Bela Vista	Bela Vista Norte	No		

Source: Report on inadvertent roaming (R. Gold)- Regulatel.
Prepared in-house.

As the table above shows, many cities are separated only by a street, bridge, or river, and therefore movement by citizens living in them is entirely unrestricted. This leads to recurrent incidences of inadvertent roaming in those cities.

Other border areas are major commercial centers, such as the Desaguadero border (Peru-Bolivia border), where residents periodically move from one country to the other, which may lead to manifest problems of roaming.

Additionally, some highly important borders should be accorded highest priority in addressing problems of inadvertent roaming of high roaming tariffs that are impeding or halting the growth of these cities:

‣ The Puerto Suarez-Corumba border (Bolivia-Brazil border), the region's most important development pole and where the main Brazilian port, of global importance, is located.
‣ The Colorinda-Asunción border (Argentina-Paraguay border) is of major importance because Asunción is the Paraguayan capital and the country's largest city, with a population of over 2.5 million. The border cities are separated by only 4 km.
‣ Another important border is the triple border between Ciudad del Este, Foz de Iguazú, and Puerto Iguazú (Argentina-Brazil border), with a population of nearly 1 million and a major tourism center.

The countries should accord priority to these border areas, and the others mentioned in Table 14, to avoid cases of inadvertent roaming and billing shocks, which have negative implications for the telecommunication market and the cities' general development.

4   Conclusions.

(i)   Mobile market environment conditions
- ✓ The information presented by 12 countries shows that the main frequency bands utilized for the mobile service are the 800 MHz and 1900 MHz bands.
- ✓ In several countries, calls for bids will soon be issued for the 1.7 GHz, 2.1 GHz, and 2.6 GHz bands.
- ✓ In many of the countries, flat national tariffs will be applied.
- ✓ National roaming is not available except in Ecuador and Chile.
- ✓ Many of the countries agree that LTE technology is about to enter the mobile market.
- ✓ Regarding the management of stolen terminals, in general, the countries indicate concern regarding this issue and have systems for recording information on stolen terminals, whether centralized, or decentralized by operators, with an obligation to share such information.

(ii)   Specific mobile telephony market conditions
- ✓ Brazil has the largest mobile telephony market and Costa Rica has the smallest mobile telephony market.
- ✓ Six countries have three mobile service operators, five countries have four operators, two countries have five operators, one country has seven operators; and one country has nine operators.
- ✓ The market is highly concentrated in most countries.
- ✓ The roaming services provided are voice and data.
- ✓ Very few countries reported information on growth expectations for their mobile telephony market.

(iii)   International and cross-border roaming conditions
- ✓ Most countries do not have information on the total volume of traffic via roaming; still less on the volume of cross-border traffic.
- ✓ The main complaints made regarding roaming have to do with billing.
- ✓ Many of the countries agree that an alternative to roaming is communication by Internet.
- ✓ Many of the countries monitor information on roaming provided by the operators through the web page, brochures, advertising, or service welcome messages.
- ✓ Information additional to the survey shows that:
  - a. In many Member States, information on roaming is provided through customer service media (free lines, e-mail, etc.).

OSIPTEL

b. In many Member States, information is provided on service activation modalities.

c. In many Member States, information is provided on voice and data tariffs, tariffs differentiated by area or country, on coverage, and on the operators with which a roaming agreement has been concluded.

d. Only some of the Member States provide information on type of billing (by minute or minute fraction) and on the different plans available.

e. Very few Member States provide information on the possibility of activating voice and data roaming, service configuration by mobile terminal model, service duration date, and the existence of billing limit notifications.

f. Roaming tariffs are substantially higher than those for international long distance. For example, roaming tariffs for communications with the United States that are 165% higher than those for conventional ILD have been observed.

g. In Peru, one mobile operator is offering differentiated cross-border tariffs with Ecuador and Tacna, a practice that could be replicated in other countries.

✓ Evaluate at the Member State level the advisability of regulating mechanisms on the minimum information to be provided by operators so that:

a. Users of mobile services are duly informed in a timely manner of the voice and data international roaming service.

b. The contractual conditions for international voice and data roaming are clear and expressly indicate agreement mechanisms, charging and billing mechanisms, technical conditions for use of service, and means of requesting assistance and submitting complaints, among others, enabling users to take informed decisions regarding service use.

✓ Evaluate at the Member State level the advisability of adopting measures to encourage operators to reduce international roaming tariffs and adopt specific cross-border roaming measures

5   Recommendations.

(i)   Standardize mechanisms for the minimum information to be provided by operators so that:

    a. Users of mobile services are duly informed on a timely basis of the international voice and data roaming service.

    b. The contractual conditions of the international voice and data roaming service are clear, and expressly indicate the acceptance mechanisms, tariff and billing mechanisms, technical conditions of service use, and means of requesting assistance and making complaints, among others, to enable the user to take informed decisions in using the service.

(ii)   Make provision of the international roaming service contingent upon express subscriber request.

(iii) Have specific studies of the technical and economic conditions of roaming service provision, so as to obtain elements for evaluating the advisability of adopting any type of regulation.

(iv)   Evaluate, in coordination with the competent authorities, measures that may be taken to avoid double taxation in the roaming service.

(v)   Evaluate at the level of the Member States, the advisability of adopting measures to encourage operators to lower international roaming tariffs and adopt specific measures regarding cross-border roaming.

Forward this draft report to the Member States so that they may forward their comments and contributions in accordance with the Work Plan for the diagnostic study on international roaming. The period for this would be 15 days from receipt of this draft report.

OSIPTEL

ANNEX

Annex 1.

SATISFYING INFORMATION PROVISION CRITERIA

This annex shows the percentages of operators providing information on each of the 13 criteria mentioned above. These are shown in individual figures clearly showing the situation in each country.

The aim of this annex is to show the breakdown for each information criterion so that each country can assess which aspects require greater emphasis so that users are provided with updated and complete information on roaming services. This would also enable telecommunication regulatory bodies of each country to use it as the basis for establishing minimum information obligations or at least recommendations to operators on providing minimum information in their web portals, replicating information provided by countries more fully meeting these criteria.

The first four criteria presented here are part of the minimum information on tariffs that operators should provide so that users are fully informed of each tariff and can fully monitor their own usage so they are not surprised by exorbitant figures when billed.

Figure 11 shows the percentage of operators providing information on voice/SMS tariffs differentiating between incoming and outgoing, i.e., whether information is clearly provided in the web portals on incoming and outgoing call tariffs and SMS.

Figure 11: Percentage of operators providing information on voice/SMS tariffs differentiating between incoming and outgoing
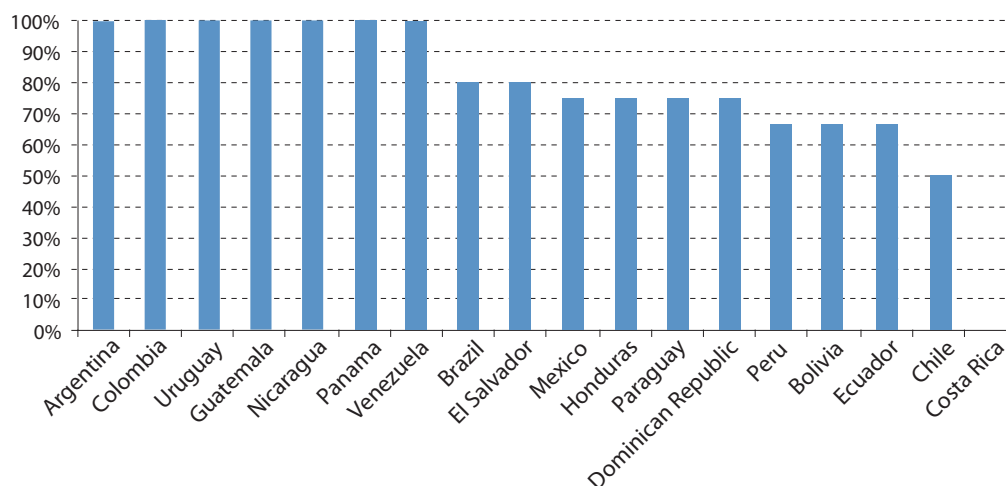
Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

Clearly, this is a criterion met in most countries and most operators, except in Costa Rica, whose only operator does not provide this information through its web portal, so that a recommendation can be issued for this information to be included.

Figure 12 shows the percentage of operators providing information on tariffs differentiated by country or area. No problems are evident regarding this criterion since it is met by most operators in each of the 18 countries evaluated

Figure N° 12: **Percentage of operators providing information differentiated by country or area**
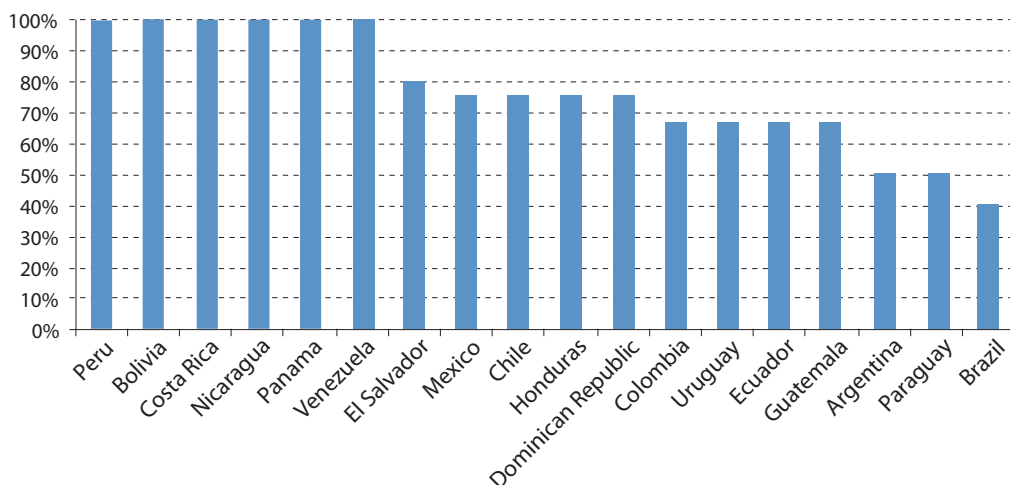
Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

Figure 13 shows the percentage of operators providing information on the voice service billing method, i.e., whether the web page shows whether the billing method is by minute or minute fraction. This highly important aspect in ensuring that users are fully aware of the tariffs they will pay is 100% met only by Peru and Costa Rica, and is largely met by Uruguay, Bolivia, Venezuela, and Brazil. However, countries such as Panama, Nicaragua, Dominican Republic, Honduras, and Mexico should work hard in this area, since it may be one of the main reasons for the high rate of complaints in all countries in connection with billing.

OSIPTEL

Figure N° 13: Percentage of operators providing information on whether voice service billing is by minute or minute fraction
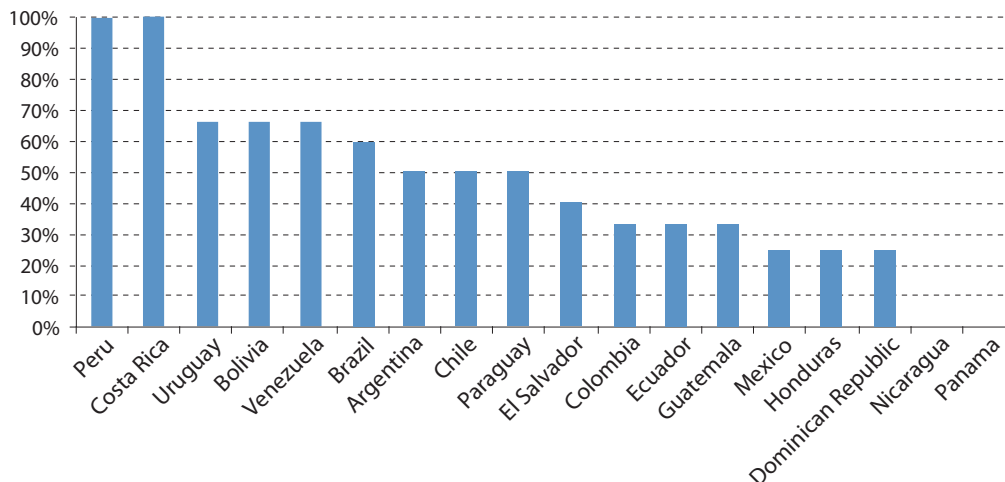
Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

Another aspect that may be related to the high rates of complaints stemming from lack of knowledge of billing policy is that in some countries, such as Bolivia, Chile, Ecuador, Colombia, Brazil and, to a lesser extent, Paraguay, Honduras, and Panama, the operators' web pages do not show whether the tariffs shown include taxes such as Value Added Tax. This is shown in Figure 14, which shows the percentages of operators providing information on whether tariffs include VAT.

Figure N° 14: Percentage of operators providing information on whether tariffs include VAT
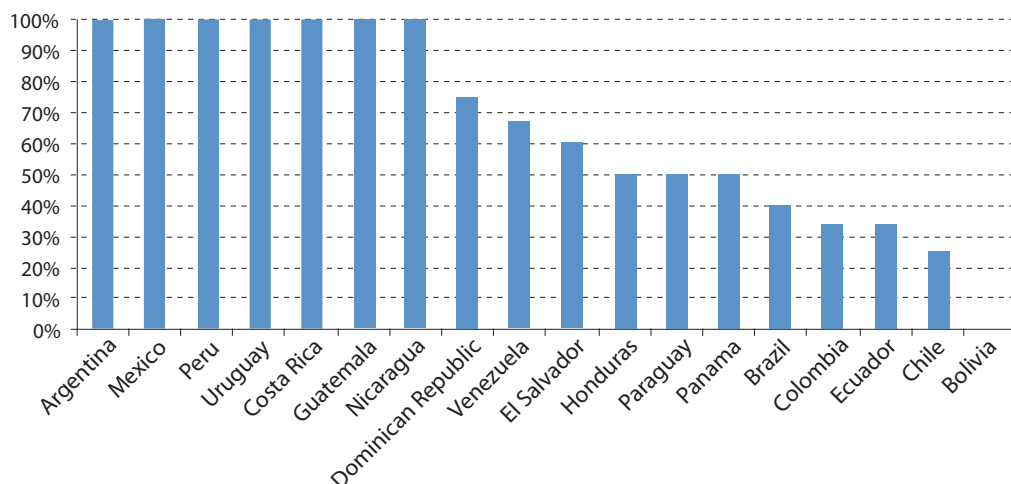
Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

In addition to the question of tariffs, another important aspect for full user awareness and to enable users to take decisions optimizing their usage is information on the different plans or promotions for both pre-paid and post-paid users. This information is provided in Figure 15, which shows the percentage of operators providing information on the different available plans (pre-paid, post-paid, packages) and that shows that Colombia, Bolivia, and Costa Rica should work on this area.

Figure 16 shows the percentage of operators providing información on the possibility of electing separate voice, SMS, and data roaming services. And this is a crucial point, since some operators cover this information, but most do not; and in Brazil, Colombia, Bolivia, Guatemala, Honduras, Nicaragua, Paraguay, and Venezuela, no operator includes this information.

Figure 17 shows the percentage of operators providing information on the start and end dates for the roaming service they contract. This is a highly important aspect to ensure that users do not have problems with early service cancellation or with service starting prior to the date they wished. And, unfortunately, it is one of the criteria with the lowest percentage of operators meeting it, since only six of all operators provide this information.

OSIPTEL

Figure N° 15: **Percentage of operators providing information on the different available plans (pre-paid, post-paid, packages)**
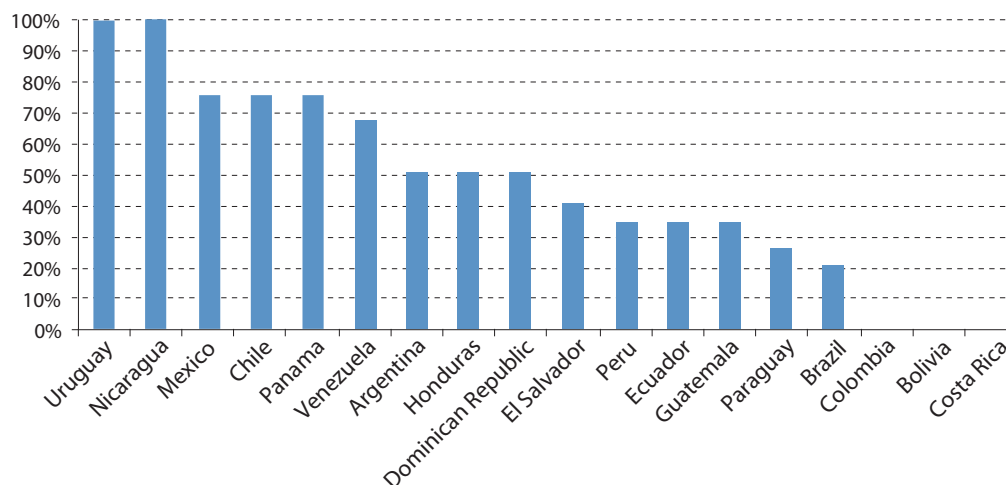
Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

Figure N° 16: **Percentage of operators providing information on the possibility of electing separate voice, SMS, and data roaming services**
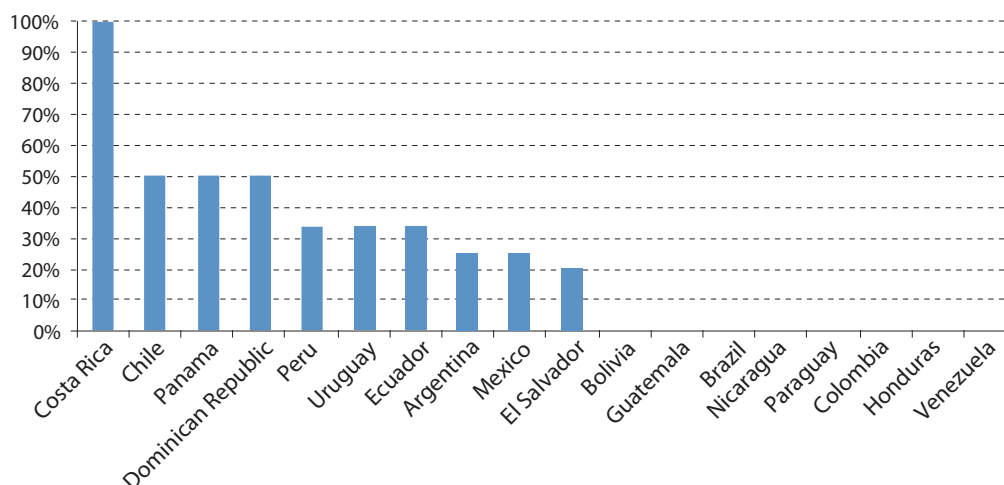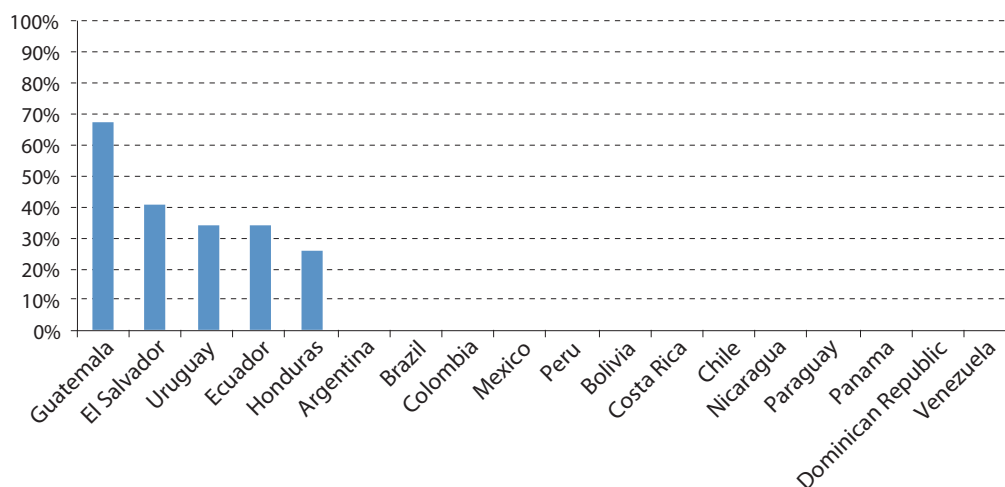

Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

De igual manera en el gráfico N° 17 se pone en manifiesto el porcentaje de operadores que ofrecen información sobre las fechas de inicio y término del servicio de roaming que contratan los usuarios. Este aspecto es sumamente importante para que los usuarios no tengan problemas con la cancelación anticipada del servicio o con el inicio del servicio previo a cuando ellos lo deseaban.

Lamentablemente es uno de los criterios con menor porcentaje de satisfacción por parte de los operadores, ya que sólo Colombia lo satisface al 100% y 5 países lo hacen entre un 50 y 80% (El Salvador, Argentina, Guatemala, Chile y Nicaragua) mientras que del lado opuesto hay 5 países que no consignan dicha información en sus portales web, estos son: Perú, Brasil, República Dominicana, Costa Rica y Paraguay con un 0% de satisfacción, mientras que otros lo satisfacen entre un 20 y 30%, los cuales son: Uruguay, Bolivia, Ecuador, Venezuela, México, Honduras y Panamá.

Figure N° 17: **Percentage of operators providing information on the roaming service start and end dates**
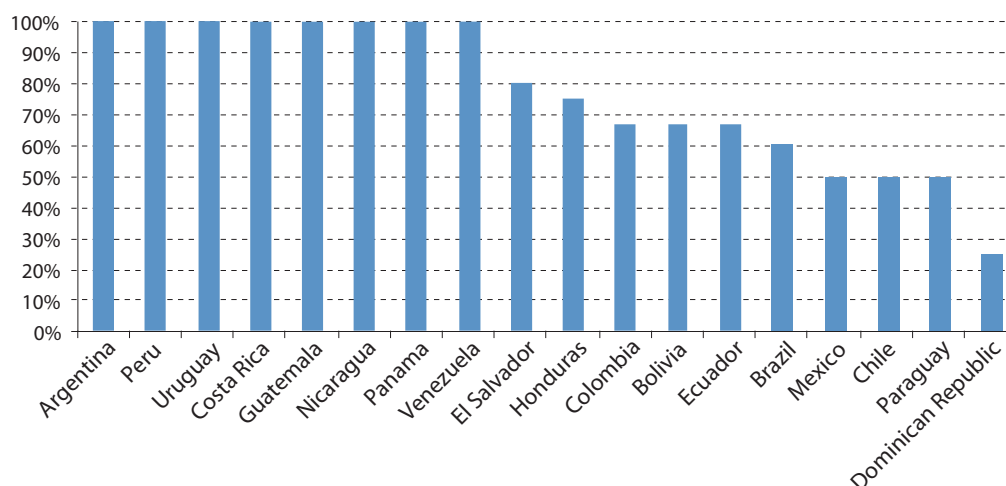

Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

Another important matter to be noted in the minimum information provided by operators is information on other more specific aspects of the countries to which potential users plan to travel. Therefore, it is important for operators to provide information on the roaming service coverage they provide and the operators with which they have contracts to provide roaming service in each country.

OSIPTEL

Figure 17 shows the percentages of operators providing coverage information (describing the services available in each country) and Figure 18 the percentage of operators providing information on the operators with which they have contracts to provide roaming in each country.

In the first case, the criterion is broadly satisfied by the operators of nearly all countries, apart from the Dominican Republic, where only one of its three operators provide this information. In the second case, the criterion is satisfied in somewhat fewer cases. The only operator of Costa Rica providing roaming service does not provide this information on its web page.
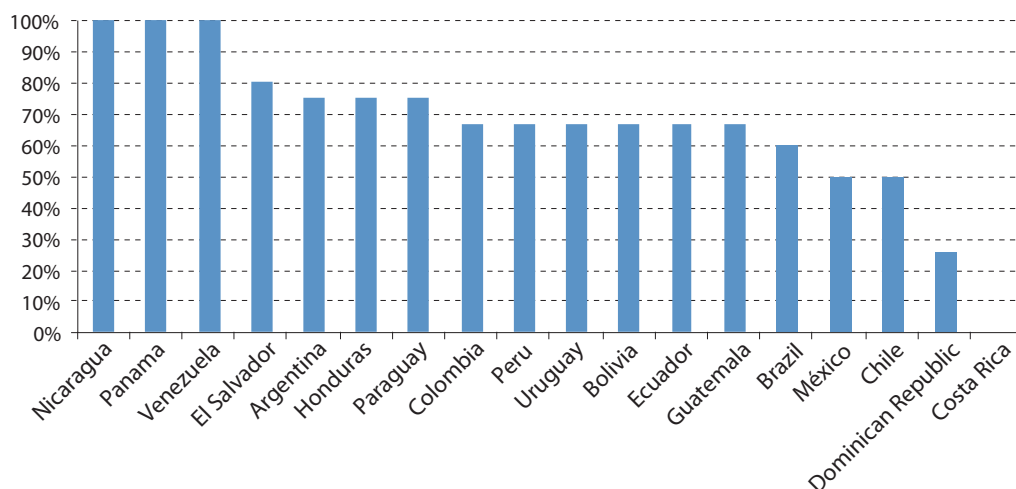
Figure N° 18: **Percentage of operators providing coverage information (the services available in each country)**

Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

Figure N° 19: Percentage of operators providing information on the operator or operators with which they provide roaming in each country
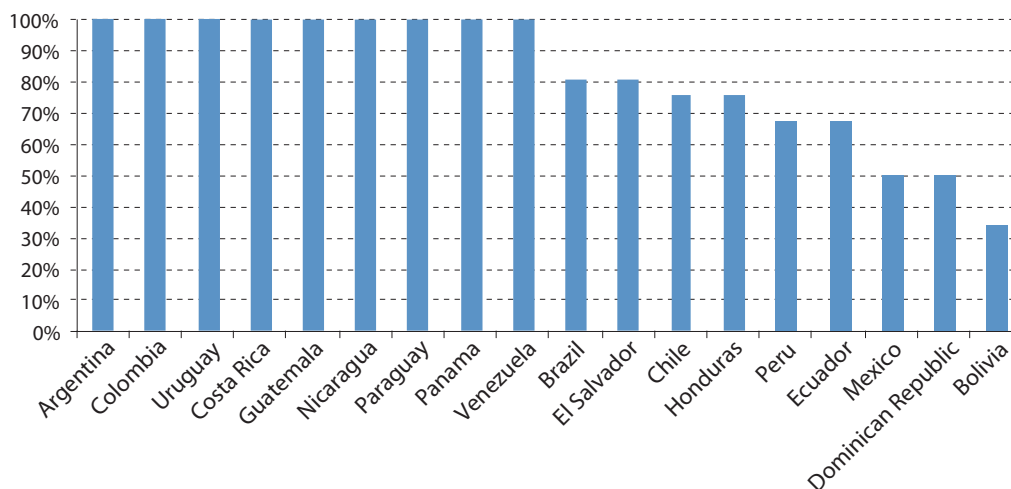

Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house .

Information not as basic but equally important to provide users with full information at the time of requesting service is that on roaming service activation modalities and on service configuration by cellular device model. Figures 20 and 21 show the percentages of operators meeting these criteria.

Although the latter of these criteria is not essential since users can obtain this information from the information brochures provided with their own terminal equipment, it would be advisable for Mexico, Uruguay, Costa Rica, Paraguay, and Dominican Republic, countries that do not provide this information, to recommend the provision of these details, which would be of assistance to users.

OSIPTEL

Figure N° 20: Percentage of operators providing information on service activation modalities

Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

Figure N° 21: Percentage of operators providing information on service configuration by cellular device model
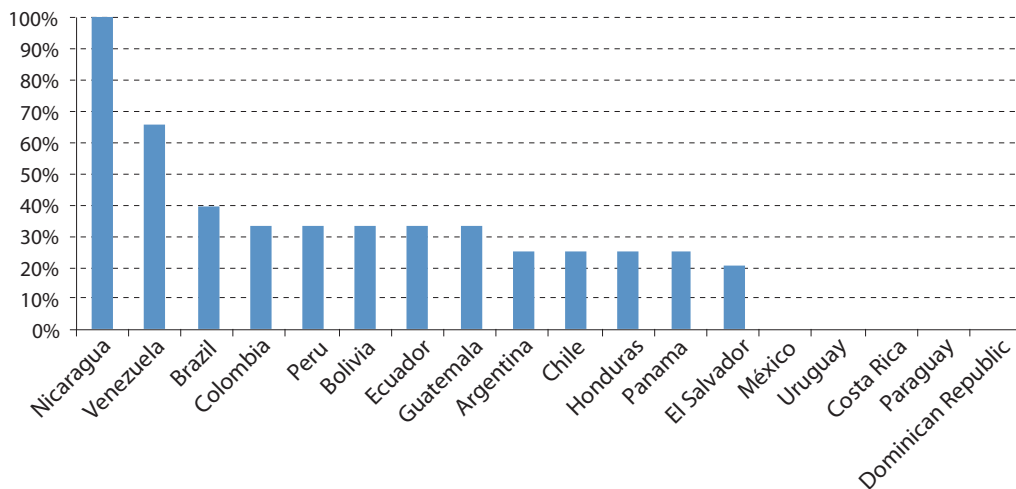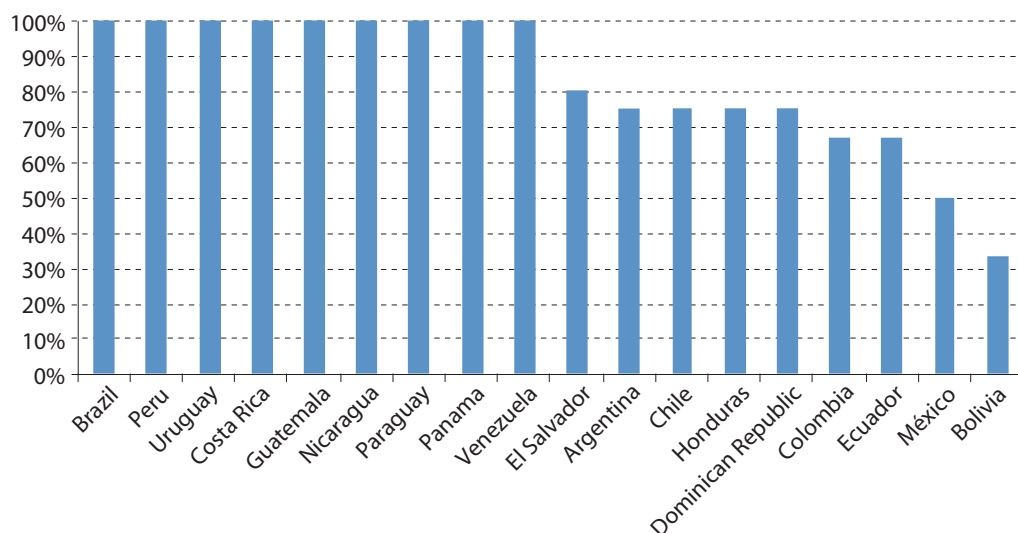

Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

Lastly, the group of criteria additional to the minimum required information but that may serve to improve the quality of this service are criteria of customer service information and usage notification when the billing limit selected by the user has been reached.

Paradoxically, this first criterion, or that seen in Figure 22 (percentage of operators providing information on customer service (free lines, e-mail, etc.) is the criterion with the highest satisfaction ratings. The latter criterion is met by just one operator in Venezuela, as shown in Figure 22.

Figure N° 22: Percentage of operators providing information on customer service (free lines, e-mail, etc.)

Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

OSIPTEL

Figure N° 23: **Percentage of operators providing information on customer service (free lines, e-mail, etc.)**
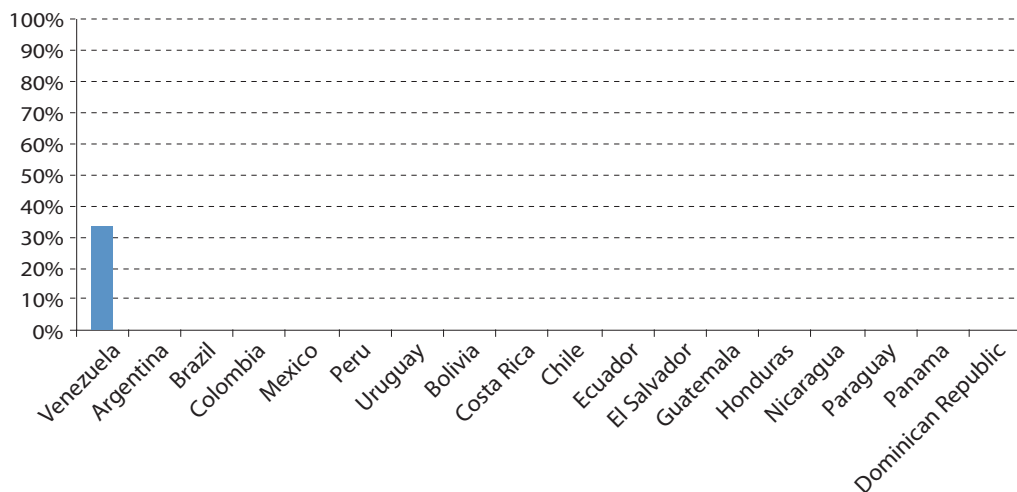
Source: Report of Regulatel-Arturo Briceño consulting assignment (2011)
Prepared in-house

Annex 2

HIGHER MARKET CONCENTRATION INDICES IN THE MEMBER STATES

Knowing the market concentration index makes it possible to develop more precise ideas and reach fuller conclusions regarding different matters related to that market. In this case, the mobile telephony market concentration index for many Member States assists in ascertaining whether problems in the roaming services may arise in part from market concentration.

As shown in Table 15, all countries, regardless of their number of operators, have high or very high concentration indices.   This means that many of the operators in these markets may have substantial market power, impacting competition in all services they offer.

However, note that the extent to which this impacts competition and roaming market conditions cannot be determined.

Table N° 12: Mobile telephony market concentration index - 2011

	NUMBER OF COMPANIES	CONCENTRATION (HHI)
Nicaragua	2	5898
Argentina	3	3209
Bolivia	3	3431
Uruguay	3	3568
Venezuela	3	3587
Guatemala	3	3786
Peru	3	5109
Honduras	3	5266
Ecuador	3	5560
Panama	4	3382
Chile	4	3494
Dominican Republic	4	3600
Paraguay	4	4186
Colombia	4	5246
El Salvador	5	2761
Mexico	5	5372
Costa Rica	5	7354
Brazil	7	2535
Canada	9	n.d.

Prepared in-house

---

14   According to economic theory, a high concentration index is one exceeding 2500 points, and a very high concentration index one exeeding 5000 points.

OSIPTEL