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*Statistical Publication*

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## Telecommunication Services Performance Indicators

*Bureau Telecommunicatie en Post*  
*Telecommunications Regulatory Authority of Curaçao*

*Willemstad, Curaçao*

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The Information and Statistics contained in this report are derived from a variety of sources, but are mainly reliant on data obtained from Service Providers. In case of incomplete data, estimates are used based on extrapolation and market intelligence. In future publications, these estimates are replaced with official data when received from Service Providers and trusted sources. This report does not constitute commercial or other advice. No warranty, representation or undertaking of any kind, express or implied, is given in relation to the information and statistics contained in this report.

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## 1 ABOUT THIS REPORT

This report offers an overview of the trends in the telephony market (fixed and mobile), broadband market (fixed and wireless) and subscription television market. It is the fifth report that is based on data that Bureau Telecommunicatie en Post (BT&P) collected through an internationally standardized questionnaire from the International Telecommunication Union (ITU). The questionnaire was sent to operators in the first quarter of 2018, requesting them to provide the values on the point-in-time date of 31 December 2017 (from here on: EOY 2017). In this report the fixed and mobile-telephone subscription indicators for EOY 2017 are based on BT&P data that is collected separately from the ITU Questionnaire.

All benchmarking analysis are conducted on the previous year (EOY 2016) as the information of EOY 2017 from other sources were not readily available at the time of production of this document. Prices are collected by BT&P from local operators in this standardized questionnaire and then subsequently submitted to the ITU for its ‘ICT Price Basket’ analysis.

Telecommunication authorities of almost 200 countries collect the standardized questionnaire and ICT Price Basket information. In its policy for delivering data to the ITU, BT&P does not share what is considered to be market sensitive information belonging to operators. All available data is published yearly by the ITU in the ‘ITU Yearbook of Statistics’. Through the ITU World Telecommunication/ICT indicators (WTI) database (2018), BT&P was able to benchmark the Curaçao data against peers in the Caribbean region, South and Central America, and World averages. Relevant information can also be found in the yearly “ICT-Prices” publication by the ITU.

In addition, BT&P uses international studies and datasets from recognized bodies like the Central Bureau of Statistics to add interesting market information to this report. This is how BT&P keeps an eye on ICT-trends in various markets and is able to develop fact-based policy.

## 2 FIXED TELEPHONE NETWORK

### 2.1 Fixed-telephone subscriptions

In the end of 2017 the number of fixed telephone subscriptions increased to 61.7 thousand representing an overall 4.2 percent or 2.47 thousand increase in subscriptions from the previous year. This is the second time in the last years that the figures for fixed telephone network showed an increase in numbers from the previous year. However, the result shows a fairly stabilizing trend for the last 6 years with regards to the total number of fixed telephone subscriptions in Curaçao.

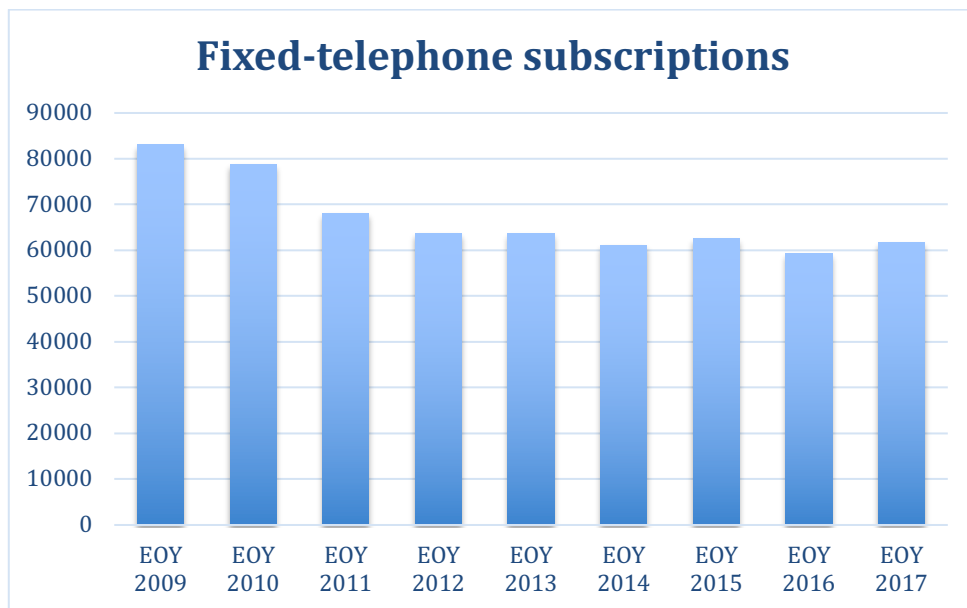
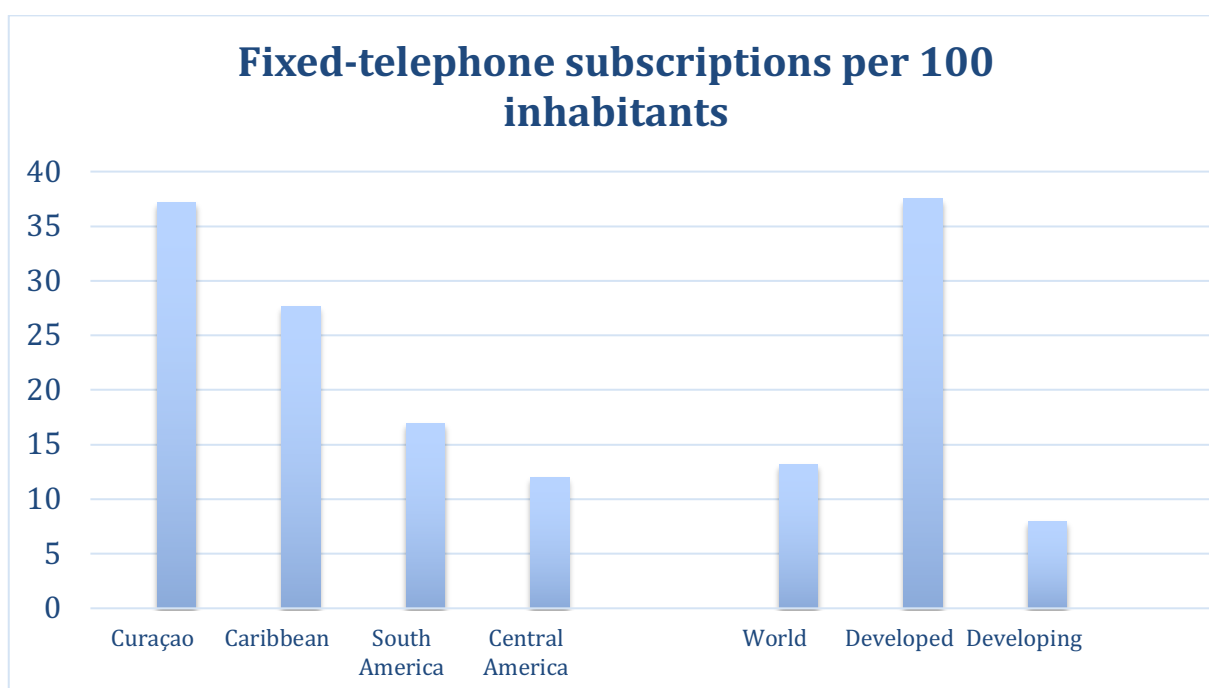


Figure 1: Fixed-telephone subscriptions, EOY 2009 - EOY 2017

## 2.2 Fixed-telephone subscriptions per 100 inhabitants

As the standard metric recognized internationally to measure the adoption of fixed voice services, fixed voice penetration is calculated based on the number of fixed voice subscriptions per 100 of the population. The EOY 2016 fixed voice penetration was calculated at 37.17, which is 0.62 percent, higher than the previous year. This means that in 2016 there were approximately 37 fixed voice subscriptions available to every 100 persons in Curaçao.

If compared to the region as shown in figure 2, Curaçao has a high fixed-telephone subscription penetration rate. Curaçao scores slightly lower compared to developed<sup>1</sup> countries. The classification used according to the UN M49 results show the overall score for developed countries the highest score of 37,50, followed by 13.20 and 8.00 for world and developing respectively. See Appendix D1 for list of countries and source data.



*Figure 2: Fixed-telephone subscriptions per 100 inhabitants, EOY 2016  
Compared to the region and the World<sup>1</sup>*

<sup>1</sup> The classification used for developed/developing countries is according to the UN M49. The M49 is a standard for area codes used by the United Nations for statistical purposes, developed and maintained by the United Nations Statistics Division. Based on the M49, countries are classified according to macro geographical regions and sub-regions, and selected economic and other groupings, see: <http://unstats.un.org/unsd/methods/m49/m49regin.htm>.

### 2.3 Fixed telephone tariff benchmark

Fixed telephone tariffs are internationally benchmarked by ITU through comparison of USD costs a three-minute call, including any call set-up charges and taxes. Both peak and off-peak calls are compared. See Appendix D2 for list of countries and source data.

A three-minute fixed-telephone peak call would cost 0.29 ANG/ 0.162 USD including taxes of 6% on Curaçao. This is calculated with the largest market share operator at a per-minute rate of 0.04 ANG and 0.17 ANG call set-up charge applied for each fixed local call. The largest market share operator makes no distinction between peak and off-peak prices. In the other regions there is a small difference of 0.01 USD between peak and off-peak prices. As shown in figure 3, for Curaçao the prices for peak and off-peak is higher if compared to the average costs in the Caribbean region, South and Central America. The average price of a three-minute fixed call in the Caribbean region would cost around 0.12 USD peak and 0.11 USD off-peak. For the Caribbean region, the British Virgin Island has the highest price of a three-minutes local call to a fixed-telephone line, around 0.51 USD as for peak and off-peak local call. Cuba has the lowest rates in the Caribbean for a three-minutes local call to a fixed-telephone line, around 0.004 USD for peak and 0.002 for off-peak, followed by Jamaica with rates of 0.03 USD for peak and off-peak calls.

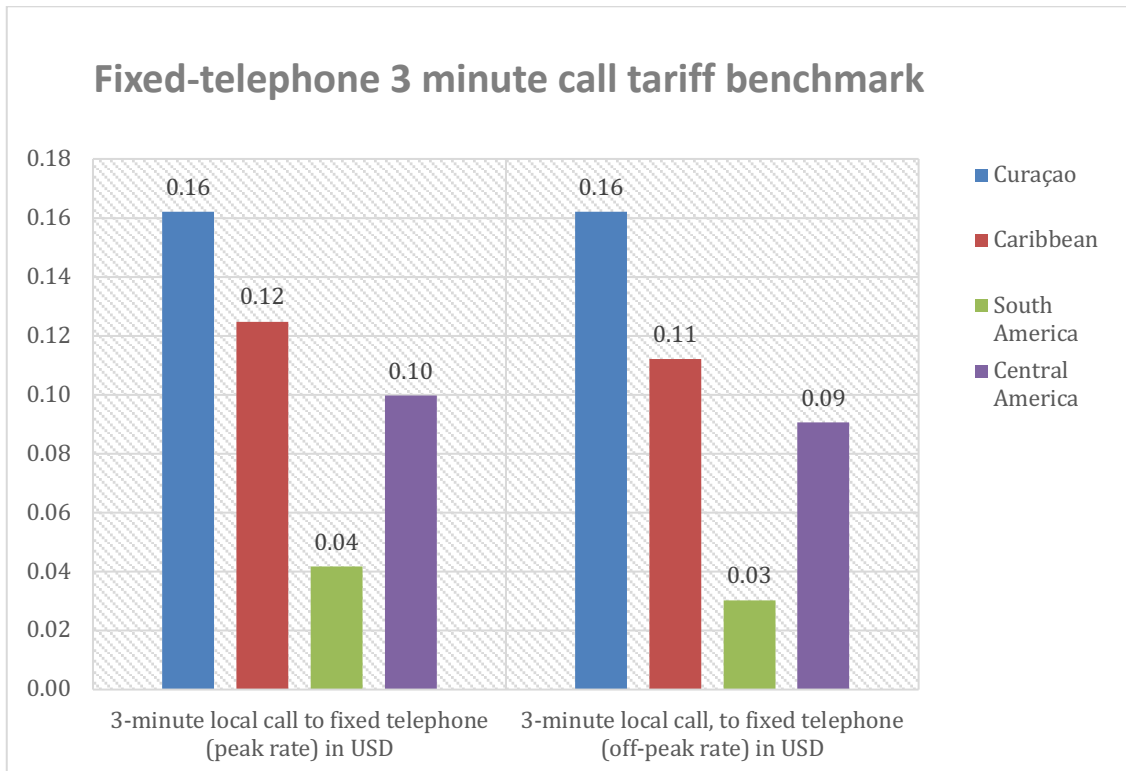


Figure 3: Fixed-telephone 3-minute call tariffs compared with the region in USD, EOY 2016

## 2.4 Affordability of fixed-telephone price sub-basket

While absolute prices are important, comparing these with the average net income per month for the country gives insight in affordability of fixed-telephone usage. ITU uses an international standardized “sub-basket” when comparing and benchmarking fixed-telephony prices. The fixed-telephone sub-basket is composed of the sum of the monthly subscription for fixed telephone services plus 30 local calls (15 peak and 15 off-peak) of 3 minutes each. The sub-basket is then divided by the average monthly income (GNI) per capita to know which portion of the monthly income would go for this portion of phone calls. For Curaçao, the sub-basket cost for EOY 2016 is 19.66 USD, which is 0.61 percent lower than the previous year. This reflects a 1.21% of the GNI, which places Curaçao on the 14<sup>th</sup> position of affordability in the Caribbean, South and Central America region. Curaçao ranking have dropped in comparison to last year, due to a decrease in the GNI per capita.

Rank	Economy	% of GNI	USD of fixed-tel sub-basket	Rank in 2015	GNI p.c., USD, 2016 (or latest available)
1	Cuba	0,05	0,34	--	7.709
2	Venezuela	0,18	1,31	2	8.991
3	Suriname	0,28	1,62	4	6.990
4	Argentina	0,33	3,29	1	11.940
5	Trinidad and Tobago	0,41	5,78	3	16.760
6	Aruba	0,70	13,92	--	23.918
7	Bahamas, The	0,70	16,25	6	27.850
8	Uruguay	0,74	9,32	5	15.200
9	Guyana	0,86	3,04	--	4.240
10	Costa Rica	0,92	8,35	8	10.830
11	St. Kitts and Nevis	0,94	12,28	7	15.690
12	Panama	1,11	11,07	13	11.990
13	Antigua and Barbuda	1,13	12,78	9	13.560
<b>14</b>	<b>Curaçao</b>	<b>1,21</b>	<b>19,66</b>	<b>10</b>	<b>19.426</b>
15	Puerto Rico	1,31	21,17	--	19.460
16	Peru	1,67	8,28	18	5.950
17	Brazil	1,67	12,35	12	8.860
18	Ecuador	1,67	8,09	15	5.800
19	Mexico	1,71	12,87	17	9.010
20	Barbados	1,74	22,00	16	15.210
21	Grenada	1,77	13,41	19	9.100
22	St. Lucia	1,91	13,41	22	8.440
23	St. Vincent & Grenadines	1,92	10,86	23	6.770
24	Chile	1,98	22,14	14	13.430
25	Paraguay	2,07	7,01	20	4.060
26	Dominica	2,12	12,56	21	7.110
27	Colombia	2,47	13,06	11	6.350
28	Dominican Republic	3,15	16,76	28	6.390
29	Jamaica	3,35	12,93	25	4.630
30	Honduras	3,36	6,04	26	2.160



Selected Countries					
-	Singapore	0,18	7,94	--	52.350
-	Malta	0,49	9,83	--	23.840
-	United States	0,58	27,22	--	56.800
-	Netherlands	0,86	33,41	--	46.610

*Table 1 –Affordability of fixed-telephone sub-basket*

### 3 MOBILE-CELLULAR NETWORK

#### 3.1 Mobile-cellular telephone subscriptions

Over the past five years the mobile market in Curaçao experienced a downward trend, with exception of the year ending 2017. In EOY 2017 the mobile market has slightly increased with 540 subscriptions, or 0.3 percent when compared to 2016. As Figure 4 below highlights, the mobile voice market has experienced a continuous 5 years downward trend, since it peaked in EOY 2011 and a slight increase in the EOY 2017 with a total of 187.2 thousand subscriptions.

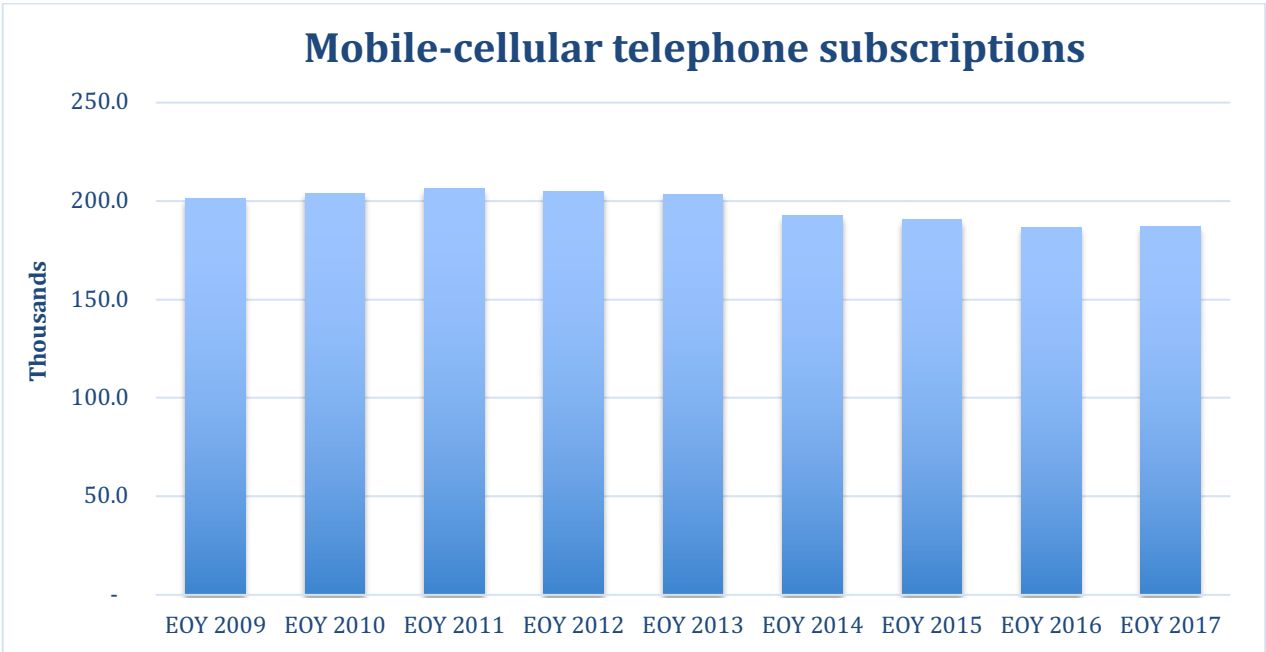


Figure 4: Mobile-cellular telephone subscriptions, EOY 2009 – EOY 2017

### 3.2 Mobile-cellular subscriptions prepaid versus postpaid ratio

Mobile voice subscriptions can be sub-divided into prepaid, where customers purchase credit prior to service use, and postpaid, where customers enter into a contractual billing arrangement with a mobile service provider. As shown in figure 5, the mobile market consists 93 percent out of prepaid subscriptions, while only 7 percent is postpaid by December 2017. The previous year the mobile market consisted of 90 percent prepaid and 10 percent postpaid. There has been a slight shift of 3 percent from postpaid towards prepaid subscriptions.

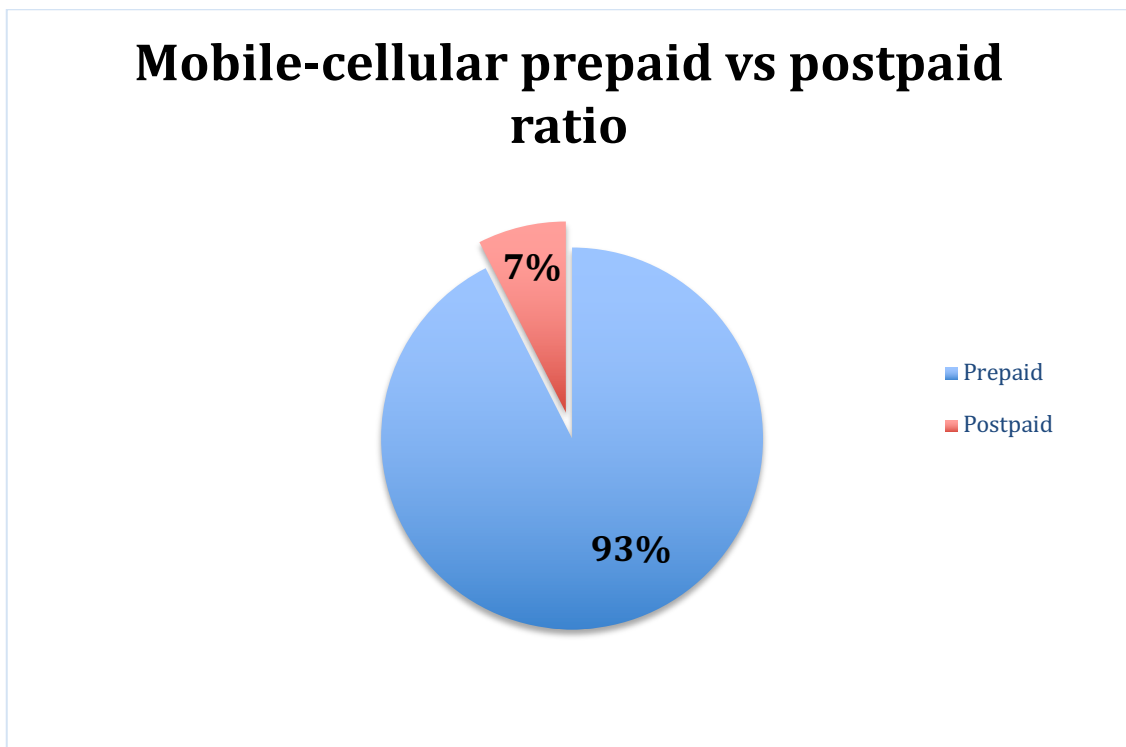


Figure 5: Mobile-cellular prepaid vs postpaid ratio, EOY 2017

### 3.3 Mobile-cellular subscriptions per 100 inhabitants

In December 2016, mobile penetration stood at 117.1. This means that there were approximately 117 mobile subscriptions per 100 inhabitants in Curaçao at the end of 2016. As shown in figure 6, the mobile penetration rates in Curaçao are comparable to region averages of the Caribbean, South American and Central American regions. See Appendix D1 for list of countries and source data.

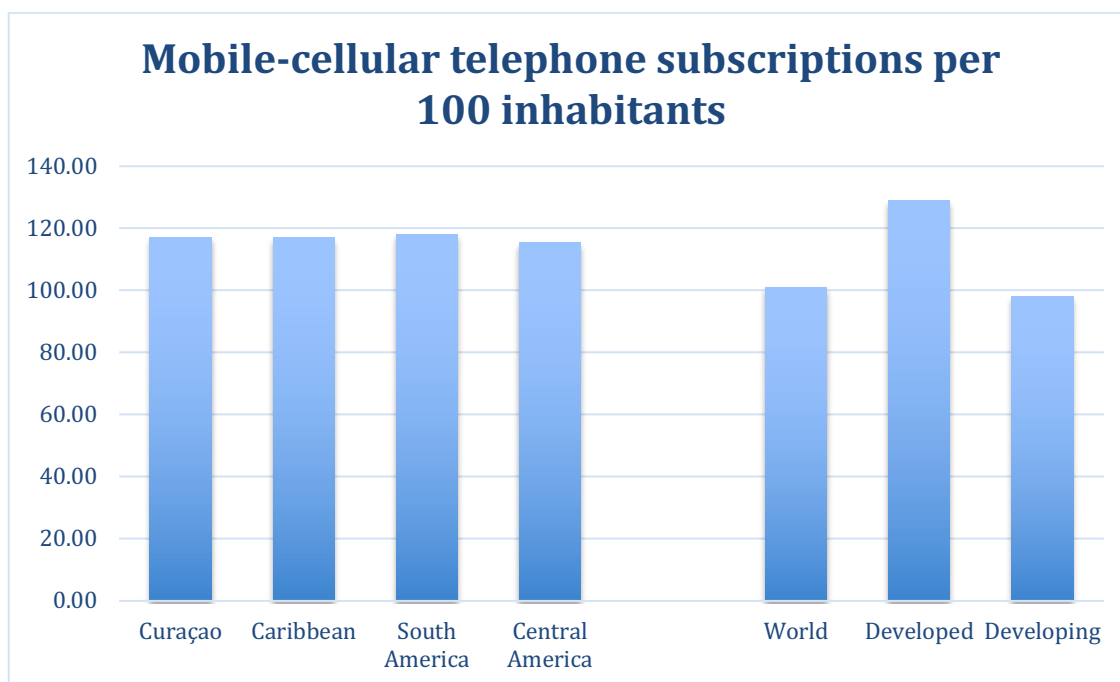


Figure 6: Mobile-cellular telephone subscriptions per 100 inhabitants, EOY 2016

### 3.4 Mobile-cellular telephone tariff benchmark

Mobile-cellular telephone tariffs are benchmarked through comparison of USD costs of a one-minute call, including taxes. Both peak and off-peak calls are compared, both on-net and off-net. See Appendix D2 for list of countries and source data.

For example, in Curaçao the largest market share operator provides a single rate tariff for a prepaid plan. There is no difference in peak/off-peak or on-net/off-net rates. A one-minute mobile-cellular telephone peak/off-peak or on-net/off-net call, would cost 0.41 USD including taxes of 6% in Curaçao end of year 2016.

As shown in figure 7, both peak and off-peak, on-net and off-net prices are higher, if compared to the average costs in the Caribbean region and South and Central America. For example, the average price of a one-minute peak call, off-net, would be around 0,32 USD in the Caribbean.

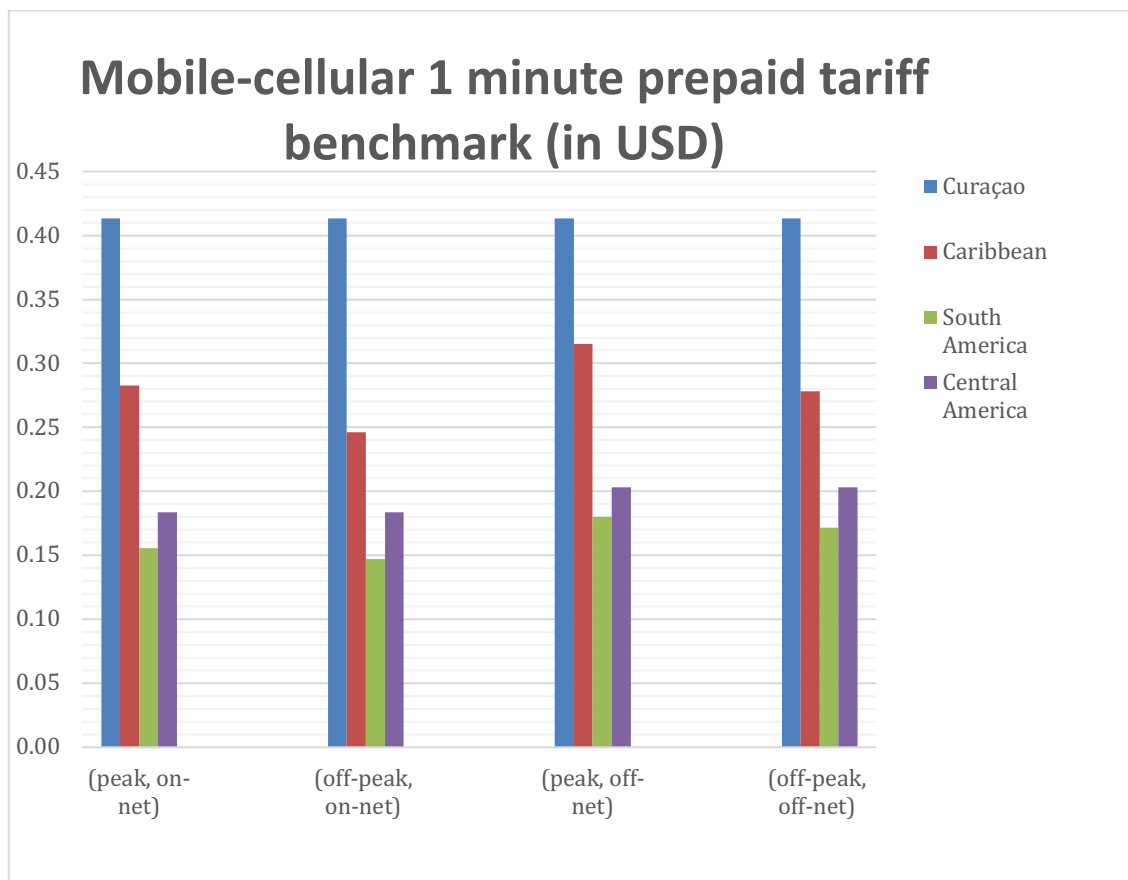


Figure 7: Mobile-cellular price of 1-minute call, compared to the region, EOY 2016

When looking at the trend in mobile-cellular prepaid tariffs in figure 8, the Curaçao prices has been stable for the last 5 years. In the rest of the Caribbean region, prices are raising slightly over the years. However, the prices in Curaçao at this moment are still significant higher than the Caribbean average.

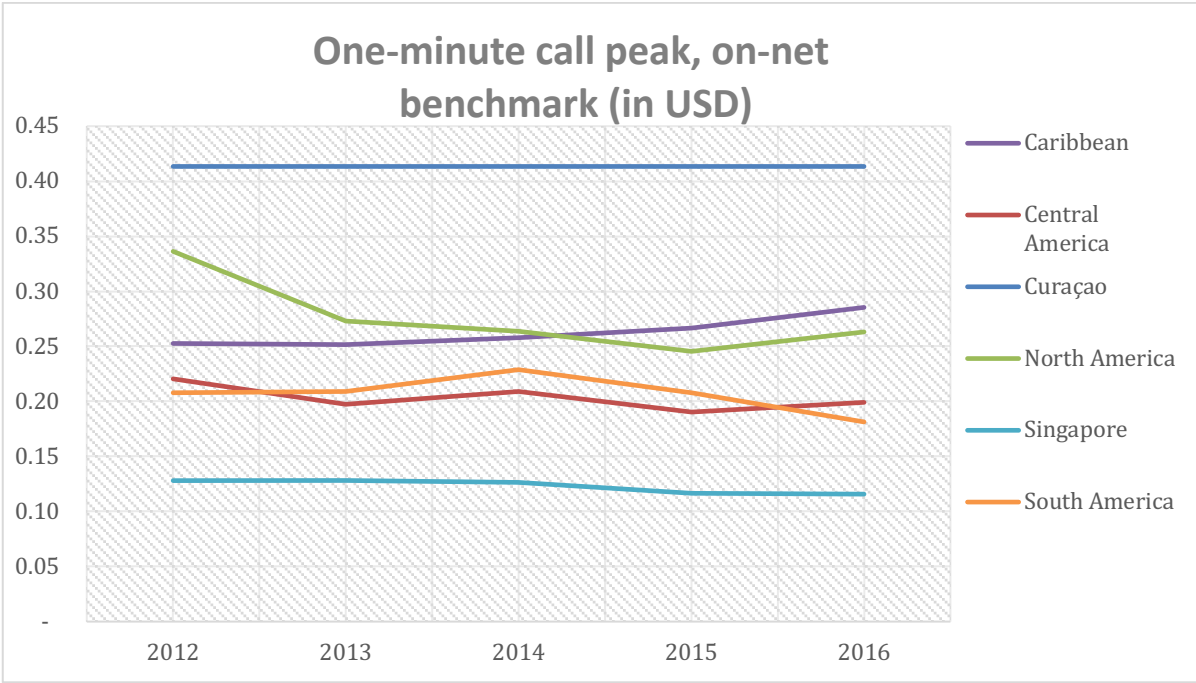


Figure 8: Mobile-cellular price of 1-minute call peak, on-net, compared to the region, 2012-2016

### 3.5 Affordability of mobile-cellular price sub-basket

While absolute prices are important, comparing these with the average net income per month for the country gives insight in the affordability of mobile-cellular usage. The mobile-cellular sub-basket consists of 30 outgoing calls (both on-net, off-net and to a fixed line, and for peak, off-peak and weekend) in predetermined ratios, plus 100 SMS messages (50 SMS on-net and 50 SMS off-net). The sub-basket is then divided by the average monthly income (GNI) per capita to know which portion of the monthly income would go for this portion of phone calls. For Curaçao, this sub-basket will cost 34.40 USD, which relates to 2.12% of the GNI per capita, placing it on the 14<sup>th</sup> place in the region in terms of affordability. This represents a rise of 1 place in EOY 2016 compared to the year 2015 figures.

Rank	Economy	% of GNI	USD of mobile-cellular sub-basket	Rank in 2015	GNI p.c., USD, 2016 (or latest available)
1	Costa Rica	0,47	4,29	1	10.830
2	Brazil	0,57	4,23	6	8.860
3	Bahamas, The	0,81	18,79	4	27.850
4	Mexico	0,92	6,87	3	9.010
5	Trinidad and Tobago	1,10	15,42	2	16.760
6	Panama	1,27	12,64	9	11.990
7	Aruba	1,31	26,14	--	23.918
8	Uruguay	1,32	16,77	7	15.200
9	Chile	1,73	19,36	11	13.430
10	Paraguay	1,74	5,89	8	4.060
11	St. Kitts and Nevis	1,92	25,10	10	15.690
12	Peru	2,09	10,35	16	5.950
13	Argentina	2,12	21,08	19	11.940
<b>14</b>	<b>Curaçao</b>	<b>2,12</b>	<b>34,40</b>	<b>15</b>	<b>19.426</b>
15	Suriname	2,18	12,71	14	6.990
16	Barbados	2,22	28,14	18	15.210
17	Jamaica	2,41	9,32	12	4.630
18	Colombia	2,42	12,79	13	6.350
19	Dominican Republic	2,57	13,71	20	6.390
20	Antigua and Barbuda	2,67	30,12	17	13.560
21	Grenada	2,84	21,55	23	9.100
22	Cuba	3,35	21,53	25	7.709
23	Dominica	3,57	21,13	22	7.110
24	Ecuador	3,61	17,43	21	5.800
25	Guyana	3,77	13,31	--	4.240
26	St. Lucia	3,92	27,56	27	8.440
27	Bolivia	4,02	10,32	26	3.080
28	El Salvador	4,14	13,57	24	3.930
29	St. Vincent & Grenadines	4,75	26,79	--	6.770
30	Belize	7,43	27,74	29	4.480

Selected Countries					
-	Singapore	0,18	7,92	--	52.350
-	Netherlands	0,72	27,94	--	46.610
-	United States	0,75	35,73	--	56.800
-	Malta	0.84	16.75	--	23.840

*Table 2 –Affordability of mobile-cellular sub-basket (EOY 2016)*



### 3.6 Mobile broadband subscriptions

In the mobile internet market, 2013 saw a jump in technology with the introduction of High Speed Packet Access (HSPA+) by the operators in Curaçao. The jump to 3G networks has paved the way for the provision of services at broadband mobile internet access speeds, a significant step up from the 2.5G technology (i.e. Enhanced Data Rates for GSM Evolution – EDGE). With the introduction of LTE over the last three years, the total number of subscriptions has reached even higher numbers. The upward trend takes the number of wireless-broadband subscriptions to 89.4 thousand subscriptions by the end of 2017.

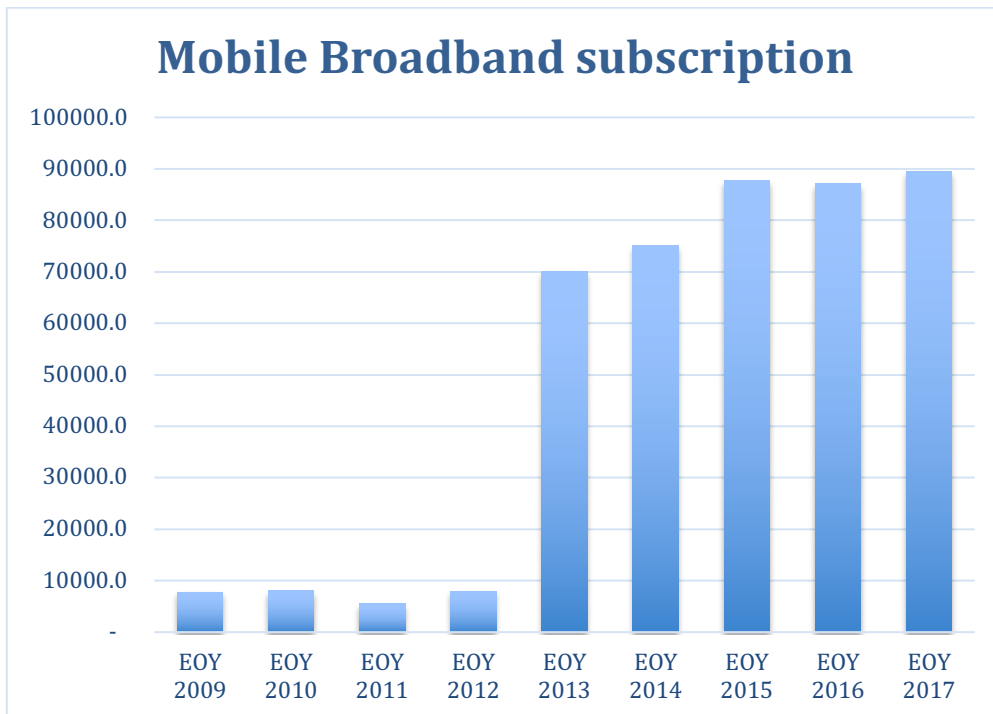


Figure 9: Wireless Broadband subscriptions, EOY 2009 – EOY 2016

## 4 FIXED BROADBAND

### 4.1 Fixed broadband subscriptions

Telecommunication service providers in Curaçao use a mix of technologies to provide fixed broadband internet services to the public. Fixed broadband internet services employ Digital Subscriber Line (DSL) over copper cables, Hybrid Fiber-Coax (HFC) networks utilizing DOCSIS 3.0 technology, as well as a mix of Fiber to the Curb (FttC), Fiber to the Business (FttB), or Fiber to the Home (FttH) topologies and terrestrial fixed-wireless broadband (i.e. fixed WiMAX and other fixed-wireless technologies).

The market for fixed broadband<sup>2</sup> subscriptions continues to show growth in 2017. Figure 10 illustrates the figures for fixed broadband subscriptions of 46.1 thousand subscriptions end of year 2017. The growth thereby represents an increase of 8.0 percent or 3.4 thousand subscriptions compared to December 2016. This increase is mainly contributed due to the addition of fixed-wireless subscriptions. The presented numbers are based on residential subscriptions and may include small businesses. Fixed broadband subscriptions contracted by public and private organizations (non-residential customers), are not considered in this analysis.

The fixed (wired) internet penetration has reached a level of 79% in EOY 2017 on terms of connected households.

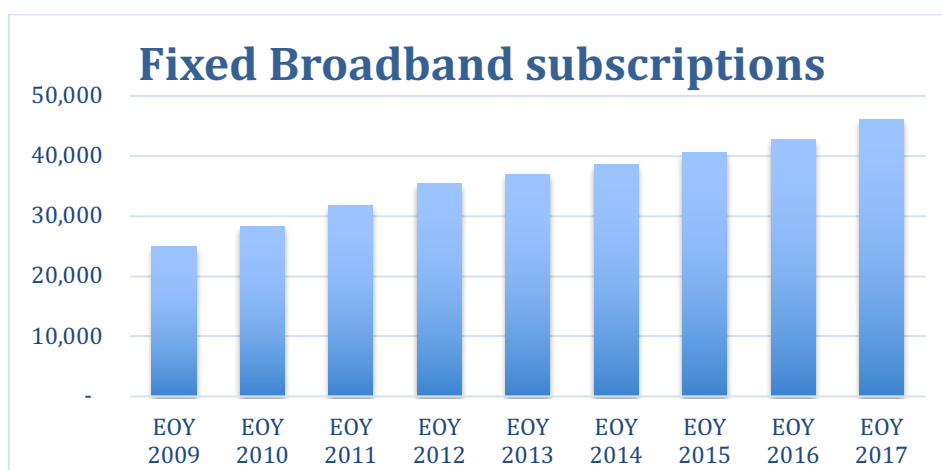


Figure 10: Fixed (wired) broadband subscriptions, EOY 2009 - EOY 2016

<sup>2</sup> To be able to compare to other countries and the region, this report defines broadband by the following international definition. Fixed (wired)-broadband subscriptions refers to subscriptions to high-speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to, or greater than, 256 kbit/s. This includes cable modem, DSL, fibre-to-the-home/building and other fixed (wired)-broadband subscriptions. In following years (EOY 2016 and up) the definition also includes wireless-fixed broadband.

## 4.2 Fixed (wired) broadband subscriptions by speed

Total Fixed (wired) broadband subscription reached 47.2 thousand for the EOY 2017. The Fixed (wired) broadband speeds between 10 Mbit/s to less than 30 Mbit/s represents the largest category in EOY 2017, nearly 46 percent of the total users. In EOY 2017, 38 percent of the Fixed (wired) broadband subscriptions were of speeds between 2 Mbit/s to less than 10 Mbit/s, whereas 16 percent of the subscriptions were of speeds between 30 Mbit/s to less than 100 Mbit/s. The speed group below 2 Mbit/s has diminished in the last few years, as the Fixed (wired) broadband subscriptions for this category are not available anymore. The lowest available entry-level fixed (wired) internet subscription in Curaçao starts at 5 Mbps download speed. The speed group above 100 Mbit/s is still relative small but growing slowly.

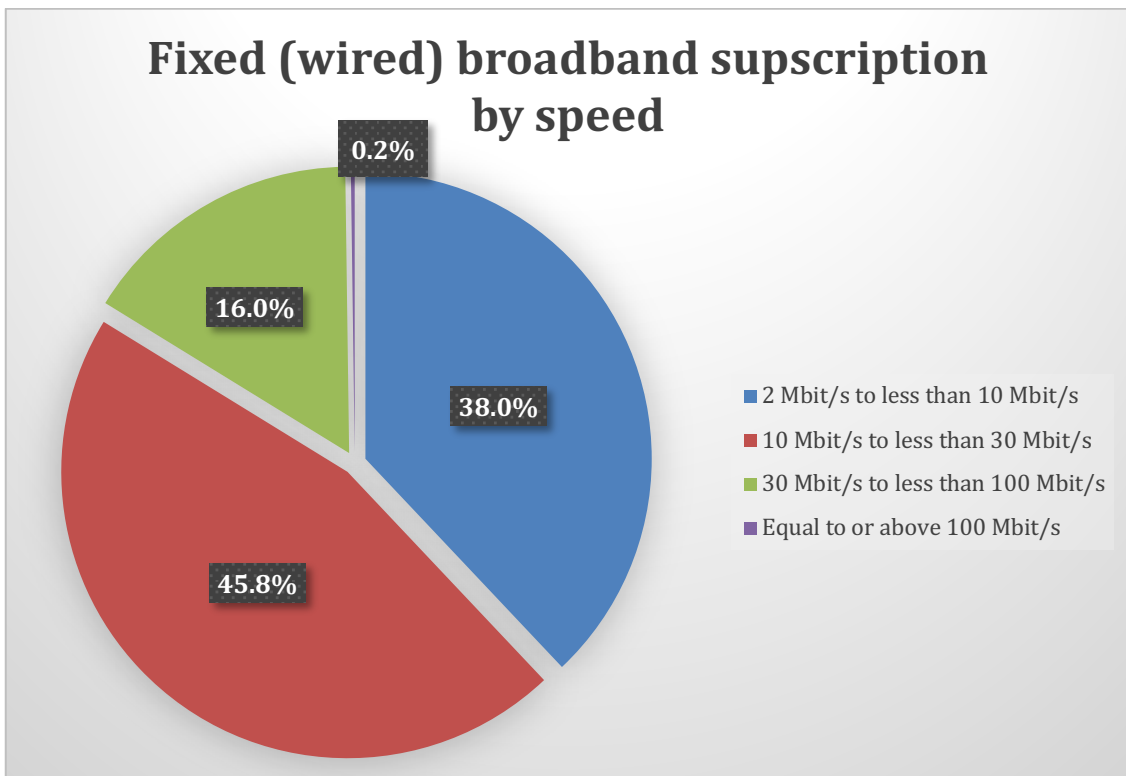


Figure 11: Fixed (wired) broadband subscriptions by speed, EOY 2016

### 4.3 Fixed (wired) broadband subscriptions per 100 inhabitants

In December 2016, Curaçao had a fixed (wired) Broadband penetration of 26.8 in terms of population. This implies that there were approximately 27 fixed (wired) Internet subscriptions for every 100 inhabitants in Curaçao. In comparison with EOY 2015, there is an increase of 5.1% fixed (wired) Internet subscriptions for every 100 inhabitants in Curaçao.

If compared to the region as shown in figure 12, Curaçao has a remarkable higher fixed (wired)-broadband subscription penetration rate to the Caribbean region. See Appendix D1 for list of countries and source data.

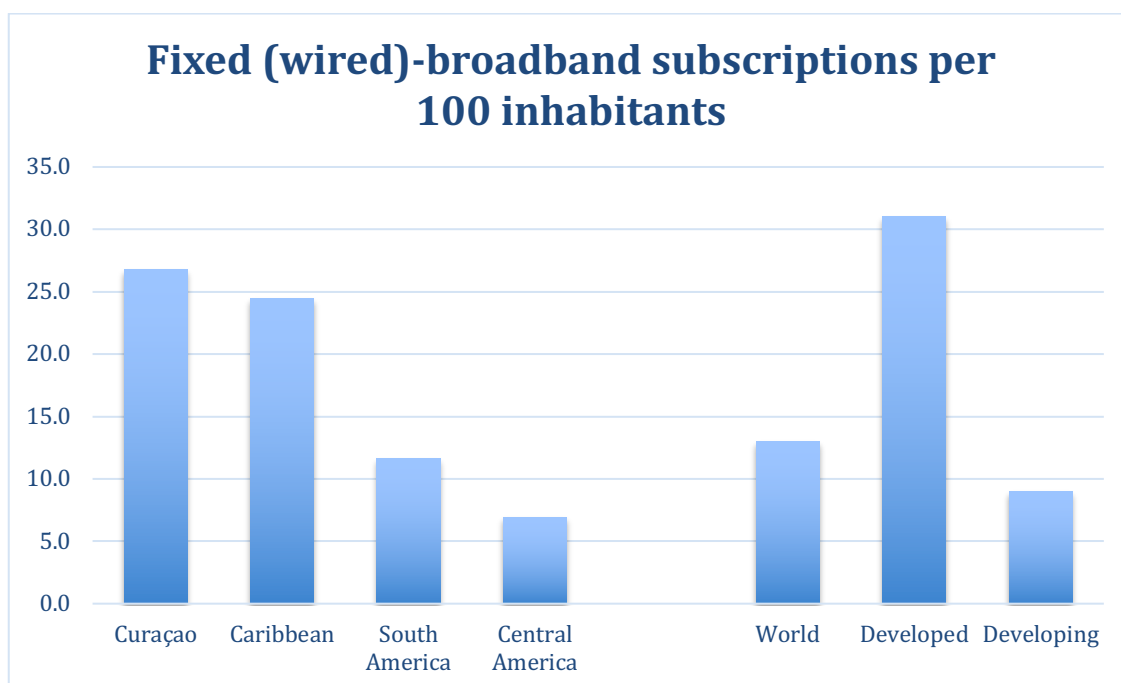


Figure 12: Fixed (wired) Broadband subscriptions per 100 inhabitants, EOY 2016

#### 4.4 List of broadband penetration in the Caribbean region, South and Central America

Compared to the top list of broadband internet subscription per 100 inhabitants of the Caribbean region, South and Central America, Curaçao ranks 3<sup>rd</sup> in December 2016, in a ranking list of islands of which data is available. Curaçao ranking as compared to the previous year, shows a remarkable increase of three places. Curaçao moved up from a sixth place ranking in EOY 2015 to 3<sup>rd</sup> place in EOY 2016, with an increase in ratio from 25.50 to 26.80.

Rank	Economy	Fixed (wired) Broadband subscriptions per 100 inhabitants
1	Barbados	32,44
2	Saint Kitts and Nevis	29,92
<b>3</b>	<b>Curaçao</b>	<b>26,80</b>
4	Uruguay	26,76
5	Bahamas	21,41
6	Dominica	21,06
7	St. Vincent & Grenadines	19,94
8	Grenada	19,40
9	Trinidad and Tobago	18,72
10	Puerto Rico	18,72
11	Saint Lucia	16,73
12	Argentina	16,49
13	Chile	16,22
14	Costa Rica	13,16
15	Brazil	12,89
16	Suriname	12,75
17	Mexico	12,57
18	Colombia	12,15
19	Panama	10,66
20	Jamaica	9,93
21	Antigua and Barbuda	9,17
22	Ecuador	8,92
23	Venezuela	8,27
24	Guyana	7,40
25	Dominican Rep,	7,21
26	Peru	6,67
27	El Salvador	6,23
28	Belize	6,00
29	Paraguay	3,71
30	Guatemala	3,05

Selected Countries		
-	Netherlands	42,28
-	Malta	39,89
-	United States	33,00
-	Singapore	25,99

Table 3 - List of broadband penetration in the Caribbean region

### 4.5 Average download speeds

Similar to the last years, the year average download speed continued its upward trend in 2017 as illustrated in Figure 13. In 2017, the estimated average download speed recorded was approximately 21.01 Mbit/s. Average yearly download speed data in 2017 is calculated from the largest market share operator weighted average of subscriptions per speed<sup>3</sup> and validating this against the average download speeds as indicated by the Ookla Speedtest.net online tool.

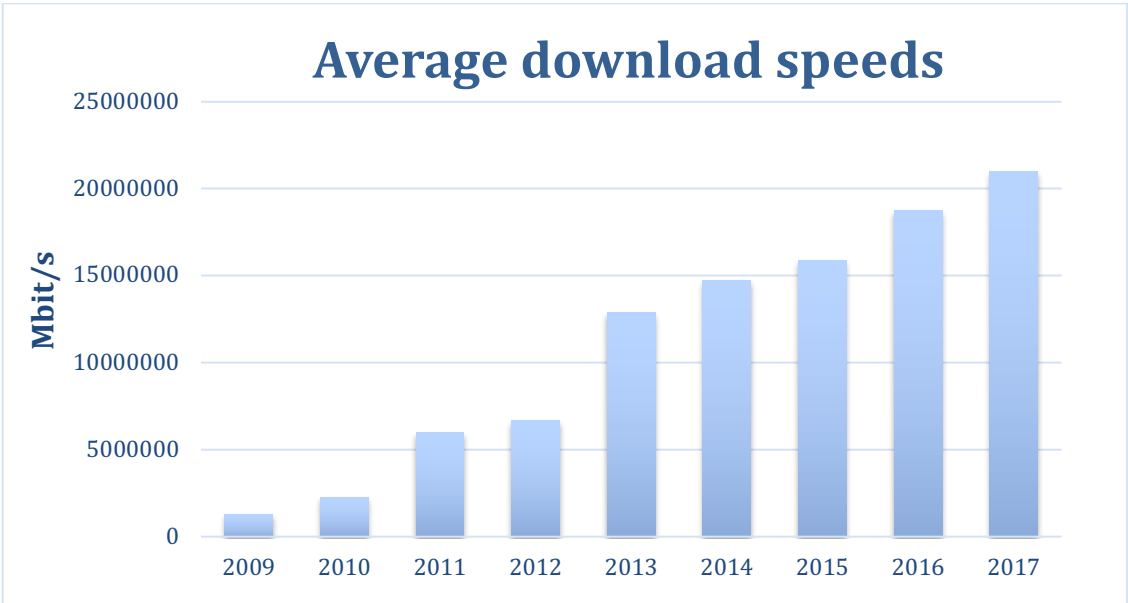


Figure 13: Download speeds (year average), 2009 – 2017

<sup>3</sup> Additional market intelligence is added to the average download speed analysis by applying a relevant factor for the real time user experience vs. the actual offered speed by the ISP.

#### 4.6 Affordability entry-level broadband plans compared with the region

Fixed-broadband prices have been collected by BT&P and compared with available ITU data regarding broadband prices. To be able to compare affordability and prices of Curaçao with the region, ITU has chosen the entry-level broadband plan as comparison statistic. This fixed-broadband plan chosen represents an entry-level postpaid fixed-broadband plan, with a minimum speed of 256 kbit/s and a monthly usage of (a minimum of) 1 Gigabyte (GB). The prices of the operator with the largest market share (measured by the number of subscriptions) are used. For plans that are limited in terms of data allowance (below 1 GB), the cost per additional byte is added to the monthly subscription price up to 1 GB. Prices are presented in USD and also calculated as a percentage of the GNI per capita, to provide an insight into the affordability of fixed broadband. Countries are ranked according to the price of fixed broadband as a percentage of GNI p.c. The lower the percentage, the lower the relative cost of the service.

For Curaçao, the entry-level plan would be the 57,94 ANG / 32,37 USD data plan of the largest market share operator with a speed of 8 Mbit/s, including taxes. The Gross National Income (GNI) per capita is collected through the Central Bureau of Statistics with a value of 34'773 ANG/19'426 USD (latest figure, 2016). Therefore, the entry-level broadband plan costs 2.0% of the GNI per capita in Curaçao, clearly meeting the United Nations target <sup>4</sup> of 5% of the GNI per capita by 2016.

Curaçao ranks 5<sup>th</sup> in terms of affordability compared to countries in the Caribbean region, South and Central America.

Rank	Economy	% of GNI	Fixed (wired) broadband monthly subscription charge in USD	Speed in Mbit/s	GNI p.c., USD, 2016 (or latest available)
1	Uruguay	0,84	10,61	0,00	15.200
2	Bahamas, The	1,29	29,99	1,00	27.850
3	Trinidad and Tobago	1,47	20,55	3,00	16.760
4	Costa Rica	1,99	17,99	1,00	10.830
<b>5</b>	<b>Curaçao</b>	<b>2,00</b>	<b>32,37</b>	<b>8,00</b>	<b>19.426</b>
6	Puerto Rico	2,06	33,44	1,00	19.460
7	Panama	2,14	21,35	4,00	11.990
8	Brazil	2,32	17,16	4,00	8.860
9	Mexico	2,49	18,70	10,00	9.010

<sup>4</sup> <http://iif.un.org/content/broadband-commission-digital-development>

10	Chile	2,51	28,05	8,00	13.430
11	Barbados	2,56	32,50	15,00	15.210
12	Peru	2,63	13,04	1,00	5.950
13	St. Kitts and Nevis	2,69	35,19	2,00	15.690
14	Belize	3,35	12,50	0,25	4.480
15	Argentina	3,41	33,88	3,00	11.940
16	Colombia	3,58	18,96	5,00	6.350
17	Grenada	3,88	29,44	12,00	9.100
18	Venezuela	3,92	29,38	1,00	8.991
19	Suriname	4,13	24,03	2,00	6.990
20	Ecuador	4,25	20,52	4,00	5.800
21	Antigua and Barbuda	4,71	53,24	1,00	13.560
22	St. Lucia	4,79	33,70	2,00	8.440
23	Dominican Republic	5,27	28,07	2,00	6.390
24	Dominica	5,43	32,20	2,00	7.110
25	Bolivia	5,58	14,33	0,70	3.080
26	Jamaica	5,67	21,89	1,00	4.630
27	St. Vincent & Grenadines	5,96	33,65	2,00	6.770
28	Guatemala	6,21	19,61	2,00	3.790
29	El Salvador	6,48	21,23	2,00	3.930
30	Paraguay	6,78	22,93	3,00	4.060

Selected Countries					
-	Singapore	0,50	21,64	300,00	52.350
-	United States	0,80	38,10	15,00	56.800
-	Netherlands	1,00	38,72	20,00	46.610
-	Malta	1,11	22,12	15,00	23.840

*Table 4 - Affordability entry-level broadband plan*



## 5 OTHER INDICATORS

### 5.1 International internet bandwidth

The international internet bandwidth refers to the average traffic load (expressed in Mbit/s) of international subsea fiber optic cables for carrying internet traffic. The used international internet bandwidth is estimated at 20.300 Mbit/s in December 2017. This figure refers to the total of used capacity over the fiber-optic cables connecting Curaçao to the rest of the world over a 12-month period for all operators combined. This figure is an estimation based on data received by the telecom providers with international capacity and information gathered from the local AMS-IX Caribbean internet exchange.

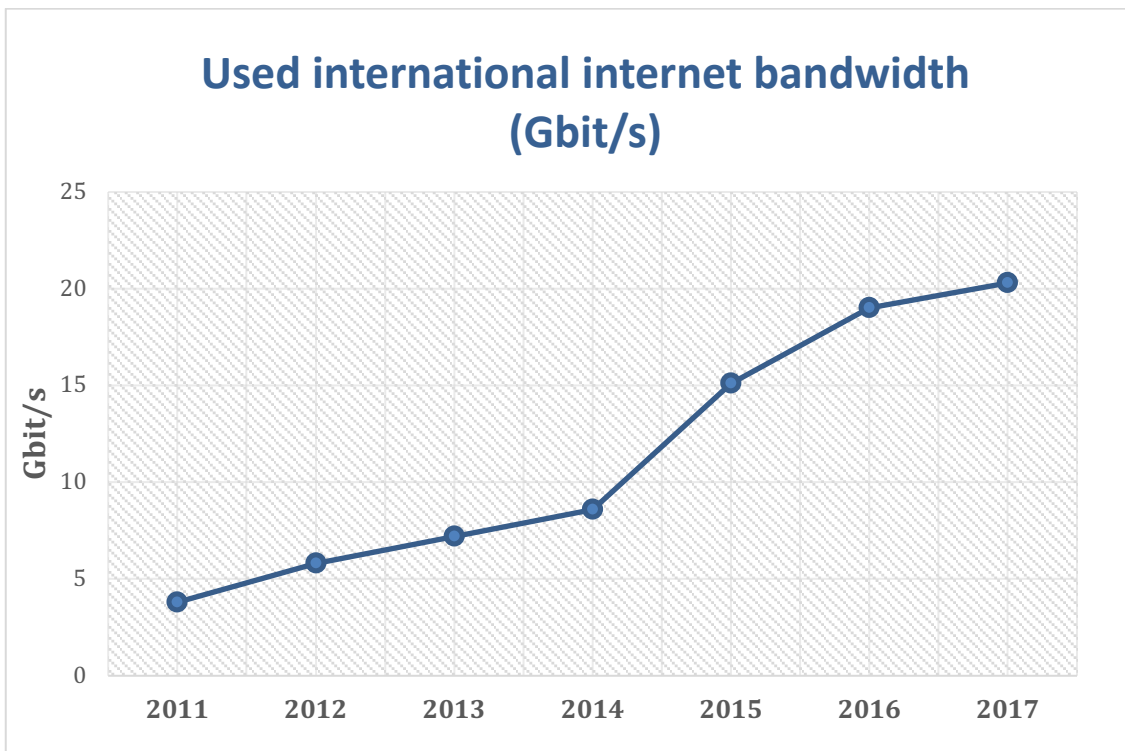


Figure 14: Used international internet bandwidth (Gbit/s), 2011-2017

## 5.2 ICT Price Basket

The cost and affordability of ICT services remain a determining factor for ICT uptake. As such, it is important to measure and benchmark the ICT market prices. To be able to benchmark the affordability of ICT services, BTP adopted the “ICT Price Basket” (IPB) methodology from the ITU. The IPB is relevant as a basic benchmarking tool that allows countries to assess their relative affordability of ICT prices, evaluate progress over time and identify challenges and shortcomings.

The IPB is a composite basket that includes three price sets, referred to as sub-baskets: the fixed-telephone, mobile-cellular and fixed broadband sub-basket (figure 15).

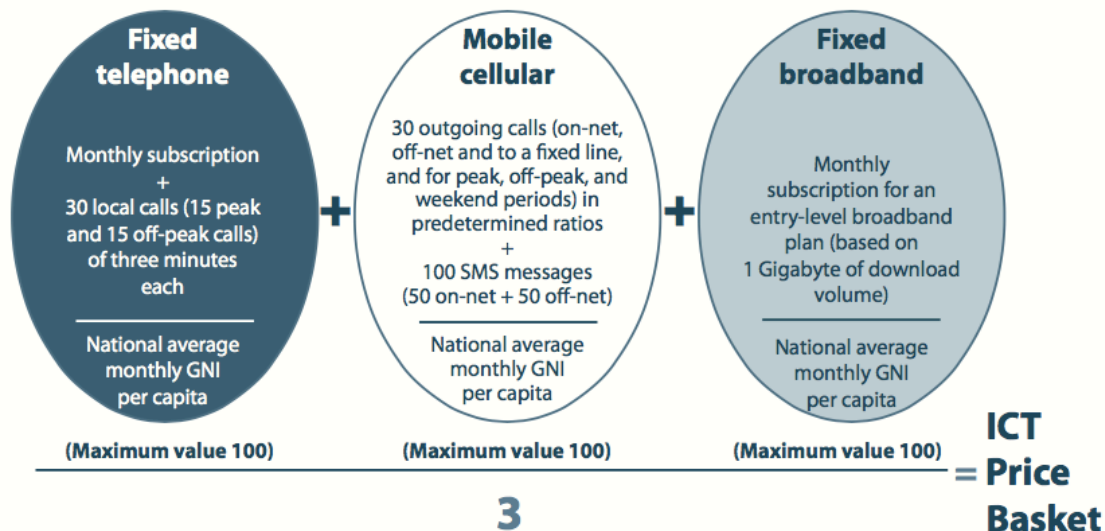


Figure 15: ICT Price Basket methodology

In this report, the three sub-baskets are calculated at 1.21% for fixed-telephone (paragraph 2.4), 2.12% for mobile-cellular (paragraph 3.5) and 2.00% for the fixed-broadband sub-basket (paragraph 4.6). The IPB for Curaçao end of year 2016, is the average of the three sub-baskets and values 1.8%.

This places Curaçao on a 11<sup>th</sup> position in the Caribbean, South and Central America region. The Bureau Telecommunicatie en Post will reassess the IPB every year to evaluate progress over time and determine the position of Curacao in the digital economy.

Rank	Economy	IPB 2016
1	Aruba	0,7
2	Bahamas, The	0,9
3	Uruguay	1,0
4	Trinidad and Tobago	1,0
5	Puerto Rico	1,1
6	Costa Rica	1,1
7	Venezuela	1,4
8	Panama	1,5
9	Brazil	1,5
10	Mexico	1,7
<b>11</b>	<b>Curaçao</b>	<b>1,8</b>
12	St. Kitts and Nevis	1,8
13	Argentina	2,0
14	Chile	2,1
15	Peru	2,1
16	Barbados	2,2
17	Suriname	2,2
18	Colombia	2,8
19	Grenada	2,8
20	Antigua and Barbuda	2,8
21	Ecuador	3,2
22	Paraguay	3,5
23	St. Lucia	3,5
24	Dominican Republic	3,7
25	Dominica	3,7
26	Jamaica	3,8
27	St. Vincent & Grenadines	4,2
28	Guyana	4,3
29	El Salvador	4,8
30	Belize	5,4
31	Bolivia	6,2
32	Guatemala	6,6
33	Honduras	9,6
34	Cuba	10,5
35	Nicaragua	13,1
36	Haiti	33,6

Selected Countries		
-	Singapore	0,3
-	United States	0,7
-	Malta	0,8
-	Netherlands	0,9

Table 5 – ICT Price Basket benchmark compared with the region

### 5.3 Terrestrial multichannel TV-subscriptions

The subscription television or pay-tv market on Curaçao is provided by several players utilizing different technologies varying from Multichannel Multipoint Distribution Systems (MMDS), Hybrid Fiber-Coax (HFC) networks with DOCSIS 3.0 technology, IPTV-services over Fiber to the Home (FttH) networks, and satellite-TV<sup>5</sup> to deliver analogue and digital television channels.

The local subscription television market in 2017 showed a considerable drop in comparison with the previous year as illustrated in Figure 16. End of year 2017, the total subscriptions estimated approximately 26.7 thousand compared to 31.4 thousand the year before. This represents an overall 4.7 thousand drop or 15.1% decrease in subscriptions.

This is a natural phenomenon, and this trend will most likely continue for the next few years, as with the evolution of the internet, Over-the-Top (video) services and applications are gaining more and more popularity.

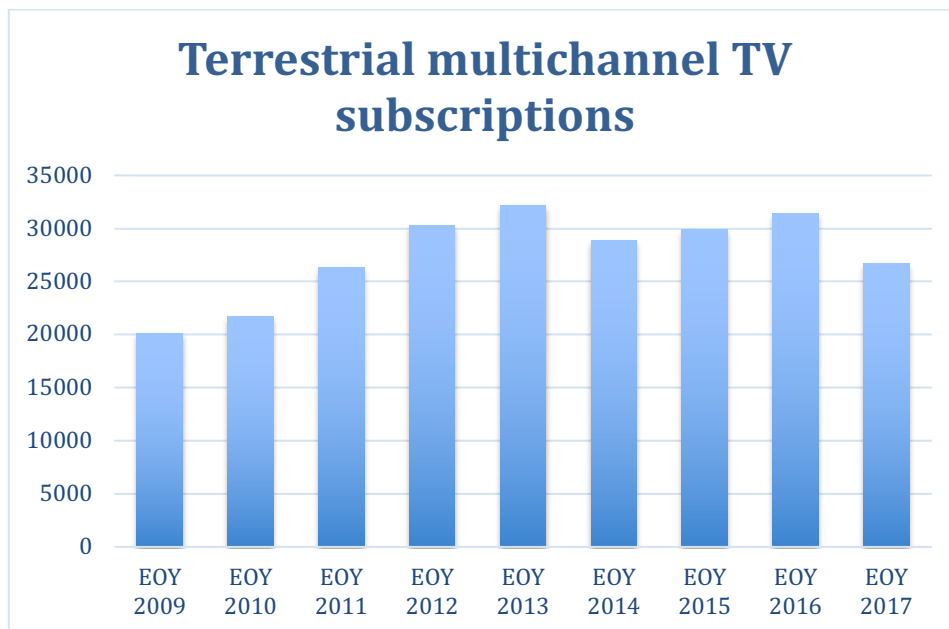


Figure 16: Terrestrial multichannel TV subscriptions, EOY 2009 – EOY 2017

<sup>5</sup> Satellite-TV is not analyzed in this study as these are not considered to be part of terrestrial (cable-television) services.

## Appendix A - Trends 2009-2017 for Curaçao

How to read the data:

1. Thousands are separated by an apostrophe (') and decimals by a period (.).
2. Other symbols used:

... or "blank"	Data not available (yet).
	Zero or a quantity less than the unit shown. Also used for data items that are not applicable.
Italics	Data in italics are BTP estimates.

3. Telecommunication/ICT data have been obtained from replies to ITU questionnaires from operators and the national statistics office. The main source of the telecommunication/ICT data for each economy is shown in the list of sources, see Appendix D.
4. The Yearbook has been prepared by the Bureau Telecommunicatie en Post Curaçao. Comments should be addressed to: Mr. Leonardo de Abreu Ladeira, Senior Policy and Market Regulation Advisor, Bureau Telecommunicatie en Post, Beatrixlaan 9, Willemstad, Curaçao.
5. Please refer to Appendix B for definitions.
6. Information about ITU statistics is available on: <http://www.itu.int/ITU-D/ict>

## CURAÇAO

INDICATOR	EOY 2010	EOY 2011	EOY 2012	EOY 2013	EOY 2014	EOY 2015	EOY 2016	EOY 2017
<b>DEMOGRAPHY, ECONOMY</b>								
Population	150284	151378	152798	154843	156971	158969	160337	160012
Households	...	54834	55233	55751	56494	57274	58010	58384
<b>FIXED TELEPHONE NETWORK</b>								
Fixed-telephone subscriptions	78846	68070	63754	63715	61130	62571	59231	61709
Fixed-telephone subscriptions per 100 inhabitants	52.46	44.97	41.72	41.15	38.94	39,36	36,94	37,17
Price of a three-minute local call to a fixed-telephone line, peak rate, in USD	...	...	0.17	0.17	0.17	0.17	0.17	0.16
Price of a three-minute local call to a fixed-telephone line, off-peak rate, in USD	...	...	0.17	0.17	0.17	0.17	0.17	0.16
<b>MOBILE-CELLULAR NETWORK</b>								
Mobile-cellular telephone subscriptions	204024	206294	204702	203502	192569	190489	186644	187184
Mobile-cellular subscriptions per 100 inhabitants	135.76	136.28	133.97	131.42	122.68	119.81	116.41	117.11
Mobile-cellular prepaid – price of a one-minute local call (peak, on- net) in USD	...	...	0.39	0.39	0.39	0.39	0.39	0.39
Mobile-cellular prepaid – price of a one-minute local call (off-peak, on-net) in USD	...	...	0.32	0.32	0.32	0.32	0.32	0.32
Mobile-cellular prepaid – price of a one-minute local call (peak, off- net) in USD	...	...	0.41	0.41	0.41	0.41	0.41	0.41
Mobile-cellular prepaid – price of a one-minute local call (off-peak, off-net) in USD	...	...	0.41	0.41	0.41	0.41	0.41	0.41
<b>INTERNET</b>								
International Internet bandwidth, in Mbit/s	...	...	4730	8200	8600	15100	19000	20300
<b>FIXED (WIRED) BROADBAND</b>								
Fixed (wired) Broadband subscriptions	...	31800	35380	37000	38663	40536	42713	47193
Fixed (wired) Internet Broadband subscriptions per 100 inhabitants	...	21.01	23.15	23.89	24.63	25.50	26.64	26.80
<b>WIRELESS BROADBAND</b>								
Total wireless broadband subscription	8020	5500	8120	70000	75138	87797	87101	89426
<b>OTHER INDICATORS</b>								
Terrestrial multichannel TV subscriptions	21681	26320	30329	32212	28858	29866	31394	26667
<b>PERFORMANCE INDICATORS</b>								
Average download speed, in average Kb/s for the year (See appendix C for calculations)	2285	6025	6727	12895	14744	15893	18760	21011

Table 6– Curacao data EOY 2009 – EOY 2016

## Appendix B – Definitions

INDICATOR	DEFINITION
DEMOGRAPHY, ECONOMY	The indicators in this category are useful for deriving ratios in order to make comparisons across countries. They are generally obtained from international organizations (see Sources) or national statistical offices. Readers are advised to consult the publications of the international organizations shown in Sources for precise definitions of the demographic and macro-economic data.
Population	The data for population are mid-year estimates. They typically refer to the de facto population within the present boundaries.
Households	The data for households refer to the number of housing units consisting of persons who live together or a person living alone. Estimates are based on growth rates between censuses.
FIXED TELEPHONE NETWORK	The indicators in this category refer to the fixed telephone network.
Fixed-telephone subscriptions	Fixed-telephone subscriptions refers to the sum of active number of analogue fixed-telephone lines, voice-over-IP (VoIP) subscriptions, fixed wireless local loop (WLL) subscriptions, ISDN voice-channel equivalents and fixed public payphones.  This indicator was previously called Main telephone lines in operation.
Fixed-telephone subscriptions per 100 inhabitants.	Calculated by dividing the number of fixed telephone subscriptions by the population and multiplying by 100.
Price of a three-minute local call to a fixed- telephone line, peak rate	Price of a three-minute local call (peak-rate) to a fixed-telephone line refers to the price of a three-minute peak local call from a residential fixed-telephone line, including any call set-up charges, within the same exchange area using the subscriber's own terminal (i.e. not from a public telephone). Taxes should be included.
Price of a three-minute local call to a fixed- telephone line, off-peak rate	Price of a three-minute local call to a fixed-telephone line refers to the price of a three-minute off-peak local call from a residential fixed-telephone line, including any call set-up charges, within the same exchange area using the subscriber's own terminal (i.e. not from a public telephone). Taxes should be included. If not included, it should be specified in a note including the applicable tax rate.
MOBILE CELLULAR NETWORK	The indicators in this category refer to mobile cellular networks.
Mobile-cellular telephone subscriptions	Mobile-cellular telephone subscriptions refers to the number of subscriptions to a public mobile-telephone service that provide access to the PSTN using cellular technology. The indicator includes (and is split into) the number of postpaid subscriptions, and the number of active prepaid accounts (i.e. that have been used during the last three months). The indicator applies to all mobile-cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging and telemetry services.
Mobile-cellular subscriptions per 100 inhabitants	Calculated by dividing the number of mobile-cellular telephone subscriptions by the population and multiplying by 100.

Mobile-cellular prepaid – price of a one-minute local call (peak, on-net)	Refers to the price per minute of a peak prepaid call from a mobile-cellular telephone with a prepaid subscription to another subscriber in the same network. Taxes should be included. If not included, it should be specified in a note including the applicable tax rate.
Mobile-cellular prepaid – price of a one-minute local call (off-peak, on-net)	Refers to the price per minute of a prepaid call from a mobile-cellular telephone with a prepaid subscription made to the same mobile-cellular network during off-peak time. Off-peak refers to the 2010: cheapest rate before mid-night. If the only off-peak period is after mid-night, the peak price should be used. Taxes should be included.
Mobile-cellular prepaid – price of a one-minute local call (peak, off-net)	The price per minute of a peak rate call from a mobile-cellular prepaid telephone to a mobile-cellular subscriber of another (competing) network during peak time. Taxes should be included. If not included, it should be specified in a note including the applicable tax rate.
Mobile-cellular prepaid – price of a one-minute local call (off-peak, off-net)	The price per minute of an off-peak rate call from a mobile cellular prepaid telephone to a mobile cellular subscriber of another (competing) network. Off-peak refers to the cheapest rate before mid-night. If the only off-peak period is after mid-night, the peak price should be used. Taxes should be included.
INTERNET	The indicators in this category refer to Internet.
International Internet bandwidth, in Mbit/s	International Internet bandwidth refers to the total used capacity of international Internet bandwidth, in megabits per second (Mbit/s). It is measured as the sum of used capacity of all Internet exchanges (locations where Internet traffic is exchanged) offering international bandwidth. If capacity is asymmetric (i.e. more incoming (downlink) than outgoing (uplink) capacity), then the incoming (downlink) capacity should be provided.
FIXED (WIRED) BROADBAND BY TECHNOLOGY	The indicators in this category refer to fixed (wired)-broadband subscriptions by technology.
Fixed (wired)-broadband subscriptions	Fixed (wired)-broadband subscriptions refers to subscriptions to high-speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to, or greater than, 256 kbit/s. This includes cable modem, DSL, fibre-to-the-home/building and other fixed (wired)-broadband subscriptions. This total is measured irrespective of the method of payment. It excludes subscriptions that have access to data communications (including the Internet) via mobile-cellular networks and technologies listed under the wireless-broadband category.
Fixed (wired)-broadband subscriptions per 100 inhabitants.	Calculated by dividing the number of fixed (wired) broadband Internet subscriptions by the population and multiplying by 100.
Fixed (wired)-broadband monthly subscription charge	Fixed (wired)-broadband monthly subscription charge refers to the monthly charge subscription charge for fixed (wired)-broadband Internet service. Fixed (wired) broadband is considered to be any dedicated connection to the Internet at downstream speeds equal to, or greater than, 256 kbit/s. If several offers are available, preference should be given to the 256 kbit/s connection.
Fixed (wired)-broadband speed, in Mbit/s	Fixed (wired)-broadband speed, in Mbit/s refers to the advertised maximum theoretical download speed, and not speeds guaranteed to users associated with a fixed (wired)-broadband Internet monthly subscription.



<b>WIRELESS BROADBAND</b>	The indicators in this category refer to wireless broadband.
Wireless-broadband subscriptions	Wireless-broadband subscriptions refers to the sum of satellite broadband, terrestrial fixed wireless broadband and active mobile-broadband subscriptions to the public Internet.
Mobile- broadband subscriptions	Mobile-broadband subscriptions refers to the sum of standard mobile-broadband and dedicated mobile-broadband subscriptions. It covers actual subscribers, not potential subscribers, even though the latter may have broadband enabled- handsets.
Mobile-broadband subscriptions per 100 inhabitants	Calculated by dividing the number of mobile-broadband Internet subscriptions by the population and multiplying by 100.
<b>OTHER INDICATORS</b>	
Terrestrial multichannel TV subscriptions	Terrestrial multichannel TV subscriptions refers to the number of subscriptions to terrestrial multichannel TV such as cable TV, Internet protocol television (IPTV), digital terrestrial TV (DTT), microwave multipoint distribution systems (MMDS).

*Table 7 – Definitions*

## Appendix C – Download speeds

YEAR AVERAGES in Kbps	2010	2011	2012	2013	2014	2015	2016	2017	2018
Average download speeds per year	2285.3	6024.8	6726.7	12895.14	14744.24	15893	18760	21011	...

MONTHLY RESULTS in Kbps	2010	2011	2012	2013	2014	2015	2016	2017	2018
January	1348.84	5753.22	6490.05	...	10823.17	14050.00	...	...	...
February	1711.44	5719.62	6633.30	...	13679.56	14200.00	...	...	...
March	1615.78	5520.82	6529.43	...	14335.05	13500.00	...	...	...
April	1568.16	5675.62	6603.65	12814.36	14344.65	16000.00	...	...	...
May	2025.94	5437.88	6613.32	13042.97	14754.09	17000.00	...	...	...
June	1805.20	5542.92	6577.46	13849.50	16106.32	17500.00	...	...	...
July	1878.51	6205.85	6986.88	13095.30	15327.46	19000.00	...	...	22110.00
August	2654.15	6419.04	7846.57	13454.28	15922.03	...	...	...	...
September	2659.47	6424.34	7593.47	13176.01	16034.84	...	...	...	...
October	2808.32	5882.68	6451.46	13079.28	15801.44	...	...	...	...
November	3405.19	6681.45	5763.54	11557.14	14986.73	...	...	...	...
December	3942.85	7034.25	6631.60	11987.44	14815.57	...	...	...	...

*Table 8 – Yearly and monthly download speed results*

The average yearly download speed data is calculated from the yearly average of monthly results in a year until 2015. From 2016 on estimates are made by calculating the weighted average of subscribers per speed from the Largest Market Share operator.

Notes:

- As from April 2013, Curaçao is recorded separately, so as of 2013 measurements from April to December are used for higher accuracy.
- From 2015 on, Ookla only shows graphs, no more raw data per country. The download speeds of 2015 are derived from that graph.
- From August 2015, Ookla data viewing is discontinued and therefore not available anymore.
- For the month of July 2018, the measurement of 22110.00 was reported by Ookla speed test (download).

## Appendix D1 – List of countries and comparison data

General Statistics		Fixed-telephone subscriptions per 100 inhabitants	Mobile-cellular telephone subscriptions per 100 inhabitants	Fixed (wired)-broadband subscriptions per 100 inhabitants	Mobile broadband subscriptions per 100 inhabitants
Curacao		37,17	117,11	26,80	56,5
Caribbean		28	117,02	24,5	48,2
South America		17	118	11,7	63,6
Central America		12	115	7,0	41,2
World		13,20	101	13,0	58,0
Developed		37,50	129	31,0	97,0
Developing		8,00	98	9,0	49,0
LDCs		1,50	71	1,0	22,0
Caribbean region	Island	Fixed-telephone subscriptions per 100 inhabitants	Mobile-cellular telephone subscriptions per 100 inhabitants	Fixed (wired)-broadband subscriptions per 100 inhabitants	Mobile broadband subscriptions per 100 inhabitants
Lucayan Archipelago	Bahamas	30,95	92,07	21,41	51,30
Greater Antilles	Haiti	0,05	59,96	0,01	10,19
	Cuba	11,52	34,75	0,13	0,00
	Dominican Republic	12,63	81,78	7,21	49,77
	Jamaica	10,77	113,40	9,93	55,16
	Cayman Islands	56,14	157,42	40,38	0,00
	Puerto Rico	22,18	88,67	18,72	59,55
Lesser Antilles - Leeward islands	British Virgin Islands	39,03	189,93	22,12	116,07
	Anguilla	41,06	177,95	34,22	0,00
	Antigua and Barbuda	22,29	178,28	9,17	40,61
	ST. Kitts and Nevis	31,80	139,70	29,92	78,66
	Montserrat	58,55	97,58	117,10	0,00
Windward islands	Dominica	18,12	106,66	21,06	40,71
	Saint Lucia	19,97	99,23	16,73	38,74
	St. Vincent and Grenadines	18,74	102,74	19,94	49,32
	Grenada	24,95	110,86	19,40	32,85
	Barbados	49,02	116,57	32,44	45,30
	Trinidad and Tobago	19,94	158,67	18,72	46,73
Curaçao	Curaçao	37,17	117,11	26,80	56,47
<b>AVERAGES</b>		<b>27,63</b>	<b>117,02</b>	<b>24,50</b>	<b>48,21</b>

South America					
Ecuador		14,96	84,73	9,79	46,93
Uruguay		32,33	148,57	26,76	101,88
Chile		18,84	130,11	16,22	72,11
Brazil		20,15	117,54	12,88	88,47
Colombia		14,63	120,62	12,15	46,87
Argentina		22,67	145,33	16,49	78,05
Paraguay		5,21	111,36	3,56	49,38
Peru		9,68	116,24	6,67	61,61
Suriname		15,94	144,51	12,75	47,29
Venezuela		24,27	87,43	8,27	50,53
Bolivia		7,97	92,82	2,64	56,58
<i>AVERAGES</i>		<b>16,97</b>	<b>118,11</b>	<b>11,65</b>	<b>63,61</b>
Central America					
Mexico		16,04	87,60	12,58	58,86
Panama		15,91	127,46	9,59	59,18
Honduras		4,86	85,95	2,42	23,30
El Salvador		14,71	151,89	6,23	29,08
Guatemala		14,80	110,14	3,05	13,93
Costa Rica		17,50	171,51	13,10	108,05
Nicaragua		5,96	125,94	2,88	23,47
Belize		6,27	61,86	6,00	13,39
<i>AVERAGES</i>		<b>12,01</b>	<b>115,29</b>	<b>6,98</b>	<b>41,16</b>

*Table 9 – List of countries and comparison data (penetration)*

## Appendix D2 – List of countries and comparison data (prices)

Economy	Fixed-Tariff 3 minute call, peak (USD)	Fixed-Tariff 3 minute call, off peak (USD)	1-min call (peak, on-net) (USD)	1-min call (off-peak, on-net) (USD)	1-min call peak, off-net (USD)	1-min call (off-peak, off-net) (USD)
Curaçao	0,16	0,16	0,41	0,41	0,41	0,41
Caribbean	0,12	0,11	0,28	0,25	0,32	0,28
South America	0,04	0,03	0,16	0,15	0,18	0,17
Central America	0,10	0,09	0,18	0,18	0,20	0,20
Economy	Fixed-Tariff 3 minute call (USD)	Fixed-Tariff 3 minute call off peak (USD)	Mobile-cellular prepaid– 1-min call (peak, on-net) (USD)	Mobile-cellular prepaid– 1-min call (off-peak, on-net) (USD)	Mobile-cellular prepaid– 1-min call (USD)	Mobile-cellular prepaid– 1-min call (USD)
Anguilla	0,089	0,056	0,252	0,252	0,348	0,348
Antigua and Barbuda	0,056	0,056	0,352	0,352	0,352	0,352
Aruba	0,184	0,184	0,428	0,208	0,428	0,208
Bahamas	0,000	0,000	0,355	0,161	0,355	0,161
Barbados	0,000	0,000	0,300	0,300	0,400	0,400
Bermuda	0,200	0,200	0,000	0,000	0,000	0,000
British Virgin Islands	0,510	0,510	0,000	0,000	0,000	0,000
Cayman Islands	0,159	0,159	0,341	0,341	0,524	0,524
Cuba	0,004	0,002	0,350	0,100	0,350	0,100
Curaçao	0,162	0,162	0,413	0,413	0,413	0,413
Dominica	0,100	0,056	0,259	0,259	0,370	0,370
Dominican Republic	0,090	0,090	0,164	0,164	0,213	0,213
Grenada	0,089	0,056	0,293	0,293	0,293	0,293
Guadeloupe	0,000	0,000	0,000	0,000	0,000	0,000
Haiti	0,000	0,000	0,036	0,036	0,077	0,077
Jamaica	0,031	0,031	0,063	0,063	0,063	0,063
Martinique	0,000	0,000	0,000	0,000	0,000	0,000
Montserrat	0,156	0,156	0,000	0,000	0,000	0,000
Puerto Rico	0,000	0,000	0,250	0,250	0,250	0,250
Saint Kitts and Nevis	0,078	0,044	0,330	0,330	0,330	0,330
Saint Lucia	0,089	0,056	0,349	0,349	0,349	0,349
Saint Vincent & Grenadines	0,089	0,056	0,367	0,367	0,367	0,367
St. Maarten	0,000	0,000	0,000	0,000	0,000	0,000
Trinidad and Tobago	0,037	0,037	0,190	0,190	0,190	0,190

Turks and Caicos Islands	0,000	0,000	0,000	0,000	0,000	0,000
Virgin Islands (US)	0,000	0,000	0,000	0,000	0,000	0,000
<i>AVERAGES</i>	<b>0,12</b>	<b>0,11</b>	<b>0,28</b>	<b>0,25</b>	<b>0,32</b>	<b>0,28</b>
<b>South America</b>						
Ecuador	0,034	0,034	0,112	0,112	0,224	0,224
Uruguay	0,127	0,042	0,279	0,279	0,279	0,279
Chile	0,000	0,000	0,185	0,185	0,185	0,185
Brazil	0,107	0,069	0,000	0,000	0,157	0,157
Colombia	0,000	0,000	0,118	0,118	0,118	0,118
Argentina	0,007	0,003	0,286	0,286	0,286	0,286
Paraguay	0,077	0,077	0,043	0,043	0,043	0,043
Peru	0,000	0,000	0,150	0,150	0,150	0,150
Suriname	0,039	0,039	0,179	0,179	0,179	0,179
Venezuela	0,011	0,011	0,187	0,187	0,187	0,187
Bolivia	0,058	0,058	0,174	0,078	0,174	0,078
<i>AVERAGES</i>	<b>0,04</b>	<b>0,03</b>	<b>0,16</b>	<b>0,15</b>	<b>0,18</b>	<b>0,17</b>
<b>Central America</b>						
Mexico	0,094	0,094	0,040	0,040	0,040	0,040
Panama	0,034	0,034	0,100	0,100	0,100	0,100
Honduras	0,074	0,074	0,173	0,173	0,173	0,173
El Salvador	0,110	0,110	0,125	0,125	0,147	0,147
Guatemala	0,196	0,196	0,354	0,354	0,354	0,354
Costa Rica	0,045	0,045	0,070	0,070	0,070	0,070
Nicaragua	0,076	0,003	0,342	0,342	0,460	0,460
Belize	0,169	0,169	0,265	0,265	0,282	0,282
<i>AVERAGES</i>	<b>0,10</b>	<b>0,09</b>	<b>0,18</b>	<b>0,18</b>	<b>0,20</b>	<b>0,20</b>

Table 10 – List of countries and comparison data (prices)

## Appendix E – Sources

### DEMOGRAPHY, ECONOMY

CBS data 2012, 2013, 2014, 2015, 2016, 2017

### TELECOMMUNICATION AND INFORMATION AND COMMUNICATION TECHNOLOGIES

Data on these subjects are obtained from operators through the annual ITU questionnaire, completed by ‘BTP aansluitpuntgegevens concessiehouders’ and ITU publications.

A full list:

- ITU Enquete EOY 2012, 2014, 2015, 2016, 2017 – UTS
- ITU Enquete EOY 2012, 2013, 2014, 2015, 2016, 2017 – Flow
- ITU Enquete EOY 2012, 2013, 2014, 2015, 2016, 2017 – Digicel
- ITU Enquete EOY 2012, 2013, 2014, 2015, 2016, 2017 – TRES
- ITU Enquete EOY 2012, 2013, 2014 – Scarlet
- ITU Enquete ICT Price Basket EOY 2012
- ITU Enquete ICT Price Basket EOY 2013
- ITU Enquete ICT Price Basket EOY 2014
- ITU Enquete ICT Price Basket EOY 2015
- ITU Enquete ICT Price Basket EOY 2016
- ITU Enquete ICT Price Basket EOY 2017
- Curaçao Fixed Internet Penetration Indicators 2009, BT&P
- Curaçao Fixed Internet Penetration Indicators 2011, BT&P
- Curaçao Fixed Internet Penetration Indicators 2014, BT&P
- BTP aansluitpuntgegevens concessiehouders 2012, 2013, 2014, 2015, 2016, 2017
- BTP televisiegegevens 2009-2014
- ITU EYE Data: <http://www.itu.int/net4/itu-d/icteye/>
- ITU Yearbook of Statistics Telecom & ICT Indicators 2005-2016
- ITU Key data 2005-2017
- ITU Measuring the Information Society 2013, 2014, 2015, 2016, 2017
- ITU World Telecommunication/ICT Indicators (WTI) database 2016, 2017, 2018
- CBS: Population and Population Growth of Curaçao (2-10-2018), downloaded from [www.cbs.cw](http://www.cbs.cw)
- CBS: Gross national income of Curaçao (2-10-2018), downloaded from [www.cbs.cw](http://www.cbs.cw)
- World bank: World development indicators, GNI per Capita (28-09-2018), downloaded from [data.worldbank.org/indicator](http://data.worldbank.org/indicator)
- AMS-IX Caribbean statistics portal: <https://cw.ams-ix.net/technical--2/statistics>
- ITU ICT Prices 2017

### DOWNLOAD SPEEDS

- Global Broadband Ookla Speedtest.net Index

## Appendix F – List of concession holders and broadband technologies

Operator	Used technologies
United Telecommunication Services N.V. (UTS)	Fixed-Wired Broadband: DSL / Fibre-to-the-Home or Building Wireless-broadband/mobile: HSPA+ / LTE International communication
Columbus Communications N.V. (Flow)	Fixed-Wired Broadband: Cable / HFC International communication
Digicel N.V.	Wireless-broadband/mobile: HSPA+ International communication
TRES Networks	Fixed-Wired Broadband: Fibre-to-the-Home or Building International communication
Smitcoms N.V.	International communication
Flamingo TV Bonaire	International communication

*Table 11 – List of operators and used broadband technology*