TELECOMMUNICATIONS

Sector Statistics

COSTA RICA

2015

sutel

SUPERINTENDENCIA DE TELECOMUNICACIONES

First Edition
May 2016

Design, diagramming and print:
Ingenio, Arte y Comunicación, S.A.
Tel: 2293-6827

310 ISSN: 2215-3683
S959e

Telecommunications Sector Statistics. Costa Rica. 2015
Amador, Mauricio; Arias, Cinthya; Calderón, Laura; Castillo, Patricia; Cerdas, Bernarda; Cortés, Ileana; García, Juan Gabriel; Herrera, Walther; Irigaray, Erick; Mejías, Karla; Molina, Laura; Ovares, Juan Carlos; Quesada, Leonardo; Rodríguez, Rodolfo; Rodríguez, Victoria; Ruiz, Max; Segura, Ana Lucrecia; Vargas, David.

Superintendence of Telecommunications (SUTEL). –[San José, Costa Rica]. SUTEL, 2016
150 pages: tables, graphics: 21.59 cm x 27.94 cm

1. STATISTICS; 2. TELECOMMUNICATIONS; 3. COSTA RICA

Content

Message from the President of the Council of the Telecommunications Superintendence

The Telecommunications Superintendence (SUTEL) is pleased to present the report "Statistics of the Telecommunications Sector 2015", where readers will find for the fourth consecutive year, the main indicators of the different telecommunication services offered in our country.

On this occasion, the report showcases last year's most relevant events, although it also highlights key moments between 2012 and 2015. Among the service indicators that were analyzed, the following highlight: subscriptions, revenue, traffic, investment, and human resources, among others.

Regarding available offer, SUTEL has a total of 139 authorized operators and suppliers. This amount confirms the growing trend, mainly during the last year, whereby a 14 % increase is expected, which is the highest amount during the 2010-2015 period.

In addition, it is worth noting that the amount of operators and suppliers with active commercial offers increased by 5 %, this evidences that Costa Rican users now have more options in the national market.

On 2015, the telecommunications sector generated 806 812 million colones in revenue, an amount 8 % greater than on 2014 (744 300 million colones). This represents, for the second consecutive year, a 3.1 % of the country's Gross Domestic Product (GDP).

The total investment made by suppliers and operators in the rendering of their telecommunication services on 2015 remains the same for a third consecutive year, with an amount equal to 1 % of our GDP.

Nevertheless, it is important to point out that in absolute terms, investment in this sector grew 4 % in 2015 in contrast with 2014 (9 160 million colones). Smaller service suppliers and operators are investing and contributing to the growth of this indicator, as opposed to larger operators and service suppliers.

On a national level, given how the sector has matured since its opening, telecommunication services have shown great dynamism. For example, the amount

of subscribers of mobile services reached its historic maximum on 2015, with an additional 516 thousand subscribers.

According to the figures shown in the 2015 report, 59 % of the mobile traffic originates from the prepaid service, however a postpaid user consumes –on average- nearly 3 times more than a prepaid user and the main destination of their calls are on their own network, with 55 % of total traffic.

Ultimately, mobile telephony has been undergoing major transformations, which at the beginning of the opening were driven by the dynamics of the new offer, but within the last year it began to reflect variations in the tastes and preferences of local users, which are now familiar with having several options on the market.

Moreover, in regards to the data transfer service, over the last 4 years the use of Internet on mobile devices has increased. In 2012, the penetration rate was 57 % while in 2015 it was 101 %.

In regards to data traffic, it increased by 209 % between 2013 and 2015, unquestionably as the result in the change in user habits such as: instant messaging, file downloads, music and video streaming, photo sending, among others.

In the international context the report presents relevant facts such as standing second in the "Affordability Drivers Index", given that Costa Rica shows one of the highest penetration rates for mobile broadband subscriptions among the countries analyzed in said index.

Furthermore, according to international indicators, Costa Rica stands fifth in fixed telephony penetration, fifth in mobile telephony penetration, fourth in fixed Internet access penetration and first in mobile Internet access penetration in Latin America.

Parallel to the delivery of this fourth report, SUTEL is proud to present the Telecommunication Indicators System (SITEL), which is the result of institutional efforts, as well as the efforts made by network operators and telecommunications service providers.

In this sense and to improve the analysis and impact studies in the telecommunications sector, SITEL provides a WEB application platform and a business intelligence solution that will enable SUTEL to build automated telecommunications market indicators and to –promptly- make them available both to the general public, as well as to network operators and providers.

I would like to thank the Directorate-General for Markets, Members of the Council and in general to all SUTEL's employees for this commendable effort, which contributes to a continuous improvement in the growth and strengthening of the telecommunications sector.

Likewise, I thank the operators and telecommunications service providers for their trust and collaboration in this process, as well as for perpetuating their commitment to generate information to all Costa Ricans.

Manuel Emilio Ruiz Gutiérrez
President of the Council - SUTEL

Presentation

Telecommunications Market in Costa Rica

This annual report presents an overview of the latest developments in the telecommunications sector and is based on data that has been collected and processed according to international standards and internationally approved methodologies. It aims to stimulate the debate on telecommunications policies and to provide an objective performance evaluation of the country in the telecommunications field. It focuses on the analysis of the services with higher coverage provided to the population. Thus the Superintendence of Telecommunications and the Directorate-General for Markets have made available the Fourth Report of the Telecommunications Sector of Costa Rica, comprising the years from 2011 to 2015.

The methodology followed by this Superintendence is internationally recognized for its thoroughness in the collection, validation and processing of data, as well as the results, which has allowed a

proper perspective of the development of this services sector in the country. The status of the telecommunications in Costa Rica is known thanks to the joint efforts from the operators, telecommunications service providers and the Superintendence.

The International Telecommunication Union has recognized the work of Costa Rica in this area, noting the rise of the country in the ICT Development Index. From position 80 in 2010, we have now moved in 2015 to place 57. Costa Rica was rewarded for such achievement at the World Telecommunications/ ICT Indicators Symposium (WTIS) 2015, held in the city of Hiroshima, Japan.

This report reveals that the telecommunications sector in Costa Rica has been steadily growing from 2010 to 2015. I hope this document will be useful for the formulation of strategies, analyzes and studies, regardless if performed by service providers, academics, statesmen or governmental authorities.

Finally I want to express gratitude to operators and telecommunications service providers, who have believed in this project and that every day, with reliable data delivery, make possible the production of this type of instruments.

Walther Herrera Cantillo
Director
SUTEL, Directorate-General for Markets

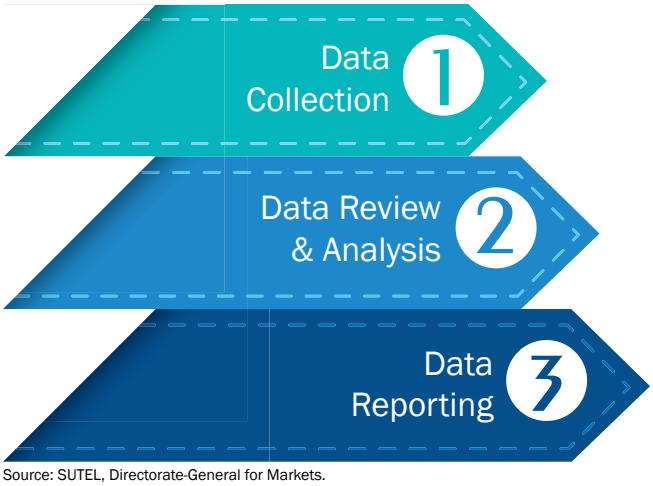
Methodology

This is the fourth consecutive annual publication of this report on the "Statistics of the Telecommunications Sector in Costa Rica". Along with the information of 2015, changes to the data from previous years are included, which arose from justified corrections provided by operators and service providers. Likewise, reports from companies that recently entered the regular statistic reporting process are also included.

As in previous reports, the procedure used for the production of performance indicators of the Costa Rican telecommunications sector comprises three phases: data collection, data review and analysis, and data reporting.

Figure 1
Process of collecting, reviewing & analyzing, and releasing the performance indicators of the telecommunications sector

Each one of the stages of data collection and construction of indicators included in this report are detailed below.



Source: SUTEL, Directorate-General for Markets.

Data Collection

As in previous years, the Data Collection stage involves several processes, including the compilation of the information using structured Excel templates. These templates are filled in by the operators and sent in the official layout by email to the email addresses created for that purpose: indicadores.mercados@sutel.go.cr and gestiondocumental@sutel.go.cr. In addition, hard work has been carried out to maintain an open channel of communication with the operators and service providers, who also receive trainings, in order to ensure there is a proper understanding of the concepts and definitions associated with each indicator.

These activities are detailed below:

a. **Release of the Data Collection Timetable:** The Directorate-General for Markets released a timetable of activities about indicator management on the SUTEL website, in the Official Gazette (La Gaceta) and also in a national newspaper. This timetable was also officially sent to each one of the contacts appointed by the operators and telecommunications service providers.

   This timetable included the deadlines for submitting the monthly, quarterly and semi-annual indicator templates; it also included the schedule for the Annual Workshop Event, in order to update and train the operators and providers, as well

as receiving feedback for the improvement of the data collection instruments.

As set out in this timetable, the operators and service providers must submit their monthly templates no later than 30 calendar days after the month closing, and the quarterly templates must be submitted no later than 30 calendar days after the quarter closing.

The schedule for the compilation of the 2015 indicators was published on December 19th 2014 in La Nacion and La República newspapers and in the Official Gazette of January 12, 2015.

b. **Quarterly Reminders:** In order to ensure the timely collection of information from the operators and telecommunication services providers, SUTEL sent out several reminders throughout the year, by email and by phone, to the contact list provided to submit information.

c. **Update and Training Workshops for Operators and Providers:** In 2015, SUTEL celebrated the third "Annual Indicators Workshop Event on the Telecommunications Sector", from the 2nd to the 13th of February, 2015. The process of Data Collection to be carried out by the Directorate-General for Markets, was presented in detail. The purpose of this process was to build results reflecting the sector's performance, explore the indicator templates and emphasize on how important it is for the regulator to have a robust and reliable base of indicators.

Overall, there were 160 representatives from the telecommunications service operators and providers, who work for 43 operators that are commercially active, as detailed below.

Table 1

Superintendence of Telecommunications: Attendance to the Annual Indicators Workshop Event for the Telecommunications Market, February 2015

Date	Service	Operator	Representatives
02/FEB/2015	Traditional Basic Phone Service	Instituto Costarricense de Electricidad	6
04/FEB/2015	VoIP	American Data Networks	2
		Call My Way S.A.	1
		E-Diay S.A.	1
		Empresa de Servicios Públicos de Heredia (ESPH)	3
		Instituto Costarricense de Electricidad	1
		InterPhone S.A.	1
		Othos Telecomunicaciones S.A.	1
		Radiográfica Costarricense S.A.	2
		R & H International Telecom Services S.A.	1
		Telecable Económico T.V.E. S.A	5
		Televisora de Costa Rica S.A. (Cabletica, Tuyo Móvil)	2
		Millicom Cable Costa Rica, S.A. (TIGO)	1
Total			**21**
05/FEB/2015	Mobile Telephony	Claro Costa Rica CR	3
		Instituto Costarricense de Electricidad	6
		Radiográfica Costarricense S.A.	1
		Telefónica de Costa Rica TC S.A.	2
		Televisora de Costa Rica S.A. (Cabletica, Tuyo Móvil)	3
Total			**15**
09/FEB/2015	Internet Access	Almafamat de Costa Rica S.A.	2
		Anditel International AI, S.A.	2
		Cable Arenal del Lago S.A.	1
		Cable Caribe S.A.	1
		Cable Zarcero S.A (Mega Cable)	1
		Cable Visión de Costa Rica CVCR, S.A.	3
		Call My Way S.A.	1
		Claro Costa Rica CR	2
		Cooperativa de Electrificación Rural Los Santos R.L (COOPESANTOS R.L)	2
		E-Diay S.A.	1
		Empresa de Servicios Públicos de Heredia (ESPH)	6
		GT Guatuso Trust INC. S.A.	1
		Millicom Cable Costa Rica, S.A. (TIGO)	2
Total			**25**

Continued ...

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Date	Service	Operator	Representatives
10/FEB/2015	Internet Access	Blue Sat Servicios Administrados de Telecomunicaciones S.A.	1
		Cooperativa de Electrificación Rural de Guanacaste R.L. (COOPEGUANACASTE)	1
		Cooperativa de Electrificación Rural de San Carlos R.L. (Coopelesca R.L.)	1
		Instituto Costarricense de Electricidad	6
		Netsys C.R. S.A.	2
		OBCR Orange Business Costa Rica S.A.	1
		Radiográfica Costarricense S.A.	7
		Red Punto Com Technologies S.A.	1
		Redes Inalámbricas de C.R. (REICO)	2
		San Carlos Wireless S.A.	1
		Société Internationale de Télécomunications Aéronautiques (SITA)	2
		Telecable Económico T.V.E. S.A	4
		Telefónica de Costa Rica TC S.A.	1
		Televisora de Costa Rica S.A. (Cabletica, Tuyo Móvil)	2
		Xarxes Networking S.R.L.	1
Total			**33**
11/FEB/2015	Leased Lines	American Data Networks	2
		BT Latam Costa Rica	3
		Call My Way S.A.	1
		Claro Costa Rica CR	2
		Columbus Networks S.A.	2
		Cooperativa de Electrificación Rural Los Santos R.L (COOPESANTOS R.L)	2
		Costa Net S.A	1
		IBW Comunicaciones	1
		Instituto Costarricense de Electricidad	4
		Metro Wireless Solutions de Costa Rica MWS S.A.	1
		GT Guatuso Trust INC. S.A.	1
		RSL Telecom (Panamá) S.A.	1
		Radiográfica Costarricense S.A.	2
		Red Punto Com Technologies S.A.	1
		Redes Inalámbricas de C.R. (REICO)	2
		RSL Telecom (Panamá) S.A.	1
		San Carlos Wireless S.A.	1
		Telecable Económico T.V.E. S.A	4
		Televisora de Costa Rica S.A. (Cabletica, Tuyo Móvil)	2
		Millicom Cable Costa Rica, S.A. (TIGO)	1
		Wizard Comunications S.A.	1
Total			36

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Date	Service	Operator	Representatives
13/FEB/2015	Subscription Television	Cable Caribe S.A.	1
		Cable Suiza S.A.	2
		Cable Talamanca S.A.	2
		Cable Visión de Costa Rica CVCR, S.A.	1
		Claro Costa Rica CR	2
		Cooperativa de Electrificación Rural de Guanacaste R.L. (COOPEGUANACASTE)	1
		Cooperativa de Electrificación Rural de San Carlos R.L. (Coopelesca R.L.)	1
		Empresa de Servicios Públicos de Heredia (ESPH)	3
		Instituto Costarricense de Electricidad	3
		Netsys C.R. S.A.	1
		Televisora de Costa Rica S.A. (Cabletica, Tuyo Móvil)	2
		Millicom Cable Costa Rica, S.A. (TIGO)	2
		Transdatelecom S.A	3
Total			24

Source: SUTEL, Directorate-General for Markets.

Data Review & Analysis

Once the data is received, it is carefully reviewed and analyzed by the professional Indicators Team of the Directorate-General for Markets. The review process verifies that the submitted data does have the following characteristics:

- **Complete data.** The team verifies that the information requested with the forms to the operators and providers is complete. In case of missing information, the company responsible must include observations to justify its absence.
- **Consistent figures.** The submitted figures must not reflect any mismatch with other periods, or with the data submitted by the same company to other domestic and/or foreign agencies, or to the SUTEL as part of other transactions. When an inconsistency is detected, the operator is notified and requested to provide a clarification or the appropriate correction.

Once this process is completed, the operators and service providers are notified about the status of the data they provided. If the submitted data meets the aforementioned criteria, a notification is sent and the data will then be systemized, in order to generate results. On the contrary, if the data provided failed to meet the criteria and needs to be clarified or corrected, a notification is sent with specific observations and the maximum response time.

Additionally, to these review processes, various meetings were held with different operators, aiming to clarify the information required in the templates and sharing the observations made by SUTEL, regarding the data provided by them. Several inquiries by email and in digital form were addressed; as well as reminders sent to the operators, in order to obtain the required data on a timely and accurate manner.

Data Reporting

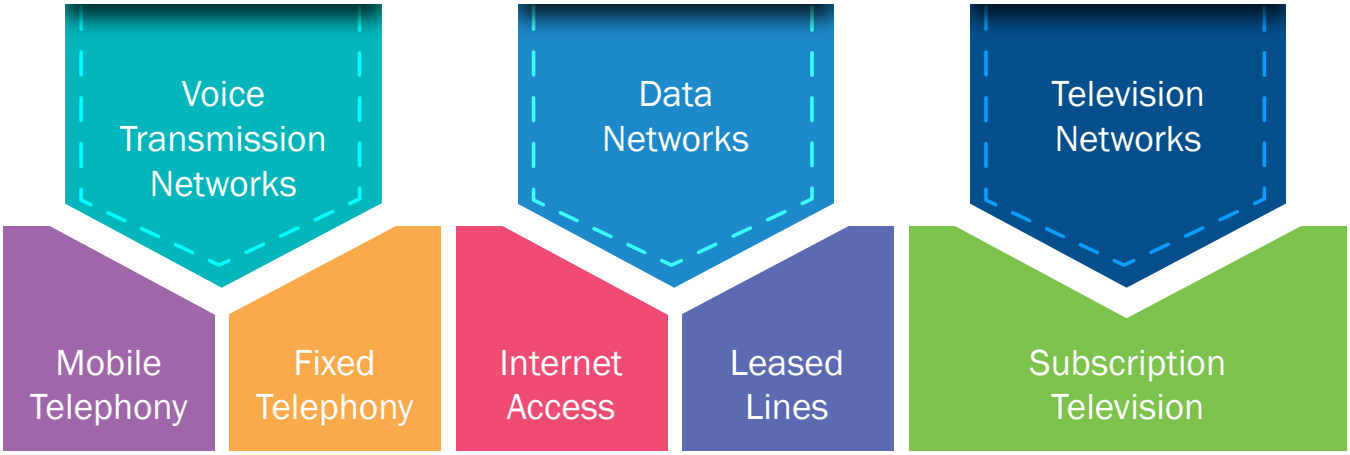
This stage consists on the creation of reports concerning the main results obtained from analyzing the data provided by operators and telecommunication service providers, as well as those gathered from secondary sources.

Because the Indicator Department is constantly receiving requests for information from agencies within SUTEL itself, as well as international organizations, institutions, companies and the general public, generating an indicator report is a recurring necessity. This type of reports, along with the ones presented in this document, summarize the sector's main results and statistics, including the main data for each of the services regulated by SUTEL: Fixed Telephony (both, basic traditional and VoIP), Mobile Telephony, Data Transfer (Internet Access and Leased Lines) and Subscription Television. Additionally, this report presents general data from the sector, such as total investment, total income and human resources employed.

Description of Telecommunication Services

In order to standardize and simplify the way in which the market data is collected from the service providers and operators, the telecommunication services available to the public have been classified based on the existing network and the signal type they carry. This classification is illustrated in Figure 2.

Figure 2
General Classification of Services



Source: SUTEL, Directorate-General for Markets.

Telecommunications Services

All telecommunications services considered by the Directorate-General for Markets in this publication, are classified into three categories: Voice Services, Data Transfer Services and Subscription TV Services.

Mobile Telephony and Fixed Telephony services are included as part of the Voice Services. Mobile Telephony provides the users with two types of subscriptions: prepaid and postpaid payment method; having said this, it must be noted that the analysis and monitoring of this service is based on the amount of subscriptions, income, voice traffic and prices offered to the market.

On the other hand, the Fixed Telephony Service, as defined in Article 3 of the Regulation on the Protection Scheme of the Telecommunication Services for the End User (RPUF, Régimen de Protección al Usuario Final de los Servicios de Telecomunicaciones), will be classified into three different types of service: Traditional Basic Telephony (traditional basic phone service), IP Telephony (VoIP) and Public Telephony. As stated in Article 3 of the aforementioned regulation, all means of access are included in the Fixed Telephony Services, provided that the associated terminals do not allow mobility. These services are monitored by analyzing the income evolution, the number of subscribers and the voice traffic in the network.

The Data Transfer service is defined in Article 8, subsection 75 of the Rules for the Provision and Quality of Services; this article has subdivided this service in two markets, as an analysis is performed: Internet Access and Leased Lines. In the first case, the following information is drawn: the number of subscribers, income reported by the companies and data traffic, classified by type of access network. As for the Leased Lines, the following data is drawn: number of connections, different technologies to provide the service and recorded income. Likewise, the subscription television service is analyzed by income and subscriptions per technology.

Summary of the Services Included in this Report

The following extract contains detailed telecommunication services currently provided with the appropriate authorization and commercializing modalities, as well as the features of the networks that support the service. Table 2

Table 2
Telecommunication Services Included in this Report

Telecommunication Service Category	Commercializing Modalities	Features of the Supporting Networks
Mobile Telephony	Instant Messaging (SMS), Multimedia Messaging (MMS), Voice Post-paid, Voice Pre-paid.	It facilitates voice communications over wireless media access; it also allows sending and downloading data over the air interface. Its evolution is directed towards all-IP architecture.
Fixed Telephony	Traditional Basic Telephony, Voice over IP (VoIP), ISDN.	Known as PSTN, it uses a set of core exchange centrals and trunk links, in order to establish a temporary end-to-end connection, which is known as circuit switching. Furthermore, with the implementation of a softswitch and other active elements, you can interconnect the PSTN with any data network and provide a Voice over IP service.
Subscription Television	Satellite TV, Cable TV, IPTV and MMDS TV	The service is provided by different technologies, it can be a satellite or wireless system based on DOCSIS 2.0 and superior. It can transmit data, so even if subscription television is not a telecommunications services, it is interesting to analyze its evolution.
Data Transfer	Internet Access, International Carrier, Mobile Data, Leased Lines.	Communications are achieved by generating data packets, which are forwarded through the network, regardless of the propagation medium or network used. It is based on two techniques: datagram routing and virtual circuits.

Source: SUTEL, Directorate-General for Markets.

Summary of the Researched Indicators

This section contains general definitions for each indicator included in this report, in order to provide clarity for the reader regarding the processed market data; volume and variety are expected to increase over time.

Table 3
Fixed Telephony Service Indicators, 2015

Indicator	General Definition
Total Number of Active Fixed Telephone Lines	Total number of lines in service that have been properly assigned to a customer, when the service is not permanently suspended (Articles 12 and 34 of the RPUF) and which show at least one billable activity during the last month of the valuation or which remain as an existing contract to provide services with the operator.
VoIP Subscriptions / Active Lines	Number of active subscriptions to Active Fixed Lines, which use the Voice over IP Protocol (VoIP). This number should only include those VoIP Subscriptions showing to have generated inbound or outbound traffic during the last three months. Excluding: VoIP software applications (e.g., Skype P2P or PC to Phone VoIP).
ISDN, BRI & PRI Service Subscriptions	Total number of subscriptions to the Integrated Services Digital Network (ISDN), which can be separated into: Basic Rate Interface (BRI) and Primary Rate Interface (PRI) Services.

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Indicator	General Definition
Total Traffic of the Traditional Basic Telephony	Traffic pertaining to calls made through fixed telephone lines, both analog and digital.
Total VoIP Traffic	Traffic pertaining to calls made via Fixed Managed VoIP Telephony (Voice over IP Protocol).
International Inbound Telephone Traffic	Total traffic with an international origin and a fixed on net destination.
International Outbound Telephone Traffic	Total on net traffic with a fixed origin and an international destination.
Total Income by Traditional Basic Telephony (retail)	Income generated in form of a Base Rate + Additional Minutes + other items associated with the fixed telephone service.
VoIP Total Income (retail)	This indicator entails the income generated by a Base Rate + over + Additional Minutes + other items associated with the VoIP telephone service.

Source: SUTEL, Directorate-General for Markets.

Table 4

Data Transfer Service Indicators, 2015

Indicator	General Definition
Active Subscriptions to Fixed Wired Internet	Total amount of active subscriptions to Fixed Wired Internet Access (cable modem, xDSL, fiber optic and other fixed wired technologies).
Active Subscriptions to Fixed Wireless Internet	Total amount of active subscriptions to Fixed Wireless Internet Access (satellite, fixed WiMax and other fixed wireless technologies).
Active Subscriptions to Mobile Internet	Total amount of active subscriptions to Mobile Internet Access (both prepaid and postpaid, data card, mobile WiMax and other mobile technologies).
Active subscriptions to Dial-Up Internet	Number of active subscriptions to Dial-Up Internet. This service consists of an Internet connection via a modem and a fixed telephone line, in which the modem dials a phone number when Internet access is required.
Number of Leased Lines (Dedicated Links).	Number of Leased Private Connections. A leased line will connect two locations of voice and private data telecommunication service. These lines do not have a special cable but a reserved circuit between two points. Typically, companies lease these lines for their office connections, as they guarantee the necessary bandwidth for network traffic.
Internet Traffic	This is the amount of transmitted / downloaded data (in Gigabytes) for all users of the Internet Access Service.
Total Income generated by dedicated lines	Total amount of income billed by the dedicated line service altogether.
Maximum download speed offered	Full Internet Speed offered for data download as part of the Internet Access Service.
Minimum download speed offered	Minimum Internet Speed offered for data download as part of the Internet Access Service.
Total income billed by Fixed Wired Internet Access	This is total amount of income billed, associated with the service of Fixed Wired Internet Access.
Total income billed by Fixed Wireless Internet Access	This is total amount of income billed, associated with the service of Fixed Wireless Internet Access.
Total income billed by Mobile Internet Access	This is total amount of income billed, associated with the service of Mobile Internet Access.

Source: SUTEL, Directorate-General for Markets.

Table 5
MobileTelephony Service Indicators, 2015

Indicator	General Definition
Active Subscriptions to Postpaid Payment Method in Mobile	Total number of subscriptions to postpaid mobile cellular phones that pay a monthly fee, which show at least one billable activity during the month of the valuation and whose service is not in permanently suspended, as per Articles 12 and 34 of the RPUF.
Active Subscriptions to Prepaid Payment Method in Mobile	Total number of subscriptions to prepaid mobile cellular phones that show at least one billable activity in the balance of the service, within 90 calendar days prior to the final valuation and which are part of the prepaid platform.
Total Capacity of the Installed Mobile Lines	The maximum number of mobile lines that can be connected. This number includes those mobile lines already connected and those mobile lines available for future connections, including those used for the technical operation of the central (test numbers).
Mobile Traffic (Voice, SMS and MMS)	This is the total traffic of the mobile phone service.
Mobile Traffic - Fixed Proprietary	Traffic originated from the proprietary mobile network (mobile on net) directed to a proprietary fixed network (fixed network of the same operator).
On Net Mobile Traffic	Traffic originated from the wireless network directed to the same mobile network (on-net traffic).
Traffic Mobile - Other Mobile Networks	Traffic originated from the proprietary mobile network (mobile on net) directed to other mobile networks (mobile networks of other operators).
Traffic from Other Mobile Networks - Proprietary Mobile	Traffic originated from the mobile networks of other operators (mobile off net) directed to a proprietary mobile network (mobile on net)
Traffic from Proprietary Fixed Network - Proprietary Mobile Network	Traffic originated from the proprietary fixed network directed to the proprietary mobile network (mobile on net).
Traffic Mobile - Other Fixed Networks	Traffic originated from the proprietary mobile network (mobile on net) directed to other fixed networks (fixed off net).
Traffic from Other Fixed Networks - Proprietary Mobile	Traffic originated from fixed networks of other operators (fixed off net) directed to a proprietary mobile network (mobile on net)
Traffic Mobile - International	Traffic originated from the proprietary mobile network (mobile on net) directed to an international destination (international off net).
Traffic International Networks - Proprietary Mobile	Traffic originated from international networks (international off net) directed to a proprietary mobile network (mobile on net)
Mobile Transit Traffic	Off net traffic (from other fixed networks, mobile networks and international long distance) directed to off net (other fixed networks, mobile networks and international long distance), passing through the proprietary mobile network.
Total Mobile Voice Traffic by Payment Method	It's the sum of mobile voice traffic by payment method (prepaid and postpaid). In determining this indicator, one must add the on net traffic plus the outbound off net traffic.
Postpaid on net SMS traffic	Total Mobile Voice Traffic: On net mobile voice traffic + total off net mobile voice traffic (outbound mobile voice traffic to other mobile networks, to the proprietary fixed network, to other fixed networks and to international networks).
Prepaid on net SMS traffic	Short Message Service (SMS) traffic exchanged between subscribers within the same mobile network, in the postpaid payment method.

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Indicator	General Definition
Postpaid off net SMS traffic	Traffic from the Short Message Service (SMS) exchanged between subscribers within the same mobile network, in the prepaid payment method
Prepaid off net SMS traffic	Traffic from the Short Message Service (SMS) sent and received by subscribers to the mobile telephony service in the postpaid payment method.
Postpaid and prepaid SMS traffic sent domestically	Traffic from the Short Message Service (SMS) sent and received by subscribers to the mobile telephony service in the prepaid payment method.
SMS traffic sent to international destinations, both postpaid and prepaid	Traffic from the Short Message Service (SMS) sent to domestic destinations, from mobile phones in the postpaid and prepaid payment method.
Postpaid on net MMS traffic	Traffic from the Short Message Service (SMS) sent to international destinations, from mobile phones in the postpaid and prepaid payment method.
Prepaid on net MMS traffic	Traffic from the Multimedia Messaging Service (MMS) exchanged between subscribers within the same mobile network, in the postpaid payment method.
Postpaid off net MMS traffic	Traffic from the Multimedia Messaging Service (MMS) exchanged between subscribers within the same mobile network, in the prepaid payment method.
Prepaid off net MMS traffic	Traffic from the Short Message Service (SMS) sent and received by subscribers to the mobile telephony service in the postpaid payment method.
MMS traffic sent domestically, postpaid and prepaid	Traffic of the Multimedia Messaging Service (MMS) sent and received by subscribers to the mobile telephony service in the prepaid payment method. Excluding: The on net MMS traffic.
MMS traffic sent to international destinations, both postpaid and prepaid	Traffic of the Multimedia Messaging Service (MMS) sent to domestic destinations from mobile phones in the postpaid and prepaid payment method.
Outbound roaming telephone traffic	Traffic of the Multimedia Messaging Service (MMS) sent to international destinations from mobile phones in the postpaid and prepaid payment method.
Inbound roaming telephone traffic	Total number of traffic minutes of communications carried out by proprietary customers through local networks in roaming modality with foreign networks, when outside the service area of the local network (outbound roaming).
Outbound SMS and MMS international roaming traffic	Total number of traffic minutes of communications received by proprietary customers through local networks in roaming modality with foreign networks, when outside the service area of the local network (outbound roaming).
Inbound SMS and MMS international roaming traffic	Traffic generated by mobile resident subscribers when sending SMS and MMS while out of the service area of their home network.
Inbound roaming data traffic (TB)	Traffic generated by mobile resident subscribers when receiving SMS and MMS while out of the service area of their home network (inbound roaming).
Outbound roaming data traffic (TB)	Traffic broadcast (TB) by resident subscribers when accessing the Internet service while out of the service area of the local network (inbound roaming).
Average Rates	Traffic received (TB) by resident subscribers when accessing the Internet service while out of the service area of the local network (outbound roaming). These are the average call rates from a mobile phone (prepaid or postpaid).
Average rate of a local 1-minute call (peak hour, on net) for mobile cellular telephony	Rate of a local 1-minute call, made during peak hours from a mobile phone. The calculation of this indicator can be made based on the distribution of the income generated by mobile on net calls (prepaid or postpaid), made during the time slot considered to be “peak” or high consumption, divided by the amount of minutes used (traffic) on these calls. It includes taxes.

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Indicator	General Definition
Average rate of a local call per minute (off-peak, on net) for mobile cellular telephony	Rate of a local 1-minute call, made on off-peak hours from a mobile phone (prepaid or postpaid) to another mobile phone within the same network. The calculation of this indicator can be made based on the distribution of the income generated by prepaid mobile on net calls, made during the time slot considered to be “off-peak” or low consumption, divided by the amount of minutes used (traffic) on these calls. It includes taxes.
Average rate of a local call per minute (off-peak, off net) for mobile cellular telephony	Rate of a local off-peak call per minute, made from a mobile phone (prepaid or postpaid) to a mobile phone on another network. The calculation of this indicator can be made based on the distribution of the income generated by prepaid mobile off net calls, made during the time slot considered to be “off-peak” or low consumption, divided by the amount of minutes used (traffic) on these calls. It includes taxes and the applicable tax rate.
Average rate of a local mobile call per minute (during peak hours) to a fixed network	Rate of a local call per minute in peak hours, made from a mobile phone (prepaid or postpaid) to the fixed telephony network. The calculation of this indicator can be made based on the distribution of the income generated by mobile prepaid calls to a fixed network, made during “peak” hours, divided by the amount of minutes used (traffic) on these calls. It includes taxes.
Average rate of a local mobile call per minute (off-peak) to a fixed network	Rate of a local call per minute, on off-peak hours, made from a mobile phone (prepaid or postpaid) to the fixed telephony network. The calculation of this indicator can be made based on the distribution of the income generated by prepaid mobile calls, made during off-peak hours, divided by the amount of minutes used (traffic) on these calls. It includes taxes and the applicable tax rate.
Average rate of a local mobile call per minute (on peak hours, off net)	Rate of a local call per minute in peak hours, made from a mobile phone (prepaid or postpaid) to a mobile phone on another network. The calculation of this indicator can be made based on the distribution of the income generated by prepaid mobile off net calls, divided by the amount of minutes used (traffic) on these calls. It includes taxes and the applicable tax rate.
Average rate of a local mobile call per minute (weekend / nighttime, on net).	Rate of a local call per minute on a weekend / during nighttime, made from a mobile phone (prepaid or postpaid) to another mobile phone in the same network. Taxes must be included. Otherwise, a note should be included showing the applicable tax rate. The calculation of this indicator can be made based on the distribution of the income generated by prepaid mobile on net calls, made on the weekend / during nighttime, divided by the amount of minutes used (traffic). It includes taxes.
Average rate of a local mobile call per minute (on the weekend / during nighttime, off net).	Rate of a local call per minute made on the weekend / during nighttime from a mobile phone (prepaid or postpaid) to a mobile phone on another network. The calculation of this indicator can be made based on the distribution of the income generated by prepaid mobile off net calls, made on the weekend / during nighttime, divided by the amount of minutes used (traffic). It includes taxes and the applicable tax rate.
Average rate of a local mobile call per minute (on the weekend / during nighttime) to a fixed network.	Rate of a local call per minute made on the weekend / during nighttime from a mobile phone (prepaid or postpaid) to a fixed telephony network. The calculation of this indicator can be made based on the distribution of the income generated by mobile prepaid calls to a fixed network, on the weekend or during nighttime, divided by the amount of minutes used (traffic). It includes taxes and the applicable tax rate.

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Indicator	General Definition
Average SMS rate (on net) for mobile telephony, both prepaid and postpaid.	Average rate of sending a SMS message from a mobile phone (prepaid or postpaid) to another mobile phone in the same network. The calculation of this indicator can be made based on the distribution of the income generated, divided by the number of on net SMSs. It includes taxes.
SMS average rate (off net) for mobile telephony, both prepaid and postpaid.	Average rate of sending a SMS message from a mobile phone (prepaid or postpaid) to another mobile phone on another network. The calculation of this indicator can be made based on the distribution of the income generated, divided by the amount of off net SMSs. It includes taxes and the applicable tax rate.
Income generated by the mobile telephony service, both prepaid and postpaid.	Income related to the mobile telephony service, both prepaid and postpaid. It can be calculated by adding the income generated by the monthly fees, the income generated by the use of off-plan minutes and the amount of charges made as part of other fees of the mobile phone service, such as fines for suspension and reconnection.
Income generated by on net Mobile Voice Traffic, both prepaid and postpaid.	Income related to the mobile voice traffic, originated in the proprietary mobile network (mobile on net) directed to the same mobile network (mobile on net).
Income generated by the outbound mobile voice traffic, both prepaid and postpaid	Income related to the mobile voice traffic, originated in the proprietary mobile network (mobile on net), directed to an off net destination (proprietary fixed network, other fixed networks, other mobile networks, international networks).
Income generated by monthly subscription fees or by the minimum prepaid and postpaid fees.	Income generated by the collection of recurring charges billable for the subscription to the mobile telephony service, both prepaid and postpaid.
Income generated by off-plan minutes in the fixed mobile telephony service, both prepaid and postpaid	Income related to the off-plan minutes or with minutes that are not covered by the minimum fee of the prepaid and postpaid services. This includes off-plan minutes for domestic and international calls.
Income generated by the inbound mobile voice traffic, both prepaid and postpaid.	Income related to an off net originated traffic (proprietary mobile network, other fixed networks, other mobile networks, international networks) directed to an on net destination (proprietary fixed network).
Income generated by the international outbound mobile voice traffic, both prepaid and postpaid.	Income related to the mobile voice traffic, originated in the proprietary mobile network (on net mobile), directed to an international off net destination.
Income generated by international inbound mobile voice traffic, both prepaid and postpaid	Income related to the traffic that has an off net international origin and an on net destination (proprietary mobile network).
Income generated by number of on net SMSs, both postpaid and prepaid.	Revenue related to the traffic of SMS messages, exchanged between users in the same mobile network, both in the postpaid and prepaid modes.
Income generated by the number of off net SMSs, both postpaid and prepaid	Revenue related to the traffic of SMS messages, sent to domestic and international destinations from mobile phones, in the postpaid service.
Income generated by the number of on net MMSs, both postpaid and prepaid.	Revenue related to the traffic of MMS messages, exchanged between users of the same mobile network, in the postpaid modality.

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Indicator	General Definition
Income generated by the number of off net MMSs, both postpaid and prepaid.	Income related to the traffic of Multimedia Messaging Service (MMS) messages, sent to domestic and international destinations from mobile phones, in the postpaid modality.
Income generated by MMSs sent domestically, both postpaid and prepaid.	Income related to the total traffic of multimedia (MMS) messages, sent to domestic destinations. Messages sent from a computer to another computer are not included, nor those sent from a computer to a mobile phone.
Income generated by MMSs sent to an international destination, both postpaid and prepaid.	Income related to the total traffic of multimedia (MMS) messages, sent to international destinations. Messages sent from a computer to another computer are not included, nor those sent from a computer to a mobile phone.
Income generated by the number of SMSs sent domestically, both postpaid and prepaid.	Income related to the traffic of SMS messages, sent to domestic and international destinations from mobile phones.
Income generated by the amount of SMSs sent to international destinations, both postpaid and prepaid.	Income related to the traffic of SMS messages sent to international destinations from mobile phones.
Income generated by the total number of MMSs.	Income related to the total traffic of MMS messages sent to domestic and international destinations. Messages sent from a computer to another computer are not included, nor those sent from a computer to a mobile phone.
Income generated by outbound roaming telephony traffic (minutes)	Income generated by proprietary subscribers to mobile phones when making and receiving calls while outside the service area of the home network, e.g. when traveling abroad.
Income generated by inbound roaming telephony traffic (minutes)	Income generated by visiting subscribers (foreigners) when making and receiving calls within a country. This income is attained by the network operators in the country visited by these subscribers.
Income generated by outbound roaming SMS and MMS messages	Income generated by the proprietary subscribers to a mobile network when sending SMSs and MMSs while out of the service area of their home network.
Income generated by inbound roaming SMS and MMS messages	Income generated by the traffic created by visiting subscribers (foreigners) when receiving SMS and MMS messages. This income is attained by the network operators in the country visited by these subscribers.
Inbound roaming data traffic (TB)	Income generated by the traffic created by visiting subscribers (foreigners) when accessing the Internet. This income is attained by the network operators in the country visited by these subscribers.
Outbound roaming data traffic (TB)	Income generated by the proprietary subscribers to a mobile network when accessing the Internet while they are outside of the service area of their home network.
Wholesale income generated by the mobile telephony service	Wholesale income related to the delivery of the mobile telephony service. Specifically, this refers to the income generated by the termination charges of the calls on their proprietary mobile This indicator is calculated based on the income received by the inbound traffic into the proprietary mobile network (IDM75).

Source: SUTEL, Directorate-General for Markets.

Table 6

Subscription Television Service Indicators, 2015

Indicator	General Definition
Total number of subscriptions to the service of Multichannel Cable TV.	Number of subscriptions to Multichannel TV, broadcast by land via hybrid networks of fiber optic and coaxial cable (HFC). These networks allow the delivery of other telecommunication services.
Total number of subscriptions to Multichannel TV through DTH antennas.	Number of subscriptions to Multichannel TV, corresponding to TV signals received from a telecommunications satellite and broadcast from the operator to the end user's receiver.
Total number of subscriptions to Multichannel TV via IPTV.	Number of subscriptions to Multichannel TV via broadband connections over IP protocol.
Total number of subscriptions to Multichannel TV by Multipoint Microwave Distribution Service (MMDS)	Number of subscriptions to Multichannel TV, using Multipoint Microwave Distribution Service (MMDS), which broadcasts the signals wirelessly to the end user. This service allows for the delivery of other telecommunications services.
Income generated by Subscription TV (income generated by subscriptions, connections, basic plans and added value).	Total income billed by Subscription TV, without any deductions (taxes, returns, rebates, allowances, discounts, canceled sales, etc.), obtained by the Subscription TV service providers in the country.

Source: SUTEL, Directorate-General for Markets.

Chapter 1

General evolution of the industry

General evolution of the industry

In this section, as in previous reports, the behavior of the telecommunications industry, in terms of revenue, investment and human resources, among other indicators, is hereby presented for the 2010-2015 period. These results will be discussed in greater detail below.

Composition of the available supply

In regards to the number of telecom operators and providers, by the end of 2015, 139 operators and service providers had been authorized by SUTEL to provide telecommunication services. This figure is evidence that the available supply of telecom operators and service providers continues to increase, especially in the last year, in which the available supply rose to a record high 14 %; the highest value recorded in the 2010-2015 period.

It is important to note that, in preparing this report, only those companies that were currently engaged in providing telecommunications services, and had received the proper authorization to do so, were taken into consideration; including the 7 franchised operators that currently manage and control the radio spectrum.

Table 7 shows the percentage and total number of telecom operators and service providers that submitted their respective performance indicator reports and addressed, in a timely manner, the observations made by SUTEL, and are therefore included in this study.

In this matter it is important to clarify that not all authorized operators and service providers were marketing their services in the periods of analysis referenced herein. For this reason, when calculating these statistics, the total number of operators and/or service providers does not necessarily equal the total number of service suppliers available. Furthermore, each authorized service provider and/or operator may provide more than one type of service and comply, or fail to comply, with the necessary requirements to receive authorization to actively market the services provided, which give rise to multiple limitations in terms of the longitudinal analysis of data collected.

88 % of all operators and service providers (whether authorized, franchised or both) were included in the 2010-2015 industry performance report; they represent 97% of the total subscriptions, and 97 % of the total revenue generated, in each and every one of the services under study. Table 8 shows the percentage of operators that contributed to the study, classified by type of service.

The authorized services that were not included in this report, in accordance with the definition of service laid forth by SUTEL in 2013, were: geo-location, video conferencing, and trunking. The reason being that these services require the allocation, by means of concession, of frequencies of the radio spectrum for private commercial use. The telecommunications network used to provide these services is therefore classified as private and, as decided by SUTEL, private networks cannot be connected to public

telecom networks. As such, these services are not considered available to the public and are not subject to the other provisions of law.

Revenue generated by the industry

When analyzing the total revenue generated by the telecommunications industry, it is important to be aware that the services under analysis include fixed telephony, mobile telephony and data transfer, but exclude cable subscriptions, as these are not considered a telecommunications service. In accordance to paragraph 123 of Agreement No. 022-089-2011, "Review of the Current List of Tariffs", SUTEL only monitors the transfer of information related to cable subscriptions, and not the service per se. As such, it is impossible to determine which part of the network is used to transfer data, and which part of the network is used to generate content.

The revenue generated by the telecommunications industry in 2015 amounted to 806 812 million Colones, 8 % higher than in 2014 (744 300 million Colones) and 84 % higher than in 2011 (437 672 million Colones. See graph 1 below.

The revenue-to-gross-domestic-product (GDP) ratio, in percentage terms, remains at 3.1 % for the second consecutive year. Nevertheless, as stated above, the total revenue generated by the industry continues to grow in terms of absolute value, but to a lesser extent than in the other years of the 2011-2015 period. See graph 2 below.

In regards to the total revenue generated by the industry, it is important to note that by the end of 2015, mobile voice telephony services remain the primary source of income for the industry, despite a 1.2 relative percentage decrease in 2015, when compared to other services. On the one hand, fixed telephony continued its downward trend, as it recorded 1.7 percentage decrease in relation to 2014. Likewise, but to a lesser extent, the dedicated line service exhibited a 1-point percentage decrease in 2015. On the other hand, fixed telephony internet access and mobile telephony internet access continues to increase, and remains the second largest service in terms of revenue. See graph 3 below.

Fixed telephony

The fixed telephony service, which includes the traditional basic telephone service as well as the VoIP service, continues its downward trend and recorded a 3 % decrease in 2011-2014, going from 88 614 million Colones to 80 531 million Colones, mainly due to a decrease in revenue generated by the traditional basic telephone service. In 2014, however, the trend shifted upwards in relation to the previous years (92 830 million Colones). Nevertheless, in 2015 the fixed telephony revenue amounted to 86 476 million Colones, a 7 % decrease compared to 2014.

Mobile telephony and internet access

The total revenue generated by the mobile voice telephony service in 2015 amounted to 412 742 million Colones; a 5 % increase in relation to 2014 and the highest recorded

value in 2011-2015. In the last year of the period, however, despite a slowdown in the service's rate of growth, it remains the service with the greatest revenue/yield in the telecommunications market.

Moreover, when considering the total revenue generated by the mobile network as a whole (i.e.: including voice and data services), 2015 recorded a 12 % increase in relation to 2014, going from 518 631 million Colones to 583 116 million Colones. This situation is in stark contrast with the information recorded in 2013-2014, when there was a 34 % increase mainly due to the growth in the revenue generated by the mobile internet access service, which rose from 127 198 million Colones in 2014 to 170 422 million Colones in 2015.

In regards to the percentage distribution of these two components, in 2015 the revenue generated by the voice service represented 71 % of the total revenue, whereas internet access represented the remaining 29 %; continuing the trend exhibited in 2013 and 2014. In 2015, however, the percentage composition shifted in favor of mobile internet access. There was a slight slowdown in the service's rate of growth; in 2013-2014 the revenue generated by this service rose from 94 006 million Colones to 127 198 million Colones (a 35 % increase), whereas in 2015, as was previously stated, that same service recorded a 34 % increase.

Internet access (excluding mobile internet access)

In 2015, the revenue generated by the wired and wireless fixed internet service amounted to 96 970 million Colones; a 5 % increase in relation to 2014. The rate of

growth is mainly determined by the behavior of the revenue generated by the wired fixed internet access service, which once more rose (but to a lesser extent than a year prior) by 7 %; going from 86,644 million Colones in 2014, to 95 590 million Colones in 2015. The wireless fixed internet service, however, presented a -22 % decrease between 2014 and 2015, as it went from 5607 million Colones to 4381 million Colones.

Dedicated lines

In 2015, the revenue generated by the dedicated line service presented a downward trend for the second consecutive year; the revenue decreased from 40588 million Colones in 2014 to 36 202 million Colones in 2015 (-10.8 %).

Total investment

The total investments made by operators and service providers in furtherance of telecommunications services in 2010-2015 (i.e.: total-investment-to-GDP ratio, in percentage terms), as in previous reports, recorded its greatest increase in the 2010-2011 biennium, in which the total-investment-to-GDP ratio rose from 0.8 % to 2.1 %. This ratio continued with its upward trend until 2012, when it peaked at 2.4 %. See graph 6 below.

In 2015, the ratio remained constant for the third consecutive year, with a total-investment-to-GDP ratio of 1%. However, it is important to note that, in terms of absolute value, the total investment in 2015 rose to 4 % in relation to 2014 (9160 million Colones). The justifications for this behavior are twofold: (i) as a result of the growth presented by the second component of the GDP; and (ii) despite the entry of new operators and service providers, a large part, and the most representative sample, of these new service providers made significantly large investments in previous years to install a reliable telecommunications network infrastructure to offer their services. Moreover, it is important to note that this indicator measures the amount of new investments made in each period, and not the total accumulated investments made by each operator and service provider.

Human resources

The number of human resources directly employed in the telecommunications industry continued its upward trend, going from 11 002 employees in 2014 to 11 426 employees in 2015 (a 4 % increase).

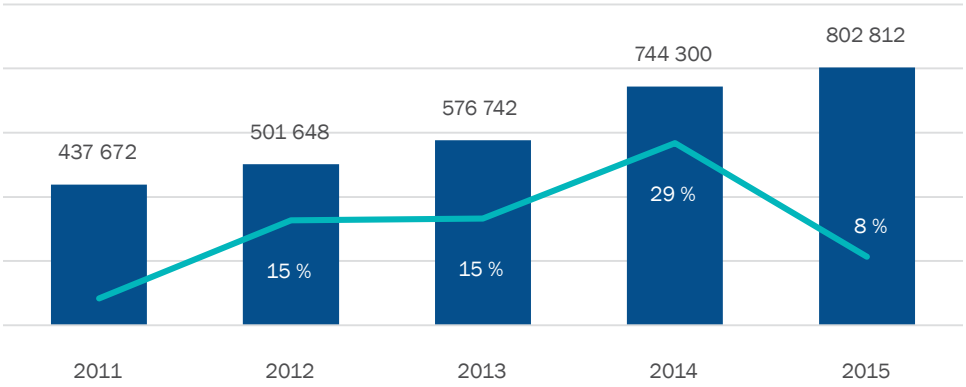
The total-workforce-employed-in-the-industry-to-total-economically-active-population ratio remained at 0.5 % for the third consecutive year. Moreover, the total-workforce-employed-in-the-industry-to-total-population ratio has remained at 0.2 % (11 426 employees) since 2011.

The employment-to-population of women in the telecommunications industry continues to rise, going from 2911 women in 2014 to 3010 women in 2015. In 2015, this ratio, in addition to the total employment ratio, continues to grow but to a lesser extent than in the previous three years, when the employment-to-population ratio of women recorded 3 %, 4 %, and 2 % increases, respectively.

Graphic N° 1

Costa Rica: Total revenue generated by, and percentage variations in, the telecommunications industry, 2011-2015

In percentage (%) and in millions of Colones (CRC)

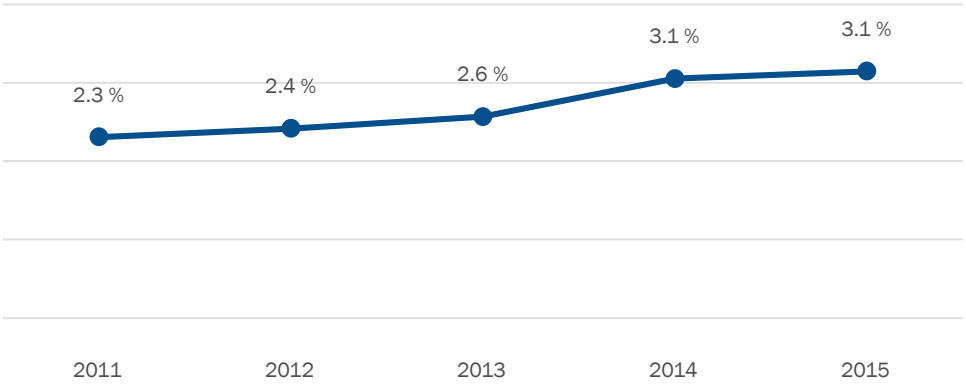


Source: SUTEL, Directorate-General for Markets.

Graphic N° 2

Costa Rica: Total revenue generated by the telecommunications industry as percentage of GDP, 2011-2015

In percentage (%)

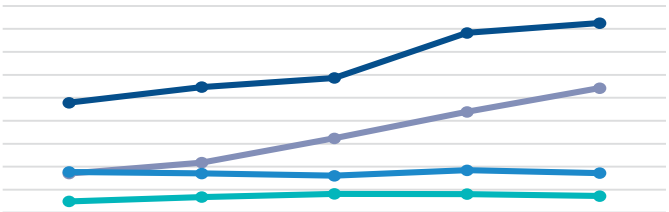


Source: SUTEL, Directorate-General for Markets.

Graphic N° 3

Costa Rica: Total revenue generated by the telecommunications industry by type of service, 2011-2015

In millions of Colones (CRC)



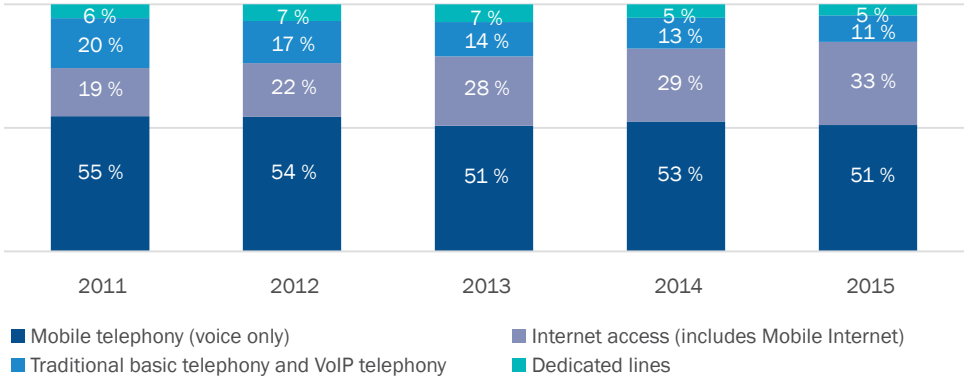
	2011	2012	2013	2014	2015
Mobile telephony (voice only)	239 405	273 342	293 197	391 433	412 742
Internet access (includes Mobile Internet)	85 119	108 920	161 914	219 449	267 392
Traditional basic telephony and VoIP telephony	88 614	85 334	80 531	92 830	86 476
Dedicated lines	24 535	34 052	41 101	40 588	36 202

Source: SUTEL, Directorate-General for Markets.

Graphic N° 4

Total revenue generated by the telecommunications industry by type of service, 2011-2015

In percentage (%)

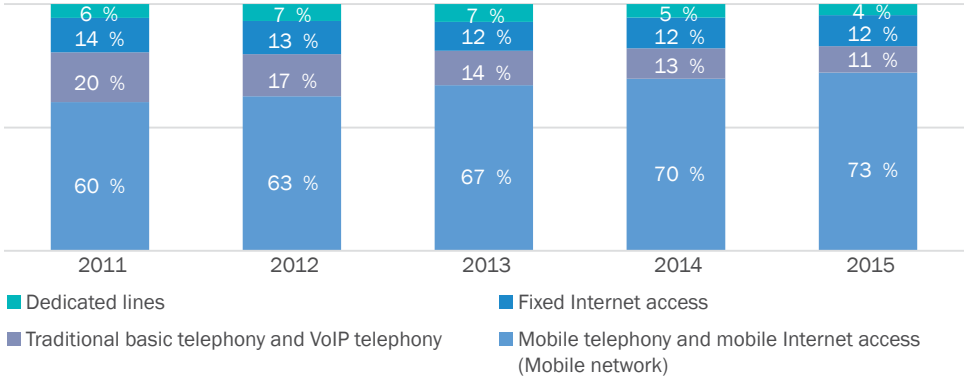


Source: SUTEL, Directorate-General for Markets.

Graphic N° 5

Costa Rica: Total revenue generated by the telecommunications industry by type of service, 2011-2015

In percentage (%)

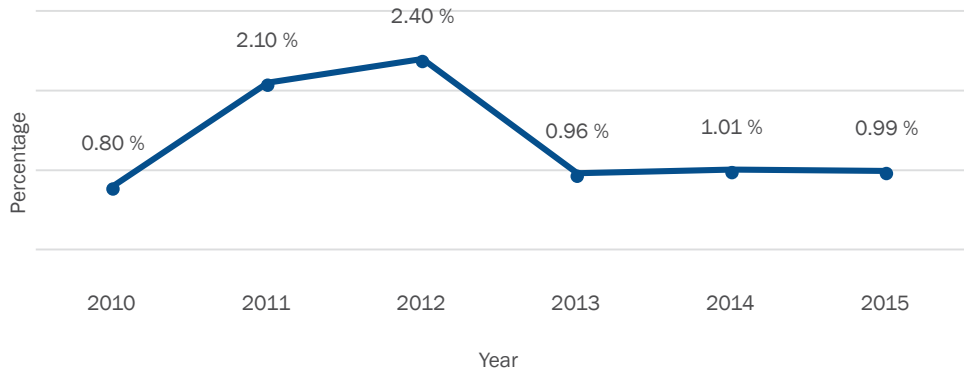


Note: The revenue generated by the mobile telephony service includes the revenue generated by the mobile internet service.
Source: SUTEL, Directorate-General for Markets.

Graphic N° 6

Costa Rica: Total revenue generated by the telecommunications industry as percentage of GDP, 2010-2015

In percentage (%)

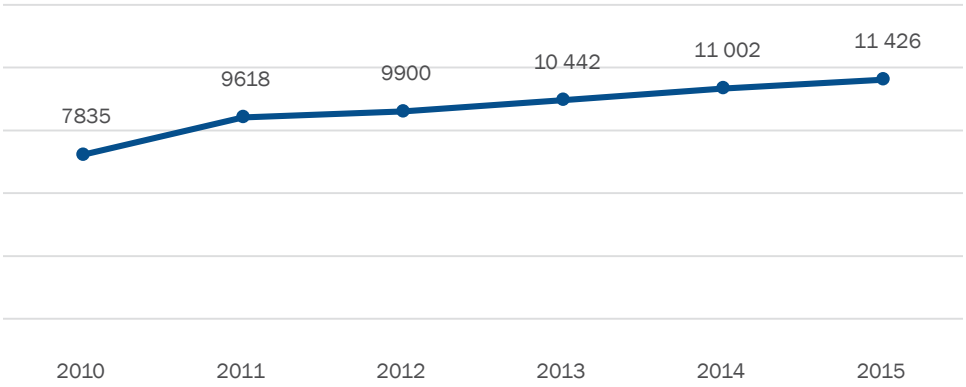


Source: SUTEL, Directorate-General for Markets and BCCR.

Graphic N° 7

Costa Rica: Workforce employed in the telecommunications industry, 2010-2015

In absolute values

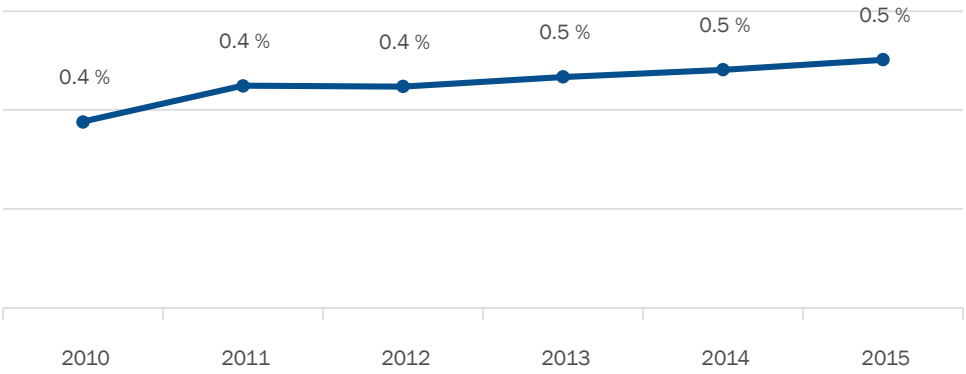


Source: SUTEL, Directorate-General for Markets.

Graphic N° 8

Costa Rica: Workforce employed in the telecommunication sector with respect to the total population, 201-2015

In percentage (%)

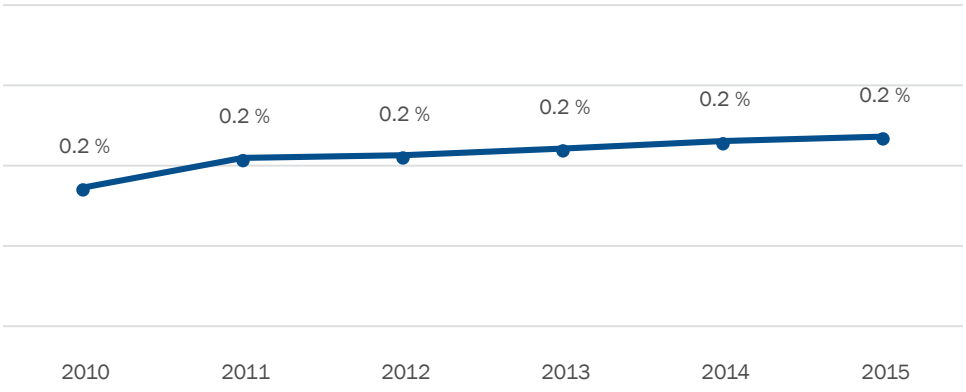


Source: SUTEL, Directorate-General for Markets and INEC.

Graphic N° 9

Costa Rica: Workforce employed in the telecommunication sector with respect to the economically active population, 2010-2015

In percentage (%)

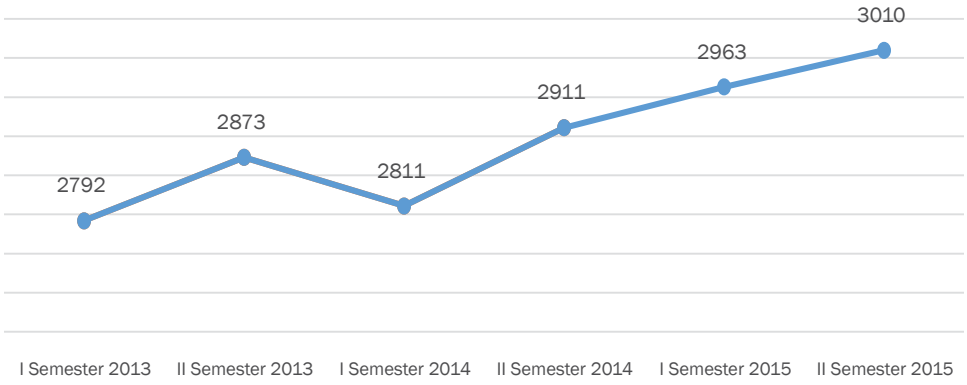


Source: SUTEL, Directorate-General for Markets and INEC.

Graphic N° 10

Costa Rica: Female work force in telecommunication sector, 2013-2015

In absolute values (per semester)



Source: SUTEL, Directorate-General for Markets and INEC.

Table 7

Total number of telecom operators and service providers, 2011-2015

	2011	2012	2013	2014	2015
Total number of authorized companies	108	118	117	122	139
Response rate	89 %	89 %	84 %	84 %	88 %

Source: SUTEL, Directorate-General for Markets.

Table 8

Costa Rica: Percentage distribution of companies included in the sector indicators report, by service , 2011-2015

	2011	2012	2013	2014	2015
Fixed telephony	100 %	100 %	92 %	94 %	94 %
Mobile telephony	100 %	100 %	100 %	100 %	100 %
Data transfer	98 %	98 %	97 %	98 %	97 %
Subscription television	100 %	100 %	100 %	100 %	100 %

Source: SUTEL, Directorate-General for Markets.

Table 9
Summary of relevant performance indicators of the Costa Rican telecommunications industry, 2011-2015

Performance indicators	2011	2012	2013	2014	2015
Industry's aggregated data					
Total revenue (in millions of Colones)**	437 672	501 648	576 742	744 300	802 812
Total revenue/GDP (%)	2.3 %	2.4 %	2.6 %	3.1 %	3.1 %
Total investment/GDP (%)	2.1 %	2.4 %	1.0 %	1.0 %	1.0 %
Total workforce employed	9618	9900	10 442	11 002	11 426
Total workforce employed/total economically active population	0.4 %	0.4 %	0.5 %	0.5 %	0.5 %
Fixed telephony					
Total subscriptions	1 031 719	995 089	968 459	881 217	859 514
Total subscriptions/100 Costa Rican citizens	22 %	21 %	21 %	18 %	18 %
Total subscriptions/100 Costa Rican households	80 %	75 %	72 %	63 %	60 %
Total basic subscriptions (fixed telephony)	1 027 847	976 824	936 035	839 968	804 468
Total VoIP subscriptions	3872	18 265	32 424	41 249	55 046
Total number of public phones	18 960	16 348	13 145	8188	5726
Mobile telephony					
Total subscriptions	4 135 185	5 348 881	7 059 471	7 020 412	7 535 599
Prepaid subscriptions	2 872 496	4 211 766	5 831 878	5 598 911	5 951 337
Postpaid subscriptions	1 262 689	1 137 115	1 227 593	1 421 501	1 584 262
Total subscriptions/100 Costa Rican citizens	90 %	115 %	150 %	147 %	156 %
Prepaid subscriptions/total subscriptions	69 %	79 %	83 %	80 %	79 %
Postpaid subscriptions/total subscriptions	31 %	21 %	17 %	20 %	21 %
Data transfer					
Total subscriptions with internet access	2 008 763	3 118 155	4 028 302	4 806 217	5 420 554
Total subscriptions with internet access (fixed telephony: wired)	414 384	439 043	474 433	503 347	545 813
Total subscriptions with internet access (fixed telephony: wireless)	5398	8904	10 450	12 493	12 843
Total subscriptions with internet access (mobile telephony)	1 588 981	2 670 208	3 543 419	4 290 377	4 861 898
Total subscriptions with internet access (fixed telephony)/100 Costa Rican citizens	9 %	10 %	10 %	11 %	12 %

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Total subscriptions with internet access (fixed telephony)/100 Costa Rican households	32 %	34 %	36 %	37 %	39 %
Total subscriptions with internet access (mobile telephony)/100 Costa Rican citizens	35 %	57 %	75 %	90 %	101 %
Total subscriptions with internet access (mobile telephony)/ total subscriptions (mobile telephony)	38 %	50 %	50 %	61 %	65 %
Total number of dedicated line connections	10 273	11 993	16 375	16 286	14 093
Cable subscriptions					
Total subscriptions	498 137	540 693	641 042	732 546	797 230
Total subscriptions/100 Costa Rican citizens	11 %	12 %	14 %	15 %	16 %
Total subscriptions/100 Costa Rican households	38 %	41 %	48 %	52 %	56 %
Other reference indicators					
Total population	4 592 149	4 652 459	4 713 168	4 773 130	4 832 234
Gross domestic product at basic prices (in millions of Colones)	18 952 080	207 501 928	22 451 325	24 358 070	25 629 763
Total Costa Rican households	1 297 522	1 326 805	1 348 036	1 399 271	1 436 120

Notes:
** These figures do not include capital gains and/or revenue for cable subscriptions.
Source: SUTEL, Directorate-General for Markets, INEC and BCCR.

Chapter 2

Fixed telephony

Fixed telephony

Subscribers

According with the trend of the last years, during the year 2015, fixed telephony (traditional basic and VoIP) shows a decrease in the number of subscribers. From the 1 031 079 subscribers who had the fixed telephone service in 2011, at the end of the year 2015 only 859 514 clients remained with the service, as specified in table 39 of the Annex. Nevertheless, the reduction in this last year (21 704 subscribers, which is equivalent to 2.5 %) is less than the average for the three previous years (50 167 subscribers, that is an annual decrease of 5.1 %).

Considering that fixed telephony comprises both, the traditional basic phone service and the voice over IP (VoIP) service, the above-stated table evidences the behavior differences between the subscribers of both technologies. Thus, while the traditional basic phone service shows a meaningful decrease of subscribers (number of subscribers decreased from 1 027 847 in the year 2011 to 804 468 in 2015), the number of clients in the VoIP service increased during that same time span from 3872 subscribers to 55 046. In respect to the year 2015, while the VoIP service had an increasing tendency with 13 797 new subscribers, the traditional basic service experimented a reduction of 35 500 clients. See graphic 11.

For comparative purposes, if the number of quarterly registered subscribers in the fixed telephone service is considered for the years 2014 and 2015, an overall and persistent decrease is observed in the total number of subscribers of that service during the eight quarters analyzed. While the client reduction is associated with the traditional basic telephony, it is noted that unlike the behavior shown in the fixed telephony as a whole, the figures of the VoIP service show that, except for the second quarter of 2015, there is a continuous growth in the number of subscribers over the last two years, on average equal to 5.8 % quarterly. The corresponding data are included in table 40 of the Annex.

As the result of that dissimilar behavior in the number of subscribers per service, participation rates in both services -within the total number of customers- has varied markedly, which in the annual perspective is reflected both in table 41 of the Annex, as well as in graphic 12. Meanwhile, during the last two years it may be noted –quarterly- that while in the first quarter of 2014 basic telephony had 96.1 % of the subscribers of the fixed telephony and VoIP had the remaining 3.9 %, during the fourth quarter of 2015 these percentages varied to 93.6 % and 6.4 %, respectively. Such variations are evident in table 42 of the Annex and in the graphic 13.

Service penetration of traditional basic telephony in the country, measured as the percentage of total users compared to the total population, shows a downward trend going from 22.4 % in 2011 to 16.6 % in 2015. This means that the traditional basic service went from 224 basic lines for each

thousand inhabitants to 166 lines per each thousand inhabitants. The respective figures are shown in table 43 of the Annex and in the graphic 14.

As for the penetration of Voice over IP (VoIP), in 2015 this said service reached 11.4 lines per thousand inhabitants. The details of the corresponding evolution of this service are shown in table 44 of the Annex and in the graphic 15.

Meanwhile, the distribution per operator of the above-stated VoIP service subscribers and its evolution over the past two years is shown in the 16 and 17 graphics. While Tigo remains as the operator with the largest number of subscribers (41.6 % in 2014 and 36.1 % in 2015), also Cabletica (26 % 2015 compared to 20.2 % in 2014) and Telefonica (passing from 11.6 % in 2014 to 17.4 % in 2015) had a noticeable growth in their number of clients.

Given that the public telephone service should also be considered as fixed telephony, it is important to analyze the number of public phones available and their evolution over time. The available information indicates a decrease in the number of such devices, which went from 18 960 in late 2011 to 5 726 in 2015. As of 2013, the reduction was accentuated; hence the number of available payphones in 2015 represents only a 35 % of those installed in 2012 (16 348). Obviously, such a decrease in the number of public telephones is associated with a minor need of the population of such service, given the availability of other options, including mobile telephony. The corresponding evolution is shown in table 45 of the Annex and in the graphic 18.

Income[1]

According to the subscriber data and telephone traffic behavior, which analysis is presented below, the income from the provision of fixed telephony in general also shows a downward trend during the period of analysis (2011-2015). While in 2011 fixed telephony generated 88 614 million colones, in 2015 the corresponding revenue decreased to 86 476 million colones, i.e. a reduction equivalent to 2.4 % in the five-year period (0.6 % annual average reduction). It should be noted, however, that the downward trend in revenue was much more marked in the period 2011-2013, since 2014 showed, on the contrary, a significant increase (15.3 %) as the result of the tariff adjustment approved by SUTEL, under resolution RCS-268-2013 on September 18, 2013, enforced later that year by the leading provider of fixed telephone services (Instituto Costarricense de Electricidad). In this regard, in 2014, the corresponding revenue reached a total of 92 831 million colones. Despite this upturn, again in 2015 a 6.8 % downward was experienced with respect to the 2014 period. A detail of the respective amounts and the aforementioned downward trend can be observed in table 46 of the Annex and in the graphic 19.

As occurred with the number of subscribers and telephone traffic (discussed below), in the case of the VoIP service, contrasting the behavior of the revenues for the fixed telephony service -in general- and the traditional basic service –specifically-, income has increased over time, rising from 231 million colones in 2011 to 5071 million colones in 2015. This increase is persistent over time, to the extent that during the five years analyzed (2011-2015), the average annual growth reached 165.2 %. The aforementioned data are shown in table 47 of the Annex and in the graphic 20.

For comparison purposes, on a quarterly basis and considering the last two years, the revenues from fixed telephony show a marked decline, at least until the third quarter of 2015. Such revenues decreased from 24 116 million colones in the first quarter of 2014 to 20 931 million colones in the third quarter of 2015, which equals an average quarterly decline of 2.3 %. During the fourth quarter of the last year, an increase (2,3 %) was observed reaching a value of 21 420 million colones. Overall, quarterly data for 2014 surpassed those of the following year. The breakdown of the figures is shown in the table 48 of the Annex and in the graphic 21.

Meanwhile, the corresponding revenues from the VoIP service during the eight quarters comprised between the years 2014 and 2015 show a similar behavior to that presented in fixed telephony as a whole. Certainly, during the past two years, the growth experienced by the VoIP service, both in terms of number of subscribers as telephone traffic, did not resulted in an increase of the corresponding revenues, at least until the third quarter of 2015, to such an extent that while during the first quarter

1 It should be noted that the revenues from fixed telephony set forth in this report, comprising the period of time between 2011 to 2014, do not match those that were included in previous reports, because unlike these, the actual includes revenues from calls originating in ICE's fixed network that are intended for different mobile networks. This omission by the operator in the reports issued for the previous years has meant that the current data markedly exceeded those referred to for the purposes of the preparation of the 2012 , 2013 and 2014 reports.

of 2014 such revenue totaled 1457 million colones, during the third quarter of 2015 it reached 1184 million colones, thus showing an average quarterly decrease of 3.4 %. In the following quarter an increase was observed in the corresponding amount, so that in that fourth quarter of 2015, the value was of 1266 million colones. Such decrease is primarily explained by the termination in the provision of the international calls service by one of the leading providers.The corresponding data are included in table 48 of the Annex and in the graphic 22.

The revenue and number of subscribers' available information allows obtaining the average revenue per user (ARPU). Obviously, the above average revenue per user can be calculated both for all the services included in the fixed telephony, as well as for each of the different types of service comprised within this telephone modality, i.e. the traditional basic telephony and VoIP service.

When considering fixed telephony -in general-, as well as the traditional basic telephony, the calculations show a very similar average annual income per subscriber for the first three years analyzed (2011-2013). During this period, the corresponding value varied in a range between 83 000 and 86 000 colones. As a result of the above-mentioned tariff adjustment, this average income increased above 104 000 colones in 2014 (26 %), decreasing in the following year to a lower figure (101 172 colones in the case of traditional basic telephony and 100 593 colones for fixed telephony in general). The corresponding detail can be seen in table 50 of the Annex, which also includes the resulting figures in the case of the VoIP service.

Meanwhile, in the case of the VoIP service, revenue per subscriber has shown an fluctuating behavior, with a significant increase from 2011 to 2012 (increased from 59 592 colones to 84 254 colones), a decrease in 2013 (77 274 colones) and another increase in 2014, when it reached a value of 116 989 colones, higher than the one shown by traditional basic telephony for the same year. In 2015, the corresponding amount (92 113 colones) is 1721 lower than the one recorded for the previous year. Refer to graphic 23.

Available information also allows obtaining the average revenue per minute for both the traditional basic telephone service and the VoIP service. The resulting amounts set forth in table 51 of the Annex, show a steady decline in the average price paid by users of the VoIP service, which is explained in part by the loss of relevance of international telephony (decrease in both traffic and the average price per minute), and, moreover, by the significant increase in the number of customers, which involves providing the service to clients with increasingly lower consumption. In the case of traditional basic telephony, the average prices show a significant increase as of 2014, which is a consequence, as above-stated, of the increased tariff enforced by ICE at the end of the 2013 year. The aforementioned behavior can be observed in graphic 24.

Traffic

Telephone traffic through fixed networks has been declining over time, so that while 5441 million minutes were transferred, in 2015

that traffic had decreased to 3208 million minutes, equivalent to an average annual reduction of 12.4 %. It should be noted, however, that the traffic decline experienced in the last year (265 million minutes), represents a lower decrease (7.6 %) than the average reduction. The corresponding detail is shown in table 52 of the Annex and in graphic 25.

Unlike the behavior shown in the fixed telephony as a whole, primarily because of what occurred with the traditional basic telephony, concerning the VoIP telephone service, the corresponding telephone traffic has been increasing with the passage of time and the subsequent consolidation of the service, as observed in table 53 of the Annex, to which graphic 26 related to. In such sense, the minutes coursed thru VoIP increased from 5602 thousand minutes in 2011 to 229 984 thousand minutes in 2015. A growth of 196.6 % experienced during the 2014-2015 biennium in relation to the VoIP traffic on 2013 (77 532 thousand minutes) is noticeable.

When considering quarterly data, specifically for the eight quarters that are included within the last two years, a downward trend in telephone traffic is clear in the case of fixed telephony services in general, which has been decreasing repeatedly in each one of the quarters considered, as the result of the reduction experienced over time in the telephone traffic thru traditional basic telephony network. The relevant data shows that while in the first quarter of 2014 the transfer of minutes via the fixed telephony reached 926 million minutes, in the fourth quarter of 2015, said telephone traffic had dropped to 790 million minutes, which represents an average quarterly decline of 2.2 %. An exception to this downward trend was experienced during the fourth quarter of 2015, were traffic increased by 5.4 % compared to the figure shown in the third quarter of that same year (750 million

minutes). In this regard, please refer to table 54 of the Annex and to graphic 27.

As for the VoIP service, the quarterly figures for the period 2014-2015 show a sustained growth, so that the 45 million minutes of telephone traffic recorded during the first quarter of 2014, increased to 63 million minutes in the fourth quarter of 2015, which means that on average such traffic increased on a quarterly basis by 4.9 % (table 55 of the Annex and graphic 28).

With regard to the VoIP service, the available information allows to determine the percentage distribution of telephone traffic per operator. In that sense, the 2014 distribution showed that the three operators with higher traffic concentrated 75 % of the transferred minutes. Meanwhile, the 2015 data clearly evidenced a reduction in the share of these three operators, which reaches a 71.5 %. This does not mean a traffic reduction thru said operators, since the total traffic from 2014 to 2015 shows an increase of 31.7 % and, additionally, other operators have gained market share at the expense of these three high-traffic operators. The corresponding distributions are specified in graphics 29 and 30.

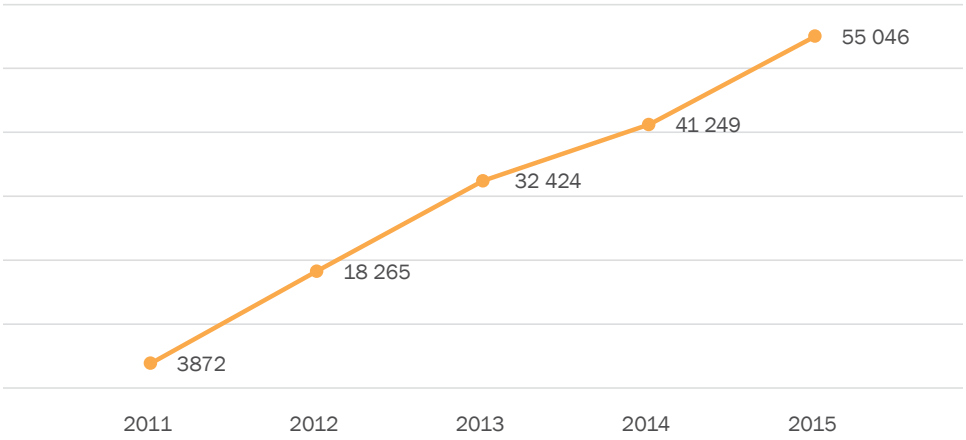
Finally, in connection with fixed telephony traffic as a whole, an important data that can be calculated is the average traffic per subscriber. The figures show that while in 2011, specifically regarding traditional basic telephony, the average traffic per subscriber reached the 5269 minutes, in 2015 that average had decreased to 3465 minutes, which represents an annual average decrease of 9.9 %. The opposite occurs when it comes to the VoIP service, were the average traffic per user has increased from 1447 minutes in the year 2011 to 4178 minutes in 2015, with an annual average increase of 30.4 %. Thus, in the last two years of the period analyzed the average VoIP telephony traffic exceeded the average traffic for the traditional basic telephone service traffic. Refer to graphic 31.

Between 2011 and 2015, the number of subscriptions to the VoIP service has experienced a significant increase.

Graphic N° 11

Costa Rica: Subscriptions to VoIP service 2011-2015

Figures by the end of each year

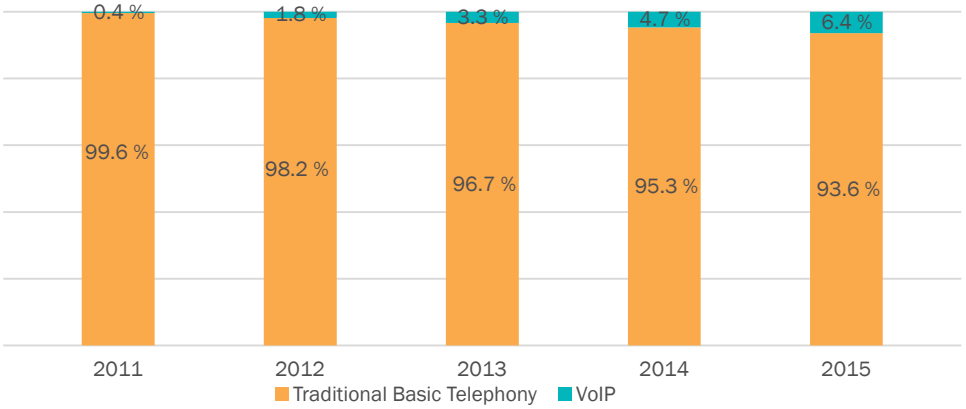


Source: SUTEL, Directorate-General for Markets.

Graphic N° 12

Costa Rica: Percentage distribution of subscriptions to traditional basic and VoIP telephony, 2011-2015

Figures by the end of each year

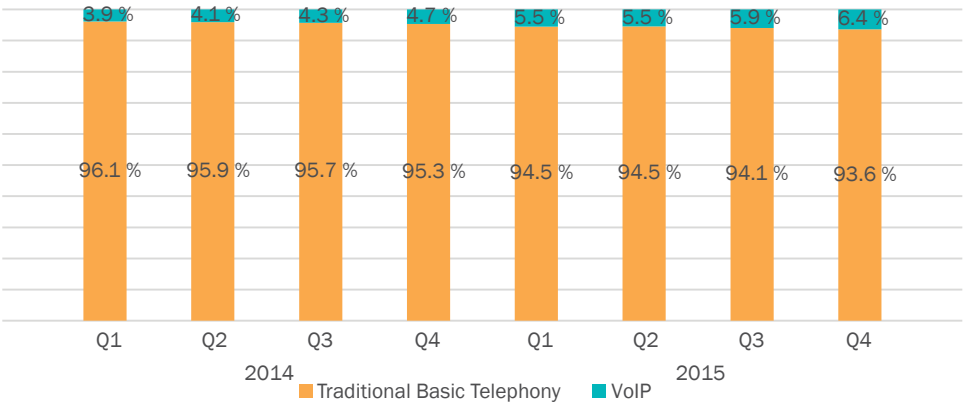


Source: SUTEL, Directorate-General for Markets.

Graphic N° 13

Costa Rica: Percentage distribution of subscriptions to traditional basic and VoIP telephony, 2014-2015

Figures by the end of each quarter

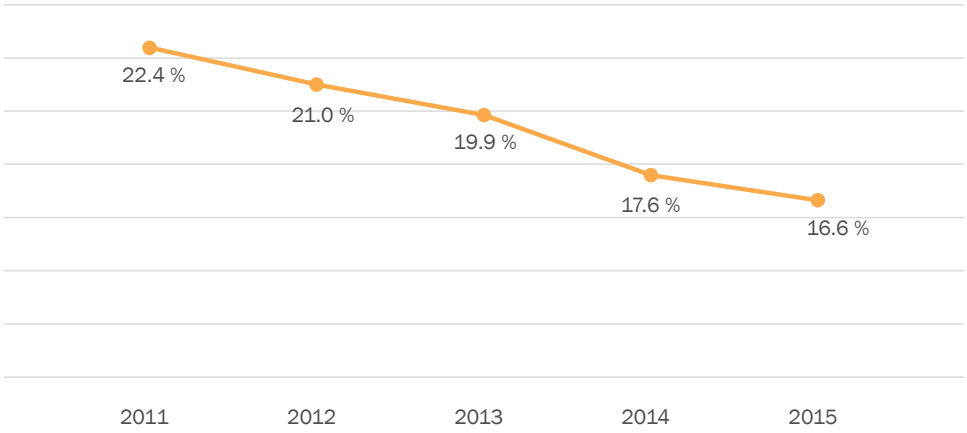


Source: SUTEL, Directorate-General for Markets.

Graphic N° 14

Costa Rica: Traditional basic phone telephony 2011-2015

Connections in relation to the total population (%)



Source: SUTEL, Directorate-General for Markets.

Penetration rate of the traditional basic telephone service

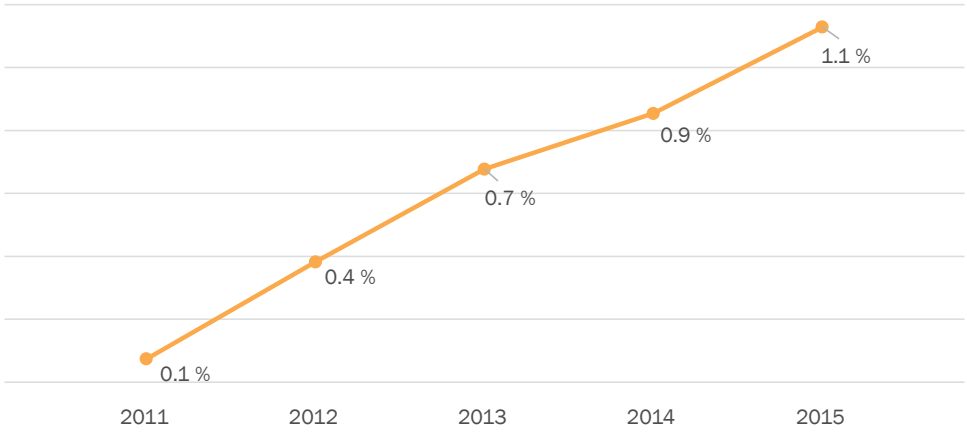
decreased

between the year 2011 and 2015, passing from 22.4 % to 16.6 %

Graphic N° 15

Costa Rica: VoIP telephony service penetration, 2011-2015

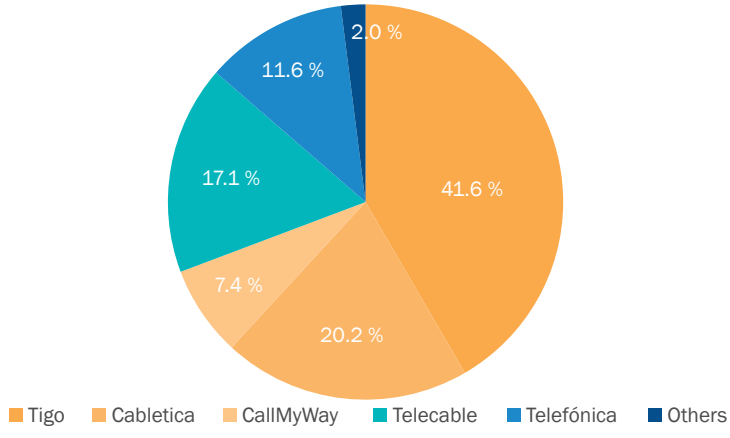
Connections per 1000 Inhabitants



Source: SUTEL, Directorate-General for Markets.

Graphic N° 16

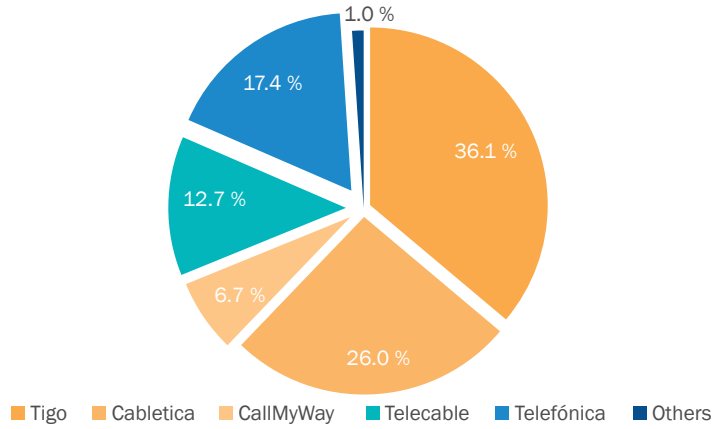
Costa Rica: VoIP Service Subscription Distributed by Operator, December 2014 (%)



Source: SUTEL, Directorate-General for Markets.

Graphic N° 17

Costa Rica: VoIP Service Subscription Distributed by Operator, December 2015 (%)



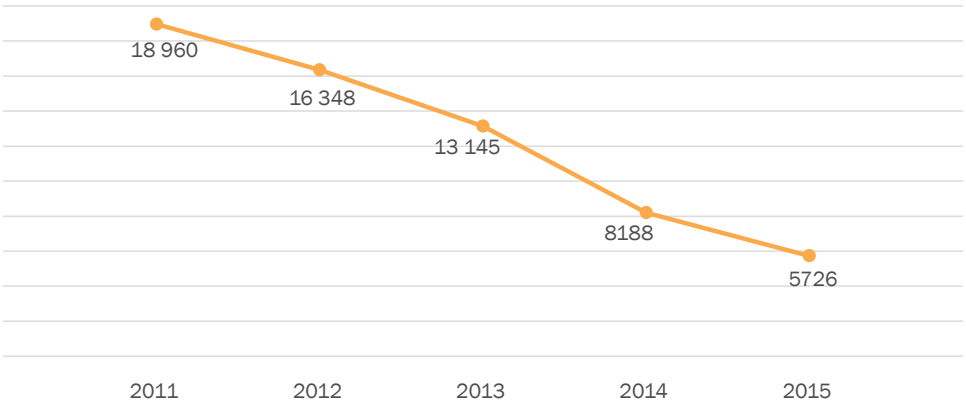
Source: SUTEL, Directorate-General for Markets.

The number of public pay phones in the country **decreased** from 18 960 in the year 2011 to 5726 in 2015

Graphic N° 18

Costa Rica: Number of public pay phones in operation, 2011-2015

Figures by the end of each year

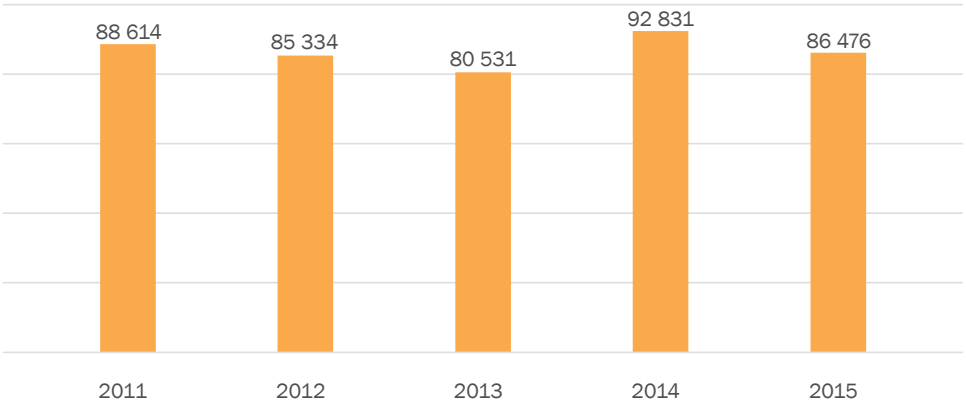


Source: SUTEL, Directorate-General for Markets.

Graphic N° 19

Costa Rica: Fixed telephony service total income, 2011-2015

Figures in millions of colones

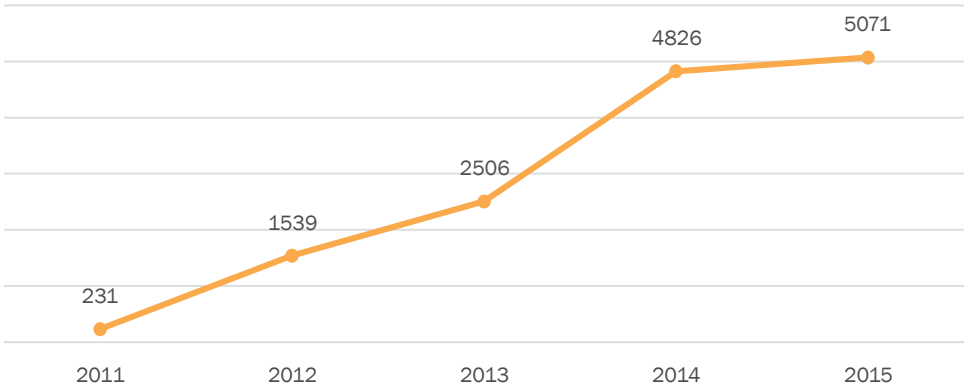


Source: SUTEL, Directorate-General for Markets.

Graphic N° 20

Costa Rica: VoIP telephony income, 2011-2015

Figures in millions of colones



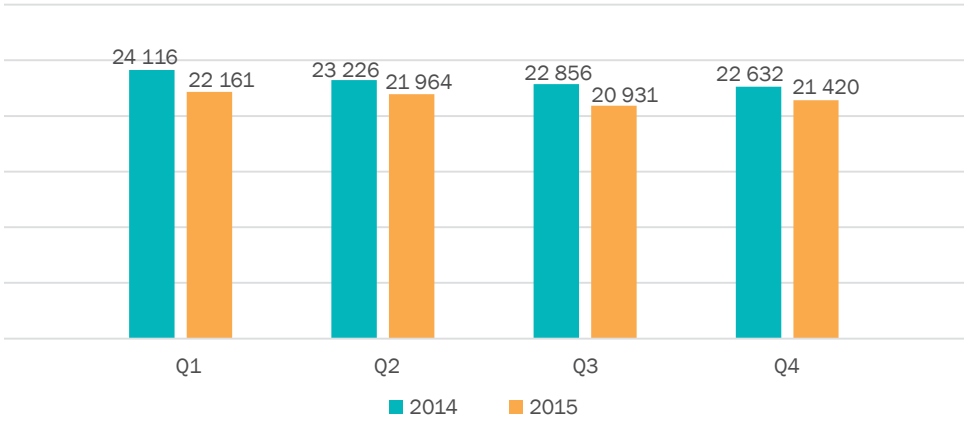
Source: SUTEL, Directorate-General for Markets.

A larger number of users have allowed an increase in the revenues from the **VoIP service**

Graphic N° 21

Costa Rica: Fixed telephony total income, 2014-2015

Quarterly figures in millions of colones

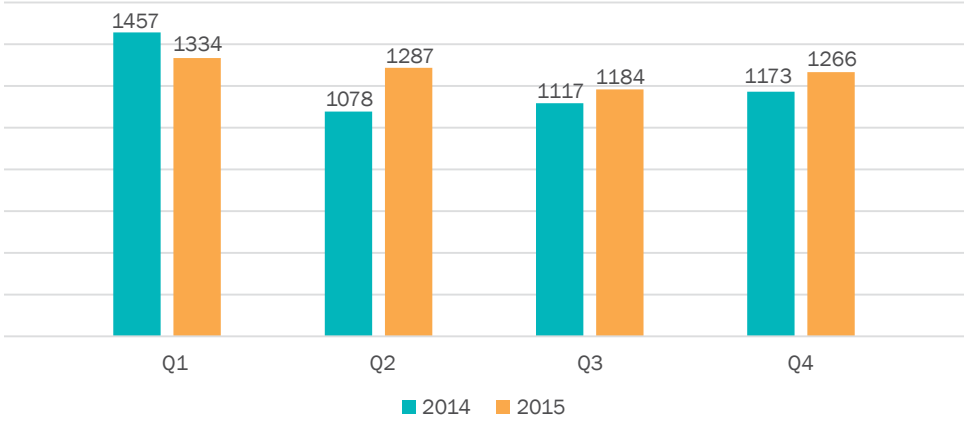


Source: SUTEL, Directorate-General for Markets.

Graphic N° 22

Costa Rica: VoIP telepony income, 2014-2015

Quarterly figures in millions of colones



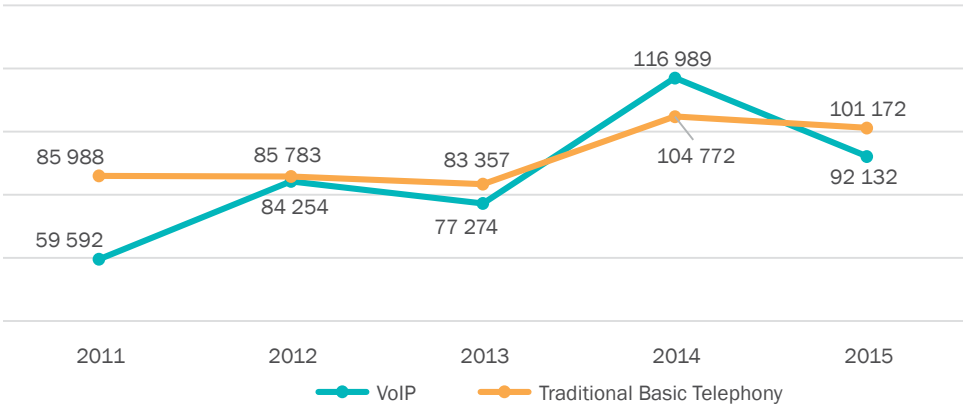
Source: SUTEL, Directorate-General for Markets.

Average income per **VoIP service** subscriber still remains below the traditional basic telephony

Graphic N° 23

Costa Rica: Average income per fixed telephony subscriber, as per type of connection: Traditional basic and VoIP, 2011-2015

Annual figures in colones (CRC)



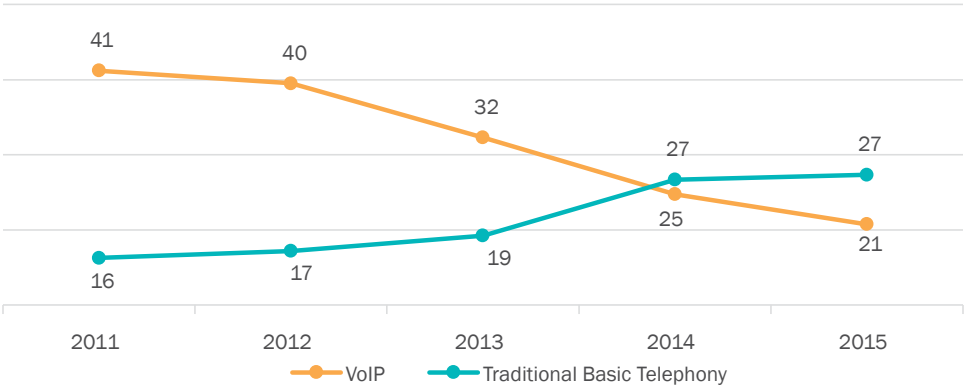
Source: SUTEL, Directorate-General for Markets.

The average income per coursed minute thru the **VoIP service** is less than the one generated by the traditional basic telephony

Graphic N° 24

Costa Rica: Average income per coursed minute thru fixed telephony, as per type of connection: Traditional Basic and VoIP, 2011-2015

Figures in colones (CRC)

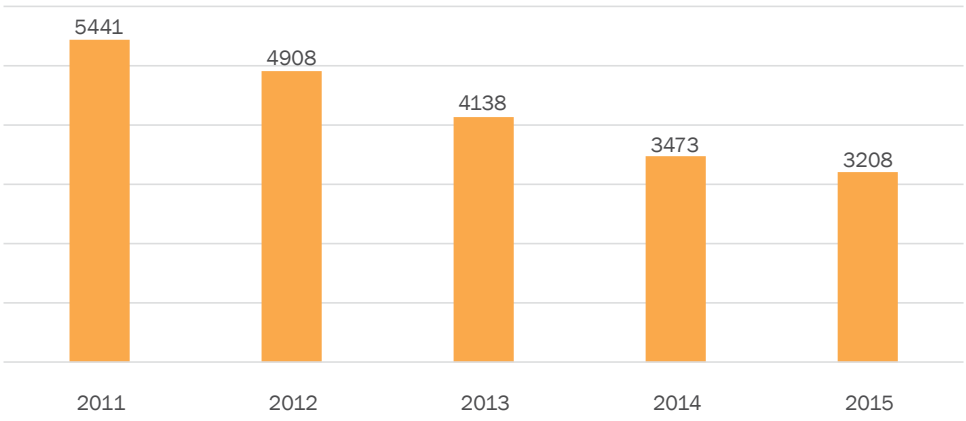


Source: SUTEL, Directorate-General for Markets.

Graphic N° 25

Costa Rica: Fixed telephony traffic, 2011-2015

Millions of minutes per year

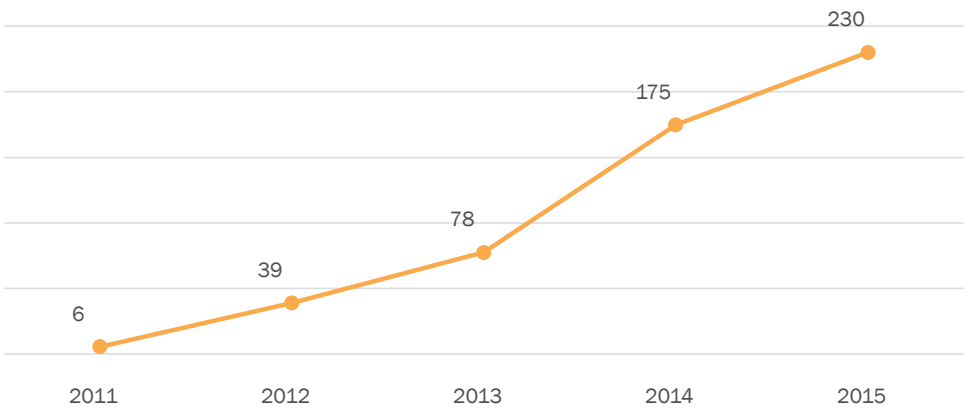


Source: SUTEL, Directorate-General for Markets.

Graphic N° 26

Costa Rica: VoIP telephony traffic, 2011-2015

Thousand of minutes per year



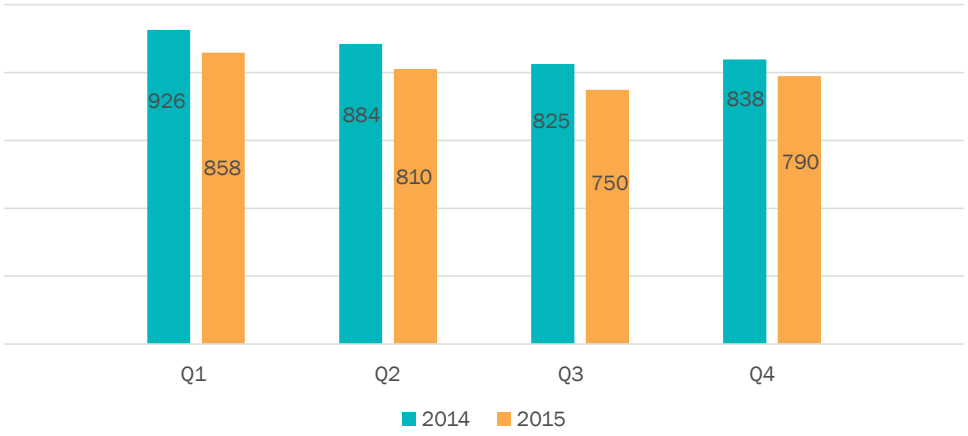
Source: SUTEL, Directorate-General for Markets.

During the last four years telephone traffic originated in the **VoIP network** shows a significant increase

Graphic N° 27

Costa Rica: Fixed telephony traffic, 2014-2015

Quarterly figures in millions of minutes

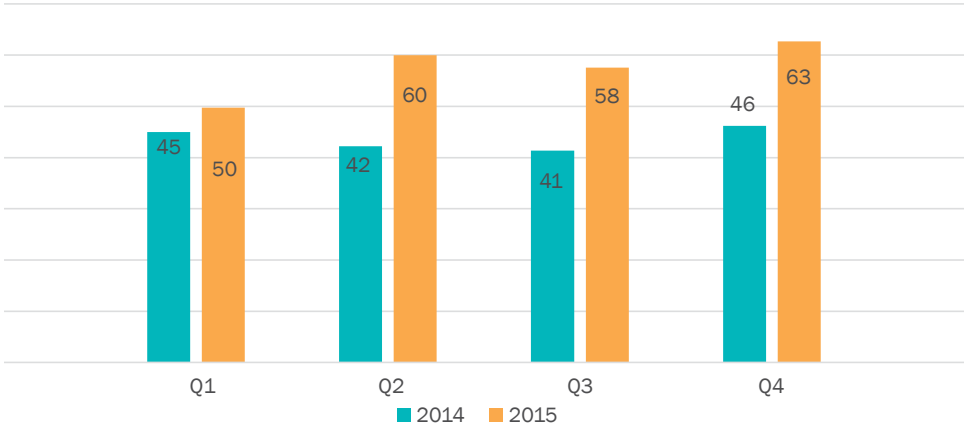


Source: SUTEL, Directorate-General for Markets.

Graphic N° 28

Costa Rica: VoIP telephony traffic, 2014-2015

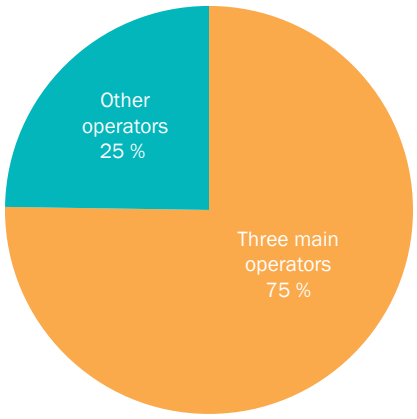
Quarterly figures in millions of minutes



Source: SUTEL, Directorate-General for Markets.

Graphic N° 29

Costa Rica: Percentage VoIP telephony traffic distribution per operator, 2014



Source: SUTEL, Directorate-General for Markets.

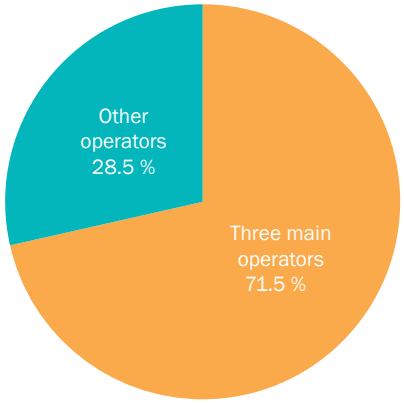
In 2015, three VoIP service operators concentrate

more than 70%

of the traffic coursed thru that network

Graphic N° 30

Costa Rica: Percentage VoIP telephony traffic distribution per operator, 2015



Source: SUTEL, Directorate-General for Markets.

As of 2014, the average traffic per

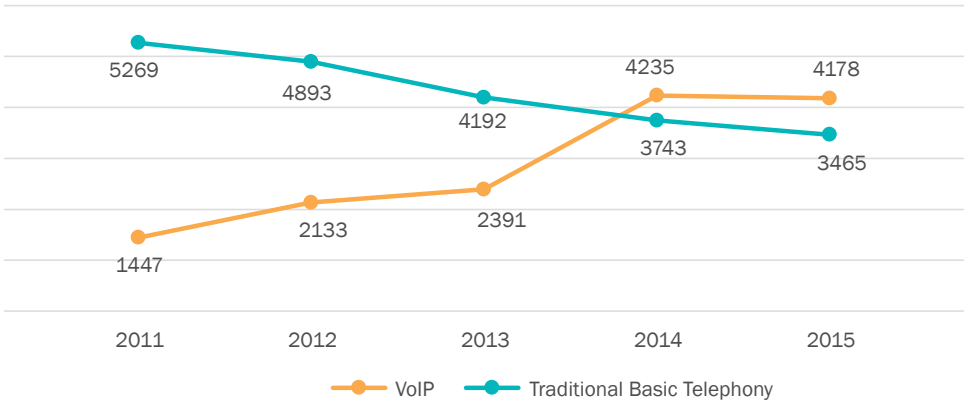
VoIP service

subscriber exceeded the traditional basic telephony average

Graphic N° 31

Costa Rica: Average annual traffic per fixed telephony subscriber, as per type of connection: Traditional basic and VoIP, 2011-2015

Figures in minutes



Source: SUTEL, Directorate-General for Markets.

Chapter 3

Mobile phones

Mobile phones

Subscriptions

2015 reported around 7 536 000 subscribers in the mobile telephone service, which translates into a 7 % increase compared to 2014. It should be noted that this increase was reflected both in prepaid and postpaid services (6 % and 11 %, respectively). A 156 % penetration was accomplished, which is the highest recorded in Costa Rica. This can be seen in graphics 32, 36 and 37.

Though, in the case of market operators, in contrast to 2014 Claro, Telefónica and Fullmóvil experienced a year-on-year increase of 24 %, 17 % and 93 %, respectively. The change of Fullmóvil's historical trend is highlighted, as this operator, since 2013, had experienced continuous declines. See graphic 33.

In regards to the form of payment, the prepaid service remains as the preferred service by the users with a 79 % market share, while the postpaid service represents a 21 %. Since 2012, these figures continue showing a similar behavior. This can be seen in graphics 38 and 35.

In connection with market distribution per number of subscribers, ICE remains the operator with the largest share (58 %), followed by Telefonica (22 %) and Claro (19 %). Tuyo Móvil and Fullmóvil together registered a 1 % participation. However, attention must be paid to the fact that despite ICE remains the operator with the largest share, since 2011 ICE has experienced a steady decline (approximately 33 % in 4 years). By 2015, Claro (3 %) followed by Telefónica (2 %) experienced the largest percentage increase in their market share in contrast to 2014. See graphic 34.

When analyzing the numbers of users based in the form of payment and operator, in the case of the prepaid service, ICE has the largest share (54 %), followed by Telefónica (25 %), Claro (19 %), and virtual operators with a 1 % each. In the postpaid service, the structure changes as ICE prevails with a 71 % market share. However, Claro moves to the second position with 19 % and Telefónica remains third with a 10 %. It is important to note that the prepaid service is more fragmented than the postpaid, in which nearly three quarters of the users correspond to ICE, despite that the historical behavior shows that since 2011 this operator has reduced its participation hence giving market space to other operators. See graphics 39 and 40.

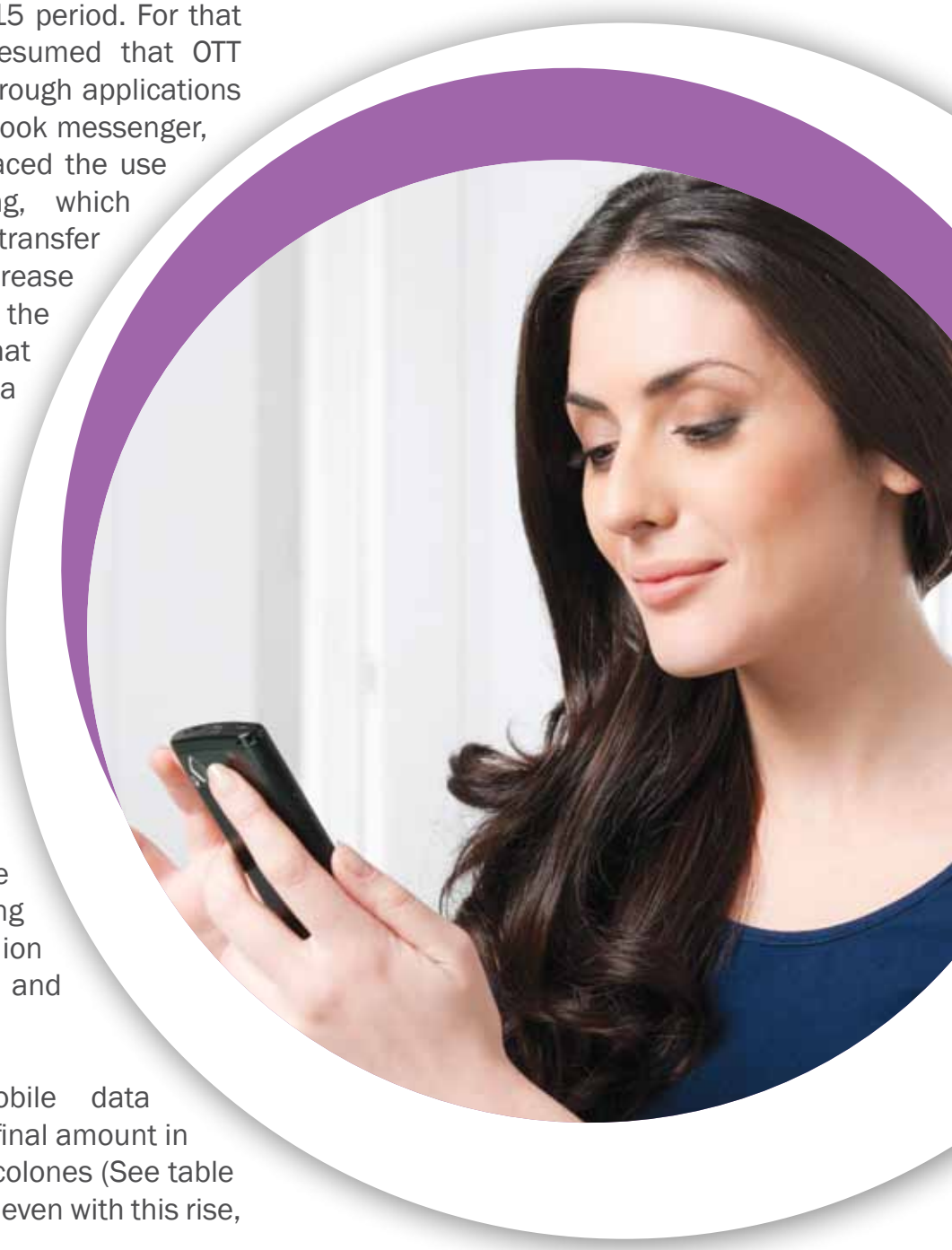
Income

Revenues from mobile telephony services (income from voice and messaging services) experienced an increase of 21 309 million colones in contrast to the year 2014 (5 %). Thus, in 2015 they reached a figure close to 413 000 million colones. However, despite the revenue growth, the increase was lower than the annual average growth for the 2011-2014 period (18 %). This is shown in graphic 41.

As for the conformation, year-by-year mobile voice income has gained a larger share, reaching in 2015 a 97 % high peak, 3 percentage points more than in 2014. In addition, said service experienced an 8 % increase during the last year, registering 398 422 million colones, while in 2015 messaging (SMS/MMS) represented just a 3 %, as it recorded a significant decrease of 39 % for the 2014-2015 period. For that particular case, it is presumed that OTT (over the top) services, through applications such as Whatsapp, Facebook messenger, among others, have replaced the use of traditional messaging, which is reflected in the data transfer section, with an increase of more than 30 % in the revenues generated by that service in the mobile data market. See graphic 43.

Income from voice roaming remained similar to the previous year, as it only increased by 0,12 % compared to 2014; registering in 2015 the amount of 6596 million colones. The income from SMS/MMS roaming + data increased 2 % over the previous year, accumulating a total of 5788 million colones. See graphics 45 and 46.

The income from mobile data increased by 34 % with a final amount in 2015 of 170 366 million colones (See table 60 of the Annex), however even with this rise, the growth presented was the lowest since 2012. Revenue generated by the mobile network -as a whole- is determined by adding the mobile date income along with mobile voice and messaging, which figure closed at 583 108 million, showing 12 % increase compared to 2014 (the lowest since 2012).



As for income as per the form of payment in 2015, even though the postpaid service represents only a 21 % of the subscriptions, the total income share within the mobile network is of 57 %, which represents 330 555 million colones, showing a year-by-year increase of 34 %. The 252 553 million colones reported for the prepaid service showed a 7 % decrease compared to 2014, and represents a 43 % income within the mobile network income. See graphic 42.

In line with the above, the average monthly income per postpaid subscriber of the mobile network in the year 2015 was 17 387 colones (highest figure since 2011). While income per prepaid subscriber was of 3537 colones (13 % below 2014). See graphic 47.

Traffic

Mobile voice traffic closed 2015 with 8252 million minutes, which is 9 % lower than 2014, mainly because the number of minutes in the prepaid service, which accounted for 59 % of total traffic, decreased by 16 % compared to 2014 (4868 million minutes in 2015 and 5799 million minutes in 2014). While the postpaid service experienced only a 5 % increase with 3384 million minutes in 2015. It is important to note that for the first time since the opening of the telecommunications market, mobile voice traffic dropped, as shown in graphic 48.

In terms of traffic per subscriber, in 2015 users of the prepaid service had a monthly average consumption of 68 minutes, while those belonging to the postpaid service consumed around 178 minutes. At this point it should be noted that prepaid users consume less and less, as in 2011, 102 minutes were monthly transferred per user, i.e. in four years decreasing by 33 %. The same applies to the postpaid service, however this behavior has not been as pronounced as in 2011 when users consumed 210 minutes per month, i.e. in this period their consumption has reduced by 15 %. See graphic 55.

Participation by destination network experienced no major changes with respect to its historic behavior, as calls with mobile

destination remained as the most user-consumed (79 % of total traffic divided into 55 % on net and 24 % off net), while an 18 % was destined to fixed telephony and a 3 % to international. Despite the fact that market shares are similar to those of 2014, trends by destination continue, since the on net mobile termination and the fixed telephony decreased, on average 2 and 4 percentage points per year, respectively, while mobile off net increased 6 points on average per year, and internationally telephony destinations practically remain unvaried over the years. See graphic 49.

International traffic closed 2015 with 503 million minutes (5 % less than the previous year). It is conformed by 46 % of incoming international traffic and 54 % international outgoing traffic. The latter presents an upward trend, given that in 2011 their share was of 28 %. Contrary to the foregoing is the incoming international traffic , given that in 2011 its share was around 72 % and at the end of 2015 it reached its lowest level. See graphic 54.

The voice roaming traffic totaled 42 million minutes at the end of 2015 showing a 50 % increase compared to 2014 (the largest in the analyzed period), especially in roaming incoming (58 % compared to 2014), while outbound roaming traffic experienced a 15 % increase. This can be seen in graphic 53.

As for messaging traffic, the short message service (SMS) has experienced an annual average decrease of 21 %; moving from 22 839 million messages in 2012 to 9551 million messages in 2015. Of these, 48 % were bound off net and 52 % on net. Since 2013, MMS messaging has been decreasing at an annual average rate of 56 % and closed 2015 with 10 million messages. See graphics 50, 51 y 52.

Number Portability

Since 2013 the possibility for mobile users to carry numbers to other mobile operators was established. From that date until December 2015, 485 966 successful ported numbers have been accomplished, with an approximate monthly average of 20 000.

The fact that in 2015 the largest amount of exports (294 553) was performed, i.e. 69 % compared with 2014. The third quarter of that year recorded the highest number of exports.

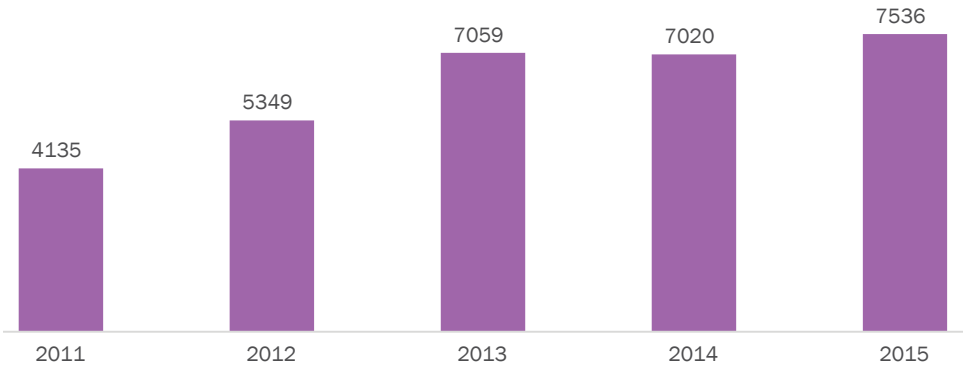
Portability has resulted that in net terms (imported numbers - exported numbers), ICE, Fullmóvil and Tuyomóvil have withdrawn a total of 296 800 numbers (291 348, 2576 and 2876, respectively). In contrast to the above, Claro and Telefónica have received thru this mechanism 118 074 and 178 726 new users, respectively. See graphics 56 and 57.

Subscriptions reach a **record high** in 2015

Graphic N° 32

Costa Rica: Mobile telephone service subscriptions, 2011-2015

Figures in thousands of subscriptions by the end of the year



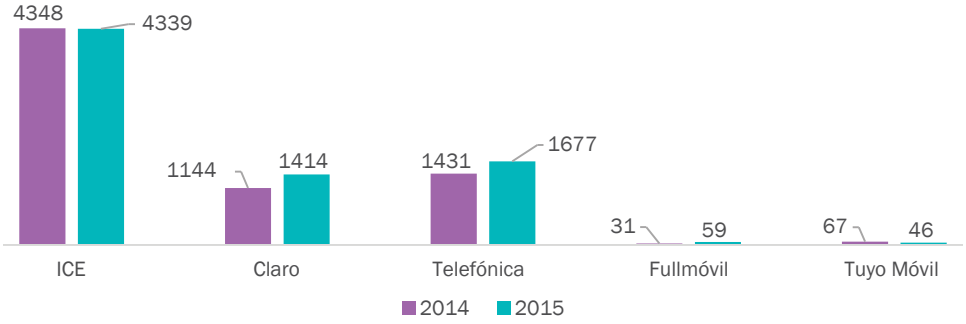
Source: SUTEL, Directorate-General for Markets.

2015 **increased** by 516 thousand subscribers compared to 2014

Graphic N° 33

Costa Rica: Mobile telephone service subscriptions per operator, 2014-2015

Figures in thousands of subscriptions



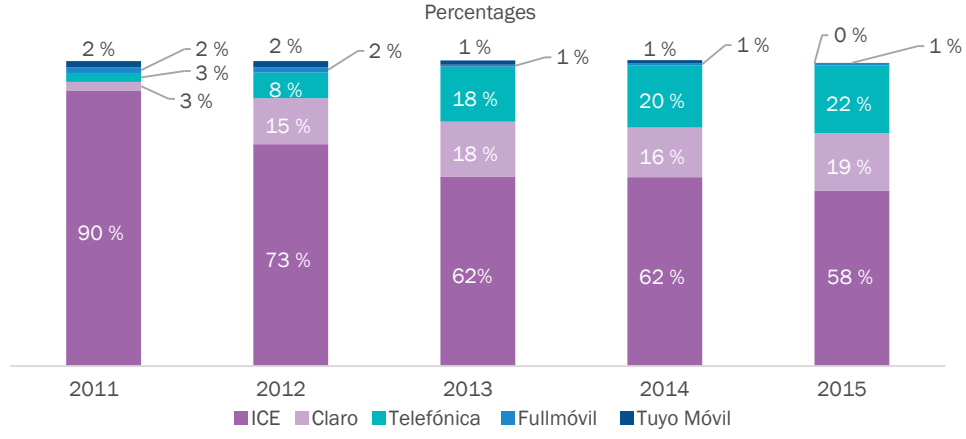
Source: SUTEL, Directorate-General for Markets.

Claro and Telefonica reach their highest market share in their **history**

Graphic N° 34

Costa Rica: Share of mobile telephone service subscriptions per operator, 2011-2015

Percentages

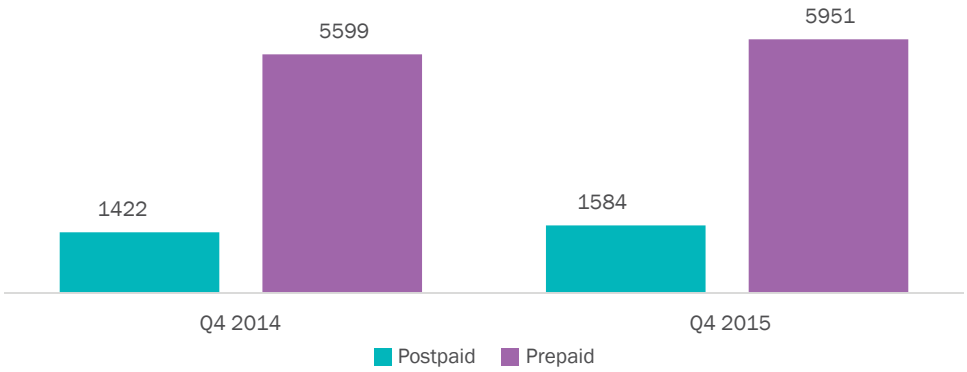


Source: SUTEL, Directorate-General for Markets.

Graphic N° 35

Costa Rica: Mobile telephone service subscriptions by form of payment, 2014-2015

Quarterly figures in thousands of subscriptions



Source: SUTEL, Directorate-General for Markets.

Prepaid subscriptions quarterly

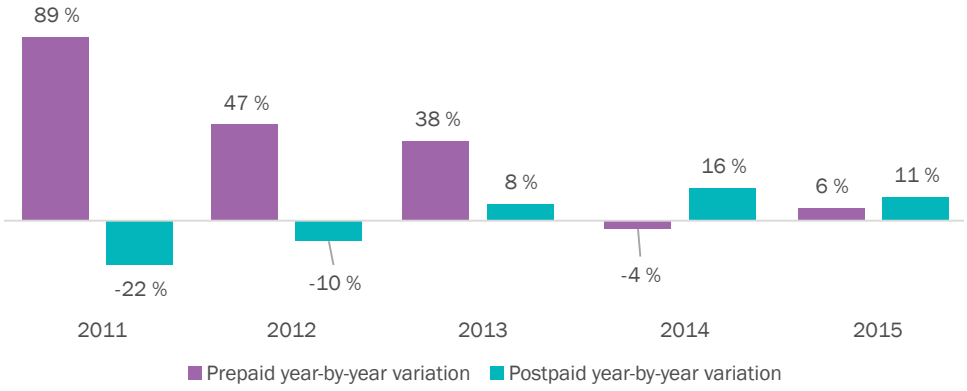
increased

–on average- by 0.3 %, while postpaid by 3.3 %

Graphic N° 36

Costa Rica: Year-by-year variations in mobile telephone service subscriptions by method of payment, 2011-2015

Percentages



Source: SUTEL, Directorate-General for Markets.

Subscriptions

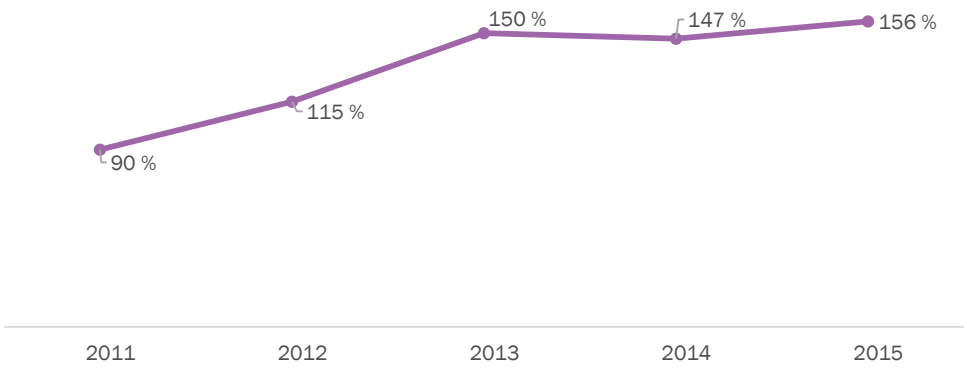
increased by 7 %

compared to the data recorded in 2014

Graphic N° 37

Costa Rica: Mobile telephone service subscriptions per 100 inhabitants, 2011-2015

Percentages



Source: SUTEL, Directorate-General for Markets.

156 % mobile penetration,

the highest

in the history of Costa Rica

For each postpaid user,

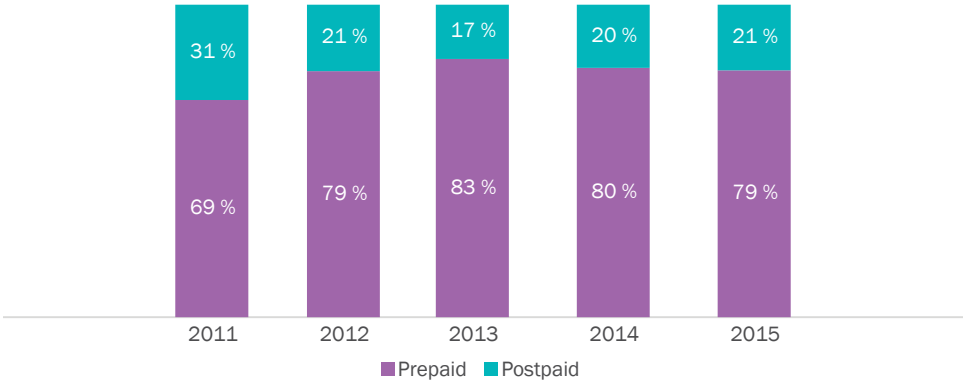
4 prepaid

users exist

Graphic N° 38

Costa Rica: Share of mobile telephone service subscriptions by form of payment, 2011-2015

Percentages



Source: SUTEL, Directorate-General for Markets.

ICE is the operator with the largest market share in the

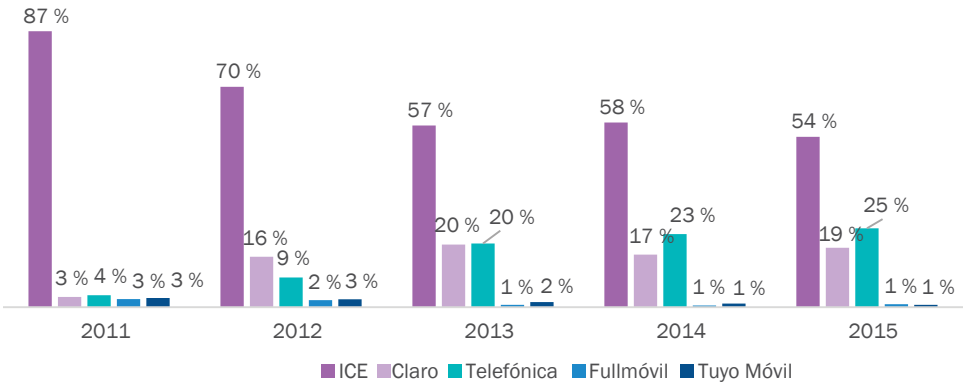
prepaid

form of payment, with 54 %

Graphic N° 39

Costa Rica: Share of prepaid mobile telephone service subscriptions by operator, 2011-2015

Percentages



Source: SUTEL, Directorate-General for Markets.

ICE is the operator with the largest market share in the

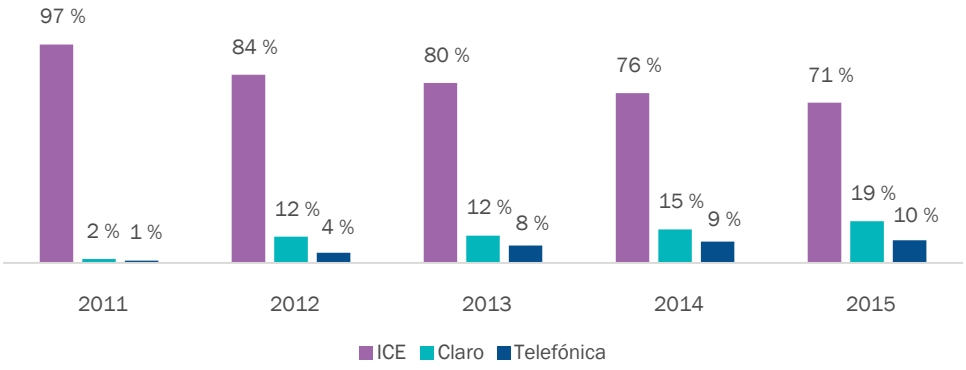
postpaid

form of payment, with 71 %

Graphic N° 40

Costa Rica: Share of postpaid mobile telephone service subscriptions by operator, 2011-2015

Percentages

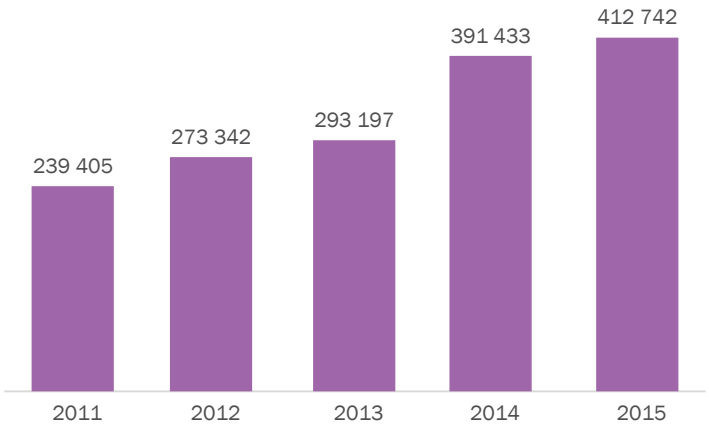


Source: SUTEL, Directorate-General for Markets.

Graphic N° 41

Costa Rica: Mobile telephone service total income, 2011-2015

Figures in millions of colones



Source: SUTEL, Directorate-General for Markets.

Mobile telephony income

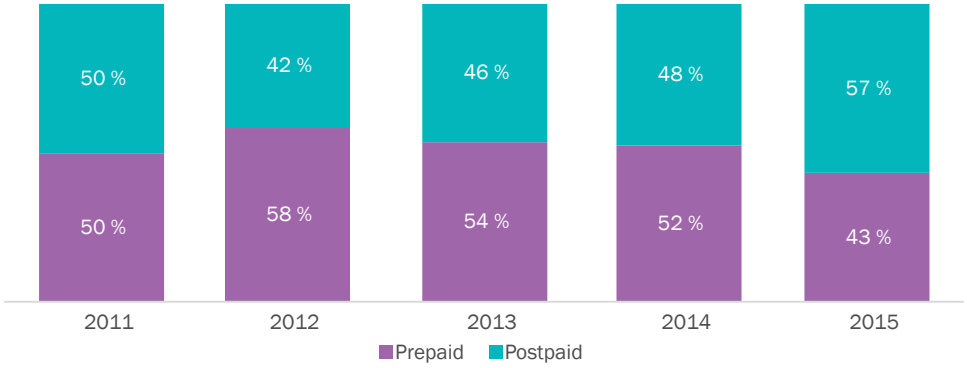
increased by 5 %

compared to 2014

Graphic N° 42

Costa Rica: Ratio of total income for the mobile network*, as per form of payment, 2011-2015

Percentages with respect to the total



*Includes income from mobile voice, messaging and data; roaming is not considered.

Source: SUTEL, Directorate-General for Markets.

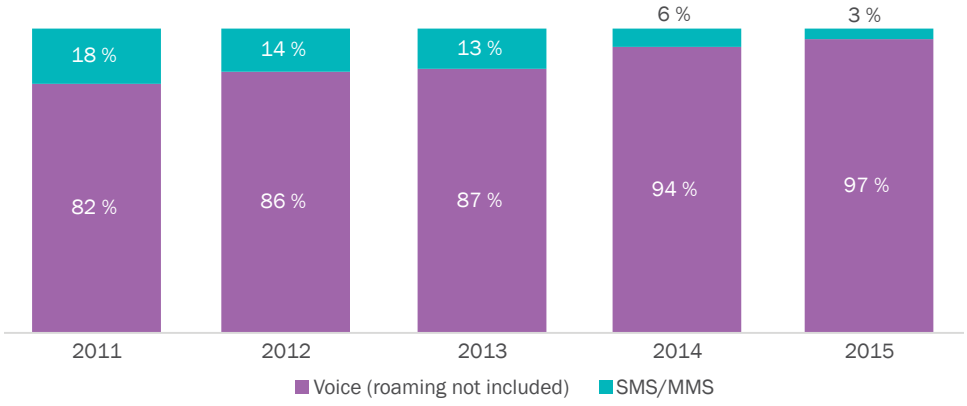
57 %

of the income from the mobile network originates in the postpaid form of payment

Graphic N° 43

Costa Rica: Ratio of total income for the mobile network*, as per component, 2011-2015

Percentages with respect to the total



Source: SUTEL, Directorate-General for Markets.

Voice income is the largest component of mobile telephony with

a 97 %

Income for mobile network

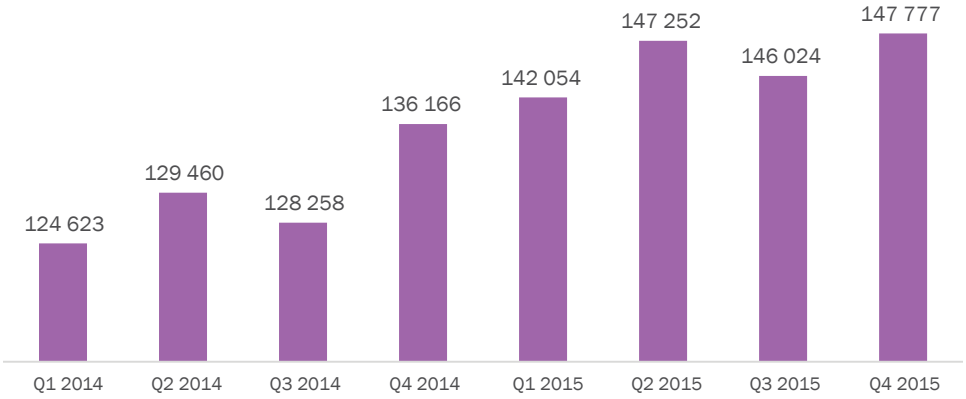
grew 12 %

compared to 2014

Graphic N° 44

Costa Rica: Total quarterly income for the mobile network*, 2014-2015

Figures in millions of colones



*Includes income from mobile voice, messaging and data; roaming is not considered.

Source: SUTEL, Directorate-General for Markets.

Income for SMS/ MMS and Internet roaming

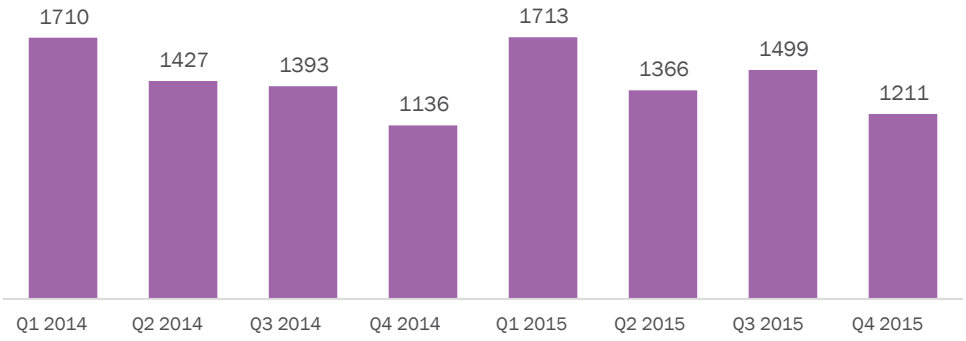
increased by 2 %

compared to the year 2014

Graphic N° 45

Costa Rica: Quarterly income for roaming, SMS/MMS and data, 2014-2015

Absolute figures in millions of colones



Source: SUTEL, Directorate-General for Markets.

Income for

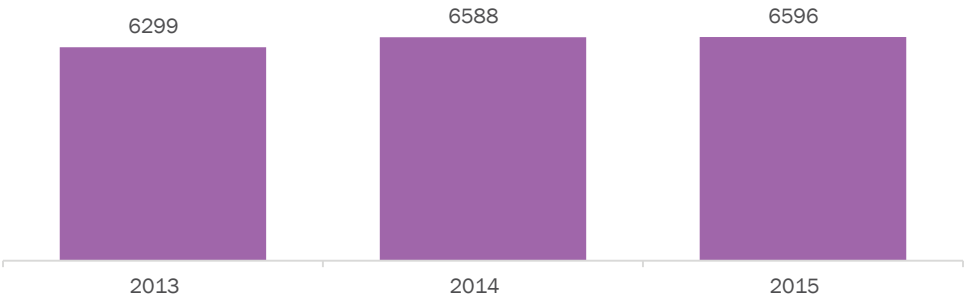
voice roaming

practically remains unchanged since 2014

Graphic N° 46

Costa Rica: Total income for voice roaming, 2013-2015

Absolute figures in millions of colones

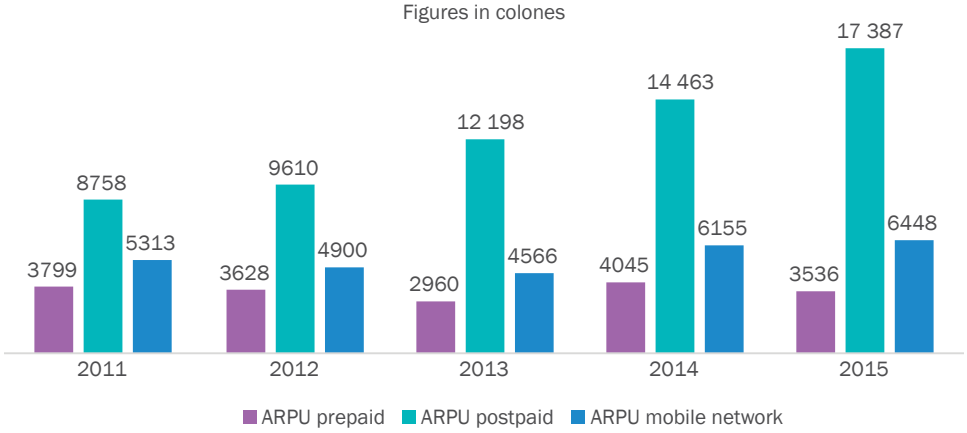


Source: SUTEL, Directorate-General for Markets.

Graphic N° 47

Costa Rica: Average monthly income per subscriber of the mobile network as per form of payment, 2011-2015

Figures in colones



Source: SUTEL, Directorate-General for Markets.

The average income received by an operator from a postpaid user is

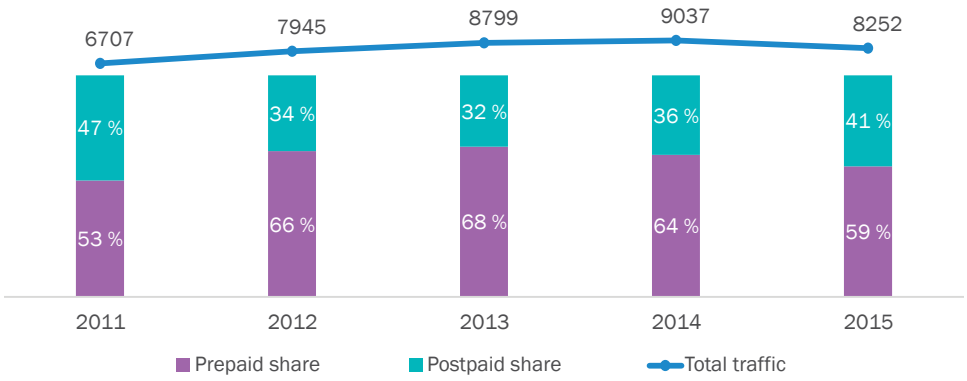
almost 5 times

larger than from a prepaid user

Graphic N° 48

Costa Rica: Total traffic of the mobile telephone service and its percentage conformation per form of payment, 2011-2015

Absolute figures in millions of minutes and percentages



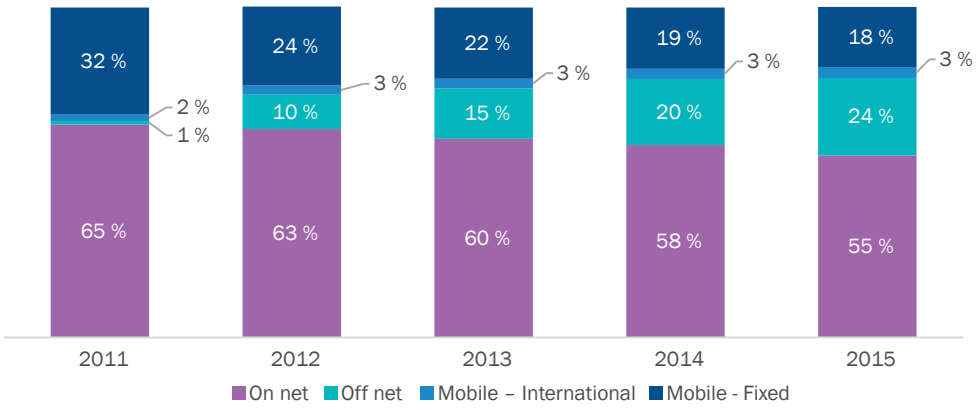
Source: SUTEL, Directorate-General for Markets.

59 %

of the mobile telephony traffic originates from the prepaid form of payment

Graphic N° 49

Costa Rica: Percentage conformation of total traffic in the mobile telephone service by destination, 2011-2015



Source: SUTEL, Directorate-General for Markets.

The main destination of calls is to the On Net mobile network, which represents a

55 %

of the total traffic

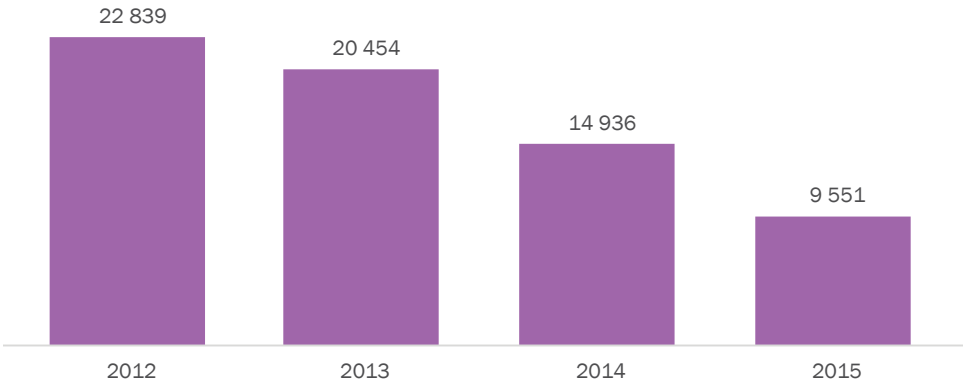
A historic low in the number of SMS messages is recorded

(9551)

Graphic N° 50

Costa Rica: Total SMS traffic, 2012-2015

Figures in millions of messages



Source: SUTEL, Directorate-General for Markets.

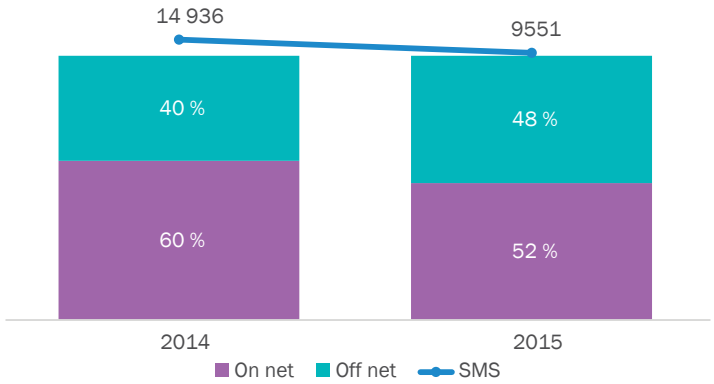
52 % of the SMS messages are

On net

Graphic N° 51

Costa Rica: Total and percentage conformation of SMS traffic in the mobile telephone service, 2014-2015

Absolute figures in millions of messages and percentages



Source: SUTEL, Directorate-General for Markets.

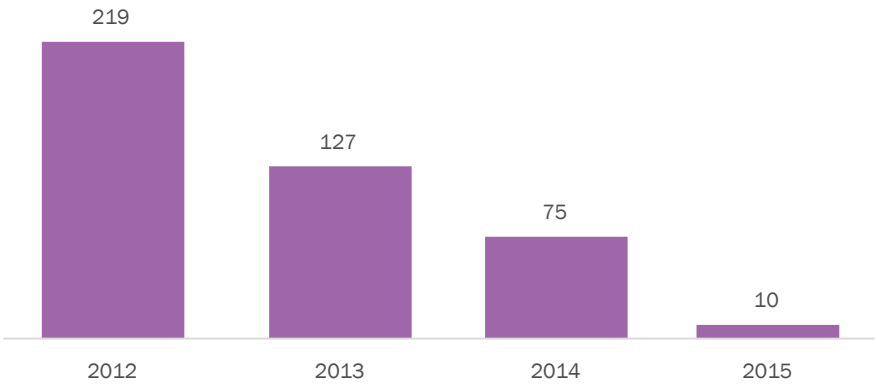
A historic low in the number of MMS messages is recorded

(10 million)

Graphic N° 52

Costa Rica: Total MMS traffic, 2012-2015

Figures in millions of messages

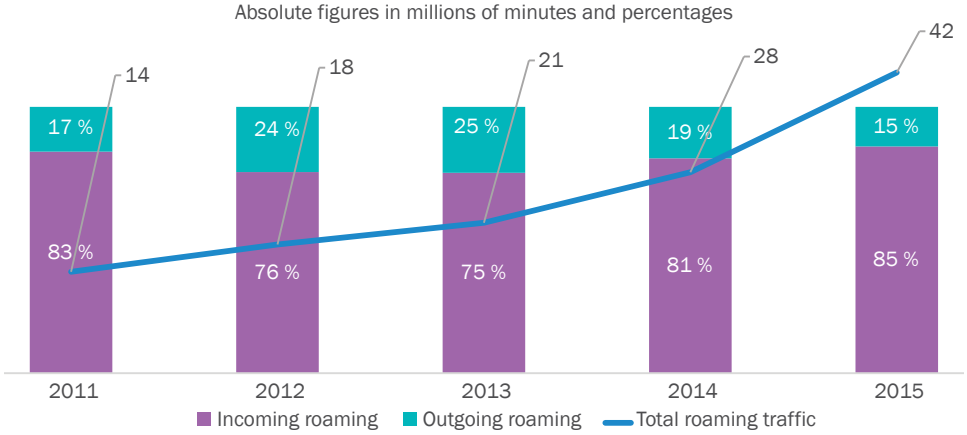


Source: SUTEL, Directorate-General for Markets.

Graphic N° 53

Costa Rica: Total and percentage conformation of voice roaming traffic in the mobile telephone service, 2011-2015

Absolute figures in millions of minutes and percentages



Source: SUTEL, Directorate-General for Markets.

The year 2015 recorded

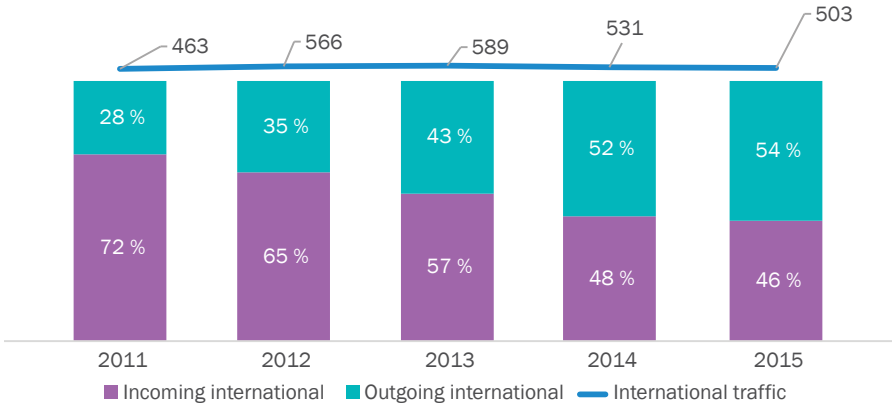
42 million

minutes of voice roaming

Graphic N° 54

Costa Rica: Total and percentage conformation of international traffic in the mobile telephone service, 2011-2015

Absolute figures in millions of minutes and percentages



Source: SUTEL, Directorate-General for Markets.

International traffic

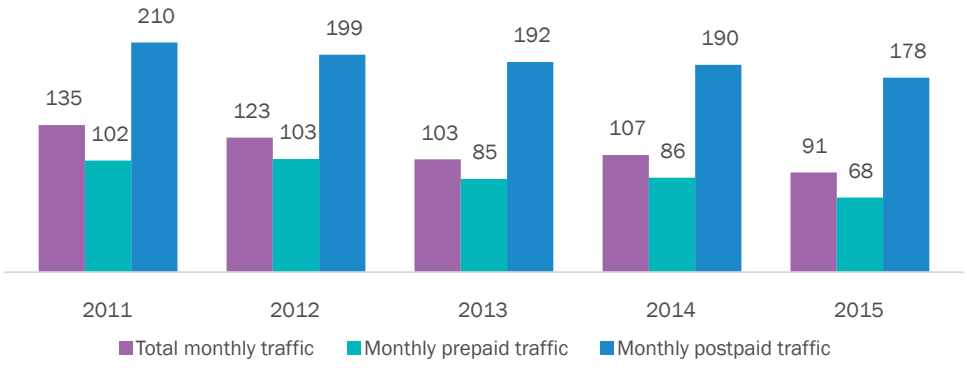
decreased 5 %

compared to the year 2014

Graphic N° 55

Costa Rica: Average monthly subscriber traffic per form of payment, 2011-2015

Figures in monthly minutes per subscriber



Source: SUTEL, Directorate-General for Markets.

A postpaid user consumes almost

3 times more

than a prepaid user

The year 2015

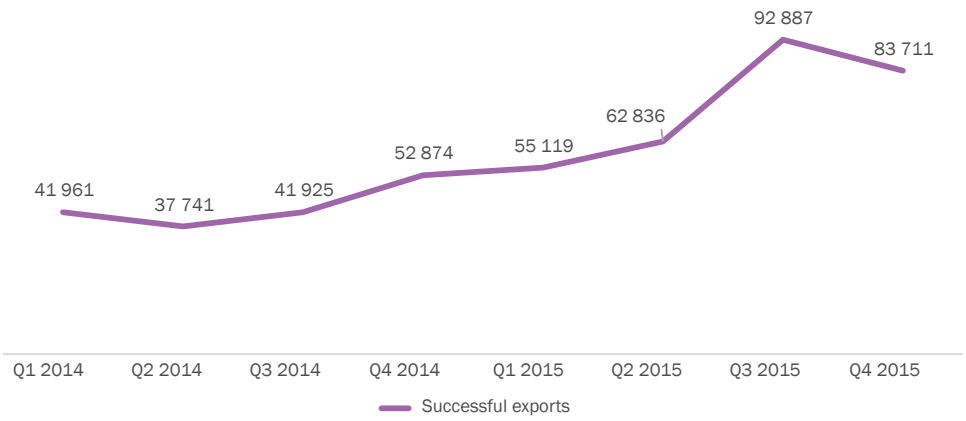
recorded 69 %

of successful ported numbers

Graphic N° 56

Costa Rica: Successful* ported numbers at the end of the quarter, 2014-2015

Figures in monthly minutes per subscriber



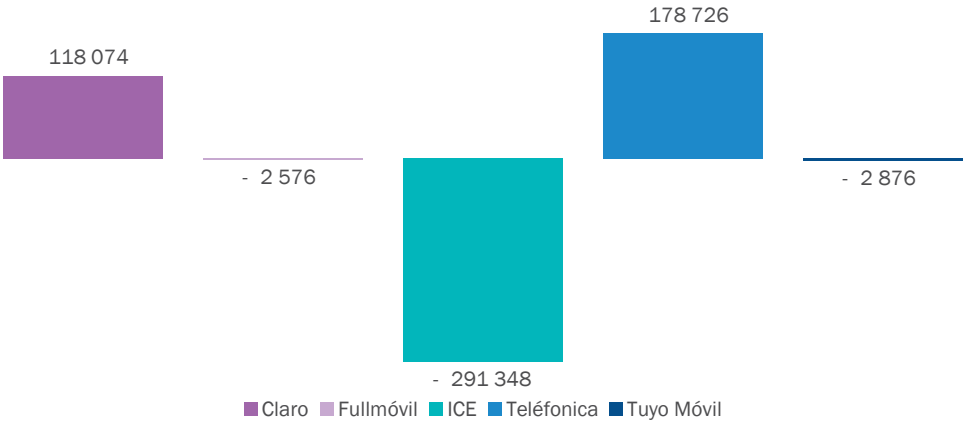
*Successful exports: Number of porter numbers finally activates in the new operator's network.
Source: SUTEL, Directorate-General for Markets and Directorate-General for Quality.

Telefónica

is the operator with the largest number of imported numbers

Graphic N° 57

Costa Rica: Successful* ported numbers per operator, (December 2013 – December 2015)



*Successful imported numbers: Number of imports finally activates in the new operator's network.
Source: SUTEL, Directorate-General for Markets and Directorate-General for Quality.

Chapter 4

Data Transfer

Data Transfer

This section presents the analysis performed to the data transfer service and the evolution of the related markets during the period 2014 to 2015. At the beginning of each section the general data of each market for all years with available information will be presented, however, the main focus will be the 2014 to 2015 evolution, and special emphasis is made to points of interest during 2015.

The specific services to be analyzed are: mobile Internet access, retail fixed Internet access, wholesale fixed Internet access and leased lines. The analysis of variables such as connections sold and total revenue, which are also specified by connection technologies and purchased speed ranges, are also contemplated. The variable data traffic is analyzed only for the mobile Internet access and retail fixed Internet markets.

Internet access via mobile networks

For this analysis information was gathered from 3 network operators with a concession within the spectrum and from the authorized mobile virtual network authorized operators. These companies operate networks with 2G, 3G and 4G technologies. The study of this market is presented taking into consideration the following aspects: type of access device, form of payment and speed ranges. The details are exposed in the following sections.

Subscriptions

Graphic 58 shows the service evolution in terms of the number of users. From 2012 to 2015 a sustained increase has been observed ranging from 2 670 708 subscribers at the beginning of the period in question, to 4 861 898 at the end of 2015, with an average growth of 82 % during this period.

This increase of 2 191 690 subscriptions during the period comprised between 2012-2015 denotes the increasing rate of the mobile data market in recent years. This can be observed in the increase in the per capita penetration of this service, which passed from a 57 % in 2012, until reaching a 101 % at the end of 2015.

Following, Graphic 59 shows the total subscriptions per quarter registered during the 2014-2015 period. As shown, a 12.3 % variation is observed in this period, which indicates that the mobile Internet market experienced during the last years a steady growth in the number of customers.

As shown, in 2015 a quarter-by-quarter growth occurred and the year closed with 508 494 active subscriptions, more than the amount recorded in the first quarter, which represents a 11.7 % variation during the year.

A detailed analysis is performed in connection with the composition of the number of subscriptions, the review is shown, in most of the cases, by quarter during 2015, and annually for certain cases where previous years information is available. This analysis shows subscriptions per access device, form of payment and speed.

One point of interest in the mobile Internet market is the distribution of subscriptions per access device, given that still USB devices and other receivers that provide access to mobile Internet are found in the market.

As shown in Graphic 60, the number of subscriptions via mobile phones represents 98 % of the total market, while the other mentioned devices represent the remaining 2 %, figure that remains constant in each quarter for the year 2015, possibly because these devices cover the need for Internet access in areas where the supply of fixed services is insufficient.

Following, the conformation detail of the 98 % of the subscriptions thru mobile devices is analyzed. Firstly, the details per form of payment are presented.

Graphic 61 presents the annual behavior of the mobile market in terms of prepaid and postpaid subscriptions, where it is observed that subscriptions have varied from 2013 to 2015. It is noted that the postpaid service had a slight decrease in 2014, though experienced a recovery in 2015; on the other hand, the prepaid service shows a steady growth year after year.

Hereafter, Graphic 62 presents a per quarter analysis for the 2014-2015 period. The percentage of prepaid and postpaid customers is shown for each quarter with the intention to see the subscribers' variation over time. It is noted how the percentage of prepaid

customers decreased from 78.3 % during the first quarter of 2014 to 73.9 % during in the fourth quarter of 2015.

However, as noted, only during the year 2015 the tendency among postpaid subscriptions and prepaid subscriptions remained almost constant quarter-by-quarter. The number of postpaid customers ranged at most in 1.3 % of total mobile customers, i.e. 24.9 % in the first quarter and 26.2 % in the third quarter, therefore, the amount of prepaid subscriptions recorded its highest share in the first quarter with 75.1 % and its lowest share in the third quarter with a 73.8 %.

It should be noted that as in 2014, the relationship between prepaid and postpaid in 2015 was approximately of 3 to 1, which means that the prepaid wireless service is an important costumer source for operators.

To complement the description of the subscriptions variable in the mobile Internet market, graphic 63 shows hoy how these are distributed according to the connection speed, variable which, as observed, is defined by ranges.

According to data provided by the mobile operators and in accordance with the ranges established by SUTEL to collect the information, only in four of the ranges of speed there are active connections to the mobile Internet service access, i.e. 0 to 256 kbps, 256 kbps to 512 kbps, 512 kbps to 2 Mbps and 2 Mbps to 10 Mbps.

The first two ranges together represent 40.6 % of the subscriptions during the first quarter, figure which drops to 34.9 % at the end of the fourth quarter. That means, 2015 closed with a smaller ratio of subscribers connected to speeds of less than or equal to 512 kbps.

The speed range between 512 kbps and 2 Mbps shows a positive variation during 2015, increasing from 33.8 % in the first quarter to 36.7 % in the fourth quarter. Finally, it is seen as the 2 Mbps to 10 Mbps range ended the year with a 28.4 % of subscriptions, 2.8 % more than at the beginning of 2015.

Briefly, Graphic 63 shows that on average during 2015, 73 % of the mobile Internet subscriptions purchased were below 2 Mbps. Now, to extend this, the percentage of prepaid and postpaid subscriptions can be further analyzed by speed range. Accordingly, graphic 64 graph shows the conformation by form of payment for each quarter during 2015.

It should be noted that graphic 64 is fully linked to graphic 63. First, it should be pointed out that the 0 to 256 kbps and 256 kbps to 512 kbps ranges are added to graphic 63, thus a 0 to 512 kbps range is created. Now, from graphic 63 it can be observed that during the first quarter this range recorded 40.6 % of the total subscriptions, and during the third and fourth quarters, it recorded 36.2 % and 34.9 %, respectively.

Hereafter, graphic 64 shows each of the foregoing percentages by form of payment. 40.6 % of the subscriptions during the first quarter are divided into 2.2 % for postpaid users and 38.4 % for prepaid users; the 38 % observed during the second quarter is divided into 2 % for postpaid and 36 % for prepaid; the 36.2% observed during the third quarter is divided into 34.3 % for prepaid and 1.9 % for postpaid, and finally, the 34.9 % during the fourth quarter is comprised by a 33.2 % for prepaid and 1.7% for postpaid.

From the detail of the speed range from 0 to 512 Kbps, it can be concluded that a high percentage of prepaid customers access mobile Internet at low speeds. This analysis is reproduced for the other two speed ranges, i.e. from 512 kbps to 2 Mbps and 2 Mbps to 10 Mbps. In both ranges the scenario changes, i.e. increasing the number of postpaid customers in each. For 512 kbps to 2Mbps range, which covers the largest number of subscriptions, 13.2 % of the total during the first quarter and 14 % of the total during the second, third and fourth quarters.

Income

In addition to the subscription results, the mobile Internet access service study comprises the total revenue generated by the companies providing this service.

Graphic 65 shows the total volume of revenue per year for the mobile Internet service during the period from 2013 to 2015. During that period, a sustained profit growth is observed for network operators, which records a 81 % variation, as it moves from 94 000 million in 2013 to more than 170 000 million colones in 2015.

Graphic 66 shows the total revenue for each quarter during 2014-2015. It should be emphasized that the figures shown include revenues generated from mobile Internet through devices connected to second, third and fourth generation networks, either mobile or USB devices, as well as WiMax mobile, which has a small stake. As shown in graphic 66, growth has been sustained during the period and shows a 52 % variation.

Graphic 66 provides an approximation of the revenue growth during 2015. Nearly a 10 000 million growth is observed between the fourth quarter of 2014 and the fourth quarter of 2015, representing a 27 % increase.

The analysis of total revenue for 2015 is supplemented as in the subscription analysis, with the income distribution by device, form of payment and speed ranges.

The relationship between revenues from subscribers using mobile phones and those connected via USB devices and others, are shown in Graphic 67. It is noted that the income from mobile subscriptions represents 96 % of the total during each of the quarters of the year .

In the same manner as the subscription detail was presented, in this case the annual performance of the mobile market is shown in terms of revenue by form of payment. Only revenue generated by mobile telephones is considered, as 96 % of the income is

obtained from such devices. Graphic 68 enables to observes the income variation during the 2013-2015 period.

As shown, revenues have increased year-after-year. Prepaid revenues show a 73 % variation and postpaid an 83 % variation. Prepaid growth during 2014 and 2015 is highlighted, with a 44 % year-by-year growth; and for the same period, postpaid revenues experienced a 27 % growth.

The breakdown by form of payment is shown in Graphic 69, which shows the percentage distribution by quarter for revenues during the 2014-2015 period. A similar income situation can be observed in all quarters, which remain near a 50 % in each form of payment, although prepaid income are slightly higher.

As previously stated, the relationship between postpaid and prepaid subscriptions in 2015 is about 3 to 1; nevertheless, graphic 69 shows that the ratio of the income for the both types of payment is almost 1 to 1. During the first quarter, prepaid revenues totaled up to 52 % and therefore the postpaid revenues represented a 48 % of the total income; this remains similar throughout the year, except in the third quarter where the difference slightly increased, with 54 % for prepaid and 46 % for postpaid. This parity between prepaid and postpaid revenue was largely due to a higher volume of prepaid customers and to pricing differences between postpaid plans and prepaid data downloading.

To conclude the income distribution analysis for mobile Internet in mobile telephone devices, the percentage of these is reviewed based on speed range. Explanation is made that not all operators submitted this information with the required accuracy, thus only three ranges of speed can be included in this report: 512 kbps to 2 Mbps, 2 Mbps to 10 Mbps and a unspecified range of speeds, which when contrasted with the subscription analyses, is observed to be at speed lower than 512 Kbps.

Graphic 70 enables to show how ranges -as a whole- of 512 kbps to 2 Mbps and 2 Mbps to 10 Mbps have a smaller share of revenues, compared to the unspecified speed; the quarterly average of the both ranges is approximately 37.3 %, while the group of unspecified speeds does totals over 62 % of the total income for the mobile internet market thru mobile devices. This implies that the majority of the costumers connected to low speeds generated the largest share of income by speed range.

Traffic

A brief analysis of data traffic on mobile networks is shown below. Graphic 71 enables to observe that data consumption has been increasing from 24 270 TB in 2013 to 74 933 TB during 2012015 , this represents 209 % variation for the period shown. Accordingly, the trend is clear and it shows that users in Costa Rica consume a greater amount of data each yearyea, for instance, between 2014 and 2015 the annual growth was of 97 %.

To expand the analysis, graphic 72 is presented, where the quarterly detail for the 2014-2015 period can be observed. It can be observedshows how in the first quarter of 2014 the total estimated data was

approximately over 8000 TB, while in the fourth quarter of 2015 this number nearly tripled reaching 23 504 TB that represents a 184 % variation, which is evidence that the mobile data market grows day-by-day, hence presenting new challenges for quality and service offering.

It is interesting to note that in 2015 the trend in the mobile Internet market showed a slight increase in subscriptions and revenues and a double-digit growth in traffic volume. Moreover, it is also observed that most subscribers access the Internet at speeds lower than 2 Mbps.

Internet via fixed networks

In this service modality, the operators involved in the provision of the service compete using different technology platforms -wired and wireless connections-. More than 20 service providers reported their data for this publication, as many of these are companies that offer the service along with cable television through HFC networks.

number of registered households, as per the last national household survey, the result obtained is a penetration of 38.9 %, hence an additional 2% in comparison with 2014. With the estimated population at the end of 2015, the per capita penetration rate was of 11.6 %.

Subscriptions

Regarding the total subscriptions per year in the period 2012-2015, in graphic 73 enables to observe that 448 594447 947 subscriptions were recorded in 2012, while in 2015 this increased to 558 656, with a 25 % variation during the period. In the last year, growth in comparison to 2014 was of 8 %.

Graphic 74 shows the number of connections per quarter during the period 2014 to 2015. It is noted that the variation in this period was of 12.4 %. It is further appreciatedappreciate, that by the end of the fourth quarter of 2015, 558 656 subscriptions were accounted and when said figure is associated to the

In the last year, the in the number of subscribers between the first and fourth quarter was of 30 992 customers, which represents a 5.9 % variation.

For in depth analysis on the behavior of subscribers to this service, hereafter the analysis is sub-divided, in first instance by means of access, i.e. the use of wired or wireless connections, then the specific connecting technology and speed ranges shall be reviewed.

Graphic 75 shows the percentage of customers in each of the above-stated access means, where it is evident that wireless connections represent only a 3 % of the total, making it clear that access thru fixed wired networks (xDSL, HFC and optical fiber) predominate in terms of coverage, capacity and user preference.

Following, the technology conformation for each of these access means is presented, i.e. xDSL, HFC and optical fiber for wired means, and WiMax, Satellite and microwave for wireless means.

Graphic 76 shows the details by connection technology. Data was gathered for HFC, xDSL and last mile optical fiber networks. It is noted that the market share of the latter increases gradually from 0.5 % in the first quarter to 1.2 % in the fourth quarter. Moreover, cable networks slightly exceed slightly xDSL networks in number of subscribers, given that the average cable networks account for almost 53 % and xDSL for about 46 % of the total subscribers.

Graphic 77 shows the participation percentages of wireless technologies available on the market (satellite, WiMax and

microwave). It is noted that the WiMax service continues to concentrate the majority of the subscriptions. In the first three quarters of 2015, WiMax concentrated about 87 % of the total subscriptions, while microwave subscribers represent little less than 10 % and satellite about 3.5 %. It should be noted that in the fourth quarter, microwave subscriptions increased to 11.7 % of the total.

The number of subscriptions per speed range and per access means is shown in graphic 78, where the details for fixed networks with wired means can be observed. For speeds of less than 256 kbps, a quarterly average of nearly 0.012 % of the subscriptions' is obtained, for speeds between 256 kbps and 512 kbps the quarterly average is of 3 %, for the 512 kbps to 2 Mbps range, said average is of 51 % and for speeds between 2 Mbps to 10 Mbps the quarterly average obtained is of 44.3 %. This indicates that more than half of the subscribers purchase services with speeds of less than or equal to 2 Mbps, however, at the end of the year, a slightly increase is observed in the percentage of subscriptions with speeds over 2 Mbps.

Graphic 79 shows the distribution by speed ranges for the total number of subscriptions' thru wireless means. In particular it is noted that on average 31.6 % of wireless links have speeds higher than 10 Mbps, which is probably explained by the presence of business customers in this fixed Internet access market share. The quarterly percentage for the 512 kbps to 2Mbps range fluctuated between 30.3 % and 6.2 % during the year, and for speeds lower than 10 Mbps but higher than 2 Mbps, the variation was between 27.2 % and 35.8 % during the year.

Income

In terms of total income from the fixed Internet access market, graphic 80 shows the annual evolution within the 2013-2015 period. An increase is observed in 2015, with 42.8 % variation within the period and a 5 % annual increase from 2014 to 2015.

Graphic 81 shows the total income evolution -by quarter- during the period under review. The behavior is slightly variable. An average of 23 653 million per quarter and a 8 % variation is maintained.

If 2015 is independently examined, it can be observed that the fourth quarter closed at 25 004 million colones, with a 6 %. Variation.

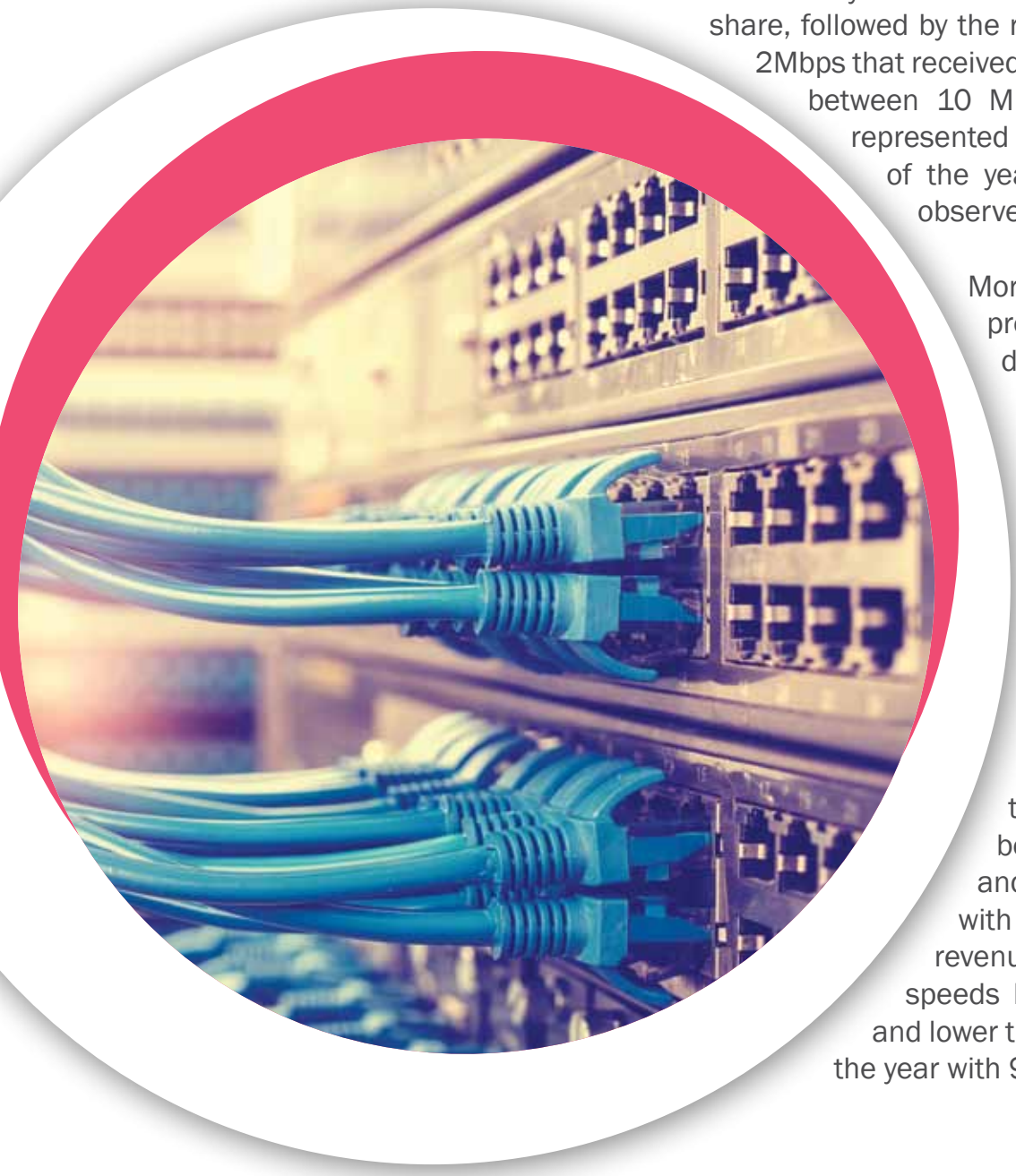
The total income is divided according to the means of access, connections in wired networks and systems with wireless connection. Graphic 82 suggests that, similar to what happened with the number of subscriptions, the percentage of wireless service revenues is much lower: 4 % at year-´s end.

Graphic 83 shows the income distribution in wired networks, according to the three technologies in which data is recorded: HFC, xDSL and opticaloptic fiber.

Despite that Internet access over opticaloptic fiber represented only 1% of the quarterly subscriptions in 2015, it meant about 12.4 % of total quarterly revenues. This is due to its market value, quality of service and restricted supply. It is noted that HFC networks generated approximately 41 % of the total income each quarter, while xDSL networks produced around 46 % each quarter.

Graphic 84 shows the percentage of each of the three wireless technologies available on the market: Satellite, WiMax and microwave. Satellite connections received, on average, 3 % of the quarterly revenues. Microwave connections have fewer subscribers than WiMax, as this produced, on average, 50.5 % of the quarterly revenues. Finally, WiMax received 46.6 % of the quarterly revenue. It is evident in the graphic that WiMax revenues decreased towards the end of the year, while microwave connections increased.

Breaking down the total income earned in the retail fixed Internet segment, according to the speed ranges purchased by customers with Internet access via fixed networks using wired media, it can be observed that the largest share of those revenues are generated in the 2 Mbps to 10 Mbps range. This range closed the year with a 55.8 % revenue market share, followed by the range of 512 kbps to 2Mbps that received 28.9 % and speeds between 10 Mbps and 100 Mbps represented a 11.3 % at the end of the year. Such behavior is observed in graphic 85.



Moreover, graphic 86 presents the income distribution by speed ranges in the fixed retail segment using wireless access means. Similarly, it is observed that the largest share of income is in the 2 Mbps to 10 Mbps range, which closed the year with a 53.4 % of the total, while speeds between 512 kbps and 2 Mbps closed with a 35.2 % of the total revenue, and then the speeds higher than 10Mbps and lower than 100Mbps closed the year with 9.5 %.

Traffic

To conclude the retail fixed Internet segment study, below is shown the revision that was made to the data traffic reported by network operators and service providers. Graphic 96 shows the annual evolution between the years 2014 to 2015. Significant growth in the amount of data transferred over fixed access networks is observed. The simple growth for this period is of 95 %.

Graphic 88 shows the quarterly for 2014-2015 period. A sustained growth is noticeable from the beginning of 2014; however, growth is higher from the fourth quarter of 2014 to the first quarter of 2015. A 207 % variation is observed during the period.

As noted, 2015 closed with more than 76 000 TB during the fourth quarter and a 37 % variation. These figures reflect the growing trend of data consumption by fixed network subscribers.

Graphic 89 chart shows the distribution of traffic by connecting technology in the fixed network for each quarter of 2015. It can be observed that data consumption prevails in the case of customers with access over HFC networks, which gradually increased their share from the first quarter to close the year with 67.9 %. XDSL networks closed the year with 30.4 %, while only a 1.8 % was jointly recorded for microwave, WiMax and optic fiber.

Wholesale access to fixed Internet

For the first time the analysis of the behavior of the wholesale segment is set forth below, where operators offer the service to other service providers. Information was gathered from 7 network operators, which was classified by connecting technology and speed ranges on the market, additionally, subscriptions' data and income are shown.

Subscriptions

The total subscriptions' during 2015 for this market segment are shown in graphic 90; where a significant growth is observed in the last quarter, which represents a 20 % variation for the period. Following, the study extends by reviewing the percentage distributions by technology and speed.

Percentage distribution is shown for each quarter by access technology type; details are observed in graphic 91.

Four types of technology are classified that, according to the operators, are being marketed in the fixed Internet access wholesale market. Passive fiber networks have the highest number of subscriptions, with a quarterly average of 74.1 %. Meanwhile the quarterly share of SDH and DWDM fluctuates, ranging between 9.7 % and 7.6 % for SDH and between 14.2 % and 6.8 % for DWDM.

Graphic 92 shows the quarterly composition of total subscriptions in the wholesale segment, according to the speed ranges in

which the service is offered. It can also be observed which of these ranges market the largest number of connections. Speed ranges between 2 Mbps and 10 Mbps and 600 Mbps to 100 Mbps are the ones showing the largest amount of subscribers. During the first quarter between both ranges a 66.7 % is accounted, of which the speeds between 2 Mbps to 10 Mbps represent a 35 %. In the fourth quarter, these same ranges represent a 62.5 % share, of which the speeds between 2 Mbps and 10 Mbps represent a 43.1 %. This means that connections at speeds lower than 10 Mbps have increased towards the end of the year, hence in detriment of the number of customers at speeds over 100 Mbps.

Income

A review of the total income reported in the wholesale segment during 2015 is made. Graphic 93 shows how the total income exceeds 1300 million colones in the first quarter, figure that fluctuates during the year, with a -5 % variation over the period.

While comparing graphic 90 with graphic 93, it is evident that the growth of subscriptions (20 %) is not reflected in the total income growth rate, which on average showed a negative behavior (-5 %), with a 14 % reduction of between the fourth and third quarters of the year.

Graphic 94 shows the quarterly distribution of income depending on the type of technology. It is noted that during the year subscriptions on passive fiber networks represented most of the revenues, with a quarterly average of 63.2 %, followed by SDH connections with a 27.7 %.

Graphic 95 shows the percentage distribution by speed range. It can be observed that the 2 Mbps to 10 Mbps range generated most of the revenue during the year, with a 47.7 % quarterly average, followed by the 100 Mbps to 600 Mbps range, reporting a 20.4 % quarterly average.

Leased lines service

Following, the service status of leased lines during 2015 is presented. It is important to note that information gathered for this service is classified by connecting technology, speed ranges, retail or wholesale segment and by geographical location of the customer, whether national or international.

To illustrate the behavior of this service, graphic 96 shows the evolution of connections for the 2012-2015 period. A year-after-year fluctuation is observed, while it rose in 2013, it decreased during 2014 and 2015. The period shows an 18 % variation, however, the annual growth from 2014 to 2015 was -13 %.

To expand the detail, graphic 97 shows the quarterly behavior during the 2014 to 2015 period. During this period a -14 % variation was experimented, given that since the first quarter of 2015 the number of connections has been decreasing.

Connections

Graphic 98 shows the customers' distribution by geographic location or territory, where clearly it can be observed that 99 % of the service connections correspond to customers located within the national territory.

Meanwhile, understanding that the number of customers in the country is significantly higher, a detailed analysis is made in connection with the distribution of that 99% of the connections. For such purposes, graphic 99 shows the quarterly number of total connections.

The behavior towards the end of the year shows a slight decrease, as the fourth quarter recorded 200 connections less than at the beginning of 2015, representing -1 % variation. Graphic 100 details the percentage distribution of national connections between the wholesale market segment and the retail segment.

Graphic 100 shows that the percentage of connections in the retail segment represents –during the year- the largest market share, so, accordingly, the retail segment by customers located in the national territory is analyzed. A technology breakdown is presented. Graphic 101 shows that the variation for each type of technology remains relatively constant throughout the year. At the same time, it can be observed that over IP connections and virtual private networks remain the most widely used platforms to market leased lines, holding a 55.9 % quarterly average. It is interesting to note that analog lines still represent a 19.1 % quarterly average share in the number of total connections in the domestic retail segment, suggesting that the deployment of next generation networks has been slow. Finally, although not shown graphically, it should be noted that in the wholesale segment also IP-VPN connections cover almost the totality in that market segment.

Income

The total revenues behavior reported by operators in the leased lines service is shown below. Graphic 103 shows the annual situation for the 2012-2015 period, with 6.5 % variations. 2015 closed with more than 36 000 million colones.

To thoroughly investigate the situation of the dedicated leased lines service, graphic 104 shows the quarterly evolution during the 2014-2015 period, where it can becane observed that, based on the above-stated connections' analysis,analyses the leased lines service has decreased in revenue, showing an -18.7 % variation.

Complementing the leased lines service review, a detail by connecting speed ranges for the retail segment and by customers in the country is presented. Graphic 102 evidences that the highest percentage of connections is at speeds lower than 2 Mbps, near a 68 % quarterly average. However, connections between 2 Mbps and 10 Mbps represent, on average, about 27 % of the domestic connections in the retail segment during 2015.

Graphic 105 presents a study –by geographical location- of the total revenue from the leased lines service. It is observed that customers with connections in the country cover 95.4 % of the total revenues, which makes it clear that operators with customers outside the country have a relative important contribution margin, if considered that they only represent 1 % of the connections.

Meanwhile, to better appreciate the volume of this service during 2015 , graphic 106 shows the total quarterly revenue during

2015 for the domestic market. It is noted that the fourth quarter virtually closes with the same amount of income than at the beginning of the year, with only a 0.02 % variation.

After showing the total revenue generated by connections within the national territory, following the composition of the 95 % generated in the retail segment is reviewed. For such purposes, graphic 107 shows the percentage of income earned in each segment of the domestic market, where the retail segment covers about 83 % of revenue in each quarter.

Graphic 108 shows the details of leased lines services composition in the domestic retail segment, as per the available connecting technologies. The most commonly traded technologies are connections to virtual private networks and IP technologies, which generate, on average, 60.4 % of total market revenues. Graphic 108 additionaly shows that, on average, analogue lines still represent 19.1 % of the connections, thus they only represent 3.8 % of the total quarterly average income. In turn, digital connections represent, on average, 33.1 % and other services such as dark fiber, frames and port leasing, represent, on quarterly average, 2.6 %.

Graphic 109 indicates the percentage of revenue by speed ranges, it is observed that speeds lower than 2Mbps, cover, on quarterly average, 33.4 % of the total revenues, speeds between 2 Mbps and 100 mbps generated a 50 % quarterly average of revenues and speeds higher than 100 mbps generated, on quarterly average, 16.4 %, the latter covering solely 1 % of the connections.

General information of the data transfer service

Relevant information for the evaluation of this market is presented below. Such information arises from bandwidth-under contract- data gathered from 23 companies. Said data vary varies from company to company, both in the number of purchased connections and in the amount of Gbps acquired, accordingly, with the intention to estimate a price in colones per Gbps that represents an amount equal to half the rate paid by the operator to purchase their bandwidth, the median for the bandwidth contracted by operator and the median price paid in colones was estimated. This The Gbps price totals 1 070 953 colones and is calculated at the end of 2015. It should be noted that this it is is positioned right in the middle of the recorded data, which means that there are operators who paid prices well above this amount to acquire bandwidth.

The total bandwidth recorded in 2015 was 180.2 Gbps, which compared to the 117.6 Gbps recorded in 2014, represents a 24 % variation in the amount of bandwidth used to access the Internet. This number is relevant however lower than the 46 % growth estimated by the Telegeography in its global bandwidth research for connections from Latin America to the United States.

Another important detail is the market share in terms of number of subscriptions. Therefore, below are presented a number of graphics are presented showing the participation shares for the retail segment of leased line services, fixed Internet (wireless and wired), and wireless Internet.

Graphic 110 shows the market share by subscriptions for companies that provide fixed Internet access through wired media. Only the top 5 companies holding market share are shown, as these cover 95 % of the total registered during 2015. It is noted that ICE continues to dominate in this segment with 45.4 % of the subscriptions, followed by Tigo and Cabletica, which together represent a 39 % of the market share.

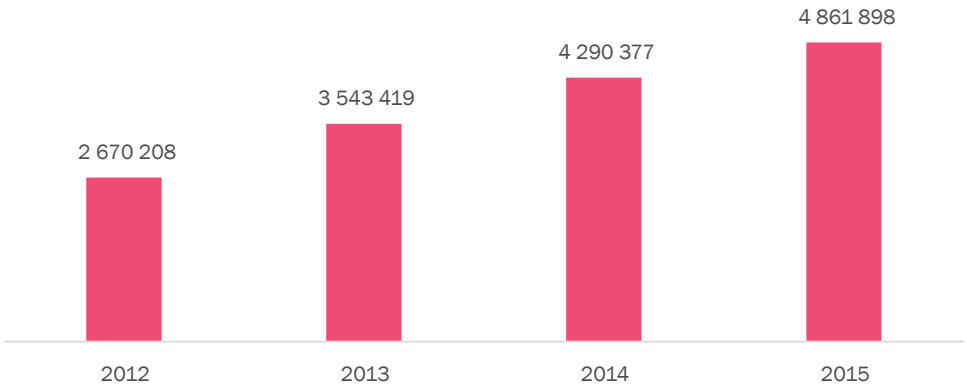
Graphic 111 shows that the distribution share of the 5 operators covers 99 % of the subscribers accessing the Internet thru fixed wireless means. It is observed in the graphic how IBW and ICE cover 86% of this service, both over WiMax; also, that from the service providers using microwave, only Metrowireless appears in the top 5 with a 4% share.

Graphic 112 shows the details of the national leased lines retail segment. Only the top 5 operators holding market share are shown, as these represent 94 % of the total market. It can be concluded from graphic 112, that ICE continues to dominate this market as it holds a 68 % stake and provides various types of connection. Meanwhile, RACSA and Tigo, through various technologies, contribute with 20 % of the subscriptions.

Finally, graphic 113 allows to observe the market shares of the 3 mobile network operators holding a spectrum concession, which represent 99 % of the market. It is evident that ICE dominates the market, as it concentrates more than half of the customers. Meanwhile Claro covers 26 % of the market and Telefonica 21 %.

Graphic N° 58

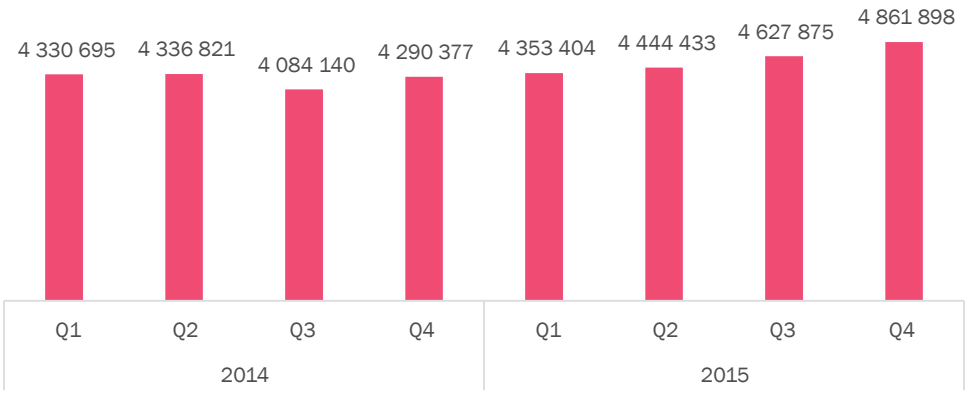
Costa Rica: Subscription, Internet access via the mobile network, by year, 2012-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 59

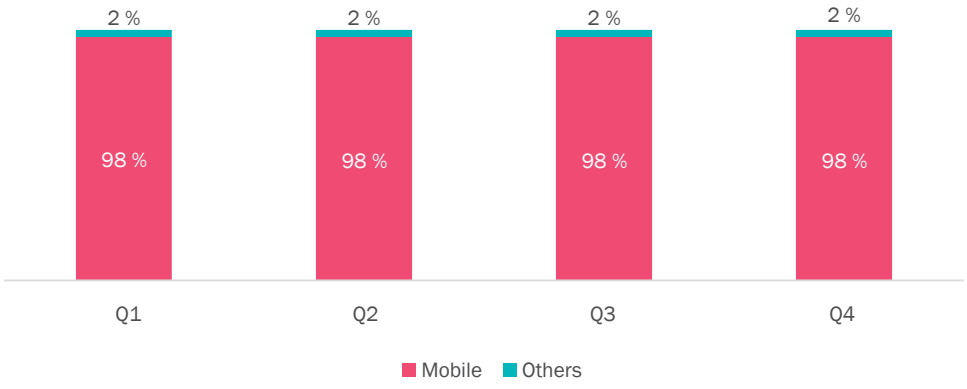
Costa Rica: Subscriptions, Internet access via the mobile network, by quarter, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 60

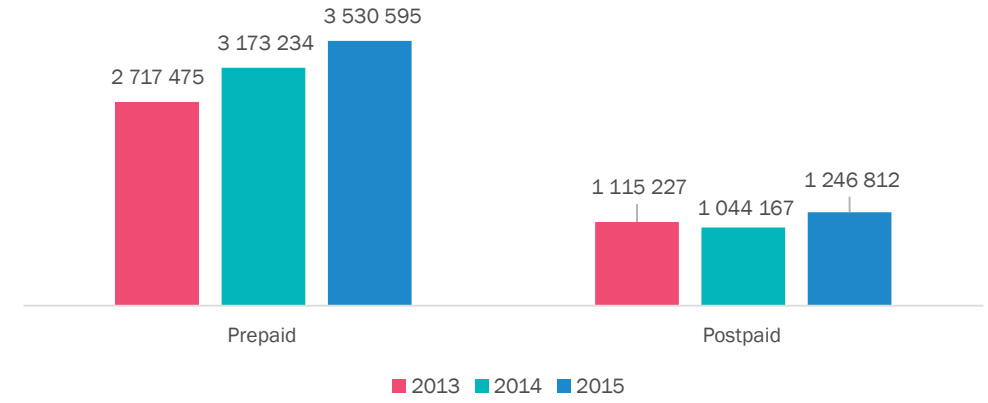
Costa Rica: Subscriptions, Internet access via the mobile network, percentage distribution per access device, by quarter, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 61

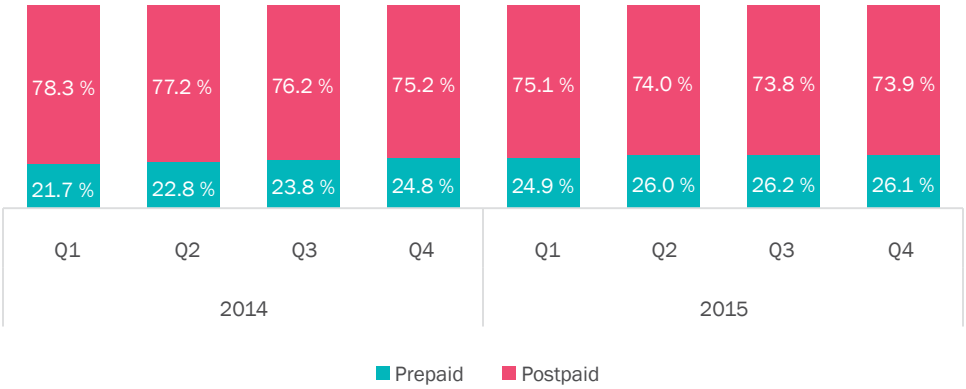
Costa Rica: Subscriptions, mobile Internet access, comparison by form of payment, 2013-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 62

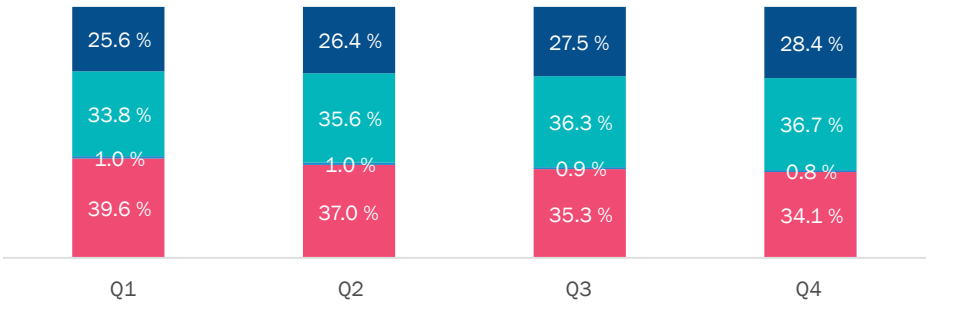
Costa Rica: Subscriptions, Internet access via the mobile network, percentage distribution by form of payment, by quarter, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 63

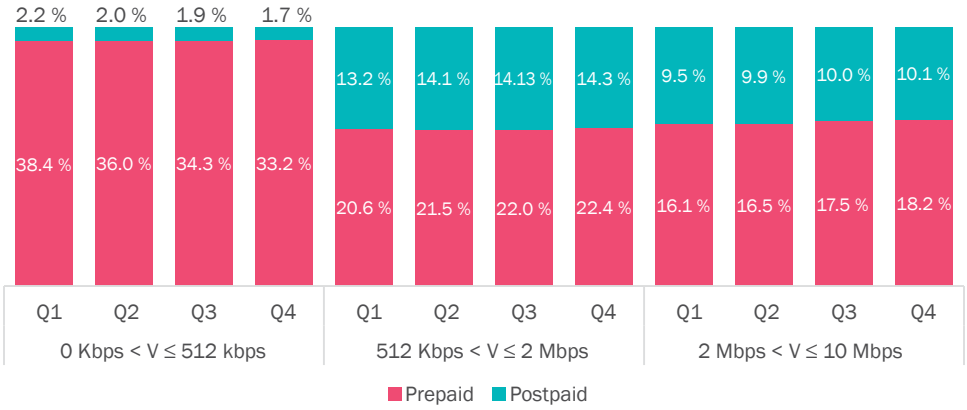
Costa Rica: Subscriptions, Internet access via the mobile network, percentage distribution by speed range, by quarter, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 64

Costa Rica: Subscriptions, Internet access via the mobile network, percnetage distribution by form of payment and speed range, by quarter, 2015

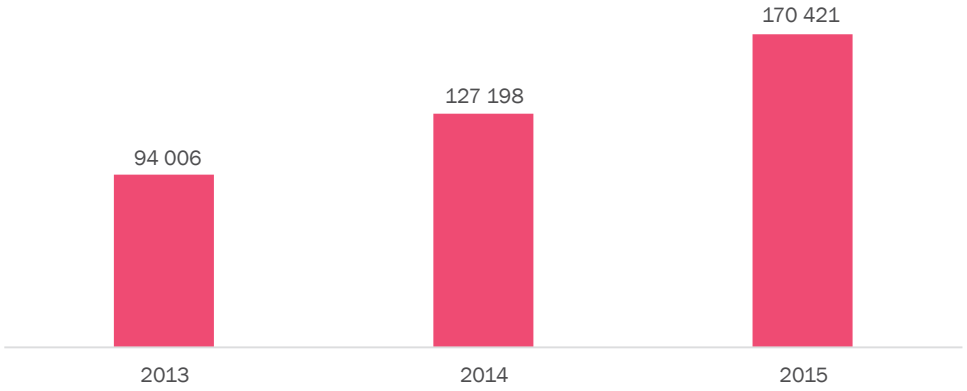


Source: SUTEL, Directorate-General for Markets.

Graphic N° 65

Costa Rica: Income, Internet access via the mobile network, 2013-2015

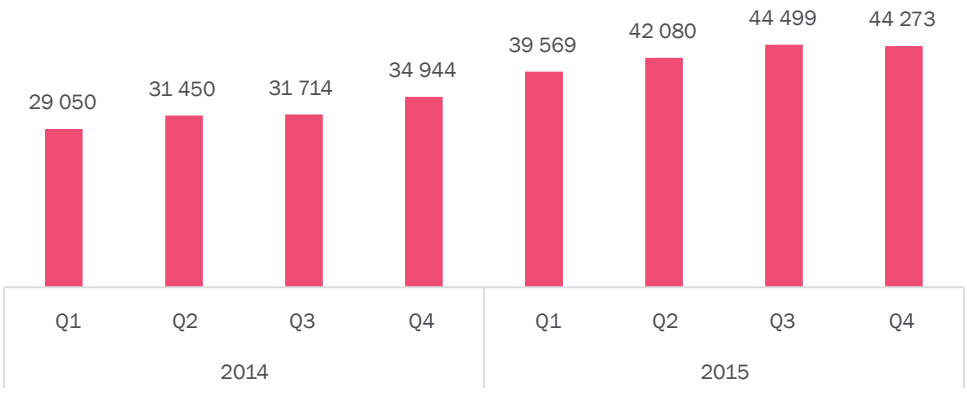
Annual figures in millions of colones



Source: SUTEL, Directorate-General for Markets.

Graphic N° 66

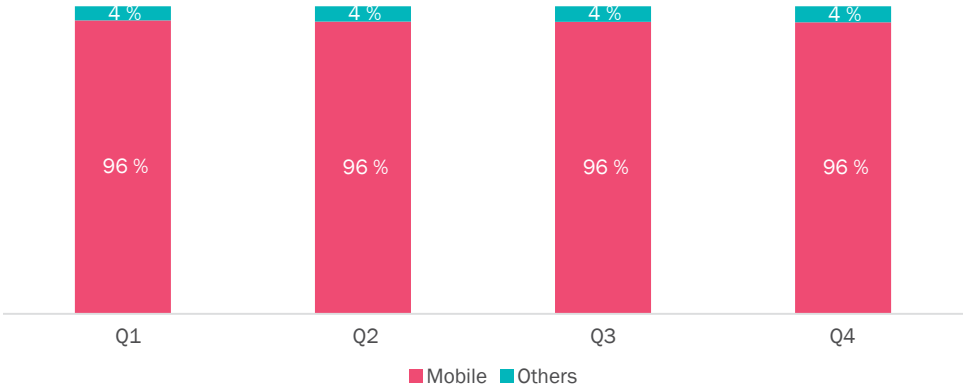
Costa Rica: Income, Internet access via the mobile network, quarterly in millions of colones, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 67

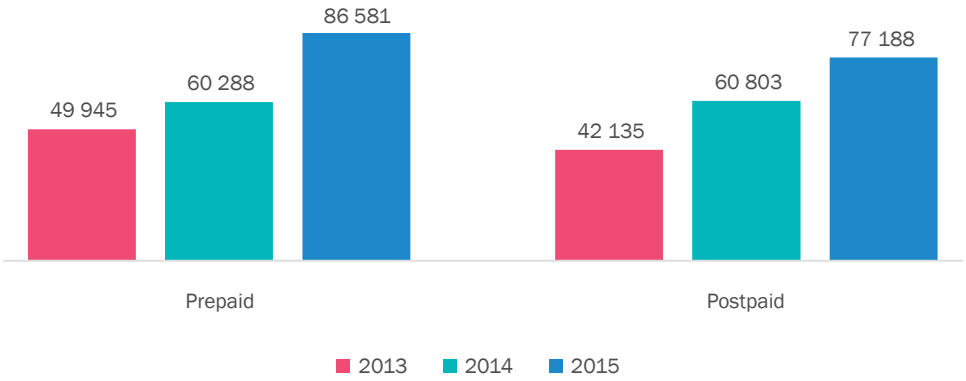
Costa Rica: Income, Internet access via the mobile network.
Percentage distribution by device, by quarter, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 68

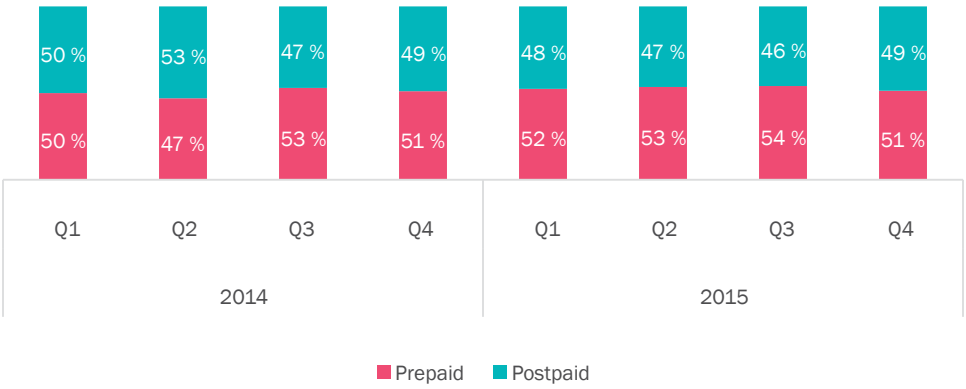
Costa Rica: Income, Internet access via the mobile network,
comparision by form of payment in millions of colones, 2013-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 69

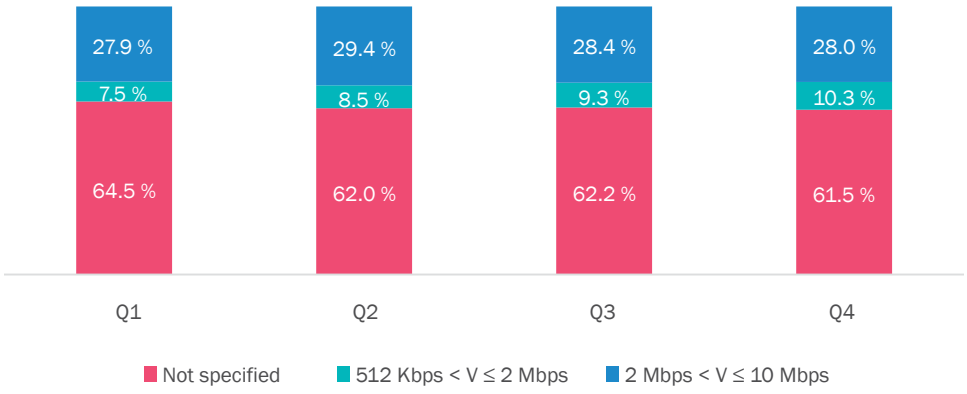
Costa Rica: Income, Internet access via the mobile network.
Percentage distribution by form of payment, by quarter, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 70

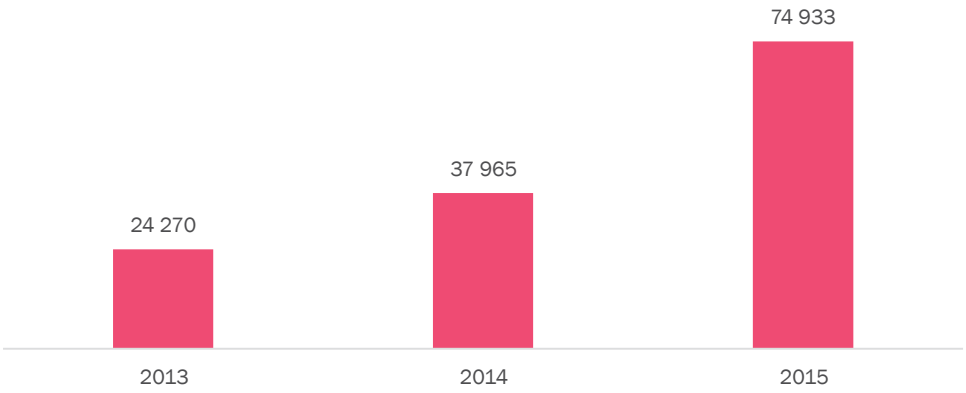
Costa Rica: Income, Internet access via the mobile network.
Distribution by speed range, by quarter, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 71

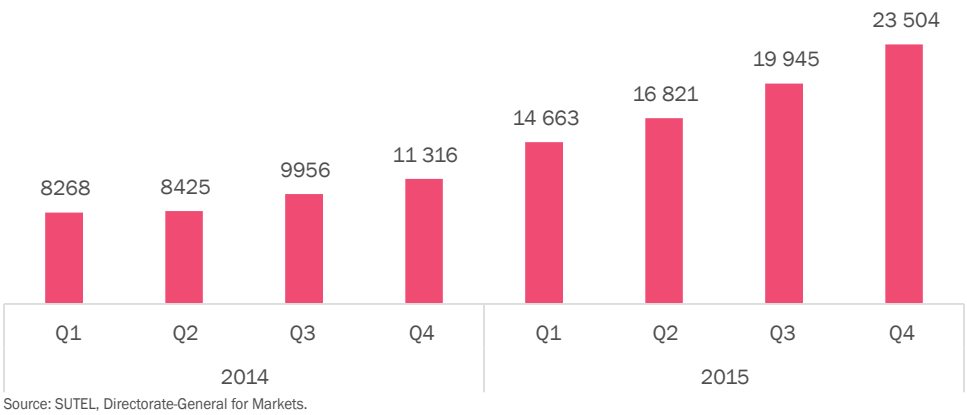
Costa Rica: Data traffic, Internet access via the mobile network.
In TB, by year, 2013-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 72

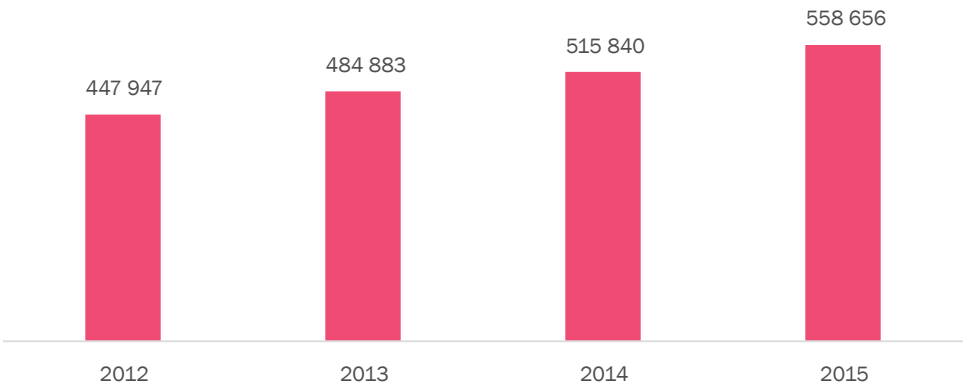
Costa Rica: Data traffic, Internet access via the mobile network.
In TB, quarterly, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 73

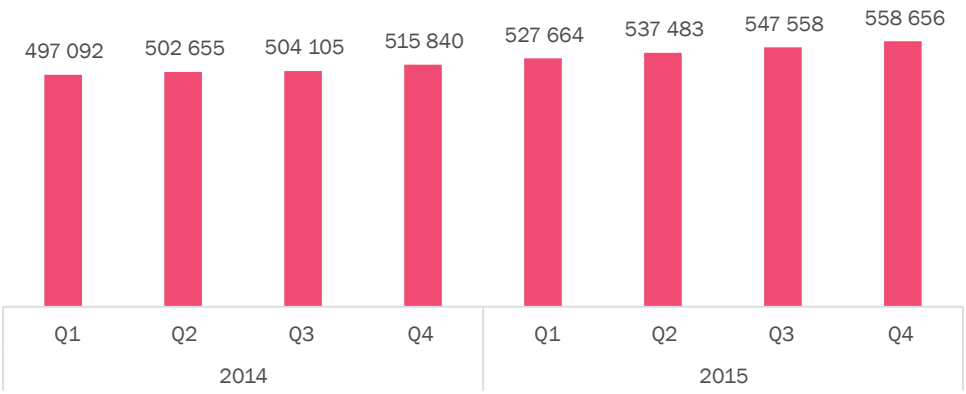
Costa Rica: Subscriptions, fixed internet access, annually, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 74

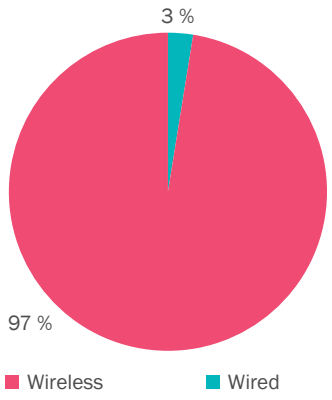
Costa Rica: Subscriptions, fixed Internet access, quarterly, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 75

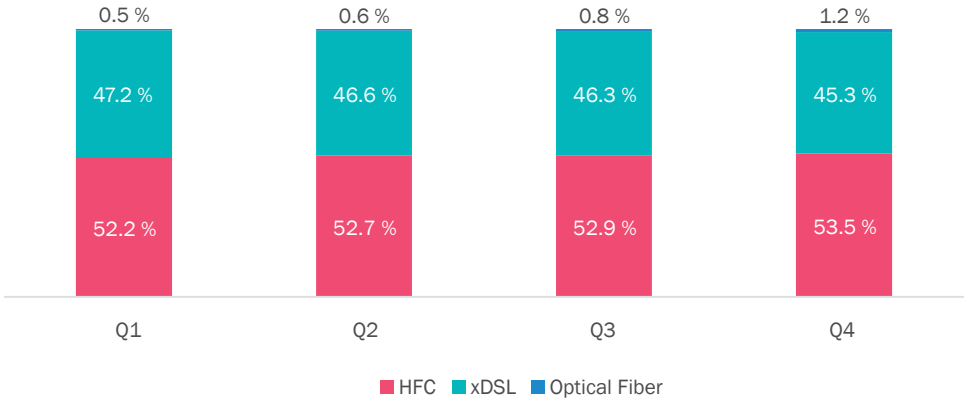
Costa Rica: Subscriptions, fixed Internet acces, by means of access, end of 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 76

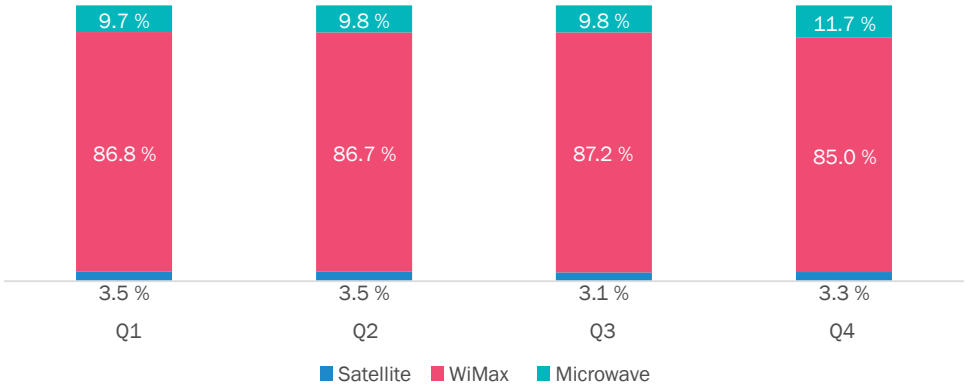
Costa Rica: Subscriptions, fixed Internet access.
Percentage distribution of subsriptions, wired means, by technology, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 77

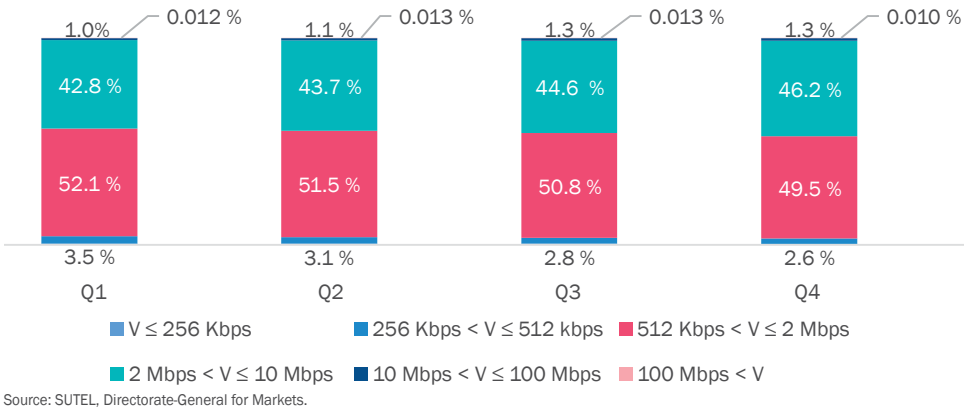
Costa Rica: Subscriptions, fixed Internet access.
Percentage distribution of subscriptions, wireless means, by technology, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 78

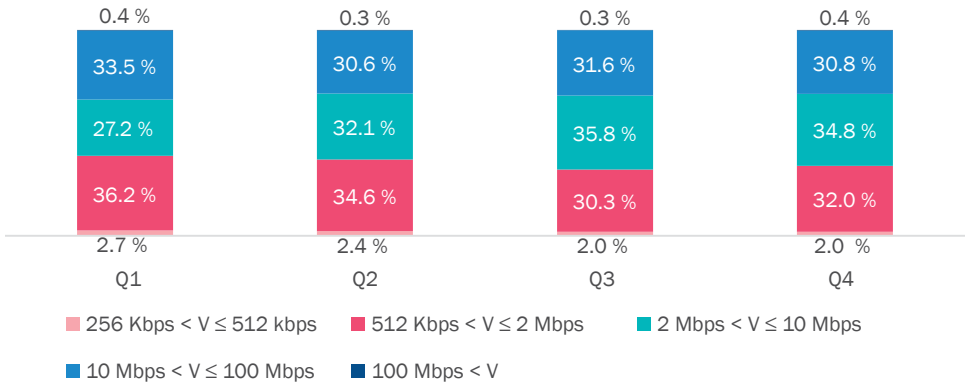
Costa Rica: Subscriptions, fixed Internet access.
Percentage distribution of subscriptions, wired means, by speed ranges, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 79

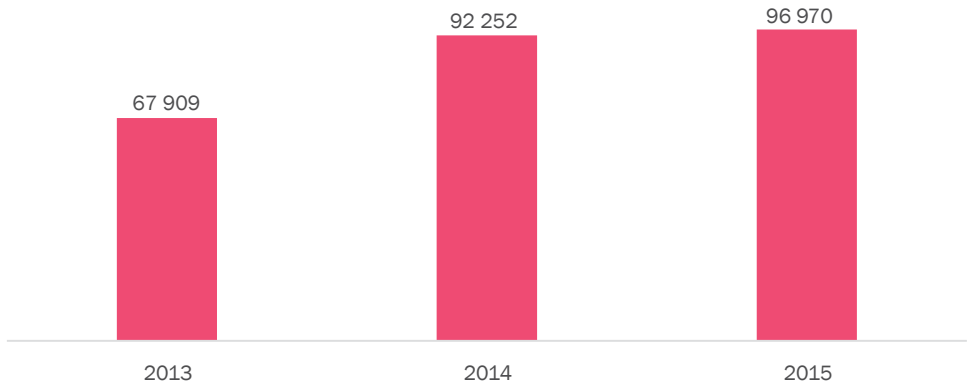
Costa Rica: Subscriptions, fixed Internet access.
Percentage distribution of subscriptions, wireless means, by speed ranges, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 80

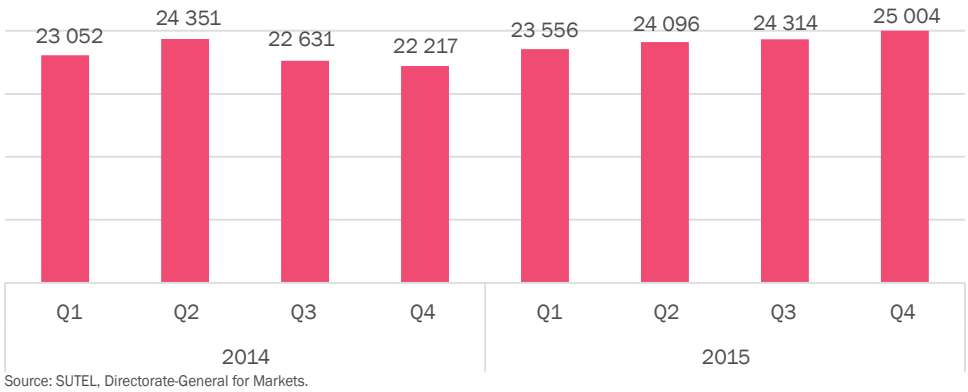
Costa Rica: Income, fixed Internet access by year, 2013-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 81

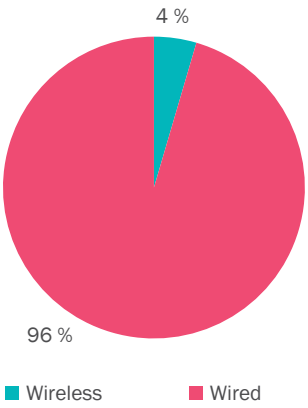
Costa Rica: Income, fixed internet access by quarter,
2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 82

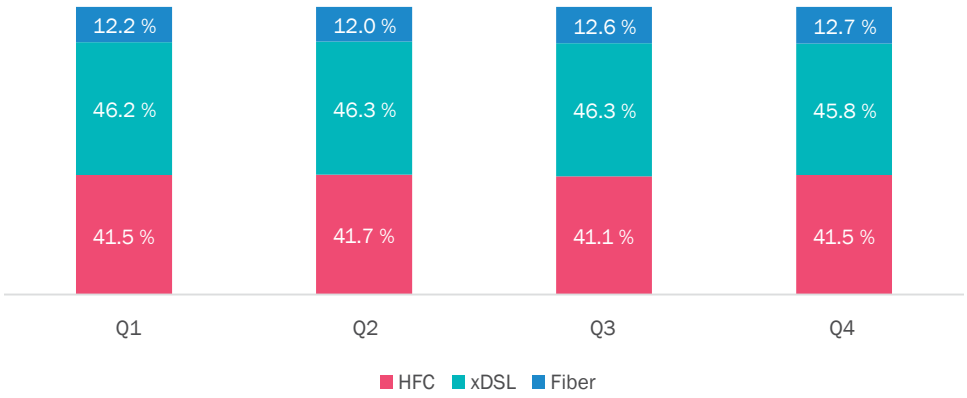
Costa Rica: Income, fixed internet access, by means of access, end of 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 83

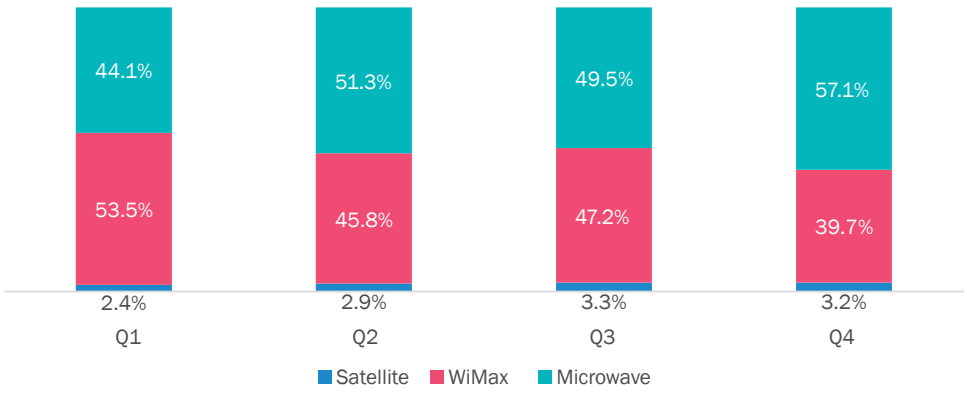
Costa Rica: Income, fixed Internet access via wired means, by technology, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 84

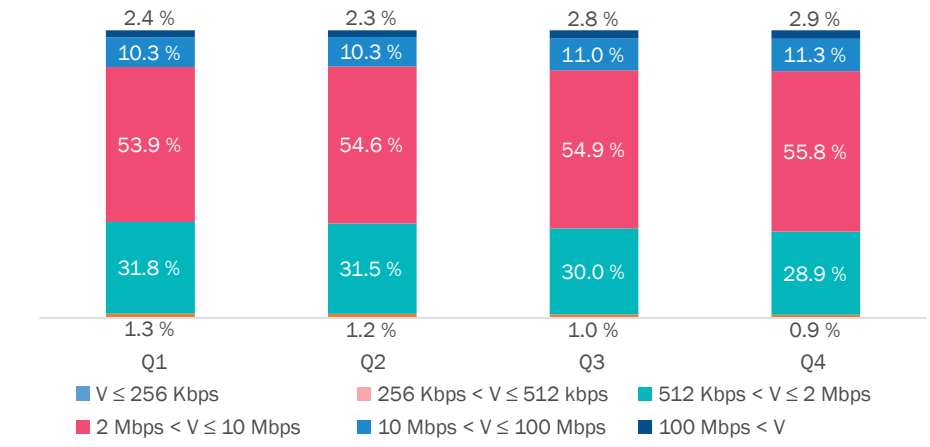
Costa Rica: Income, fixed Internet access via wired means, by technology, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 85

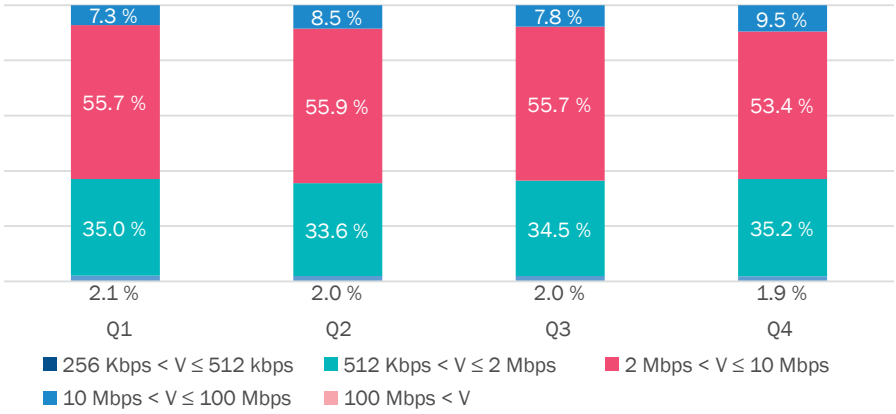
Costa Rica: Income, fixed Internet acces viawired means, by speed ranges, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 86

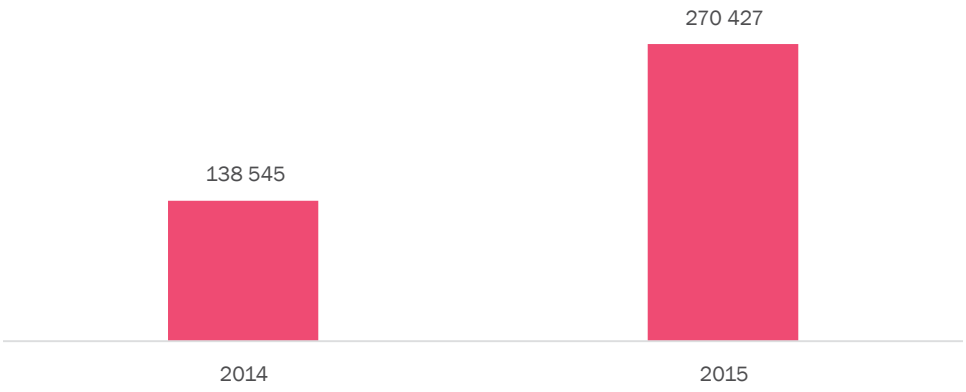
Costa Rica: Income, fixed Internet access via wireless means, by speed ranges, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 87

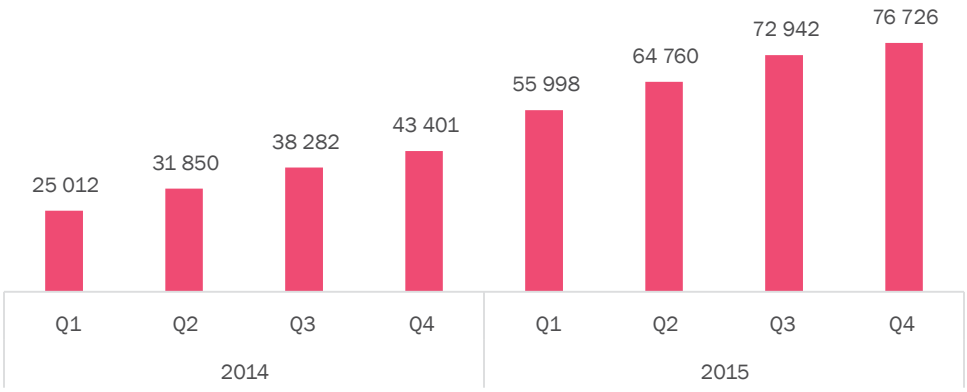
Costa Rica: Data traffic, fixed Internet access, wired and wireless means, annually, in TB, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 88

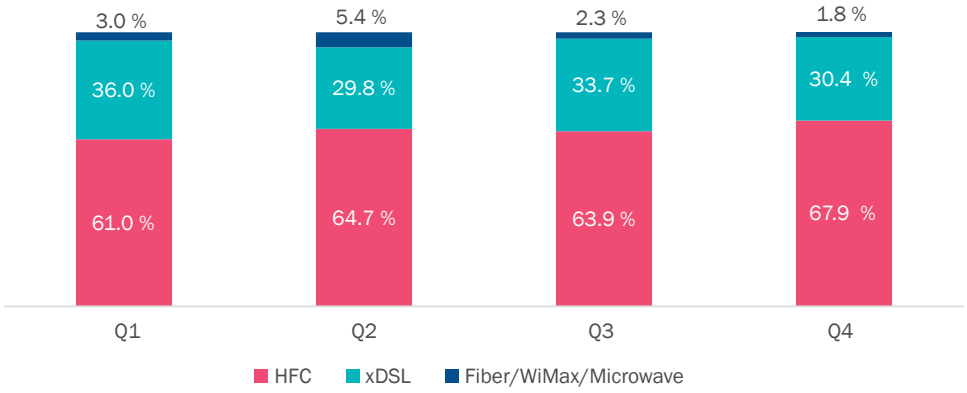
Costa Rica: Data traffic, fixed Internet access, wired and wireless means, quarterly, in TB, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 89

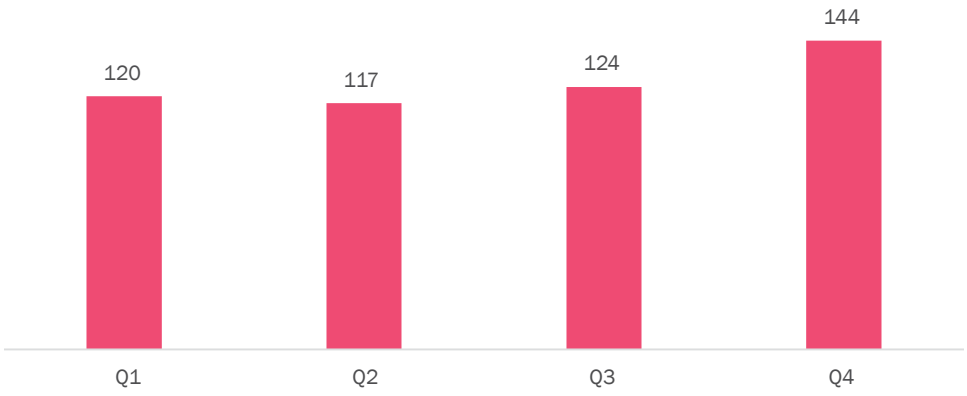
Costa Rica: Data traffic, fixed Internet access by technology in TB, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 90

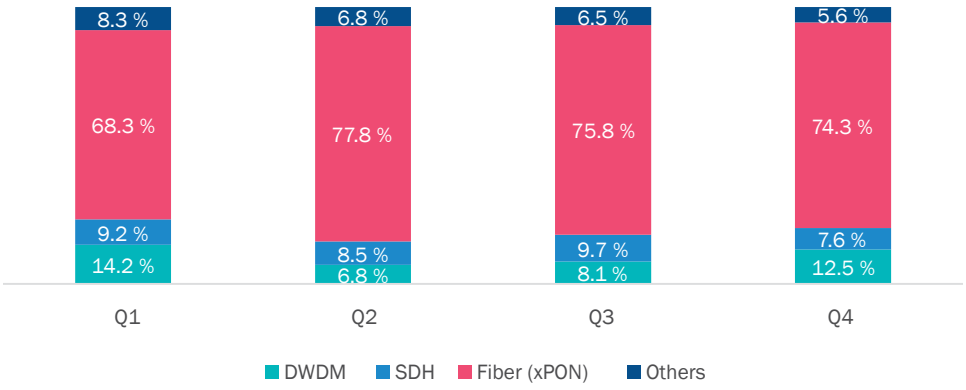
CCosta Rica: Subscriptions, wholesale access to fixed Internet, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 91

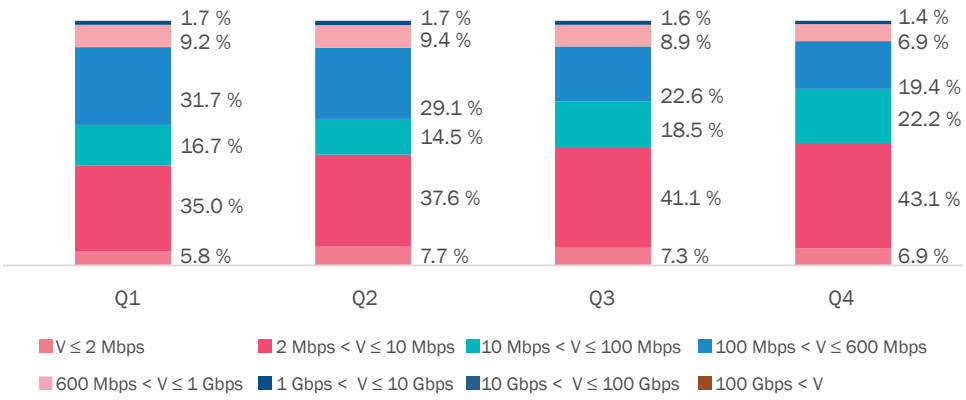
Costa Rica: Subscriptions, wholesale access to fixed Internet, percentage distribution by technology, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 92

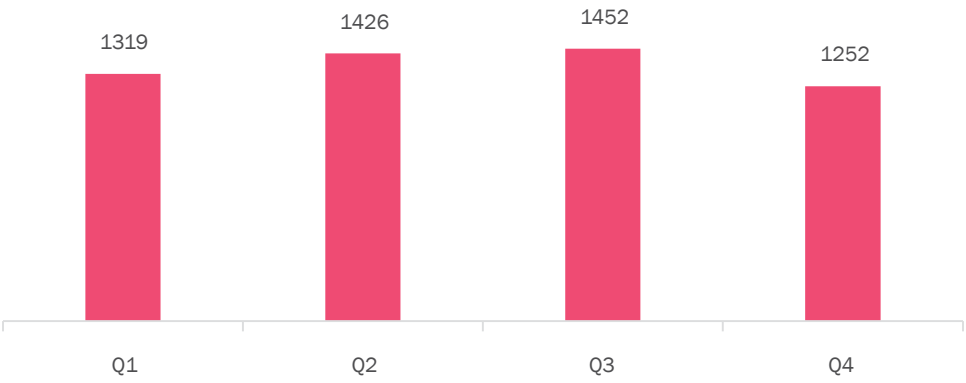
Costa Rica: Subscriptions, wholesale access to fixed internet, percentage distribution by speed ranges, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 93

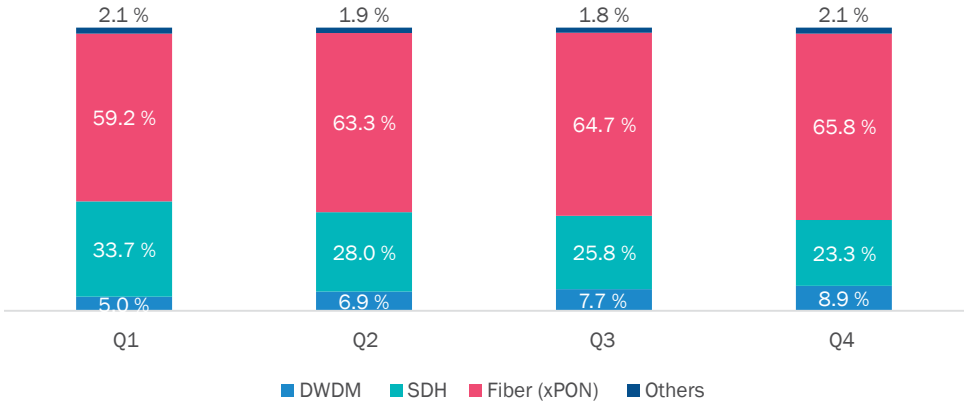
Costa Rica: Income, wholesale access to fixed internet, in millions of colones, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 94

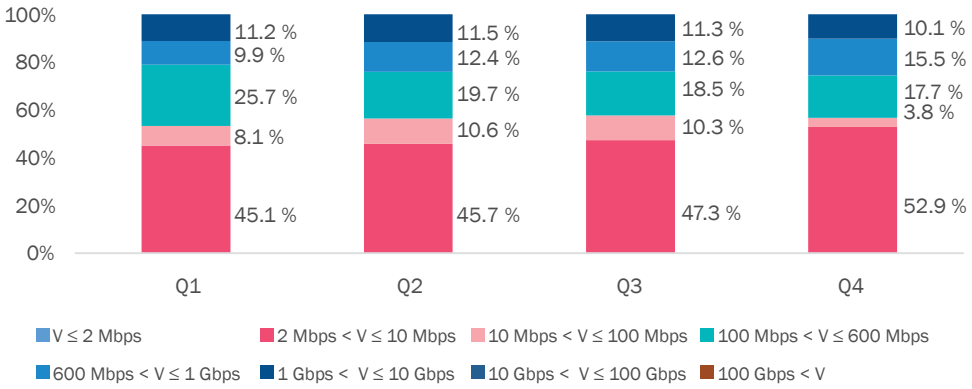
Costa Rica: Income, wholesale accesss to fixed Internet, percentage distribution by technology, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 95

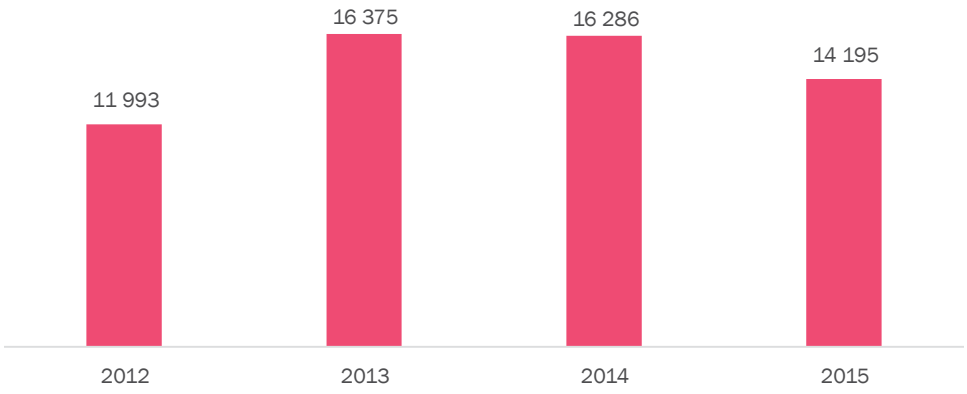
Costa Rica: Income, wholesale Internet access, percentage distribution by speed ranges, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 96

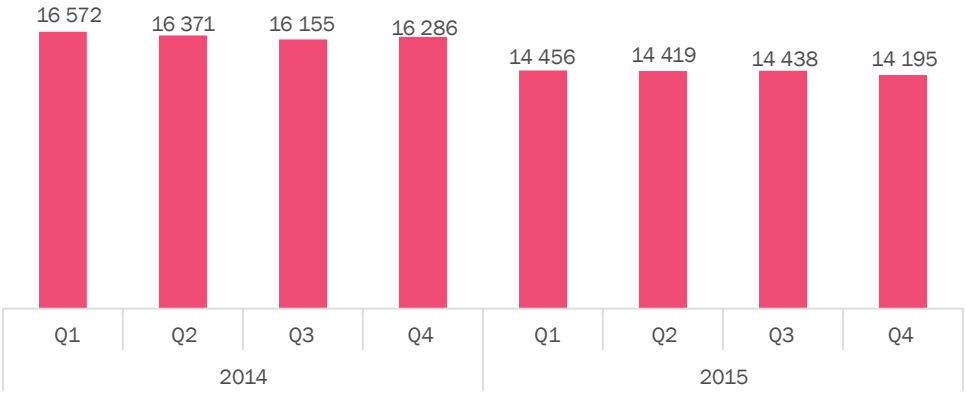
Costa Rica: Connections, leased lines service, by year, 2012-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 97

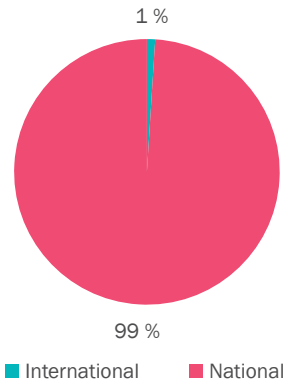
Costa Rica: Connections, leased lines service, by quarter, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 98

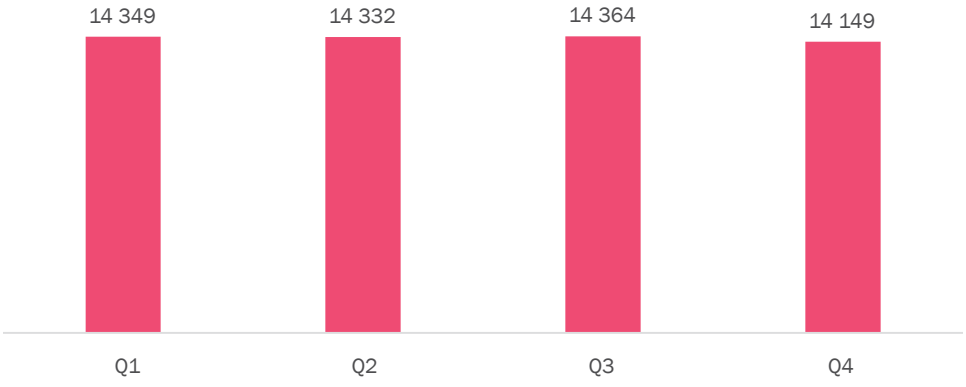
Costa Rica: Connections, leased lines service, by geographical location, end of 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 99

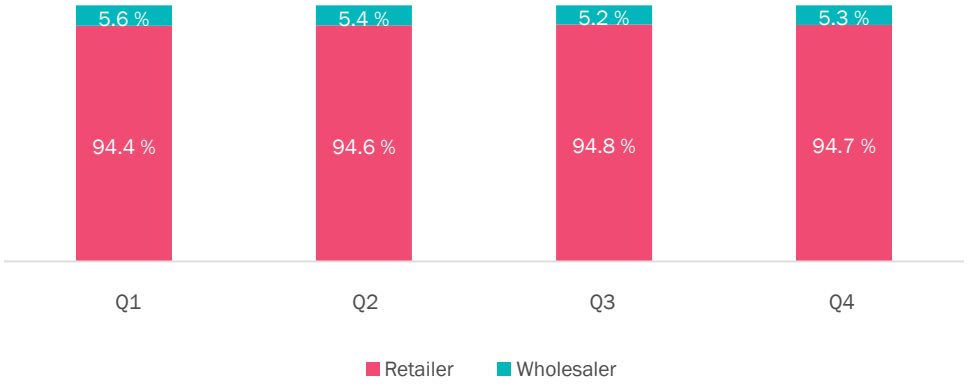
Costa Rica: Connections, dedicated lines service, customers within the national territory, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 100

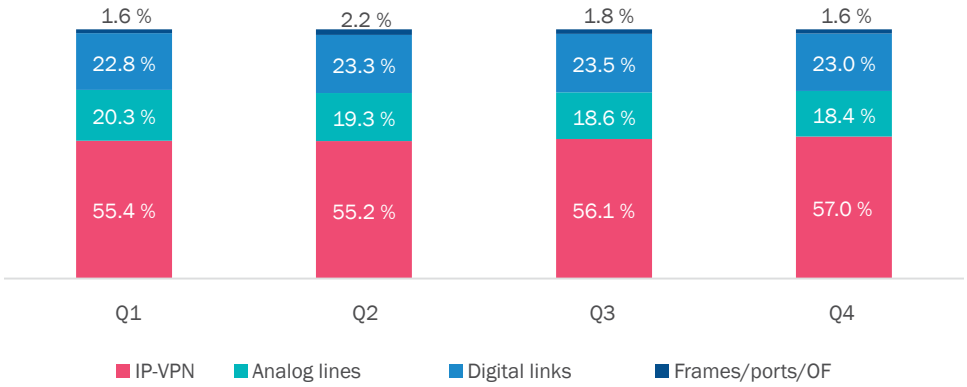
Costa Rica: Connections, leased lines service.
Percentage distribution by retail and wholesale segment, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 101

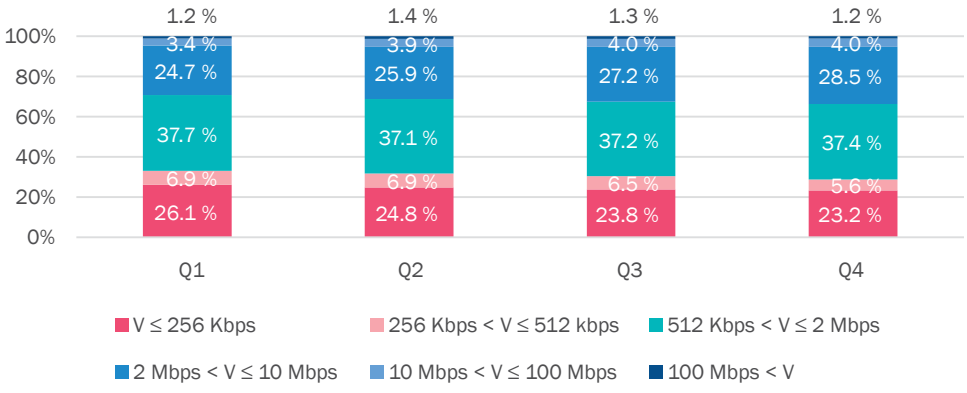
Costa Rica: Connections, leased lines service, retail segment, national costumers, by technology, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 102

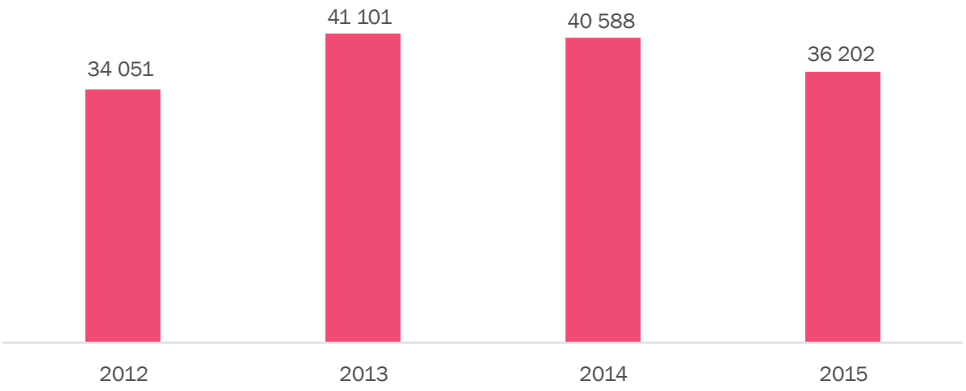
Costa Rica: Connections, leased lines service, retail segment, national customers, by speed ranges, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 103

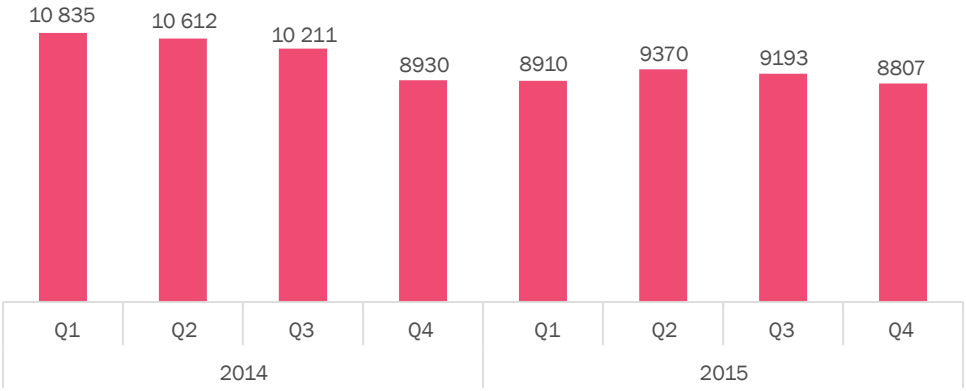
Costa Rica: Income, leased lines service, by year, in millions of colones, 2012-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 104

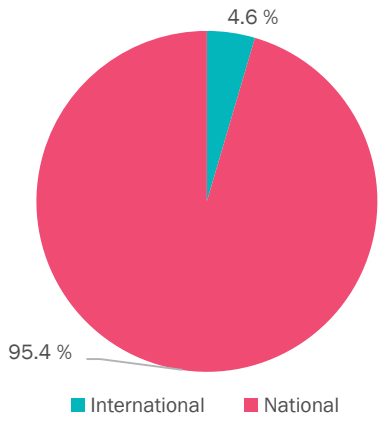
CCosta Rica: Income, leased lines service, quarterly, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 105

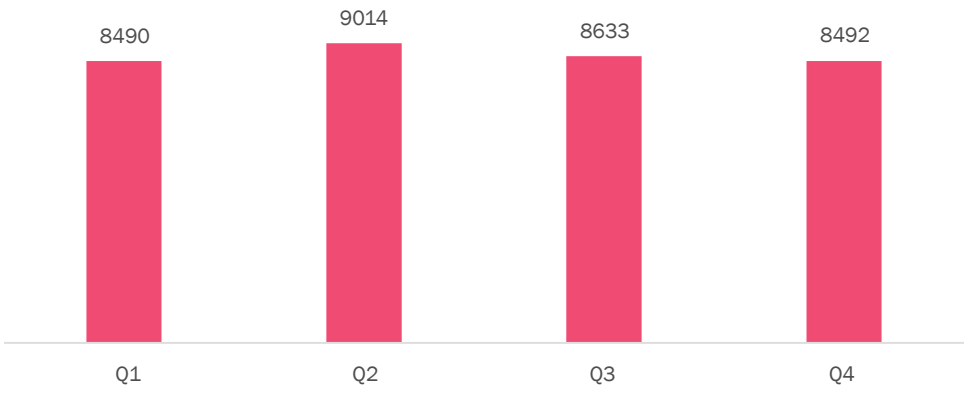
Costa Rica: Income, leased lines service, by geographical location, end of 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 106

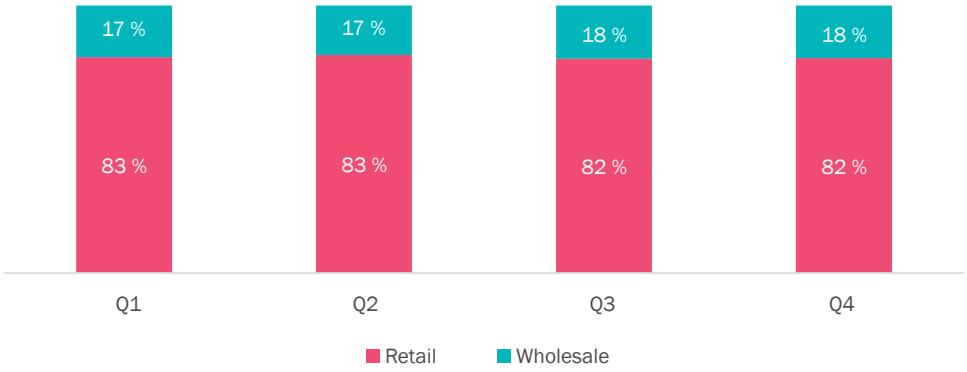
Costa Rica: Rica: Income, leased lines service, customers within the national territory, 2014-2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 107

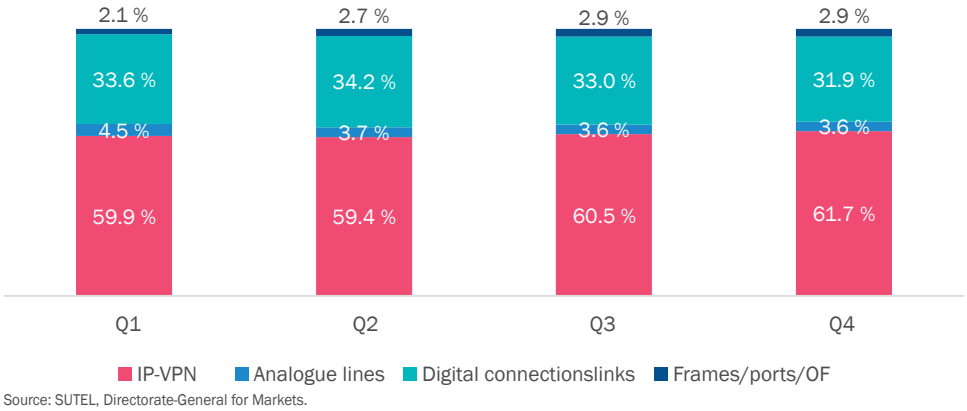
Costa Rica: Income, leased lines service, as per retail and wholesale segments, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 108

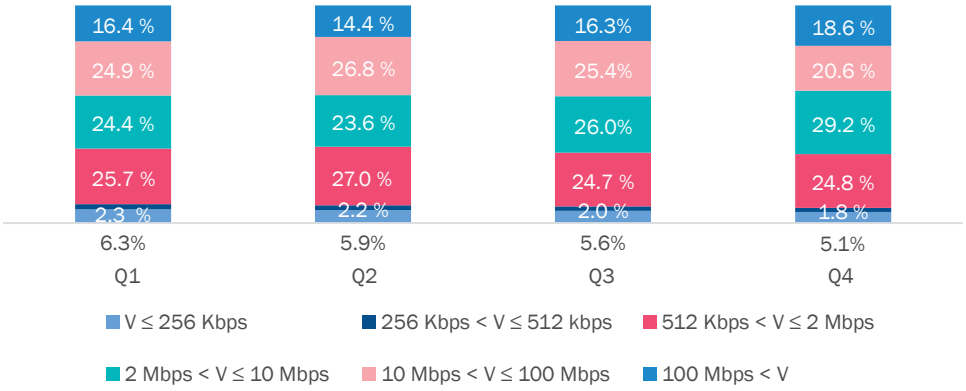
Costa Rica: Income, leased lines service, retail segment, national customers, by technology and quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 109

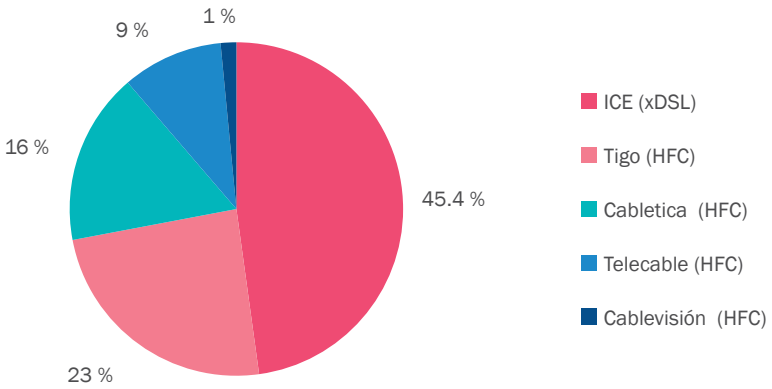
Costa Rica: Income, leased lines service, retail segment, national customers, by speed range, quarterly, 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 110

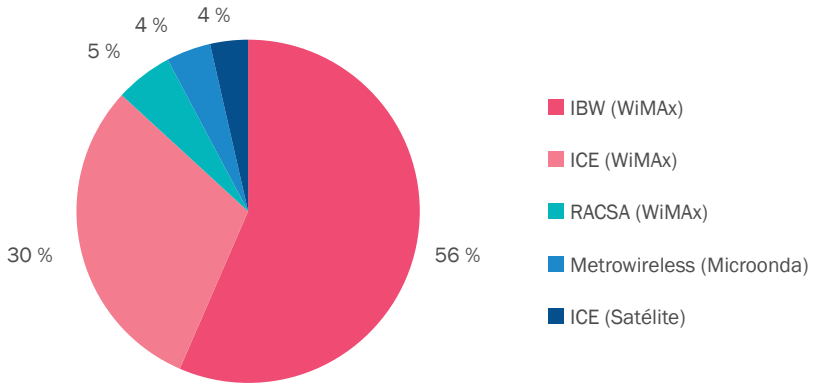
Costa Rica: Market share, fixed internet access, wired means, by operator, end of 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 111

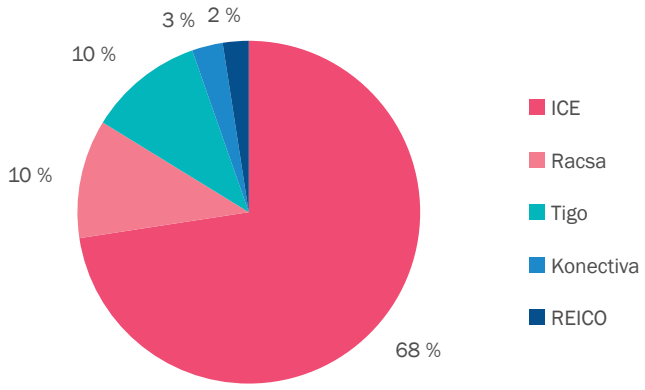
Costa Rica: Market share, fixed internet access, wireless means, by operator, end of 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 112

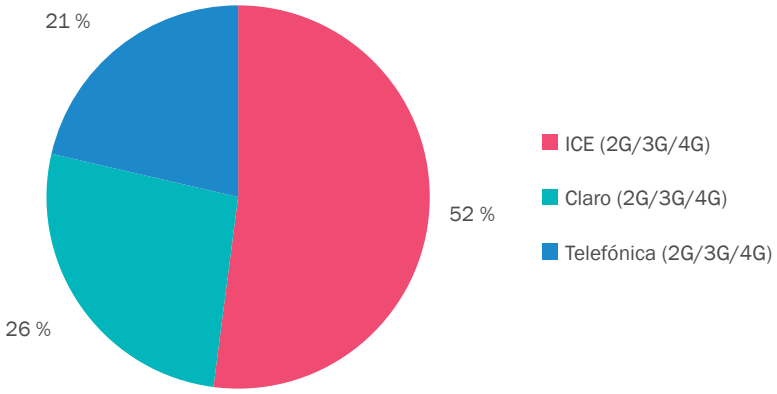
Costa Rica: Market share by operator, dedicated lines, national retail segment, end of 2015



Source: SUTEL, Directorate-General for Markets.

Graphic N° 113

Costa Rica: Market share by operator, Mobile Internet, end of 2015



Source: SUTEL, Directorate-General for Markets.

Chapter 5

Paid television

Paid television

Paid television is a service that has shown a greater variety of commercial options and available technologies. Currently users have access to the service via coaxial cable, satellite, IPTV and microwave.

In 2015, subscriptions to the service grew by 64 684 over the previous year, which means an increase of 9 % and 60 % compared to 2014 and 2011, respectively. The breakdown of these figures can be seen in graphic 114.

If the quarterly information for the period 2014 is compared to 2015, it is observed that subscriptions had a stable growth. During the first two quarters of this year an 11 % growth is observed, in comparison to the same periods for the previous year. A 12 % and 9 % increase was observed during the third and fourth quarters, respectively, in comparison to the year 2014. On average, the foregoing growth represented 75 000 new quarterly subscriptions during 2015. A 3 % decrease is observed in the last quarter of the year 2015.

In relation to the behavior of subscriptions by type of access technology, paid television via coaxial cable remains with the largest market share, i.e.67 %, followed by satellite television with 32 %, and other technologies hold the remaining 1 %, as shown in graphic 116. However, although the coaxial cable service has the largest market share, its percentage share has been declining if compared with previous years. The foregoing is observed in graphic 117, where the numbers indicate that the service via coaxial cable has weakened and the average satellite service has steadily gained a largest share.

According to the data presented in table 10, by measuring the penetration of the paid service, it can be highlighted that in 2015 more than half of the country's housing had a purchased service, i.e. a 56 % total. This penetration rate increased by 4 % if compared to 2014. When comparing the number of houses during 2015 with the data of 2011, an increase of 18 percentage points is observed. See graphic 118.

Income

According to the data shown in graphic 119, the total revenue associated with the paid television service continues to show an upward trend, reaching 134 850 million colones during 2015, thus representing an 8 % if compared to 2014. The technologies that show revenue growth are satellite and coaxial cable technologies, with 13 % and 7 % respectively. The foregoing data can be observed in table 11.

If 2015 quarterly revenue is compared to that of 2014, an 8 % quarterly growth –on average- can be observed, which represents an average amount of 2615 million colones. This amount contrasts with the figure presented for the 2013 and 2014 periods, where the reported growth was of 5147 million colones, consequently representing a quarterly average growth of 20 %. Said figures are shown in graphic 120.

If the percentage share of income by technology during 2015 is analyzed, then it can be observed that the coaxial cable continues to dominate in this category, with a 73 % of the total income, followed by satellite technology with 26 % and other technologies with 1 %. When the 2011 and 2015 periods are compared, the coaxial cable shows a percentage decrease, passing from 91 % in 2011 to 73 % in 2015. Satellite technology shows significant growth, moving from 9 % in 2014 to 26 % in 2015, while other technologies represented 1 % of the revenues. These figures are seen in detail in graphic 121.

As shows in graphic 122, the average revenue per user during the 2012 – 2013 period for the paid television service remains constant, albeit showing slight decreases. However, according to the data shown in table 30, during the last year the average revenue per subscriber to the paid television service by access technology shows a variable behavior. If the 2015 period is compared to 2014, it can be observed that the coaxial cable revenue increased by approximately 500 colones, satellite service decreased by 600 colones and the service showing the most significant decrease is the television over IP service with 14 400 colones less than in 2014.

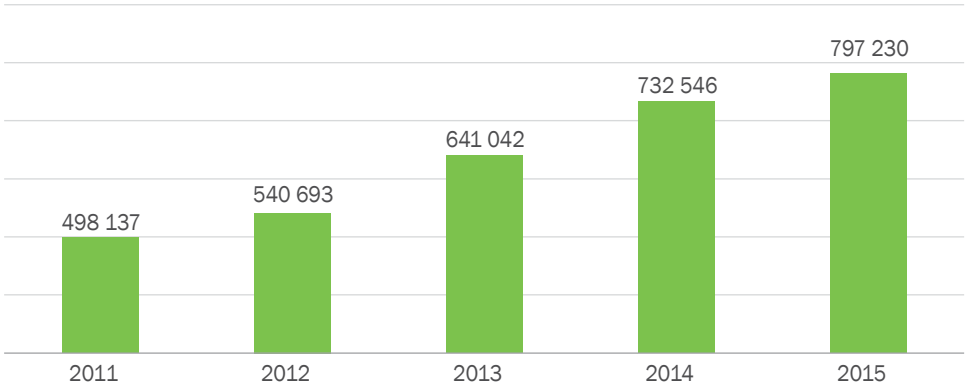
797 230

TV subscriptions by 2015

Graphic N° 114

Costa Rica: Total subscriptions to the paid television service, annually, 2011-2015

Absolute annual figures

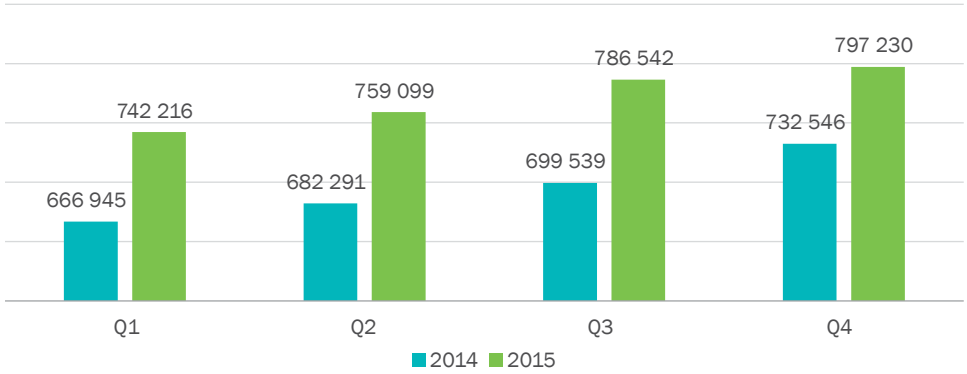


Source: SUTEL, Directorate-General for Markets.

Graphic N° 115

Costa Rica: Subscriptions to the paid television service, quarterly, 2014-2015

Absolute annual figures



Source: SUTEL, Directorate-General for Markets.

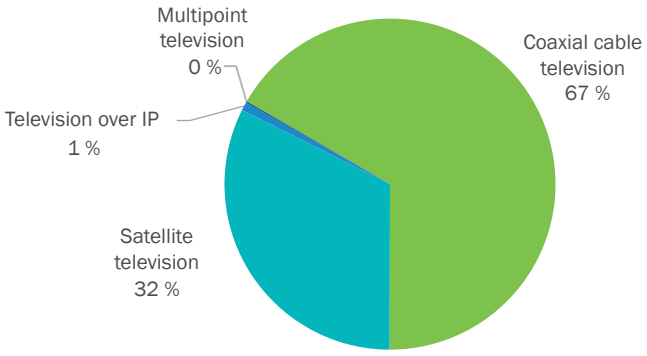
67 %

of the subscriptions are via coaxial cable

Graphic N° 116

Costa Rica: Percentage distribution for subscriptions to the paid television service, by access technology, 2015

Percentage figures

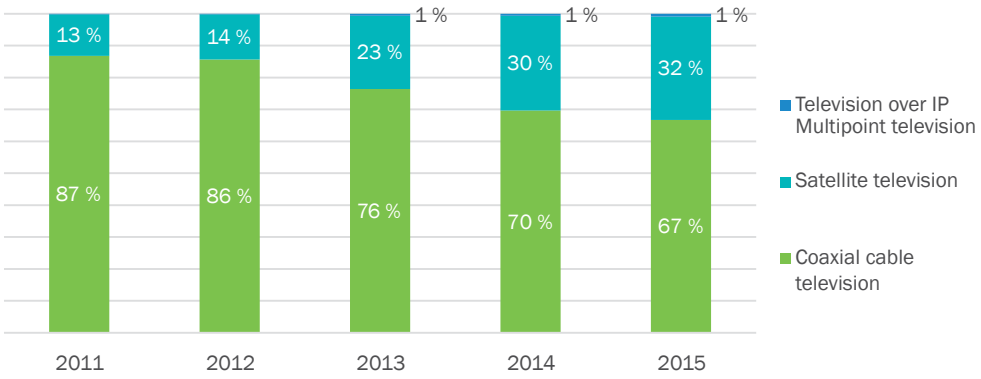


Source: SUTEL, Directorate-General for Markets.

Graphic N° 117

Costa Rica: Evolution of the percentage share for paid television technologies, by access technology, 2011-2015

Percentage annual figures



Source: SUTEL, Directorate-General for Markets.

Table 10

Costa Rica: Ratio of houses with paid television services, 2011-2015

Absolute annual figures and percentages

Subscription TV penetration	2011	2012	2013	2014	2015
Subscriptions	498 137	540 693	641 042	732 546	797 230
Houses	1 297 522	1 326 805	1 348 036	1 399 271	1 436 120
Ratio	38 %	41 %	48 %	52 %	56 %

Source: SUTEL, Directorate-General for Markets and INEC, 2011-2015.

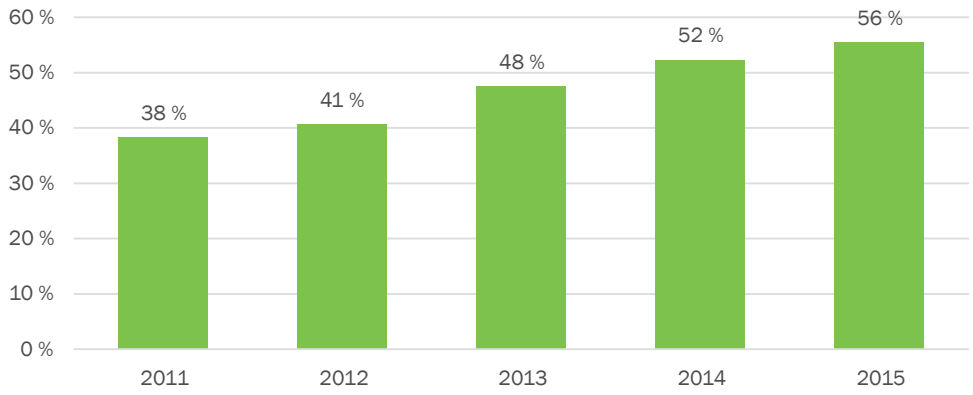
56 %

More than half of the houses have a paid television service

Graphic N° 118

Costa Rica: Ration of houses with paid television services, 2011-2015

Percentage annual figures



Source: SUTEL, Directorate-General for Markets.

Table 11

Costa Rica: Total income of the paid television service, by access technology, 2011-2015

Annual figures in millions of colones

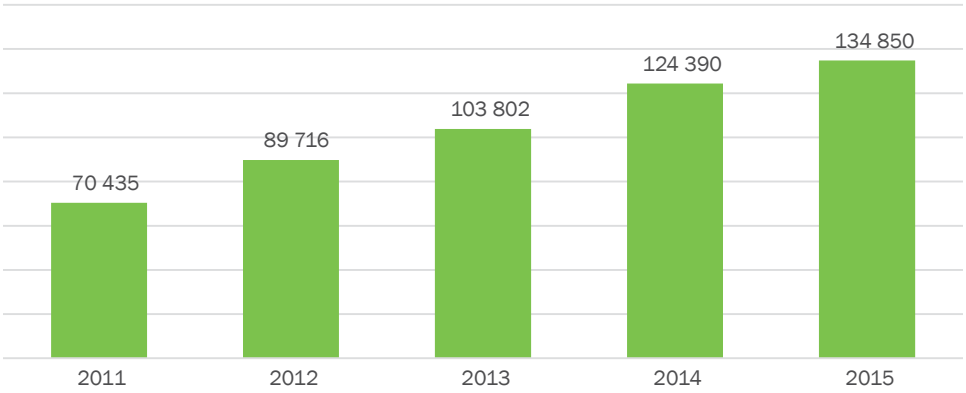
Technology	2011	2012	2013	2014	2015
Coaxial cable television	64 350	75 369	80 810	91 994	98 859
Satellite television	6059	14 287	22 484	30 721	34 570
Television over IP			447	1618	1371
Television over ground multipoint distribution	26	61	61	57	49
Total	**70 435**	**89 716**	**103 802**	**124 390**	**134 850**

Source: SUTEL, Directorate-General for Markets.

Graphic N° 119

Costa Rica: Total income of the paid television service, 2011-2015

Annual figures in millions of colones

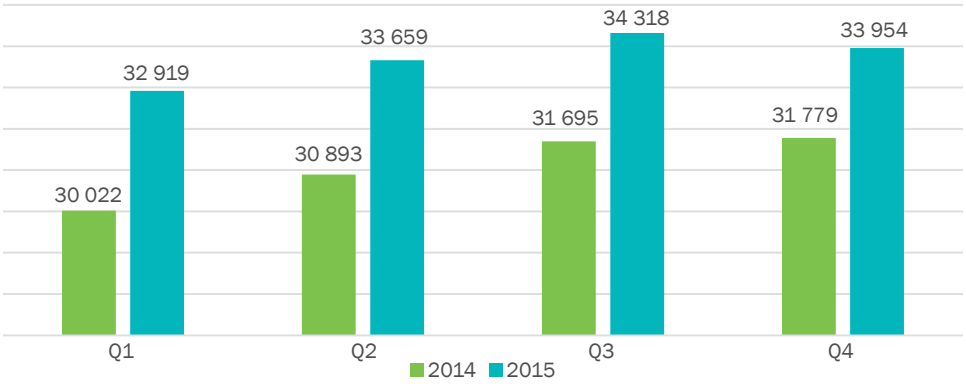


Source: SUTEL, Directorate-General for Markets.

Graphic N° 120

Costa Rica: Total income of the paid television service, 2014-2015

Quarterly figures in millions of colones

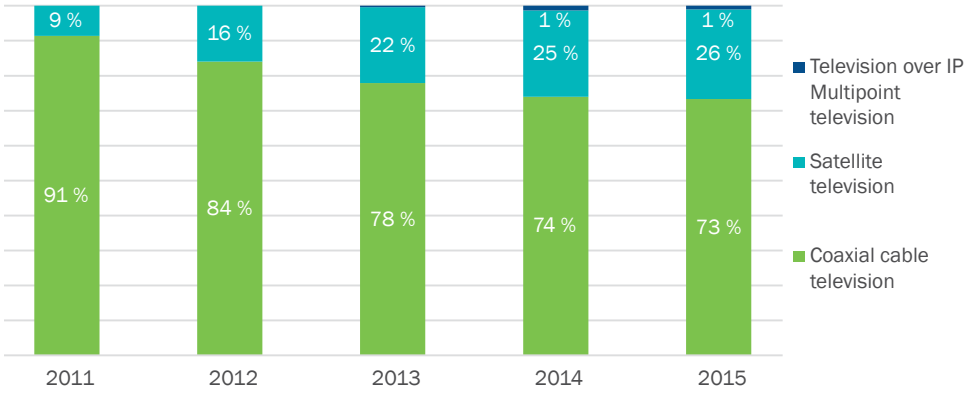


Source: SUTEL, Directorate-General for Markets.

Graphic N° 121

Costa Rica: Percentage participation of income from paid television service, by access technology, 2011-2015

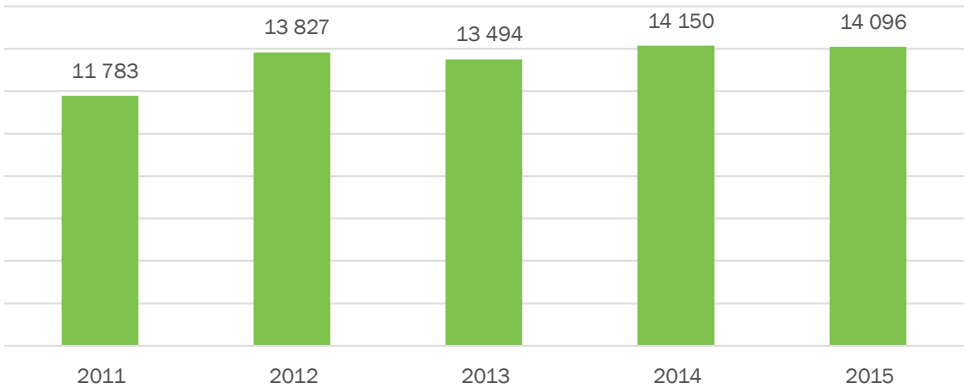
Annual figures



Source: SUTEL, Directorate-General for Markets.

Graphic N° 122

Costa Rica: Average monthly income by subscriber of the paid television service, 2011-2015, in Colones



Source: SUTEL, Directorate-General for Markets.

Table 12

Costa Rica: Average monthly income by subscriber of the paid television service, by access technology, 2011-2015, in colones

Technology	2011	2012	2013	2014	2015
Coaxial cable television	12 408	13 566	13 747	15 020	15 491
Satellite television	7782	15 565	12 752	11 790	11 167
Television over IP	-	-	12 138	32 169	17 760
Television over ground multipoint distribution	2 004	4117	4279	5758	4101
Total	**11 783**	**13 827**	**13 494**	**14 150**	**14 096**

Source: SUTEL, Directorate-General for Markets.

Chapter 6

Prices and rates

Prices and rates of telecommunication services

Prepaid mobile telephony

In 2015, telecommunications operators offered their prepaid mobile services at the maximum allowable tariff rate (40 Colones per minute), in contrast to 2013, when they offered the same services at 38 Colones per minute. Similarly, the minimum allowable tariff rate (27.60 Colones in 2015) – which was calculated considering the various options available to users, depending on peak/off-peak hours and the destination of the call – was higher than in the previous two years. In terms of average, the minimum tariff rate in 2015 increased by 3.8 Colones per minute in relation to 2014, as evidenced in graph 123 and table 13. In terms of proportion, the percentage increases in that period equals 1 %, which is well below the average increase recorded in 2013-2014 (7 %), mainly due to a lesser degree of promotions offered by mobile telecommunications operators during 2015. In regards to text messages, the 2015 rates reflect the maximum allowable tariff set by the operators (3 Colones per message), as this service is not currently regulated due to the fact that it is classified as an information service, in accordance with the provisions established by the Board of Directors of ARESEP, in resolution RJD-019-2014 of April 4th, 2013.

Postpaid mobile telephony

In 2015, in regards to postpaid mobile telephony plans, telecommunications operators offered their services at the maximum allowable tariff rate (34 Colones per minute, including sales tax), in contrast to 2013, when they offered the same services at approximately 30 Colones per minute. The minimum allowable tariff rate, consistent with the behavior of the minimum allowable tariff rate of prepaid mobile telephony services, increased in 2015 by 2.40 Colones in relation to 2014. Average rates increased in that biennium by 3 % to 16 %; this reflects an overall increase of 7 %, which is in stark contrast to the increase recorded in the 2013-2014 biennium (3 %). In -relation to text message rates, even though the maximum allowable tariff rate remained at 3 Colones per text message, the minimum tariff rate fell to 1.40 Colones per message (when sent to other users in the operator's network). This meant that, unlike the previous two years (in which a 16 % increase was recorded), the rates decreased by 6 % from 2014 to 2015, as evidenced in graph 124 and table 14.

Mobile Internet Access

Regarding the mobile internet service provided by telecommunications operators and service providers, particularly the postpaid plan internet service, the tariff

rates vary greatly depending on the plan's connection speed, as is the case with the rates of the wired internet service. Given that this service is provided by only three telecommunications operators, any change in the respective rates will have a significant impact in the resulting average rates. As such, considering one of these operators modified its rates according to what was offered in 2013, the rates in 2015 greatly resemble the rates of that year, in nearly every connection speed. The resulting average rates vary between 2623 Colones (for connection speeds of 256 Kbps) and 20 500 Colones (for connection speeds of 5120 Kbps); in general, these rates are lower than those recorded in 2014, with the exception of the average rates for connections speeds of 2048 Kbps and 4096 Kbps. The average rate of a 5120 Kbps connection in 2015 fell to 17 000 Colones; a significant decrease in relation to 2014 (24 000 Colones). Please refer to table 15, which shows the maximum and minimum average rates, and graph 125, which shows the variations in each of the rates.

In regards to the mobile internet service provided by telecommunications operators and service providers, particularly the prepaid plan internet service, the fact that operators are allowed to charge for data download volume means that – even though connection speed is in fact one of the variables considered when calculating the rate – the determining factor is the volume of information downloaded by users; therefore, for the purposes of this statistical report, that is the variable according to which the respective tariff rates are scrutinized. It should be noted, however, that in order to differentiate themselves from their competitors, the services provided by telecommunications operators differ from one another, and as such – in regards to the information collected – some connections speeds are only offered by one of the three available service providers. Moreover, given that in 2013 the information was recorded in a different format, the results referenced herein correspond exclusively to the information recorded in 2014 and 2015, and are evidence of an overall increase in tariff rates in 2015, in relation to the previous year, that is consistent with the commercial offers made by the respective telecommunications operators. The results are shown in table 16 and graph 126; however this only includes the data of download volumes greater than 200 MB.

Internet Service Rates

Based on the information provided by the different telecommunications operators that provide internet service, in this section of the report a comparative analysis of the monthly rates charged for the fixed internet service in 2015 was performed. The analysis includes the variations in the rates in 2015, in relation to the rates recorded in the previous two years.

This information was requested by SUTEL, and considers the different customers that subscribe to the internet service; the differences between any two customers are the type of connection (symmetric or asymmetric)[1] and the oversubscription ratio[2]. Therefore, being as how these are the determining factors of the rate that is charged, these are the variables according to which the respective tariff rates are scrutinized. It is important to note that the offers are categorized in accordance with the information reported by the service providers and the corresponding oversubscription ratio. In each case, the maximum, minimum, and average rates are the relevant indicators under scrutiny, and are not organized by operator. This is due to the fact that the upload speed offered greatly differs from one service provider to another, and this prevents a proper comparison of the rates offered by the service providers.

Fixed internet service with oversubscription ratio of 1:20

Internet connectivity with an oversubscription ratio of 1:20 is the service offered by the majority of the telecommunications operators; since this service is offered at the lowest rate, it has the largest number of subscribers, particularly in asymmetric internet connections. Therefore, this service is primarily provided to the residential sector and, to a lesser extent, to small and medium enterprises. The rates of this service in 2015, for asymmetric internet connections, is shown in table 17.

1 Symmetric connection speeds have the same download and upload speed. Asymmetric connection speeds have different download and upload speeds, being that the download speed is faster than the upload speed.

2 Oversubscription refers to how many connections (users) are contending for the same amount of bandwidth on the backhaul connection.

With the exception of the 6144/1024 Kbps connection speed, which has a low number of subscribers, the comparative analysis shows a direct relationship between price and connection speed; the higher the connection speed, the higher the rate.

It should be noted that in 2015, the average variation ranges between 6902 Colones (for 256/128 Kbps connection speeds) and 29 403 Colones (for 10240/1024 Kbps connection speeds). The variation range, although similar to the range recorded the previous year, greatly differs from the average variation recorded in 2013 for the 10240/1024 Kbps connection speed, which rose to 45 999 Colones. This occurred despite a significant increase (44 % on average) in the tariff rates of the 256/128 Kbps connection speed, both in 2014 and 2015, in relation to the rate recorded in 2013 (4904 Colones). The variations in the rates at which the service is provided, in 2015 and in the previous two years, is shown in graph 127.

Fixed internet service with oversubscription ratio of 1:5

Another level of oversubscription in which there is an offer available that allows rates of the different connection speeds to be compared is the internet connectivity with an oversubscription ratio of 1:5. In this case, considering the characteristics of asymmetric connections, in addition to the behavior exhibited by the fixed internet service with oversubscription ratio of 1:20, the fact that there is a significantly higher number of service providers creates a direct relationship between price and connection speed. Overall

– with the exception of the 5120/1024 Kbps connection speed, which has a lower rate than two of the slower connection speeds available – the faster the connection speed, the higher the rate. As expected, the rates recorded, which on average range between 33 782 Colones (for 512/256 Kbps connection speeds) and 127 251 Colones (for 10240/1024 Kbps connection speeds), are higher than those recorded for internet connectivity with oversubscription ratio of 1:20. The maximum, minimum, and average rates offered by service providers in 2015, for asymmetric connections with oversubscription level of 1:5, are shown in table 18.

The variations in the rates of asymmetric connections with oversubscription ratio of 1:5, in 2014 and 2015, are shown in graph 128. Overall, as evidenced in the graph, the rates offered in 2015 are lower than the rates recorded in the previous year[3].

In regards to the symmetric internet service with oversubscription ratio of 1:5, based on the information recorded in 2013 and 2014, the higher the connection speed the higher the rate. In 2015, however, the relationship between the connection speed and the rate of the service is erratic (i.e.: some of the rates offered for certain connection speeds are lower than the rates of slower connection speeds). This variability can be explained by the number of service providers; the greater the number of providers for a particular service, the lower the resulting rate. Furthermore, due to this erratic behavior, the rates recorded in 2015 are higher than the rates recorded in the two previous years, as evidenced in table 19 and graph 129.

Fixed internet service with oversubscription ratio of 1:1

Business clients generally require faster connection speeds, in addition to dedicated access to the connection channel. As such, it is understandable that the respective tariff rates rise as the oversubscription ratio gets smaller. Bearing in mind the above-stated nature of the service, the maximum, minimum and average rates of symmetric internet connectivity in 2015 are shown in table 20.

Given that the average rates for this service in 2013 and 2014 are recorded in said table, the respective comparative analysis can be performed. In general, the average rate offered in 2015 increased in relation to the two previous years, as is evidenced in graph 130.

3 It is important to caveat that this case does not include a comparison with the 2013 data, given that within the available data for that year it was not possible to identify data that could –for comparative purposes- be associated with an access service to asymmetric Internet with a 1:5 oversubscription ratio.

Comparative analysis of service rates 2009-2015

Based on the data available for the fixed internet service, particularly the data related to internet connectivity with oversubscription ratio of 1:20, a comparative analysis of the rates offered in 2009 and 2015 was performed. It is important to note that the tariff rates offered in 2009 where the maximum tariff rates established by ARESEP, and later ratified by SUTEL, in resolution number RCS-615-2009. As evidenced in the analysis, the increase of service providers had a direct effect on the internet service rates, which on average decreased by 49 %, as shown in table 21.

The abovementioned comparative analysis of tariff rates is shown in graph 131. Based on the results, it was determined that, in relative terms, the decrease in rates is greater the higher the respective connection speed; so much so that in the case of the 4096/768 Kbps connection speed, the rate fell by 72 %.

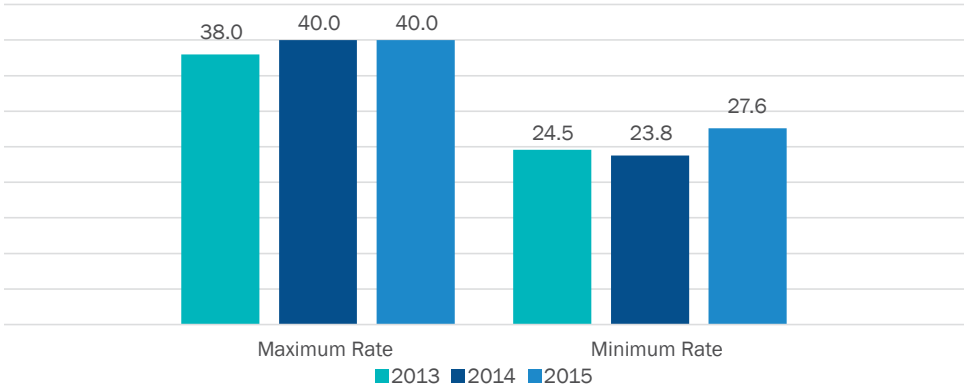
Cable subscriptions

Considering the information gathered from multiple cable subscription service providers, particularly the rates charged for said service, the maximum, minimum and average rates for the basic cable package in 2013-2015 were determined. Noteworthy in this respect is the decrease experienced by the minimum rate of the basic cable package[4], which fell 48.8 % between 2014 and 2015, and lead to a decrease in the average rate. In 2013-2014, contrary to this trend, the basic cable package rates increased, as evidenced in table 22 and graph 132.

4 Basic package should be understood as a package consisting of 75 analogic channels.

Graphic N° 123

Costa Rica: Maximum and minimum rates per minute in prepaid telephony plans, 2013-2015



Source: SUTEL, Directorate-General for Markets.

Table 13

Costa Rica: Rates per minute by type of usage in prepaid telephony plans, 2013-2015

Peak/Off-peak Hours, prepaid plans	2013			2014		
	Max rate	Min rate	Average rate	Max rate	Min rate	Average rate
Average rate per minute of local calls in peak hours (on net), mobile telephony	38	18	31	40	14	31
Average rate per minute of local calls in off-peak hours (on net), mobile telephony	38	18	28	40	14	31
Average rate per minute of local calls in off-peak hours (off net), mobile telephony	38	28	32	40	29	35
Average rate per minute of local calls in peak hours (fixed network), mobile telephony	38	29	33	40	29	35
Average rate per minute of local calls in off-peak hours (fixed network), mobile telephony	38	25	30	40	29	35
Average rate per minute of local calls in peak hours (off net), mobile telephony	38	29	33	40	29	35
Average rate per minute of local calls made during-the-weekend/at-night (on net, other operator networks), mobile telephony	38	18	31	40	14	32
Average rate per minute of local calls made during-the-weekend/at-night (off net), mobile telephony	38	29	33	40	29	35
Average rate per minute of local calls made during-the-weekend/at-night (fixed network), mobile telephony	38	25	32	40	29	35
Average SMS rate (to other users in same network), mobile telephony	3.0	1.7	2.6	3.5	1.7	2.9
Average SMS rate (other operator networks), mobile telephony	3.0	1.7	2.7	3.5	1.7	2.9

Continued ...

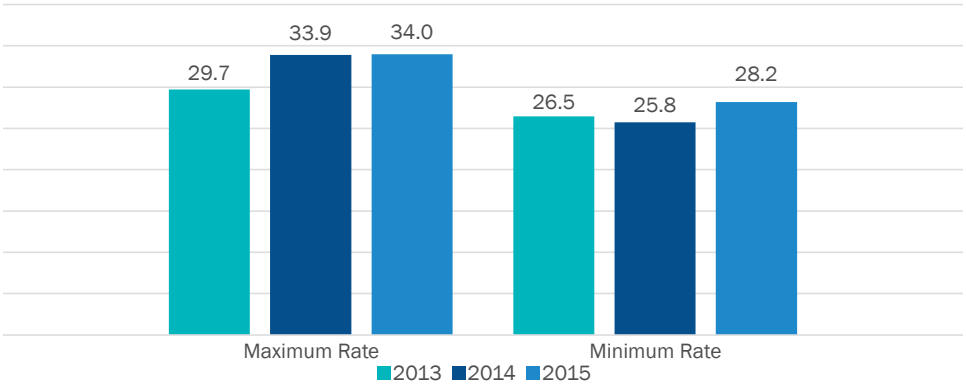
...Continuation

Peak/Off-peak Hours, prepaid plans	2015			Average variation 2013-2014	Average variation 2014-2015
	Max rate	Min rate	Average rate		
Average rate per minute of local calls in peak hours (on net), mobile telephony	40	29	34	2 %	10 %
Average rate per minute of local calls in off-peak hours (on net), mobile telephony	40	23	33	9 %	6 %
Average rate per minute of local calls in off-peak hours (off net), mobile telephony	40	30	35	8 %	-1 %
Average rate per minute of local calls in peak hours (fixed network), mobile telephony	40	30	35	5 %	-1 %
Average rate per minute of local calls in off-peak hours (fixed network), mobile telephony	40	23	33	17 %	-5 %
Average rate per minute of local calls in peak hours (off net), mobile telephony	40	23	33	4 %	-5 %
Average rate per minute of local calls made during-the-weekend/at-night (on net, other operator networks), mobile telephony	40	30	34	4 %	8 %
Average rate per minute of local calls made during-the-weekend/at-night (off net), mobile telephony	40	30	35	4 %	-1 %
Average rate per minute of local calls made during-the-weekend/at-night (fixed network), mobile telephony	40	30	35	9 %	-1 %
Average SMS rate (to other users in same network), mobile telephony	3	3	3	11 %	2 %
Average SMS rate (other operator networks), mobile telephony	3	3	3	8 %	3 %

Source: SUTEL. Directorate-General for Markets.
Sales tax included in price.

Graphic N° 124

Costa Rica: Maximum and minimum rates per minute in postpaid telephony plans, 2013-2015



Source: SUTEL, Directorate-General for Markets.

Table 14

Costa Rica: Rates per minute by type of usage in postpaid telephony plans, 2013-2015

Peak/Off-peak Hours, postpaid plans	2013			2014		
	Max rate	Min rate	Average rate	Max rate	Min rate	Average rate
Average rate per minute of local calls in peak hours (on net), mobile telephony	30	29	30	34	29	31
Average rate per minute of local calls in off-peak hours (on net), mobile telephony	29	21	27	34	19	28
Average rate per minute of local calls in off-peak hours (off net), mobile telephony	30	28	29	34	28	31
Average rate per minute of local calls in peak hours (fixed network), mobile telephony	30	29	29	34	28	31
Average rate per minute of local calls in off-peak hours (fixed network), mobile telephony	29	23	27	34	23	29
Average rate per minute of local calls in peak hours (off net), mobile telephony	30	23	29	34	20	29
Average rate per minute of local calls made during-the-weekend/at-night (on net, other operator networks), mobile telephony	30	29	30	34	29	31
Average rate per minute of local calls made during-the-weekend/at-night (off net), mobile telephony	30	29	31	34	28	31
Average rate per minute of local calls made during-the-weekend/at-night (fixed network), mobile telephony	30	29	30	34	28	31
Average SMS rate (to other users in same network), mobile telephony	3.0	1.7	2.3	3.0	1.4	2.6
Average SMS rate (other operator networks), mobile telephony	3.0	1.7	2.5	3.0	1.6	2.7

Continued ...

...Continuation

Peak/Off-peak Hours, postpaid plans	2015			Average variation 2013-2014	Average variation 2014-2015
	Max rate	Min rate	Average rate		
Average rate per minute of local calls in peak hours (on net), mobile telephony	34	29	32	2 %	4 %
Average rate per minute of local calls in off-peak hours (on net), mobile telephony	34	29	32	4 %	16 %
Average rate per minute of local calls in off-peak hours (off net), mobile telephony	34	28	32	7 %	3 %
Average rate per minute of local calls in peak hours (fixed network), mobile telephony	34	28	32	7 %	3 %
Average rate per minute of local calls in off-peak hours (fixed network), mobile telephony	34	28	32	5 %	11 %
Average rate per minute of local calls in peak hours (off net), mobile telephony	34	28	32	-1 %	11 %
Average rate per minute of local calls made during-the-weekend/at-night (on net, other operator networks), mobile telephony	34	29	32	2 %	4 %
Average rate per minute of local calls made during-the-weekend/at-night (off net), mobile telephony	34	28	32	1 %	3 %
Average rate per minute of local calls made during-the-weekend/at-night (fixed network), mobile telephony	34	28	32	1 %	3 %
Average SMS rate (to other users in same network), mobile telephony	3	1.4	2.5	16 %	-6 %
Average SMS rate (other operator networks), mobile telephony	3	1.6	2.5	8 %	-4 %

Source: SUTEL. Directorate-General for Markets.
Sales tax included in price.

Table 15

Costa Rica: Mobile internet service rates
Postpaid telephony plans
2013-2015
In Colones (monthly rates)

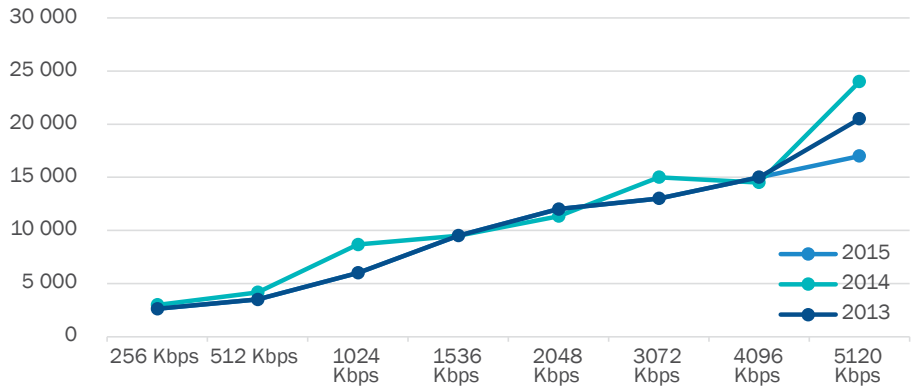
Maximum download/ upload speed	Max rate (2015)	Min rate (2015)	Average rate (2015)	Average rate (2014)	Average rate (2013)
256 Kbps	3995	1250	2623	2998	2623
512 Kbps	6500	2000	3500	4167	3500
1024 Kbps	10 000	4000	6000	8667	6000
1536 Kbps	12 000	7000	9500	9500	9500
2048 Kbps	12 000	12 000	12 000	11 333	12000
3072 Kbps	13 000	13 000	13 000	15 000	13000
4096 Kbps	15 000	15 000	15 000	14 500	15000
5120 Kbps	17 000	17 000	17 000	24 000	20500

Source: SUTEL. Directorate-General for Markets.

Graphic N° 125

Costa Rica: Mobile internet service rates - Postpaid telephony plans, 2013-2015

In colones (monthly rates)



Source: SUTEL, Directorate-General for Markets.

Table 16

Costa Rica: Mobile internet service rates, prepaid telephony plans, 2014-2015

In Colones (monthly rates)

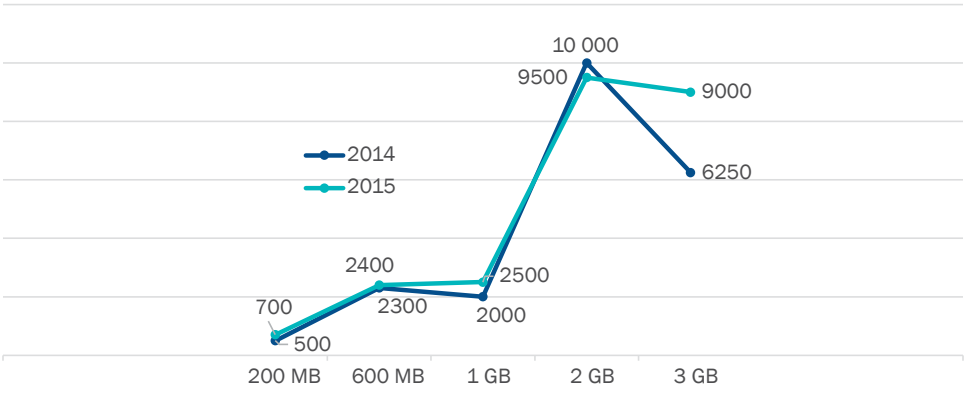
Max download speed	Max rate (2015)	Min rate (2015)	Average rate (2015)	Average rate (2014)
40 MB	300	200	250	---
50 MB	275	275	275	80
60 MB	500	500	500	100
100 MB	400	400	400	300
150 MB	289	289	289	270
200 MB	700	700	700	500
600 MB	2500	2300	2400	2300
1 GB	2500	2500	2500	2000
2 GB	10 000	9000	9500	10 000
3 GB	9000	9000	9000	6250

Source: SUTEL. Directorate-General for Markets.

Graphic N° 126

Costa Rica: Mobile internet service rates, prepaid telephony plans, 2014-2015

In colones (monthly rates)



Source: SUTEL, Directorate-General for Markets.

Table 17

Costa Rica: Asymmetric internet service rates with oversubscription ratio of 1:20, 2015

In Colones (monthly rates)

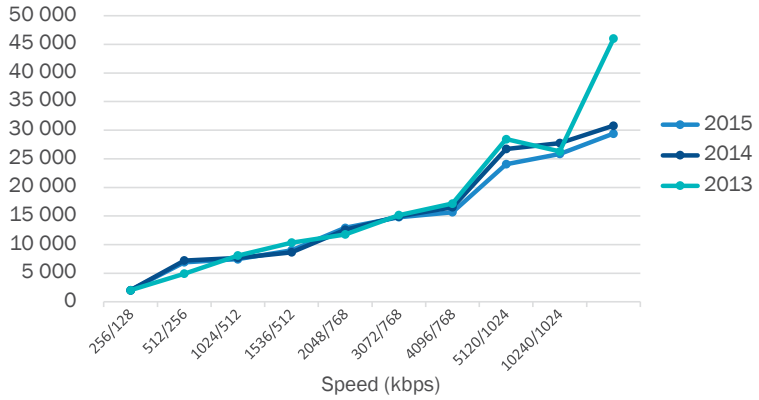
Download/upload speeds (Kbps)	Max rate	Min rate	Average rate
256/128	8551	5500	6902
512/256	10 390	5500	7444
1024/512	15 907	7080	9019
1536/512	21 424	8407	12 929
2048/768	42 878	7080	14 806
3072/768	28 568	8673	15 645
4096/768	61 267	13 150	24 040
5120/1024	47 617	14 823	25 848
6144/1024	64 283	16 500	35 513
10 240/1024	47 172	22 124	29 403

Source: SUTEL. Directorate-General for Markets.

Graphic N° 127

Costa Rica: Asymmetric internet service rates with oversubscription ratio of 1:20, 2013-2015

In Colones (monthly rates)



Source: SUTEL, Directorate-General for Markets.

Table 18

Costa Rica: Asymmetric internet service rates with oversubscription ratio of 1:50, 2014-2015

In Colones (monthly rates)

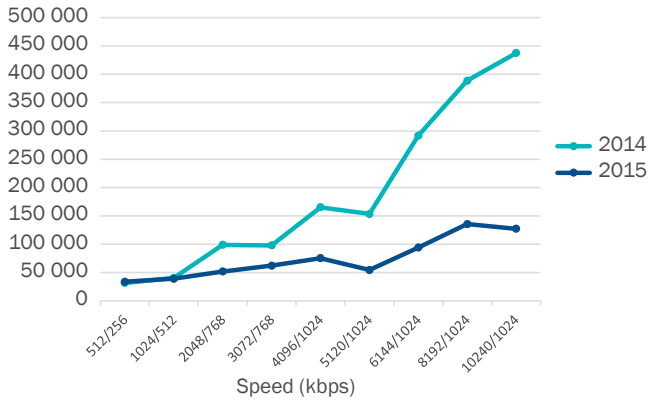
Download/upload speeds (Kbps)	Max rate	Min rate	Average rate
Download/upload speeds	Average Rate (2014)	Average Rate (2015)	Annual variation (%)
512/256	31 762	33 782	6 %
1024/512	40 651	39 199	-4 %
2048/768	98 833	51 992	-47 %
3072/768	97 903	62 115	-37 %
4096/1024	165 264	75 430	-54 %
5120/1024	153 426	54 487	-64 %
6144/1024	291 605	94 213	-68 %
8192/1024	388 805	135 506	-65 %
10 240/1024	437 416	127 251	-71 %

Source: SUTEL. Directorate-General for Markets.

Graphic N° 128

Costa Rica: Asymmetric internet service rates with oversubscription ratio of 1:5, 2014-2015

In Colones (monthly rates)



Source: SUTEL, Directorate-General for Markets.

Table 19

Costa Rica: Symmetric internet service rates with oversubscription ratio of 1:5, 2014-2015

In Colones (monthly rates)

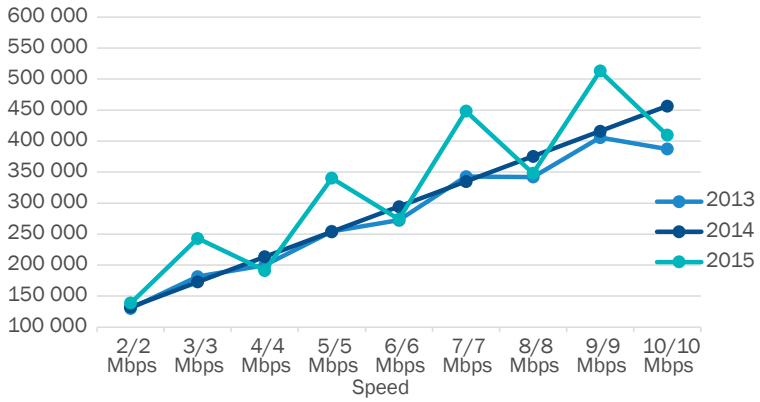
Download/upload speeds	Average Rate (2013)	Average rate (2014)	Average rate (2015)
1/1 Mbps	67 500		88 651
2/2 Mbps	130 266	132 300	138 736
3/3 Mbps	181 471	172 800	243 000
4/4 Mbps	199 620	213 300	191 356
5/5 Mbps	254 559	253 800	340 200
6/6 Mbps	272 435	294 300	273 925
7/7 Mbps	342 713	334 800	448 200
8/8 Mbps	341 982	375 300	348 001
9/9 Mbps	405 605	415 800	513 000
10/10 Mbps	387 179	456 300	409 728

Source: SUTEL. Directorate-General for Markets.

Graphic N° 129

Costa Rica: Symmetric internet service rates with oversubscription ratio of 1:5, 2013-2015

In Colones (monthly rates)



Source: SUTEL, Directorate-General for Markets.

Table 20

Costa Rica: Symmetric internet service rates with oversubscription ratio of 1:1, 2013-2015

In Colones (monthly rates)

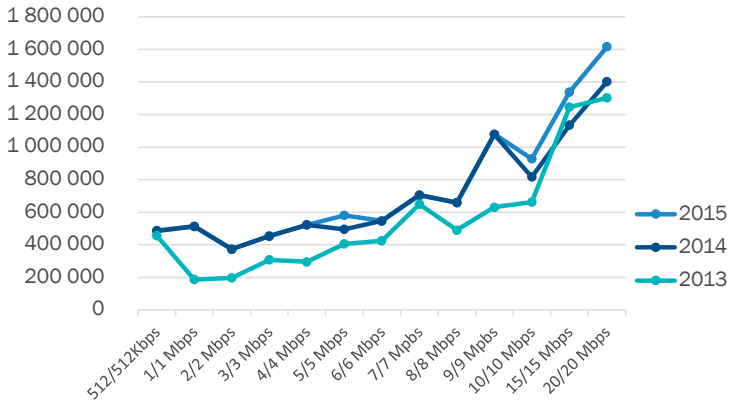
Download/upload speeds (Kbps)	Average rate (2013)	Average rate (2014)	Average rate (2015)	Min rate (2015)	Max rate (2015)
512/512Kbps	456 221	486 000	487 143	487 143	487 143
1/1 Mbps	187 551	513 000	514 207	514 207	514 207
2/2 Mbps	197 378	373 567	373 990	191 900	541 270
3/3 Mbps	308 944	453 867	454 332	222 200	595 397
4/4 Mbps	295 728	522 783	523 291	277 750	649 524
5/5 Mbps	406 076	495 906	580 759	285 325	753 300
6/6 Mbps	425 853	547 000	547 445	222 675	893 700
7/7 Mbps	649 933	705 392	706 027	320 675	985 500
8/8 Mbps	490 410	659 303	659 811	284 063	1 120 500
9/9 Mbps	631 324	1 078 650	1 079 730	920 159	1 239 300
10/10 Mbps	662 875	816 888	927 945	459 550	1 350 000
15/15 Mbps	1 245 620	1 135 467	1 338 700	652 400	2 025 000
20/20 Mbps	1 302 117	1 401 592	1 616 388	532 775	2 700 000

Source: SUTEL. Directorate-General for Markets.

Graphic N° 130

Costa Rica: Symmetric internet service rates with oversubscription ratio of 1:1, 2013-2015

In Colones (monthly rates)



Source: SUTEL, Directorate-General for Markets.

Table 21

Costa Rica: Comparative analysis of asymmetric fixed internet service rates, 2009 vs 2015
Oversubscription ratio of 1:20

In Colones (monthly rates)

Download/upload speeds (Kbps)	Max rate (2009*)	Average rate (2015)	Annual Variation (%)
256/128	9624	6902	-28 %
512/256	12 663	7444	-41 %
1024/512	19 248	9019	-53 %
2048/768	31 405	14 806	-53 %
4096/768**	85 605	24 040	-72 %

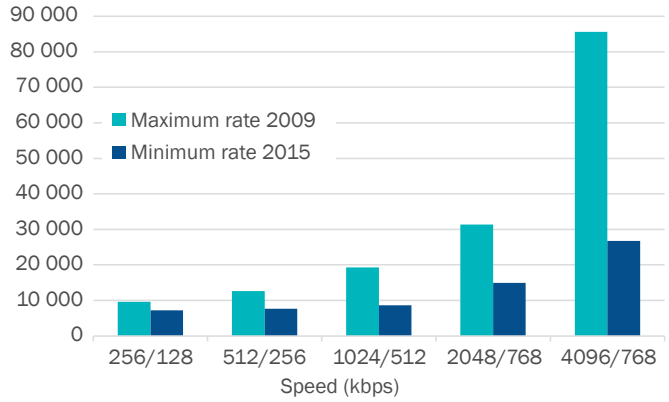
* Tariff rates established by ARESEP and ratified by SUTEL in resolution number RCS-615-2009 of December 18th, 2009, for the residential sector.
** This service primarily targets small and medium enterprises, and therefore has a higher level of subscription in that sector than in the residential sector.

Source: SUTEL. Directorate-General for Markets.

Graphic N° 131

Costa Rica: Comparative analysis of asymmetric internet service rates with oversubscription ratio of 1:20, 2009-2015

In Colones (monthly rates)



Source: SUTEL, Directorate-General for Markets.

Table 22

Costa Rica: Cable subscription rates, basic package

In Colones, 2013-2015

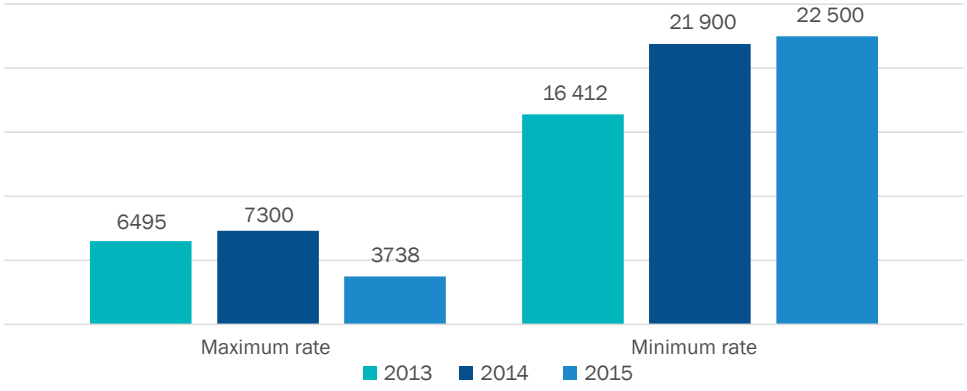
Rate	2013	2014	2015	Variation 2013-2014	Variation 2014-2015
Max	16 412	21 900	22 500	33.4 %	2.7 %
Min	6495	7300	3738	12.4 %	-48.8 %
Average	11 425	12 803	12 290	12.1 %	-4.0 %

Source: SUTEL. Directorate-General for Markets.

Graphic N° 132

Costa Rica: Maximum and minimum cable subscription rates, basic package, 2013-2015

In Colones (monthly rates)



Source: SUTEL, Directorate-General for Markets.

Chapter 7

International

International

The following section aims to analyze Costa Rica's position in the international context, exposing the important contributions offered by the telecommunications sector to developing nations, as well as to analyze the behavior of the different services in the international markets and possible future trends.

For the purposes of this analysis, the following topics will be developed:

- Analysis of general international indicators
- Analysis of the Affordability Drivers Index (ADI)

Upon completion of this report, the International Telecommunication Union (ITU) had yet no available public information for the 2015 period, so this information could not be included in this edition. However, some figures from the year 2014 are included, whose source is the ITU.

Analysis of general international indicators

As in previous years, it is important to understand the position of Costa Rica in the top general indicators with respect to leading countries in the field of telecommunications and Latin American countries. As noted in the previous section, 2014 information provided by the International Telecommunication Union (ITU) was used for this analysis, as no public information was available for the 2015 period at the time of this document. In lieu, the information was completed with the corresponding 2015 updated indexes for Costa Rica.

In this opportunity, also the position of Costa Rica in the main indicators was contrasted with that of other similar Latin American countries, or otherwise, considering to that extent the stage or time of opening of their telecommunication markets, as further specified in Table 23. In addition, the comparison with other important countries of reference in the international context is maintained.

Costa Rica is in the initial opening stage of its telecommunications market, with less than 10 years of being opened and emphasizing that it is the only Latin American country in that condition. The majority of Latin American countries are located in the intermediate stage (at least six countries depending on the service) and located in the advanced stage, those South American countries that began the opening process of the telecommunications market in the region.

Table 23
Time lapse as of the opening of the telecommunication markets in the Latin American Countries, shown by service

Service	Initial Stage Less than 10 years	Intermediate Stage Between 10 – 20 years*		Advanced Stage More than 20 years	
	Open between January 1, 2005 and December 31, 2014	Open between January 1, 1995 and December 31, 2004		Open prior to January 1, 1995	
Mobile voice	Costa Rica	El Salvador Guatemala Panama	Dominican Republic Peru Uruguay	Chile Colombia Ecuador	Argentina Brazil Mexico
Fixed voice	Costa Rica	Ecuador Guatemala Mexico	Dominican Republic Uruguay Peru	Chile Colombia Argentina	Brazil
Mobile internet	Costa Rica	Chile Colombia Ecuador El Salvador Dominican Republic	Guatemala Uruguay Mexico Panama	N/A	
Fixed internet	Costa Rica	Chile Colombia Dominican Republic	Uruguay Mexico Peru	N/A	

* Countries with over 10 years as of the opening date are included for Internet services.
Source: SUTEL, Directorate-General for Markets.

The fixed telephony, mobile telephony, and fixed and mobile Internet access services are analyzed, specially those aspects related to evolution in the number of subscribers and the total penetration, as well as the relative importance of telecommunications revenues with respect to the GDP.

In recent years the penetration of fixed telephony -in general- has shown a decrease. This situation is not unique to Costa Rica considering that the amount of subscriptions are also continuing to decline in countries such as Switzerland, United Kingdom, Sweden and Denmark. In the case of Costa Rica, penetration in 2014 was of 18 % and then dropped in 2015 to 16.6 %. It is noted that Costa Rica surpasses countries at advanced and intermediate stages in the opening of this sector of the market and is very close to Chile that has more than 20 years of being opened. Specific details are shown in graphic 133.

In the mobile phone service, as in the year 2013, Costa Rica remains among the top 10 countries with the highest penetration. In 2014 held the sixth position. In 2015 Costa Rica shows an increase, and moves from 144 % and to 156 %, with an upturn in the market. In this case, Costa Rica surpasses Chile, Colombia, Ecuador and Mexico that are countries in advanced stages of the opening of the mobile telephony market. Specific details are shown in graphic 134.

If the form of payment of mobile phone service is analyzed, the proportion of prepaid subscriptions has increased year-by-year; increasing from 79 % of the total subscriptions in 2013 to 80 % in the year 2014. In 2015 Costa Rica shows a slight decrease and

reaches 79 %, which demonstrates stability in the indicator. In that respect, Latin American countries follow a similar pattern: Guatemala, Nicaragua, Panama, Mexico, Ecuador, Colombia, Dominican Republic, among others, have a share of prepaid services far superior than postpaid services, which contrasts with the behavior registered in European countries and Asia where the relationship is reversed. Specific details are shown in graphic 135. In this case, Costa Rica is at the level of countries in advanced stages such as Colombia, Ecuador and Mexico, among others.

As occurred one year ago, according to data from the ITU Report 2014, an inverse relationship between the share of prepaid services and per capita income continues. Mobile phone users in more developed countries mainly choose postpaid services. Specific details are shown in graphic 136.

Service penetration measured by fixed Internet connections per each 100 inhabitants has remained with a slight growth near to a 1-percentage point. Thus in 2014 Costa Rica surpassed Mexico and closely positioned to Brazil. Meanwhile, Chile showed an increase of 2 percentage points compared to 2013. According to 2014 data of the ITU, European countries have higher values, which almost quadruple that of Costa Rica. In this case, Costa Rica surpasses Mexico, Colombia, Peru and the Dominican Republic, which are countries in intermediate stages as of the opening of their fixed Internet markets. Specific details are shown in graphic 137.

As for the mobile Internet service, in 2014 Costa Rica continues to show an important position regarding the penetration of this service. It remains within the top 10 places, outperforming more developed countries such as Switzerland and the Netherlands (Holland) and holds the first place in Latin America, where it surpasses countries including Brazil, Uruguay, Argentina and Chile, among others. In 2015 Costa Rica experienced a significant growth and reached levels recorded in 2014 for Denmark and Sweden. It is important to highlight that the above-mentioned Latin American countries are in intermediate stages as of the opening of their mobile Internet, while Costa Rica is located in its initial stage. Specific details are shown in graphic 138.

To end this section on the international context, according to each country, the relative importance of telecommunications revenues in relation to gross domestic product (GDP) is measured in dollars. The latest data on telecommunications revenues available from the records of the ITU is of 2014, so to ensure the comparability of the indicator at the international context said measurement is used, although in other sections of this report updated 2015 figures are included for Costa Rica.

In 2014 Costa Rica was located among the countries of the region whose telecommunications exceed 3 % of their GDP. Peru, USA and Sweden are countries included in this group that behave similarly to Costa Rica, as well as in other indicators shown in this section. Among the countries with the best positions, Honduras and Colombia stand out above the threshold of 5 % in revenues. In the case of European countries, these have values ranging between 1 % and 2 %. Specific details are shown in graphic 139.

Analysis of the Affordability Drivers Index for the year 2015

This year the name of the index changed, it went from the Affordability Index to the Affordability Drivers Index. This index is developed by the Alliance For Affordable Internet (A4AI), which is composed of a group of global institutions of private, public, academic and civil society sectors. It aims to achieve the goal of the Broadband Commission of the UN (United Nations) which has established as its target for the price of basic broadband service to represent less than 5 % of the average monthly per capita income. It also promotes the goal of universal Internet access by 2020, which was established by UN in September 2015.

The index does not measure directly the price of Internet services, but shows a strong relationship between the index scores and the price of broadband in countries of analysis, as noted in graphic 140.

Therefore countries with higher scores tend to have better prices for broadband services. Costa Rica shows a significant relationship between high index scores and low prices on Internet services.

The Affordability Drivers Index is composed of two sub-indexes that internally operate as follows.

- **Infrastructure Sub-Index:** measures the infrastructure deployment and operation, together with policies and regulatory frameworks that encourage investment and allow for future infrastructure growth. Some of the variables included are available international bandwidth and evaluation of the spectrum policy.

- **Broadband access sub-index:** measures adoption rates, policies and regulatory frameworks to encourage growth and supply of broadband services. Variables used are the Internet penetration rate and the evaluation of the effectiveness of universal service funds.

The index is calculated for 51 countries divided into two groups (developing economies and developed economies) and it's calculated on a scale from 0 to 100, based on penetration rates, usage, policy and regulatory environment. The index analysis shows that high scores are correlated with low broadband prices. This means that values close to 100 in the countries index show that prices in broadband services tend to fall.

In 2015, Costa Rica and Colombia moved to positions 2 and 1, respectively, in contrast to 2014 (the positions were inverted); this in the case of developing economies. For underdeveloped economies, Rwanda maintains the first place followed by Uganda. In the classification of emerging economies, Colombia and Costa Rica are at the top followed by Malaysia, Turkey and Peru. Specifics of the foregoing are shown in tables 25 and 26.

The A4AI report analyzes the first two positions and how both Colombia and Costa Rica remain there and emphasizes in the following:

Colombia:

- Promotes digital literacy, encourages telecommuting and improves digital government services.
- Encourages the adoption of broadband through the elimination of duties on computer purchases and offers preferential tariffs for low-income households.
- Promotes the development of ICT's thru increased marketing of digital services (development of applications).
- Promotes network sharing.
- Deletes customer retention barriers (minimum dwelling periods of time for clients).

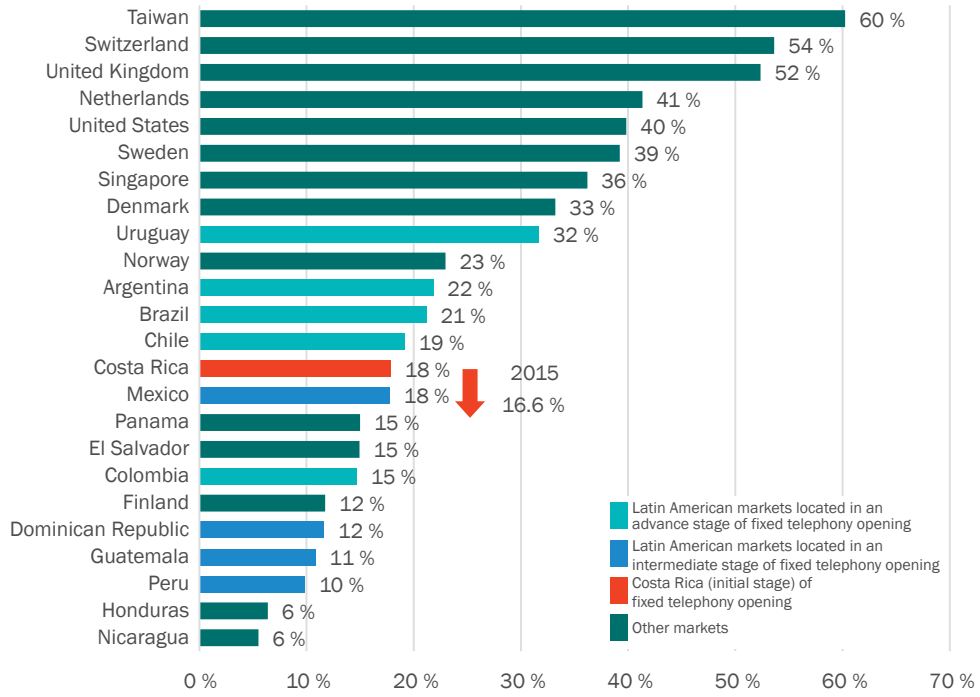
Costa Rica:

- Established that ICT's are an important tool to reduce poverty.
- It has one of the highest mobile broadband subscription penetration rates among the countries analyzed in the index.
- Prices of fixed and mobile broadband represent around 1 % of the GDP per capita and are among the lowest in Latin America.
- Approximately 50 % of the country has some type of Internet service.
- The government has created a National Telecommunications Fund (FONATEL) , which has focused on providing access to broadband Internet and telephony services to underserved schools, institutions of public health and other public entities.
- The new Telecommunication Development Plan aims to increase the use of Internet and improve broadband speeds according to the policies of the OECD.

Graphic N° 133

Fixed Telephone Subscriptions per 100 Inhabitants, 2014

Percentages



Source: SUTEL, Directorate-General for Markets based on the International Telecommunication Union.

Costa Rica

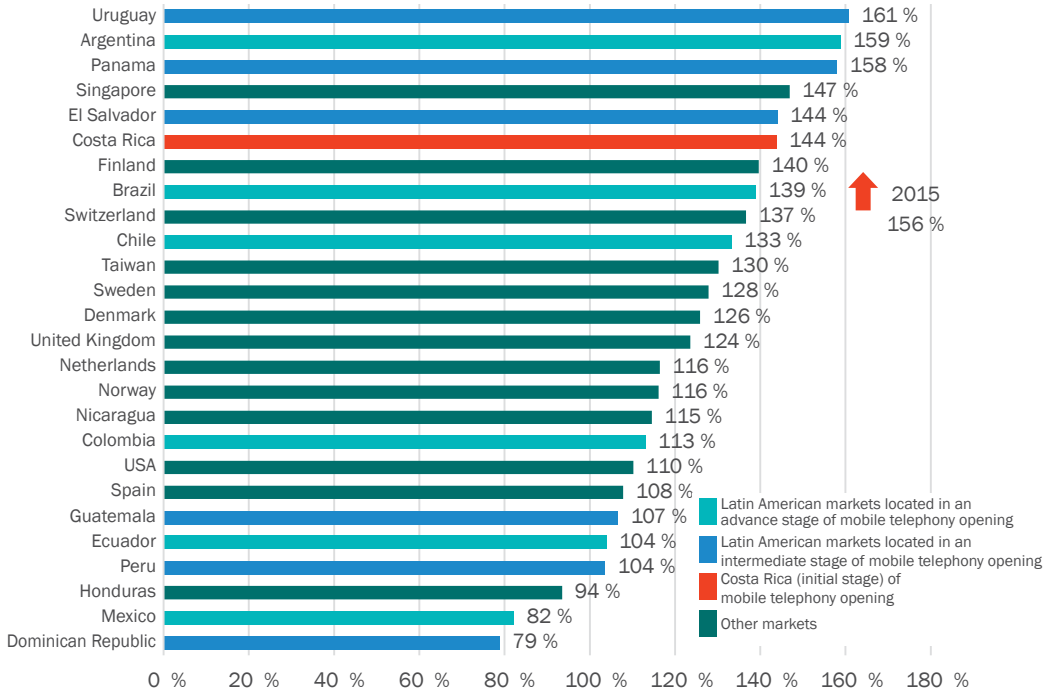
stands fifth

in fixed telephony penetration in Latin America

Graphic N° 134

Subscriptions to mobile telephone services per each 100 inhabitants, 2014

Percentages



Source: SUTEL, Directorate-General for Markets based on the International Telecommunication Union.

Costa Rican

stands fifth

in mobile telephony penetration in Latin America

Table 24

Mobile telephone subscriptions as per payment modality, 2011-2014

Percentages

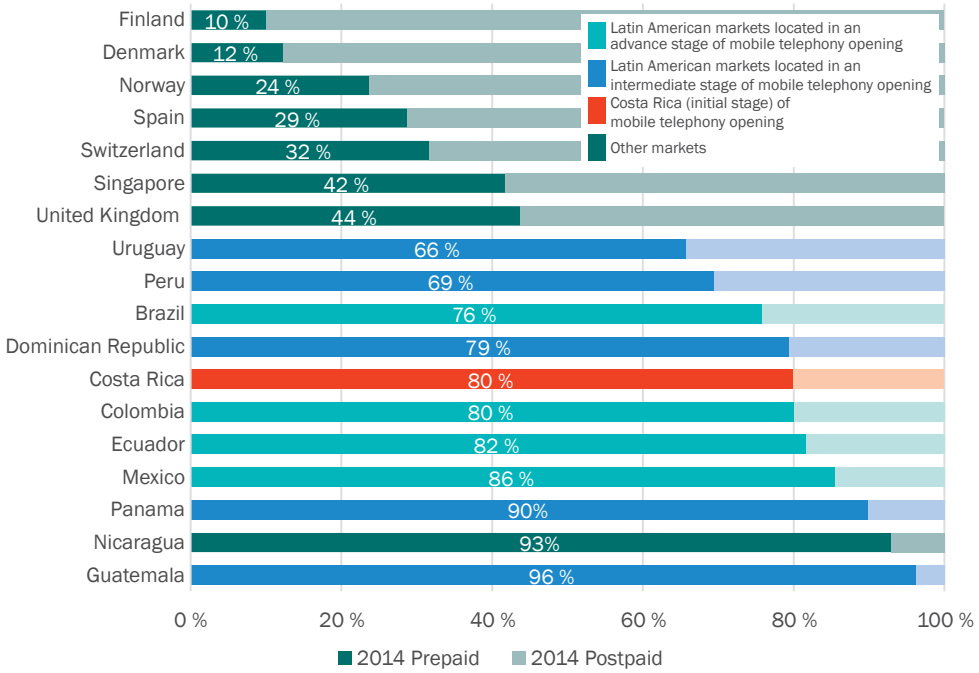
Country	2011		2012		2013		2014	
	Prepaid	Postpaid	Prepaid	Postpaid	Prepaid	Postpaid	Prepaid	Postpaid
Guatemala	5 %	95 %	95 %	5 %	95 %	5 %	96 %	4 %
Panama	7 %	93 %	100 %	0 %	90 %	10 %	90 %	10 %
Nicaragua	94 %	6 %	81 %	19 %	94 %	6 %	93 %	7 %
Mexico	85 %	15 %	84 %	16 %	85 %	16 %	86 %	14 %
Peru	83 %	17 %	76 %	24 %	76 %	24 %	69 %	31 %
Brazil	85 %	15 %	85 %	15 %	78 %	22 %	76 %	24 %
Dominican Republic	83 %	17 %	82 %	18 %	82 %	18 %	79 %	21 %
Colombia	82 %	18 %	81 %	19 %	79 %	21 %	80 %	20 %
Uruguay	70 %	30 %	69 %	31 %	68 %	33 %	66 %	34 %
Chile	29 %	71 %	72 %	28 %	70 %	30 %	N/A	N/A
United Kingdom	57 %	43 %	53 %	47 %	47 %	53 %	44 %	56 %
Costa Rica	70 %	30 %	79 %	21 %	83 %	17 %	80 %	20 %
Singapore	52 %	48 %	47 %	53 %	46 %	54 %	42 %	58 %
Switzerland	42 %	58 %	39 %	61 %	36 %	64 %	32 %	68 %
Norway	14 %	86 %	26 %	74 %	25 %	75 %	24 %	76 %
Denmark	14 %	86 %	15 %	85 %	13 %	87 %	12 %	88 %
Finland	10 %	90 %	10 %	90 %	9 %	92 %	10 %	90 %

Source: SUTEL, Directorate-General for Markets based on the International Telecommunication Union.
N/A: Not Available

Graphic N° 135

Distribution percentage for postpaid and prepaid mobile subscriptions, 2014

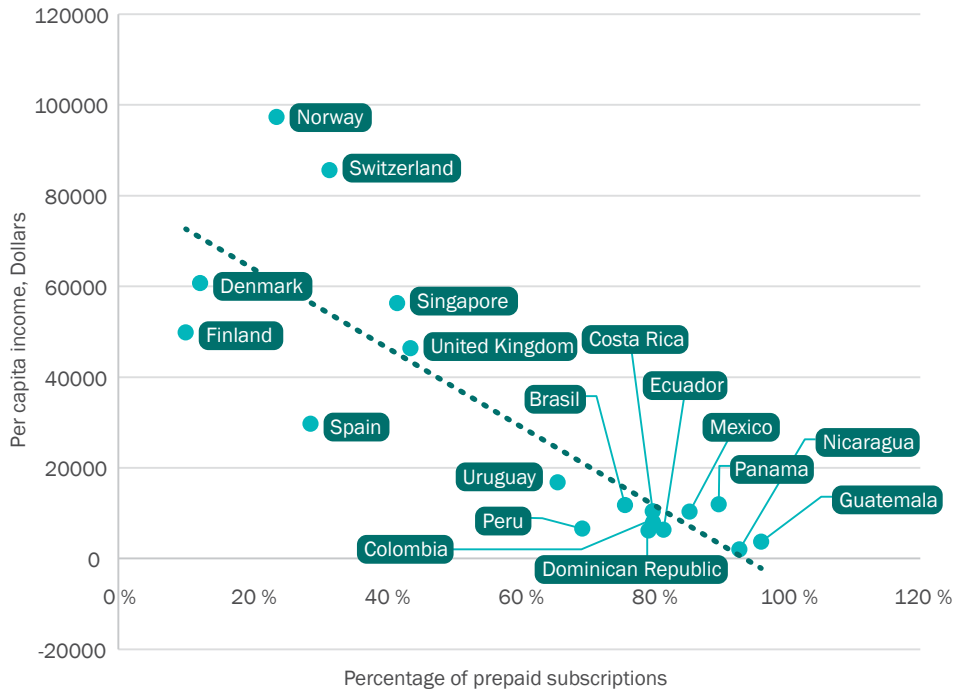
Percentages



Source: SUTEL, Directorate-General for Markets based on the International Telecommunication Union.
In the case of Costa Rica, the relation in 2015 was of 79% prepaid and 21% postpaid.

Graphic N° 136

Average increase per inhabitant and percentage of prepaid subscriptions per country, 2014



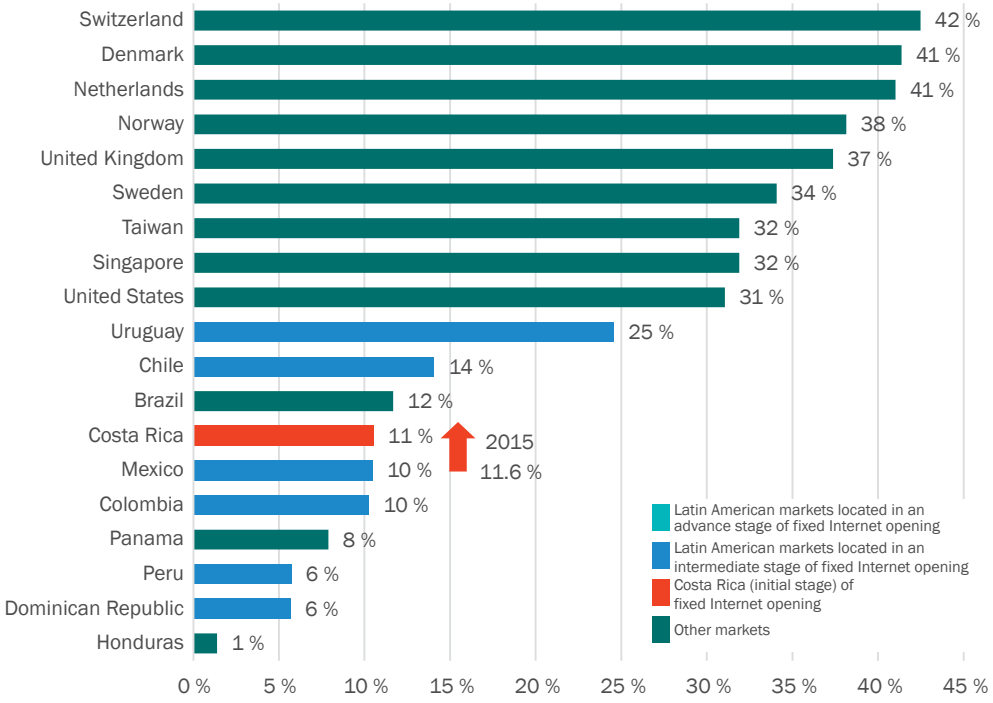
Source: SUTEL, Directorate-General for Markets based on the International Telecommunication Union.

The **inverse relationship** between high per capita income and the ratio of prepaid telephony services persists

Graphic N° 137

Fixed Internet access penetration per 100 inhabitants, 2014

Percentages



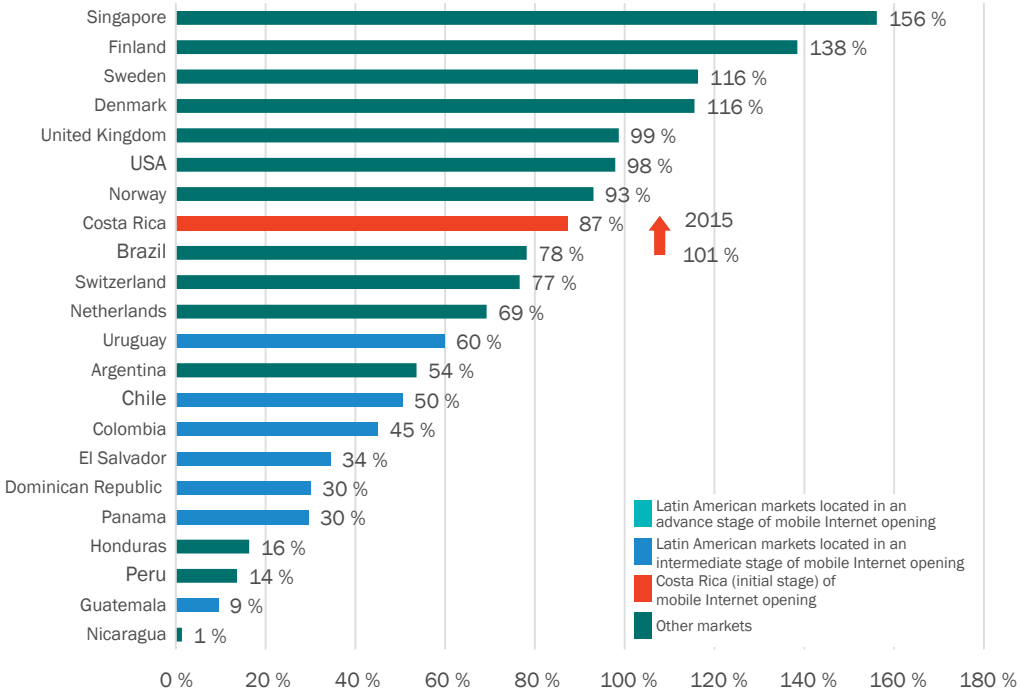
Source: SUTEL, Directorate-General for Markets based on the International Telecommunication Union.

Costa Rica **stands fourth** in fixed Internet access penetration in Latin America

Graphic N° 138

Mobile Internet access penetration per 100 inhabitants, according to countries, 2014

Percentages



Source: SUTEL, Directorate-General for Markets based on the International Telecommunication Union.

Costa Rica reaches a

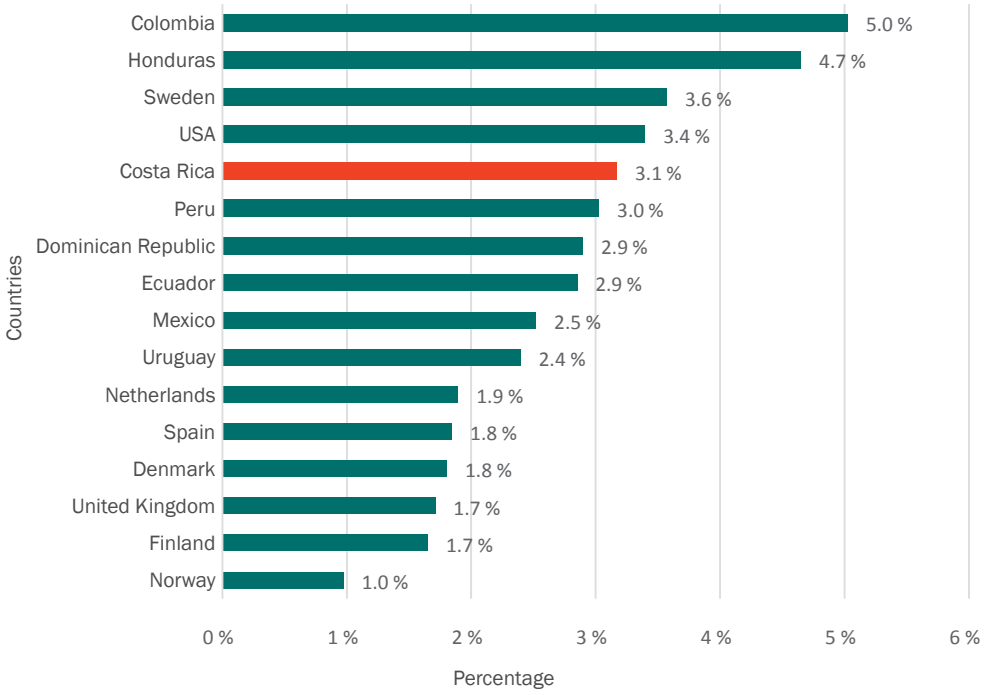
3.1 %

in the income ratio with respect to the GDP, like Uruguay, Peru and Mexico

Graphic N° 139

Total income ratio for the Telecommunications Sector with respect to the GDP, 2014

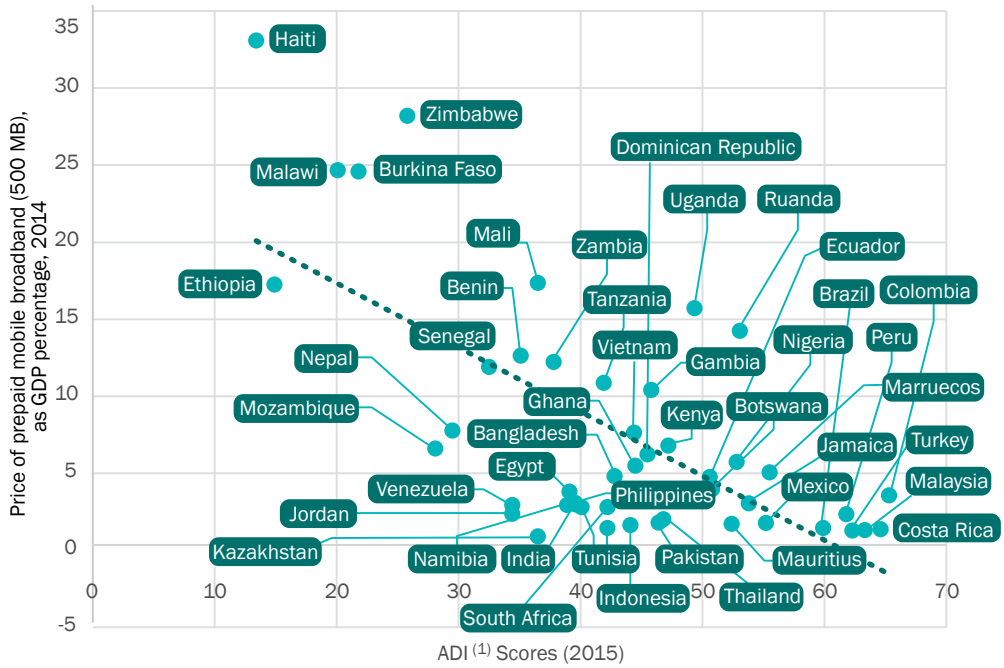
Percentages



Source: SUTEL, Directorate-General for Markets based on the International Telecommunication Union.

Graphic N° 140

Relation between the ADI1 2015 score and the price of a 500MB prepaid mobile telephony plan (GDP% per capita, 2014)



(1) ADI: Affordability Drivers Index.

Source: SUTEL, Directorate-General for Markets based on information from the A4AI.

Table 25

Ranking in the Affordability Drivers Index by country, for emerging economies 2014-2015

Ranking	Emerging economies	
	2014	2015
1	Costa Rica	Colombia
2	Colombia	Costa Rica
3	Turkey	Malaysia
4	Malaysia	Turkey
5	Peru	Peru

Source: SUTEL, Directorate-General for Markets based on information from the A4AI.

Costa Rican

ranks second

in the A4AI Affordability Drivers Index

Table 26

Scores in the Affordability Drivers Index by country, 2014-2015

Ranking	Country	2014	2015
1	Colombia	63.13	65.32
2	Costa Rica	63.37	64.60
4	Malaysia	61.52	63.28
5	Turkey	62.43	62.35
6	Perú	59.59	61.82
7	Brazil	57.57	59.90
8	Mauritius	57.18	55.20
9	Mexico	48,48	53.85
1	Argentina	51.75	53.35
2	Thailand	49.84	52.39
4	Jamaica	47.27	50.84
5	Ecuador	52.31	50.60
6	Dominican Republic	44.35	47.23
7	Tunisia	45.10	46.83
8	South Africa	43.44	46.44

Source: SUTEL, Directorate-General for Markets based on information from the A4AI.

Statistical appendix

General evolution of the industry

Table 27

Costa Rica: Telecommunications sector total income, 2012-2015

Quarterly figures in millions of colones

Indicator	2012				2013				2014				2015				2012	2013	2014	2015
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Income	121 343	123 855	126 834	129 616	133 856	140 012	148 801	154 074	182 658	187 658	183 996	189 966	196 687	202 676	200 454	202 995	501 648	576 742	744 300	802 812
Variation %	6 %	2 %	2 %	2 %	3 %	5 %	6 %	4 %	18 %	3 %	-2 %	3 %	4 %	3 %	-1 %	1 %	15 %	15 %	29 %	8 %

Source: SUTEL, Directorate-General for Markets.

Table 28

Costa Rica: Telecommunications sector total income by service, 2012-2015

Quarterly figures in millions of colones

	Q1 2012	Q2 2012	Q3 2012	Q4 2012	Q1 2013	Q2 2013	Q3 2013	Q4 2013	Q1 2014	Q2 2014	Q3 2014	Q4 2014	Q1 2015	Q2 2015	Q3 2015	Q4 2015
Traditional basic telephony and VoIP telephony	21 884	21 546	21 152	20 752	19 993	20 249	19 568	20 720	24 116	23 226	22 856	22 632	22 161	21 964	20 931	21 420
Mobile telephony (Voice only)	66 218	65 825	68 997	72 302	70 336	71 149	74 448	77 264	95 605	98 004	96 581	101 243	102 510	105 185	101 535	103 511
Internet access (includes mobile Internet)	25 678	28 184	28 019	27 039	34 122	38 175	44 204	45 413	15 102	55 841	54 345	57 161	64 126	66 176	68 814	69 277
Dedicated lines	7 563	8 300	8 665	9 524	9 404	10 439	10 581	10 677	10 835	10 612	10 211	8 930	8 890	9 351	9 174	8 787
Total	121 343	123 855	126 834	129 616	133 856	140 012	148 801	154 074	182 134	187 687	184 003	189 978	197 771	203 514	201 458	203 584

Source: SUTEL, Directorate-General for Markets.

Table 29

Costa Rica: Telecommunications sector total income by service, 2011-2015

Annual figures in millions of colones

	2011	2012	2013	2014	2015
Mobile telephony (Voice only)	239 405	273 342	293 197	391 433	412 742
Traditional basic telephony and VoIP telephony	88 614	85 334	80 531	92 830	86 476
Internet access (includes mobile Internet)	85 119	108 920	161 914	219 449	267 392
Dedicated lines	24 535	34 052	41 101	40 588	36 202
Total	**437 672**	**501 648**	**576 242**	**744 300**	**802 812**

Source: SUTEL, Directorate-General for Markets.

Table 30

Costa Rica: Telecommunications sector total income by service, 2011-2015

Annual percentages

	2011	2012	2013	2014	2015
Mobile telephony (Voice only)	55 %	54 %	51 %	53 %	51 %
Traditional basic telephony and VoIP telephony	20 %	17 %	14 %	13 %	11 %
Internet access (includes mobile Internet)	19 %	22 %	28 %	29 %	33 %
Dedicated lines	6 %	7 %	7 %	5 %	5 %
Total	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**

Source: SUTEL, Directorate-General for Markets.

Table 31

Costa Rica: Telecommunications sector total income by service, 2011-2015

Annual figures in millions of colones

	2011	2012	2013	2014	2015
Mobile telephony and mobile Internet access	263 819	314 598	387 202	518 631	583 164
Traditional basic telephony and VoIP telephony	88 614	85 334	80 531	92 830	86 476
Fixed Internet access	60 704	67 664	67 908	92 251	96 970
Dedicated lines	24 535	34 052	41 101	40 588	36 202
Total	**437 672**	**501 648**	**576 742**	**744 300**	**802 812**

Source: SUTEL, Directorate-General for Markets.

Table 32

Costa Rica: Telecommunications sector total income by service, 2011-2015

Annual percentages

	2011	2012	2013	2014	2015
Mobile telephony and mobile Internet access (Mobile network)	60 %	63 %	67 %	70 %	73 %
Traditional basic telephony and VoIP telephony	20 %	17 %	14 %	13 %	11 %
Fixed Internet access	14 %	13 %	12 %	12 %	12 %
Dedicated lines	6 %	7 %	7 %	5 %	4 %
Total	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**

Source: SUTEL, Directorate-General for Markets.

Table 33

Costa Rica: Telecommunications sector total income with respect to GDP, 2011-2015

Annual percentages

Year	2011	2012	2013	2014	2015
Total income/GDP (percentage)	2.30%	2.40%	2.60%	3.10%	3.10%

Source: SUTEL, Directorate-General for Markets.

Table 34

Costa Rica: Telecommunications sector total investment with respect to GDP, 2011-2015

Annual percentages

	2011	2012	2013	2014	2015
Annual percentages	2.1 %	2.4 %	1.0 %	1.0 %	1.0 %

Source: SUTEL, Directorate-General for Markets and BCCR.

Table 35

Costa Rica: Telecommunications sector labor force 2011-2015

Absolute figures by semesters and annually

Indicator	2011		2012		2013		2014		2015		2011	2012	2013	2014	2015
	I Semester	II Semester	I Semester	II Semester	I Semester	II Semester	I Semester	II Semester	I Semester	II Semester					
Persons	8766	9618	9933	9900	10 347	10 442	11 006	11 002	11 497	11 426	9618	9900	10 442	11 002	11 426
Variation %	12 %	10 %	3 %	0 %	5 %	1 %	5 %	0 %	5 %	-1 %	23 %	3 %	5 %	5 %	4 %

Source: SUTEL, Directorate-General for Markets.

Table 36

Costa Rica: Work force percentage in the telecommunications sector with respect to active economic population, 2011-2015

Annual percentages

Indicator	2011	2012	2013	2014	2015
Total Country	2 142 937	2 212 031	2 235 770	2 284 142	2 276 104
Telecommunications sector	9618	9900	10 442	11 002	11 426
Percentage	0.4 %	0.4 %	0.5 %	0.5 %	0.5 %
Variation %	19 %	0 %	4 %	8 %	7 %

Source: SUTEL, Directorate-General for Markets and INEC (Permanent Work Survey).

Table 37

Costa Rica: Percentage of work force in the telecommunications sector with respect to total population, 2011-2015

Annual figures in percentages

Indicator	2011	2012	2013	2014	2015
Total population	4 592 149	4 652 459	4 713 168	4 773 130	4 832 234
Work force in telecommunications	9618	9900	10 442	11 002	11 426
Percentage	0.2 %	0.2 %	0.2 %	0.2 %	0.2 %

Source: SUTEL, Directorate-General for Markets and INEC (Permanent Work Survey).

Table 38

Costa Rica: Female work force in telecommunications, 2013-2015

Absolute figures by semester

Indicator	2013		2014		2015	
	I Semester 2013	II Semester 2013	I Semester 2014	II Semester 2014	I Semester 2015	II Semester 2015
Persons	2792	2873	2811	2911	2963	3010
Variation by semester %		3 %		4 %		2 %

Source: SUTEL, Directorate-General for Markets.

Fixed telephony

Table 39

Costa Rica: Subscriptions to Traditional Basic Phone Service and VoIP Service, 2011–2015

Figures by the end of each year

Subscriptions	2011	2012	2013	2014	2015
Total	1 031 719	995 089	968 459	881 217	859 514
Traditional Basic Phone Service	1 027 847	976 824	936 035	839 968	804 468
VoIP	3 872	18 265	32 424	41 249	55 046

Source: SUTEL, Directorate-General for Markets.

Table 40

Costa Rica: Subscriptions to Traditional Basic Phone Service and VoIP Service, 2014–2015

Figures by the end of each quarter

Subscriptions	2014				2015			
		Q2	Q3	Q4	Q1	Q2	Q3	Q4
Total	956 002	940 762	896 637	881 217	880 380	871 594	865 364	859 514
Traditional Basic Phone Service	918 880	902 611	858 210	839 968	831 837	824 070	813 987	804 468
VoIP	37 122	38 151	38 427	41 249	48 543	47 524	51 377	55 046

Source: SUTEL, Directorate-General for Markets.

Table 41

Costa Rica: Distribution of Traditional Basic Phone Service and VoIP Service Subscriptions, 2011–2015

Percentage figures by the end of each year

Subscriptions	2011	2012	2013	2014	2015
Traditional Basic Phone Service	99.6 %	98.2 %	96.7 %	95.3 %	93.6 %
VoIP	0.4 %	1.8 %	3.3 %	4.7 %	6.4 %

Source: SUTEL, Directorate-General for Markets.

Table 42

Costa Rica: Percentage Distribution of Traditional Basic Phone Service and VoIP Service Subscriptions, 2014–2015

Percentage figures by the end of each year

Subscriptions	2014				2015			
		Q2	Q3	Q4	Q1	Q2	Q3	Q4
Traditional Basic Phone Service	96.1 %	95.9 %	95.7 %	95.3 %	94.5 %	94.5 %	94.1 %	93.6 %
VoIP	3.9 %	4.1 %	4.3 %	4.7 %	5.5 %	5.5 %	5.9 %	6.4 %

Source: SUTEL, Directorate-General for Markets.

Table 43
Costa Rica: Traditional basic phone service penetration, 2011-2015

Indicator	2011	2012	2013	2014	2015
Penetration (connections per inhabitants)	22.4 %	21.0 %	19.9 %	17.6 %	16.6 %
Traditional basic phone service	1 027 847	976 824	936 035	839 968	804 468
Total Population	4 592 149	4 652 459	4 713 168	4 773 130	4 832 234

Source: SUTEL, Directorate-General for Markets.

Table 44
Costa Rica: VoIP service penetration, 2011-2015

Indicator	2011	2012	2013	2014	2015
Connections per 1000 inhabitants	0,1 %	0,4 %	0,7 %	0,9 %	1,1 %
VoIP subscribers	3872	18 265	32 424	41 249	55 046
Total Population	4 592 149	4 652 459	4 713 168	4 773 130	4 832 234

Source: SUTEL, Directorate-General for Markets.

Table 45
Costa Rica: Number of public pay phones in operation, 2011-2015
Figures by the end of each year

Indicator	2011	2012	2013	2014	2015
Public pay phones	18 960	16 348	13 145	8188	5726

Source: SUTEL, Directorate-General for Markets.

Table 46
Costa Rica: Traditional basic phone service total income, 2011–2015
Annual figures by millions of colones (CRC) and variation percentages

Indicator	2011	2012	2013	2014	2015
Amount	88 164	85 334	80 531	92 831	86 476
Variation %		-3.7 %	-5.6 %	15.3 %	-6.8 %

Source: SUTEL, Directorate-General for Markets.

Table 47
Costa Rica: VoIP service total income, 2011–2015
Annual figures by millions of colones (CRC) and variation percentages

Indicator	2011	2012	2013	2014	2015
Amount	231	1539	2506	4826	5071
Variation %		566.9 %	62.8 %	92.6 %	5.1 %

Source: SUTEL, Directorate-General for Markets.

Table 48

Costa Rica: Fixed phone service total income (Traditional Basic and VoIP service), 2014–2015

Quarterly figures by millions of colones (CRC) and variation percentages

Indicator	2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Amount	24 116	23 226	22 856	22 632	22 161	21 964	20 931	21 420
Variation %		-3.7 %	-1.6 %	-1.0 %	-2.1 %	-0.9 %	-4.7 %	2.3 %

Source: SUTEL, Directorate-General for Markets.

Table 49

Costa Rica: VoIP service income, 2014-2015

Quarterly figures by millions of colones (CRC) and variation percentages

Indicator	2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Amount	1457	1078	1117	1173	1334	1287	1184	1266
Variation %		-26 %	3.6 %	5 %	13.7 %	-3.5 %	-8 %	7 %

Source: SUTEL, Directorate-General for Markets.

Table 50

Costa Rica: Traditional basic phone and VoIP service average income by subscriber

Figures in colones (CRC) and variation percentage, period 2011-2015

Year	Average Income			Variation Percentage		
	Trad. Basic	VoIP	Fixed Phone	Trad. Basic	VoIP	Fixed Phone
2011	85 988	59 592	85 889			
2012	85 783	84 254	85 755	0 %	41 %	0 %
2013	83 357	77 274	83 153	-3 %	-8 %	-3 %
2014	104 772	116 989	105 344	26 %	51 %	27 %
2015	101 172	92 132	100 593	-3 %	-21 %	-5 %

Source: SUTEL, Directorate-General for Markets.

Table 51

Costa Rica: Traditional basic phone and VoIP service average income by coursed minute

Figures in colones (CRC) and variation percentage, period 2011-2015

Year	Average Income			Variation Percentage		
	Trad. Basic	VoIP	Fixed Phone	Trad. Basic	VoIP	Fixed Phone
2011	16	41	16			
2012	17	40	17	6 %	-4 %	7 %
2013	19	32	19	12 %	-18 %	12 %
2014	27	25	27	39 %	-23 %	37 %
2015	27	21	27	0 %	-16 %	0 %

Source: SUTEL, Directorate-General for Markets.

Table 52

Costa Rica: Traffic for traditional basic phone, completed within the network and outbound

Yearly figures in millions of minutes and variation percentages, 2011-2015

Indicator	2011	2012	2013	2014	2015
Minutes	5441	4908	4138	3473	3208
Variation %		-9.8 %	-15.7 %	-16.1 %	-7.6 %

Source: SUTEL, Directorate-General for Markets.

Table 53

Costa Rica: VoIP service traffic, completed within the network and outbound, 2011-2015

Yearly figures in thousands of minutes and variation percentages

Indicator	2011	2012	2013	2014	2015
Minutes	5602	38 951	77 532	174 685	229 984
Variation %		595.4 %	99.0 %	125.3 %	31.7 %

Source: SUTEL, Directorate-General for Markets.

Table 54

Costa Rica: Traffic for traditional basic phone and VoIP services, completed within the network and outbound, 2014-2015

Quarterly figures in millions of minutes and variation percentages

Indicator	2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Minutes	926	884	825	838	858	810	750	790
Variation %		-4.5 %	-6.7 %	1.7 %	2.4 %	-5.6 %	-7.5 %	5.4 %

Source: SUTEL, Directorate-General for Markets.

Table 55

Costa Rica: VoIP service traffic, completed within the network and outbound, 2014 - 2015

Quarterly figures in millions of minutes and variation percentages

Indicators	2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Minutes	45	42	41	46	50	60	58	63
Variation %		-6.2 %	-2.0 %	11.7 %	7.7 %	20.8 %	-3.9 %	8.9 %

Source: SUTEL, Directorate-General for Markets.

Mobile phones

Table 56

Costa Rica: Total mobile telephone service subscriptions by operator, and variation Q1 2011 - Q4 2015

Figures by the end of each quarter in thousands of subscriptions

TOTAL	Q1 2011	Q2 2011	Q3 2011	Q4 2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012	Q1 2013	Q2 2013	Q3 2013	Q4 2013	Q1 2014	Q2 2014	Q3 2014	Q4 2014	Q1 2015	Q2 2015	Q3 2015	Q4 2015
ICE	3274	3506	3605	3738	3899	3819	3830	3893	3977	4075	4278	4337	4177	4251	4297	4348	4253	3925	4048	4339
Variation %	5 %	7 %	3 %	4 %	4 %	-2 %	0 %	2 %	2 %	2 %	5 %	1 %	-4 %	2 %	1 %	1 %	-2 %	-8 %	3 %	7 %
Claro	0	0	0	115	227	351	601	806	899	923	1056	1307	1386	1282	1121	1144	1206	1319	1328	1414
Variation %	0 %	0 %	0 %	0 %	98 %	55 %	71 %	34 %	12 %	3 %	14 %	24 %	6 %	-7 %	-13 %	2 %	5 %	9 %	1 %	6 %
Telefónica	0	0	0	122	268	361	410	448	645	814	1063	1272	1369	1326	1361	1431	1515	1493	1637	1677
Variation %	0 %	0 %	0 %	0 %	120 %	35 %	14 %	9 %	44 %	26 %	31 %	20 %	8 %	-3 %	3 %	5 %	6 %	-1 %	10 %	2 %
Fullmóvil	0	0	14	75	41	59	79	95	79	48	44	45	34	24	27	31	33	41	50	59
Variation %	0 %	0 %	0 %	443 %	-46 %	45 %	32 %	21 %	-17 %	-39 %	-8 %	2 %	-24 %	-28 %	9 %	15 %	8 %	24 %	22 %	19 %
Tuyo Móvil	0	12	64	85	106	105	109	107	101	93	93	98	83	73	68	67	55	47	48	46
Variation %	0 %	0 %	0 %	56 %	12 %	4 %	9 %	4 %	3 %	3 %	7 %	5 %	-16 %	-12 %	-7 %	-2 %	-18 %	-14 %	2 %	-5 %
Total	3274	3518	3683	4135	4540	4695	5028	5349	5700	5952	6534	7059	7049	6957	6873	7020	7061	6826	7112	7536
Variation %	5 %	7 %	5 %	13 %	10 %	4 %	7 %	7 %	7 %	5 %	10 %	8 %	0 %	-1 %	-1 %	2 %	0 %	-1 %	-1 %	2 %

Source: SUTEL, Directorate-General for Markets.

Table 57

Costa Rica: Total mobile telephone service subscriptions by form of payment, Q1 2011 - Q4 2015

Figures by the end of each quarter in thousands of subscriptions, quarterly variation rates, quarterly market share

	2011				2012				2013				2014				2015			
	Q1 2011	Q2 2011	Q3 2011	Q4 2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012	Q1 2013	Q2 2013	Q3 2013	Q4 2013	Q1 2014	Q2 2014	Q3 2014	Q4 2014	Q1 2015	Q2 2015	Q3 2015	Q4 2015
Prepaid	1676	1947	2121	2872	3318	3548	3896	4212	4544	4808	5367	5832	5723	5590	5491	5599	5602	5344	5579	5951
Quarterly prepaid variation	10 %	16 %	9 %	35 %	16 %	7 %	10 %	8 %	8 %	6 %	12 %	9 %	-2 %	-2 %	-2 %	2 %	0 %	-5 %	4 %	7 %
Quarterly prepaid share	51 %	55 %	58 %	69 %	73 %	76 %	77 %	79 %	80 %	81 %	82 %	83 %	81 %	80 %	80 %	80 %	79 %	78 %	78 %	79 %
Postpaid	1598	1571	1561	1263	1223	1147	1132	1137	1156	1144	1168	1228	1326	1366	1383	1422	1459	1481	1532	1584
Quarterly postpaid variation	-1 %	-2 %	-1 %	-19 %	-3 %	-6 %	-1 %	0 %	2 %	-1 %	2 %	5 %	8 %	3 %	1 %	3 %	3 %	2 %	3 %	3 %
Quarterly postpaid share	49 %	45 %	42 %	31 %	27 %	24 %	23 %	21 %	20 %	19 %	18 %	17 %	19 %	20 %	20 %	20 %	21 %	22 %	22 %	21 %
Total	3274	3518	3683	4135	4540	4695	5028	5349	5700	5952	6534	7059	7049	6957	6873	7020	7061	6826	7112	7536
Quarterly variation %	5 %	7 %	5 %	12 %	10 %	3 %	7 %	6 %	7 %	4 %	10 %	8 %	0 %	-1 %	-1 %	2 %	1 %	-3 %	4 %	6 %

Source: SUTEL, Directorate-General for Markets.

Table 58

Costa Rica: Penetration of the mobile telephone service per 100 inhabitants, 2011-2015

	2011	2012	2013	2014	2015
Penetration rate	90 %	115 %	150 %	147 %	156 %

Source: SUTEL, Directorate-General for Markets.

Table 59

Costa Rica: Mobile telephony subscription share by operator and by form of payment, 2011-2015

	2011	2012	2013	2014	2015
Prepaid					
ICE	87 %	70 %	57 %	58 %	54 %
Claro	3 %	16 %	20 %	17 %	19 %
Telefónica	4 %	9 %	20 %	23 %	25 %
Fullmóvil	3 %	2 %	1 %	1 %	1 %
Tuyo Móvil	3 %	3 %	2 %	1 %	1 %
Postpaid					
ICE	97 %	84 %	80 %	76 %	71 %
Claro	2 %	12 %	12 %	15 %	19 %
Telefónica	1 %	4 %	8 %	9 %	10 %

Source: SUTEL, Directorate-General for Markets.

Table 60

Costa Rica: Total income from mobile telephony and network (includes Internet) by component, 2011-2015

Figures in millions of colones*

	2011	2012	2013	2014	2015
Mobile network	**263 653**	**314 503**	**386 819**	**518 507**	**583 108**
Mobile telephony	**239 405**	**273 342**	**293 197**	**391 433**	**412 742**
Voice	195 910	234 567	254 527	367 871	398 422
SMS/MMS	43 494	38 775	38 670	23 562	14 320
Mobile data	24 248	41 161	93 622	127 074	170 366

*Roaming income not included.
Source: SUTEL, Directorate-General for Markets.

Table 61

Costa Rica: Total income from mobile network by form of payment*, 2011-2015

Figures in millions of colones

	2011	2012	2013	2014	2015
TOTAL (prepaid + postpaid)	**263 653**	**314 503**	**386 819**	**518 507**	**583 108**
Prepaid	130 951	183 374	207 126	271 793	252 553
Postpaid	132 702	131 129	179 693	246 714	330 555

*Roaming income not included.
Source: SUTEL, Directorate-General for Markets.

Table 62

Costa Rica: Total traffic and share by form of payment, per year, 2011-2015

Figures in millions of minutes and percentages

Form of payment	2011	2012	2013	2014	2015
Total traffic	**6707**	**7945**	**8799**	**9037**	**8252**
Total prepaid	3524	5229	5967	5799	4868
Total postpaid	3183	2716	2832	3238	3384
Prepaid share	53 %	66 %	68 %	64 %	59 %
Postpaid share	47 %	34 %	32 %	36 %	41 %

Source: SUTEL, Directorate-General for Markets.

Table 63

Costa Rica: Relative share of net mobile telephone service traffic by origin and destination, in relation to total traffic, 2011-2015

Figures in millions of minutes and percentages

Mobile traffic (on net - off net)	2011	2012	2013	2014	2015
Total traffic	**6707**	**7945**	**8799**	**9037**	**8252**
Mobile - mobile (On net)	65 %	63 %	60 %	58 %	55 %
Mobile - mobile (Off net)	1 %	10 %	15 %	20 %	24 %
Mobile - fixed	32 %	24 %	22 %	19 %	18 %
Mobile - international	2 %	3 %	3 %	3 %	3 %

Source: SUTEL, Directorate-General for Markets.

Subscription TV service

Table 64

Costa Rica: Quarterly number of subscriptions to paid television services by access technology 2011-2015

Technology	2011				2012				2013				2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Cable television	404 285	410 044	419 092	432 180	444 924	453 987	455 783	462 977	467 125	469 332	474 119	489 848	500 016	505 883	508 268	510 390	510 921	512 431	527 140	532 201
Satellite television	54 349	56 826	58 984	64 885	67 610	70 449	73 408	76 491	99 610	116 371	130 495	146 936	162 355	171 641	186 591	217 140	226 130	240 900	252 908	257 592
IP television	0	0	0	0	0	0	0	0	886	1294	2168	3071	3483	3674	3804	4191	4534	5111	5889	6434
Ground television by multipoint distribution	1065	1134	1148	1072	1173	1145	1192	1225	1136	1097	922	1187	1091	1093	876	825	631	657	605	1003
Total	459 699	468 004	479 224	498 137	513 707	525 581	530 383	540 693	568 757	588 094	607 704	641 042	666 945	682 291	699 539	732 546	742 216	759 099	786 542	797 230

Source: SUTEL, Directorate-General for Markets.

Table 65

Costa Rica: Total quarterly income from television services by access technology, 2011-2015

Figures in millions of colones

Technology	2011				2012				2013				2014				2015			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Cable television	15 279	15 520	15 961	17 591	18 434	18 940	18 727	19 267	20 061	19 973	19 907	20 870	22 374	22 642	23 690	23 288	24 344	24 749	24 631	25 134
Satellite television	911	953	989	3206	3354	3496	3642	3795	4510	5388	6038	6548	7207	7774	7590	8150	8275	8583	9303	8409
IP television	0	0	0	0	0	0	0	0	48	72	123	204	426	463	402	328	287	315	371	398
Ground television by multipoint distribution	4	4	4	14	14	15	16	15	17	15	14	15	14	15	14	14	12	12	12	12
Total	16 194	16 476	16 954	20 811	21 802	22 451	22 385	23 077	24 635	25 449	26 082	27 636	30 022	30 893	31 695	31 779	32 919	33 659	34 318	33 954

Source: SUTEL, Directorate-General for Markets.

Acronyms

A4AI	Alliance for Affordable Internet
ARPU	Average Revenue per User
BCCR	Spanish acronym for Central Bank of Costa Rica
BRI	Basic Rate Interface
CDMA	Code Division Multiple Access
DGM	Spanish acronym for Directorate-General of Markets
GB	Gigabytes
GSM	Global System for Mobile Communications
ICE	Spanish acronym for the Costa Rican Electricity Institute
INEC	Spanish acronym for the National Statistics and Census Institute
IP	Internet Protocol
IPTV	Internet protocol television
ISO	International Standards Organization
Kbps	Kilobites per second
LAN	Local Area Network
LTE	Long Term Evolution (Wireless broadband technology)
Mbps	Megabites per second
MMDS	Microwave Multipoint Distribution Service
MMS	Multimedia Messaging System
PRI	Primary Rate Interface
RDSI	Spanish acronym for Integrated Services Digital Network
SMS	Short Message Service
TB	Terabyte
TDMA	Time Division Multiple Access
ITU	International Telecommunication Union and the operators.
VoIP	Voice over Internet Protocol
WAN	Wide Area Network

sutel SUPERINTENDENCIA DE TELECOMUNICACIONES

Guachipelín, Escazú
Multipark Business Center, Tapantí Building, 3rd Floor
Toll-free line: 800-88SUTEL
Tel: Main Offices: 4000-0000
Fax: 2215-6821
Electronic Mail: gestiondocumental@sutel.go.cr