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Magazine of the Caribbean Development and Cooperation Committee (CDCC)

DIGITAL DIVIDES AND INCLUSION IN THE CARIBBEAN "NEW NORMAL"



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ABOUT ECLAC/CDCC

The Economic Commission for Latin America and the Caribbean (ECLAC) is one of five regional commissions of the United Nations Economic and Social Council (ECOSOC). It was established in 1948 to support Latin American governments in the economic and social development of that region. Subsequently, in 1966, the Commission (ECLA, at that time) established the subregional headquarters for the Caribbean in Port of Spain to serve all countries of the insular Caribbean, as well as Belize, Guyana and Suriname, making it the largest United Nations body in the subregion.

At its sixteenth session in 1975, the Commission agreed to create the Caribbean Development and Cooperation Committee (CDCC) as a permanent subsidiary body, which would function within the ECLA structure to promote development cooperation among Caribbean countries. Secretariat services to the CDCC would be provided by the subregional headquarters for the Caribbean. Nine years later, the Commission's widened role was officially acknowledged when the Economic Commission for Latin America (ECLA) modified its title to the Economic Commission for Latin America and the Caribbean (ECLAC).

Key Areas of Activity

The ECLAC subregional headquarters for the Caribbean (ECLAC/CDCC secretariat) functions as a subregional think-tank and facilitates increased contact and cooperation among its membership. Complementing the ECLAC/CDCC work programme framework, are the broader directives issued by the United Nations General Assembly when in session, which constitute the Organisation's mandate. At present, the overarching articulation of this mandate is the United Nations Sustainable Development Goals.

Towards meeting these objectives, the Secretariat conducts research; provides technical advice to governments upon request; organizes intergovernmental and expert group meetings; helps to formulate and articulate a regional perspective within global forums; and introduces global concerns at the regional and subregional levels.

Areas of specialization include trade, statistics, social development, science and technology, and sustainable development, while actual operational activities extend to economic and development planning, demography, economic surveys, assessment of the socio-economic impacts of natural disasters, climate change, data collection and analysis, training, and assistance with the management of national economies.

The ECLAC subregional headquarters for the Caribbean also functions as the Secretariat for coordinating the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States. The scope of ECLAC/CDCC activities is documented in the wide range of publications produced by the subregional headquarters in Port of Spain.

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**DIRECTOR'S DESK:****DIGITAL DIVIDES AND INCLUSION IN THE CARIBBEAN “NEW NORMAL”**

The pace of the digital transformation of the Caribbean has increased rapidly since the onset of the COVID-19 pandemic, with more governments, businesses and individuals using information and communication technologies (ICTs) than ever before. However, as the digital realm has become more important, the cost of exclusion from it has also increased, and threatens to deepen inequalities in the subregion.

This issue of FOCUS highlights issues relevant to digital divides and digital inclusion among and within Caribbean countries in the “new normal”. In particular, the articles will review key ICT statistics; discuss the Caribbean internet speed divide; and explore financing for digital inclusion.

Inclusion is a central concern of the 2030 Agenda for Sustainable Development. This is evident in its foundational principles to “leave no one behind” and “reach the furthest behind first”.

Sustainable Development Goal (SDG) 10, “Reduce inequality within and among countries”, is of particular relevance to discussions on digital inclusion, as the digitally excluded tend to be the most marginalized in society, including indigenous peoples, rural communities, women, people with low education or income, migrants and refugees, older persons, and persons with disabilities.

Seeking to support evidence-based policymaking for digital inclusion in the Caribbean, the article presents data related to access to the internet and digital technology for 24 Caribbean countries and territories. Comparing data for such a broad set of countries to global and the Organization for Economic Cooperation and Development (OECD) averages, provides new insights into the

digital development of the Caribbean and contextualizes the intraregional disparities. While the lack of disaggregated data for these indicators remains a challenge, it demonstrates that there are valuable insights to be drawn from the data that is currently available.

The private sector is becoming increasingly important as a source of recent and granular data to support policy- and decision-making. Using data from Ookla (a global leader in network intelligence and connectivity insights), we analyse internet speeds and the internet speed divide in the Caribbean since the onset of the COVID-19 pandemic.

By examining various groups of Caribbean countries, global medians and targets for internet speeds, we provide the context necessary to understand one facet of the effect of the COVID-19 pandemic on the digital development of the subregion. We also map the data for four Caribbean countries, to illustrate the possibilities that such granular data offers in terms of identifying disparities.

The importance and relevance of digital inclusion to the Caribbean cannot be overstated. Caribbean governments that wish to harness the many benefits that digital technologies can provide, must be prepared to address the risks and threats that accompany them.

In this FOCUS, we emphasize that in order to do so, the development and deployment of new technologies needs to have a solid foundation in human rights. Achieving this goal will, however, require Caribbean governments to invest in the development of new technologies specifically designed for and adapted to Caribbean circumstances. There are many options available for financing the inclusive digital transformation of the Caribbean. The challenge, however, lies in identifying which solutions would be appropriate for the regional, subregional, and national contexts of each government. In reviewing their funding and financing options, Caribbean governments must therefore expend considerable effort on mapping current policies, goals and priorities; the current financing and funding environment; applicable regulations; and the institutional landscape, with digital inclusion in mind.

Yours in Focus

Diane Quarless



A DEEP DIVE INTO CARIBBEAN DIGITAL DIVIDES: A CROSS-COUNTRY COMPARISON ON INTERNET AND COMPUTER ACCESS AND USE IN THE CARIBBEAN

Lika Døhl Diouf^{1*}

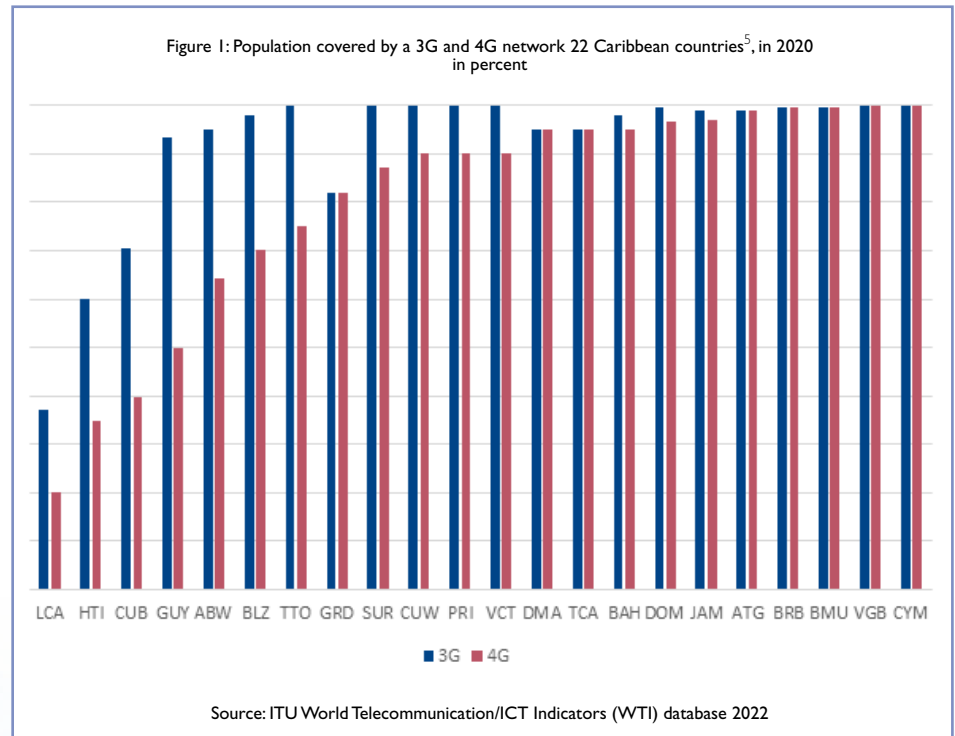
The Caribbean has experienced transformative change in terms of digital technologies in recent years. Broadband penetration has increased, 3G and 4G coverage is nearly universal in several countries², and most countries of the subregion have a higher number of internet users than the global average. However, significant digital divides remain across the Caribbean, as evidenced by several relevant indicators related to information and communications technologies (ICTs).

Many people still lack access to the internet and devices and are, therefore, excluded from the benefits that ICTs can provide. This article explores and analyses some available statistics on ICT access and use in the subregion, and highlights several disparities among countries. It focuses on indicators related to access to the internet, internet usage, access to a household computer and computer usage, and compares between 19 and 24 Caribbean countries for each indicator.

ACCESS TO THE INTERNET

A significant percentage of Caribbean people could access the internet today, given the right circumstances. This is particularly true for mobile internet, as shown in Figure 1. In all except three countries, more than 90 per cent of the population is covered by a third-generation wireless mobile network (3G³). In 13 of the 22 countries for which data is available, more than 90 per cent of the population is also covered by a fourth-generation wireless network (4G) such as LTE or WiMax. Of those 13, nearly half are territories⁴.

While coverage is a prerequisite for connection to the internet, it is not sufficient to determine whether people are connecting to the internet. Data on the number of subscriptions to fixed and mobile broadband, and the number and composition of internet users, can



provide more context on digital divides among Caribbean countries. In 2020, the number of mobile broadband subscribers⁶ was still fairly low in most countries, with less than 60 mobile broadband subscribers per 100 inhabitants in 11 of the 19 countries for which data is available (see Figure 2). However, in 16 of the 19 countries, mobile broadband subscriptions increased within the past five years, in some cases substantially.

In both Haiti and Guyana, for example, mobile broadband subscriptions

increased from less than 1 per cent to around 30 per cent. Furthermore, in the five countries with the highest number of mobile broadband subscribers, all have over 80 subscribers per 100 inhabitants, and all have experienced a minimum 20 percentage point increase between 2015 and 2020. Assuming that most who subscribe to mobile broadband do so to be able to access the internet⁷, it is likely that the percentage of people that use the internet has also increased significantly in most countries across the subregion during that period.

¹ Lika Døhl Diouf is an Associate Programme Officer in the Caribbean Knowledge Management Centre of the Economic Commission for Latin America and the Caribbean, subregional headquarters for the Caribbean.

² The word "countries" here denotes both countries and territories, unless otherwise specified.

³ A 3G connection typically provides lower-speed broadband connectivity, at around 3 megabits per second (Mbps) on average.

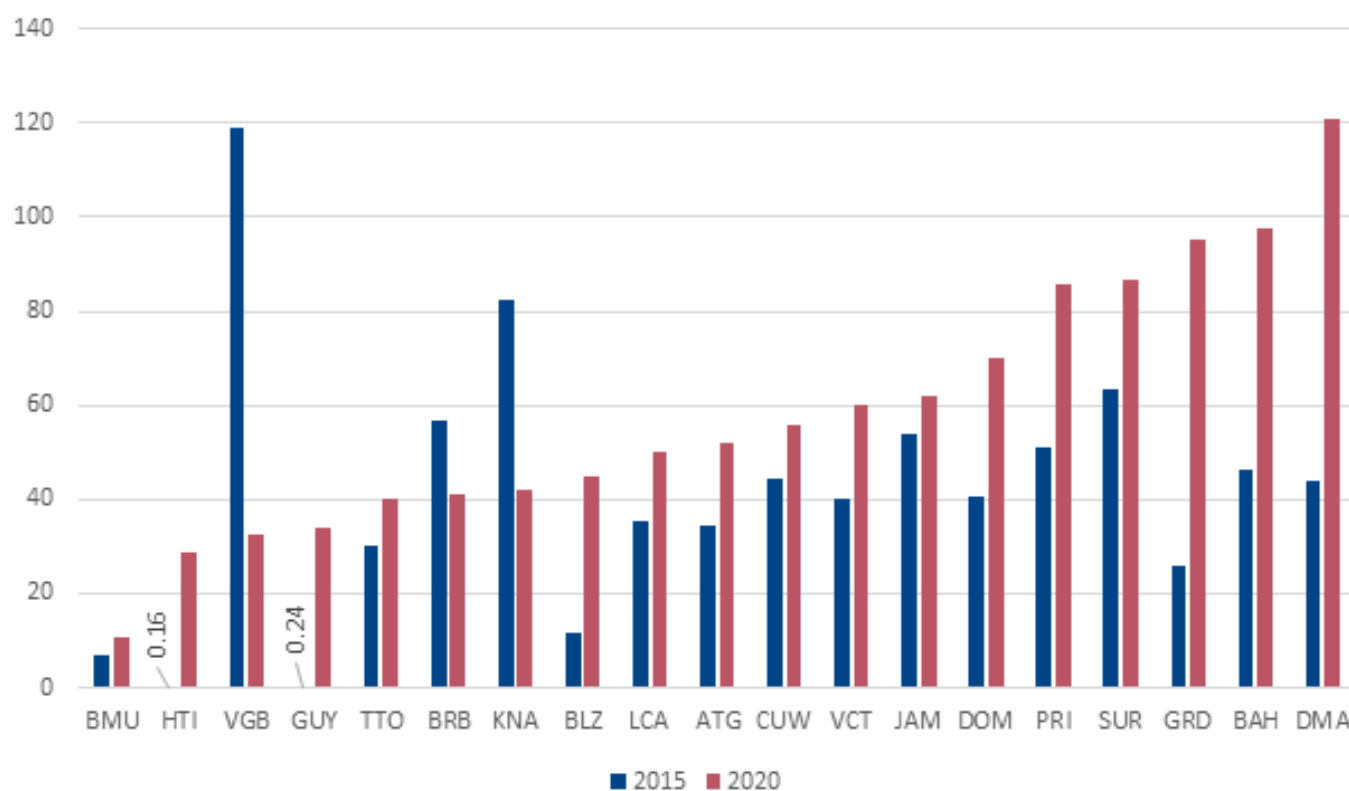
⁴ The word "territories" here refers to the associate members of the Caribbean Development and Cooperation Committee (CDCC), regardless of technical legal status. See <https://www.cepal.org/en/headquarters-and-offices/eclac-caribbean/about-us>

⁵ The figure includes all members and associate members of the CDCC for which data is available for both 3G and 4G coverage.

⁶ A mobile broadband subscription in this context refers to both data-only plans, and plans that include both voice and data, and includes both residential and business subscriptions (See International Telecommunication Union (ITU) (2020), Handbook for the collection of administrative data on telecommunications/ICT, pp. 41, 45-49)

⁷ Some may subscribe to a plan including both voice and data without using the internet frequently, or at all.

Figure 2: Mobile broadband subscriptions per 100 inhabitants 19 Caribbean countries⁸ in percent



Source: ITU World Telecommunication/ICT Indicators (WTI) database 2022

Furthermore, although a large majority of countries experienced growth in subscribers, the pace of growth varied significantly, and there appears to be no relationship between the level of mobile network coverage (Figure 1) and the proportion of mobile broadband subscribers (Figure 2).

For example, two of the five countries with the lowest levels of 3G coverage, Haiti and Guyana, are also among the five with the lowest number of mobile broadband subscribers. However, Bermuda and the British Virgin Islands, both of which reported having 100 per cent of their populations covered by 3G and 4G networks, are among the five countries with the lowest relative

number of subscribers. Grenada, which is also among the five countries with the lowest levels of 3G coverage, is among the countries with the highest number of subscribers.

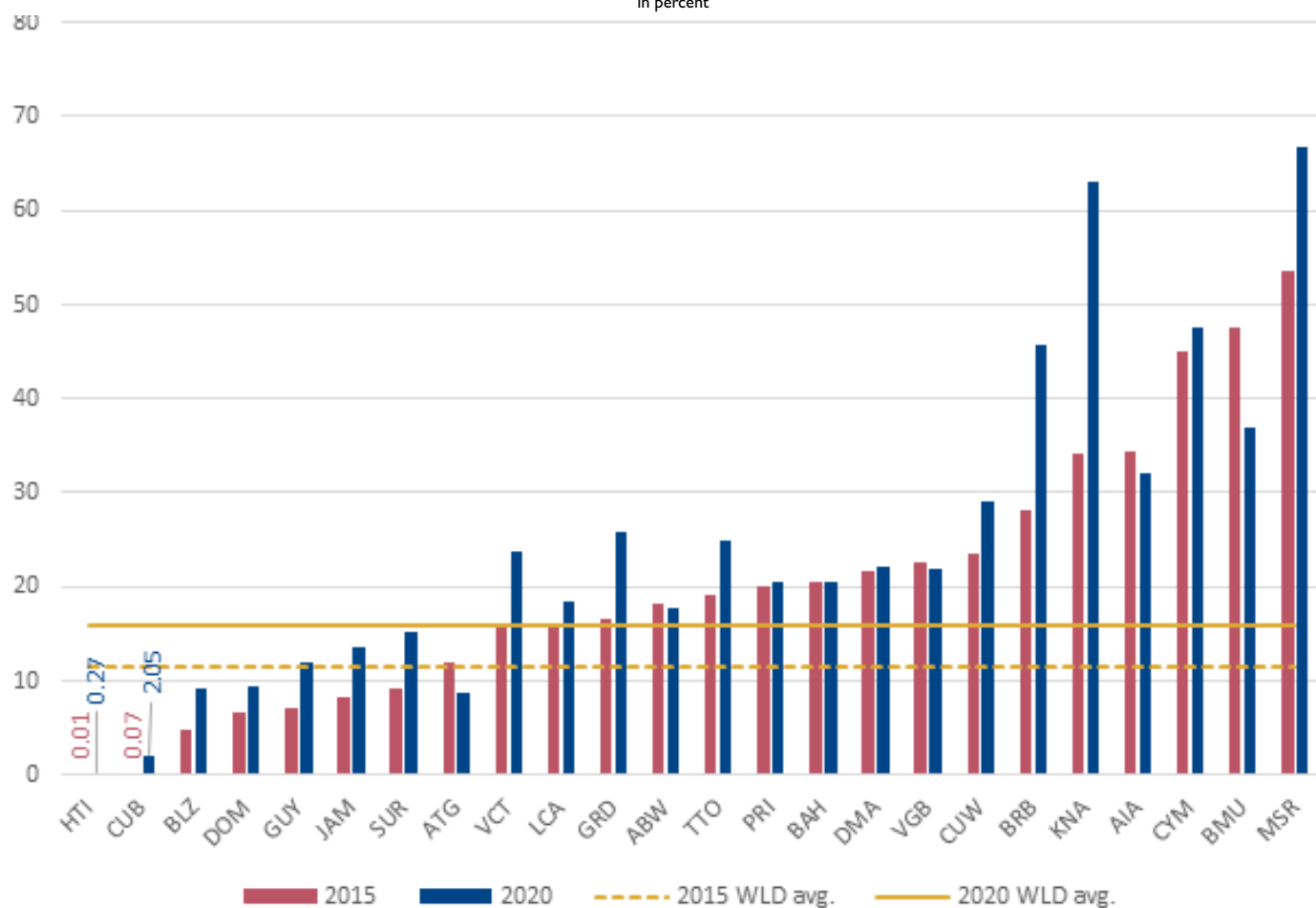
A decline in the number of mobile broadband subscriptions per 100 inhabitants was also observed between 2015 and 2020 in Barbados, the British Virgin Islands, and Saint Kitts and Nevis (Figure 2). The level of decline varies significantly: In Barbados, the decline exceeded 15 percentage points; in Saint Kitts and Nevis, it exceeded 41 percentage points, halving the proportion of subscribers; and in the British Virgin Islands there was a decrease by nearly 87 percentage points between 2015 and 2020.

The implications of these observations are not immediately apparent.

One possible explanation could lie in changing preferences among consumers, from mobile to fixed broadband. For Barbados and Saint Kitts and Nevis, this could serve as a partial explanation, as they experienced the highest relative growth rates of fixed broadband subscribers between 2015 and 2020 (Figure 3). Barbados saw a growth of over 17 percentage points, and Saint Kitts and Nevis of over 28 percentage points. However, the British Virgin Islands also saw a small decline in the proportion of fixed broadband subscribers, so this does not fully explain the decline in mobile broadband subscriptions.

⁸ The figure includes all members and associate members of the CDCC for which data is available for both 2015 and 2020. For Bermuda, the earlier figure is from 2016.

Figure 3: Fixed broadband subscriptions per 100 inhabitants
24 Caribbean countries⁹ and world average
in percent



Source: ITU World Telecommunication/ICT Indicators (WTI) database 2022 and World Bank

An examination of the relative changes in fixed broadband subscriptions, as contained in Figure 3, once again illustrates the diverse experiences of Caribbean countries. According to the World Bank, the relative number of fixed broadband subscriptions grew by nearly 38 per cent between 2015 and 2020 (Table 1)¹⁰. During that period, 13 of the 24 countries measured in Figure 3 experienced growth in the number of fixed broadband subscriptions below the world average, with 6 countries recording declines in the

relative number of subscribers.

Of these, Antigua and Barbuda, which also saw a reduction in mobile broadband subscribers between 2015 and 2020, fell below the world average for fixed broadband subscriptions in that same period. Of the 12 remaining countries that experienced above-average growth, seven recorded rates of fixed mobile broadband subscriptions that were lower than the world average in both 2015 and 2020. The above-average growth in this case

could therefore be illustrative of attempts to catch up with the rest of the subregion. Cuba and Haiti are outliers in terms of growth, where the high relative increase is a result of the negligible percentage of fixed broadband subscribers in those countries in 2015.

INTERNET USAGE

The administrative data presented in the table and figures above, paint a picture of the diverse experiences within the

⁹ The figure includes all members and associate members of the CDCC for which data is available for both 2015 and 2020. For Montserrat, the earlier figure is from 2014.

¹⁰ World Bank, "Fixed broadband subscriptions (per 100 people)", IT.NET.BBND.P2

Table 1: Fixed broadband subscriptions per 100 inhabitants, 2015 and 2020 figures, and growth rate
24 Caribbean countries¹¹ and world average In percent

| Country/territory | 2015 | 2020 | Growth |
|----------------------------------|--------------|--------------|---------------|
| Antigua and Barbuda | 12.05 | 8.63 | -28.38% |
| Bermuda | 47.51 | 36.92 | -22.29% |
| Anguilla | 34.42 | 32.08 | -6.80% |
| British Virgin Islands | 22.68 | 21.8 | -3.88% |
| Aruba | 18.22 | 17.83 | -2.14% |
| Bahamas | 20.63 | 20.42 | -1.02% |
| Puerto Rico | 20.14 | 20.52 | 1.89% |
| Dominica | 21.65 | 22.22 | 2.63% |
| Cayman Islands | 44.96 | 47.54 | 5.74% |
| Saint Lucia | 16.19 | 18.41 | 13.71% |
| Curacao | 23.59 | 29.06 | 23.19% |
| Montserrat | 53.54 | 66.67 | 24.52% |
| Trinidad and Tobago | 19.07 | 24.82 | 30.15% |
| World | 11.52 | 15.89 | 37.91% |
| Dominican Republic | 6.59 | 9.38 | 42.34% |
| Saint Vincent and the Grenadines | 15.93 | 23.64 | 48.40% |
| Grenada | 16.61 | 25.88 | 55.81% |
| Barbados | 28.15 | 45.6 | 61.99% |
| Suriname | 9.16 | 15.2 | 65.94% |
| Jamaica | 8.19 | 13.67 | 66.91% |
| Guyana | 7.11 | 11.92 | 67.65% |
| Saint Kitts and Nevis | 34.27 | 62.97 | 83.75% |
| Belize | 4.83 | 9.12 | 88.82% |
| Haiti | 0.01 | 0.27 | 2600.00% |
| Cuba | 0.07 | 2.05 | 2828.57% |

Source: Author's elaboration based on ITU World Telecommunication/ICT Indicators (WTI) database 2022 and World Bank

Caribbean as regards potential and actual access to the internet in recent years. Surveys of individuals and households regarding access to digital technologies would help contextualize the administrative data and provide a more vivid depiction of the situation of each country. However, as is well known,

many Caribbean countries experience challenges related to the capture, analysis, and dissemination of individual and household data. The limited availability of International Telecommunication Union (ITU) data on ICT household access and individual use is indicative of this challenge. For example, data on

reasons for not having internet is only available for Jamaica, making cross-country comparison within the subregion impossible. The lack of recent and disaggregated data on internet usage also emerges as a key challenge.

In this regard, while data on individuals using the internet per 100 inhabitants is available for 22 countries, for some countries the most recent data is from 2016 (Figure 4). Data disaggregated by gender is available for only five countries¹², of which three are territories. Data disaggregated by urban-rural location is only available for the Dominican Republic, data disaggregated by age, education level, and labour force status is available only for the Dominican Republic and Puerto Rico, and data disaggregated by occupation (manual vs. non-manual labour) is only available for Puerto Rico. Therefore, it is not possible at present to make a meaningful comparison of internet usage across the Caribbean at a more granular level. Nevertheless, a review of the data that is available still provides some valuable insights into the digital development of the subregion.

For example, 17 of the 22 countries for which data is available have a higher rate of internet users than the global average for 2020 of 60 per cent¹³ (see figure 4). In addition, three countries report a higher rate of internet users than the Organization for Economic Cooperation and Development (OECD) average for 2020. Furthermore, if we compare with the OECD average for 2016 (i.e., just under 80 per cent¹⁴), to account for the fact that a lot of the Caribbean data is older, that figure rises to 7 out of 22, or nearly one-third of the Caribbean countries.

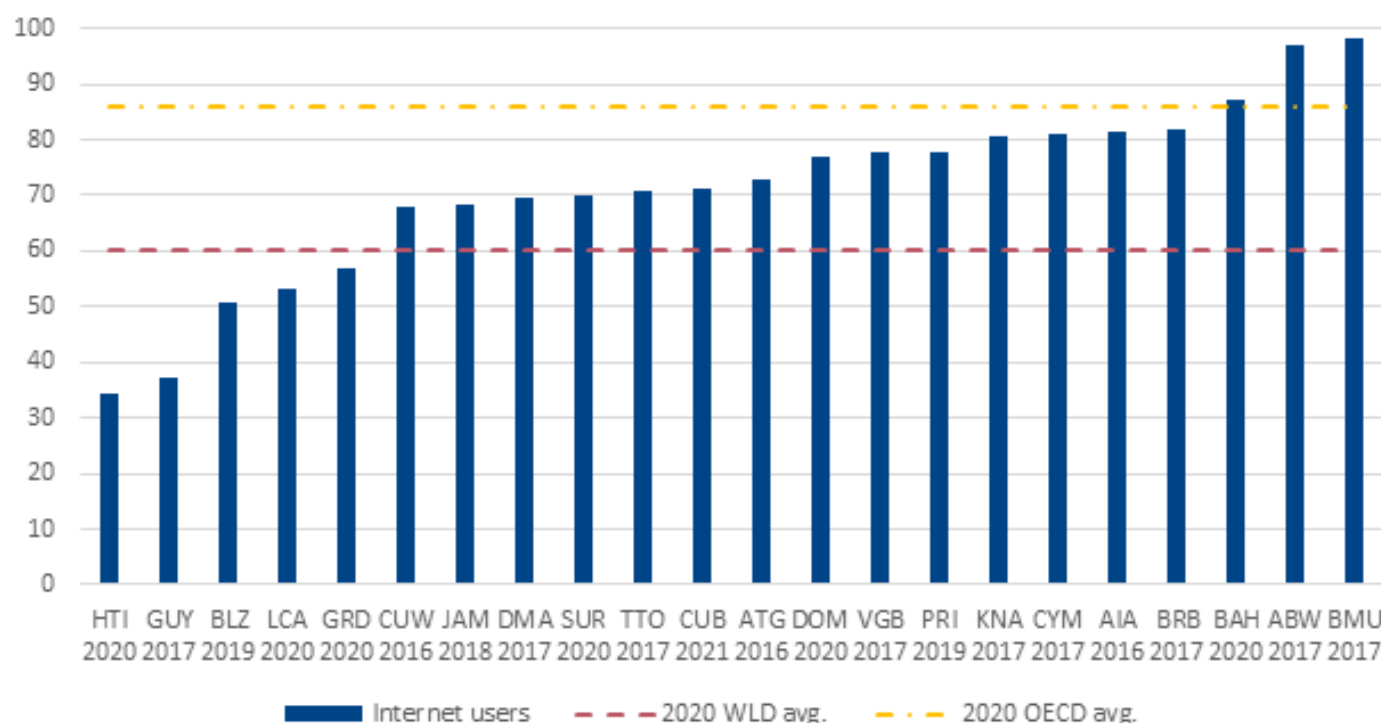
¹¹ The table includes all members and associate members of the CDCC for which data is available for both 2015 and 2020. For Montserrat, the earlier figure is from 2014.

¹² British Virgin Islands, Curaçao, Dominican Republic, Jamaica and Puerto Rico

¹³ World Bank, Individuals using the Internet (% of population) <https://data.worldbank.org/indicator/IT.NET.USER.ZS>

¹⁴ World Bank, Individuals using the Internet (% of population) - OECD members <https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=OE>

Figure 4: Individuals using the internet per 100 inhabitants
22 Caribbean countries¹⁵, world average for 2020, and OECD averages for 2016 and 2020
In percent



Source: Author's elaboration based on ITU World Telecommunication/ICT Indicators (WTI) database 2022, World Bank and OECD¹⁶

Furthermore, given that the Caribbean data largely does not account for the effects of the COVID-19 pandemic, during which the number of internet users surged globally¹⁷, it is possible that there are other countries that should be added to this list.

ACCESS TO A COMPUTER

Another dimension across which Caribbean countries can be compared is access to a computer at home (Figure 5). Data on household access to a computer is available for 12 Caribbean countries in

the ITU World Telecommunication/ICT Indicators database 2022. In addition, the ITU DataHub contains data for another nine countries. Unfortunately, no world average appears to be available for comparison for this indicator. Interestingly, the rate of access to a household computer is significantly higher in Bermuda than the OECD average for 2017 at 79 per cent, and seven Caribbean countries are within a few percentage points of the OECD average.

However, the disparities within the subregion are also glaring, as simultaneously, in four countries, less

than one third of households have access to a computer at home.

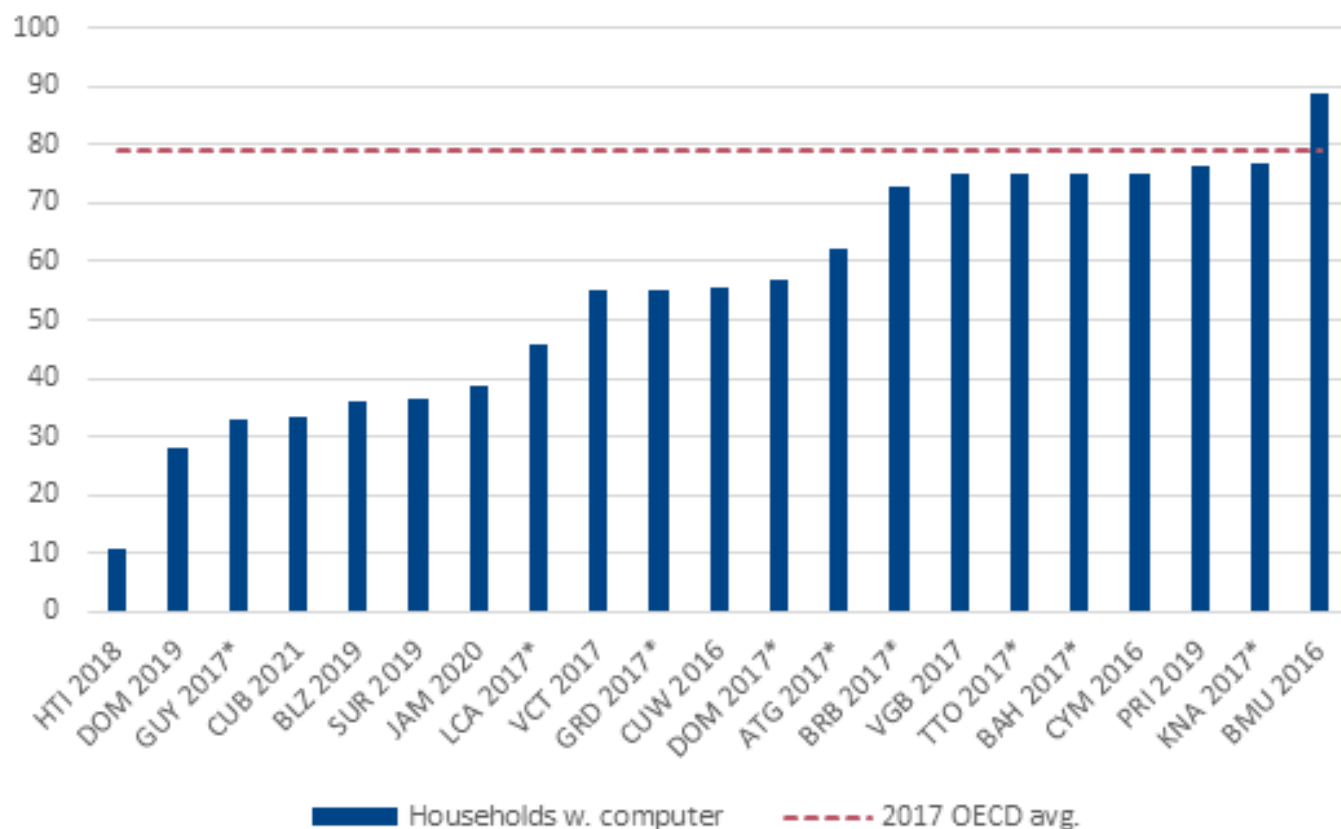
As with internet access, household access to a computer does not necessarily imply that an individual is using the computer. Unfortunately, statistics on individuals using a computer are only available for three Caribbean countries, namely Cuba, the Dominican Republic and Jamaica. Given the limited number of countries, and the fact that these large, populous countries are not representative of the diversity of the Caribbean, the data does not facilitate a subregional analysis.

¹⁵ The figure includes all members and associate members of the CDCC for which data is available after 2015. Red bars indicate countries where the number of internet users is higher than the 2020 global average of 60 per cent.

¹⁶ Access to computers from home <https://data.oecd.org/ict/access-to-computers-from-home.htm>

¹⁷ In 2020 alone, the number of internet users globally grew by 10.2 per cent, according to ITU (2021) Facts and Figures 2021, <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2021.pdf>

Figure 5: Households with a computer
21 Caribbean countries¹⁸ and OECD average for 2017¹⁹
In percent



Source: Author's elaboration based on ITU World Telecommunication/ICT Indicators (WTI) database 2022, data from ITU DataHub²⁰, and OECD

KEY INSIGHTS

The Caribbean is increasingly connected. Since 2015, the number of people who have actual or potential access to the internet has increased significantly across the subregion, with some countries having developed infrastructure to support access to the internet for their entire population. Most countries have seen growth in both fixed broadband and mobile broadband subscriptions, with mobile broadband appearing to be of greater importance to the subregion at present. The number of individuals using

the internet outstrips the global average in more than three quarters of Caribbean countries. Also, in nearly two thirds of Caribbean countries, more than half the population has access to a computer.

This data paints a picture of the digital transformation of the Caribbean in recent years and illustrates the potential of the subregion to further develop its digital capacity. However, the data also highlights the disparities across the subregion, and suggests that many people across the Caribbean lack access to ICTs. The lack of data on various indicators on household access and individual use,

in particular disaggregated data, makes a more in-depth comparison difficult. Notwithstanding, as comparisons are rarely conducted across such a broad set of Caribbean countries, the available data still provides some new and useful insights with respect to the digital development of the subregion. ■

¹⁸ The figure includes all members and associate members of the CDCC for which data is available after 2015.

¹⁹ 2017 is the latest year for which data is available for a majority of OECD countries. The average excludes Australia, Colombia, New Zealand, Switzerland and the United States of America, as no data is available for 2017 for those countries.

²⁰ Data from ITU DataHub is marked with an asterisk (*). Source: ITU DataHub, Households with a computer, <https://datahub.itu.int/data/?i=12046>



ILLUSTRATING INTERNET SPEED DIVIDES IN THE CARIBBEAN DURING COVID-19

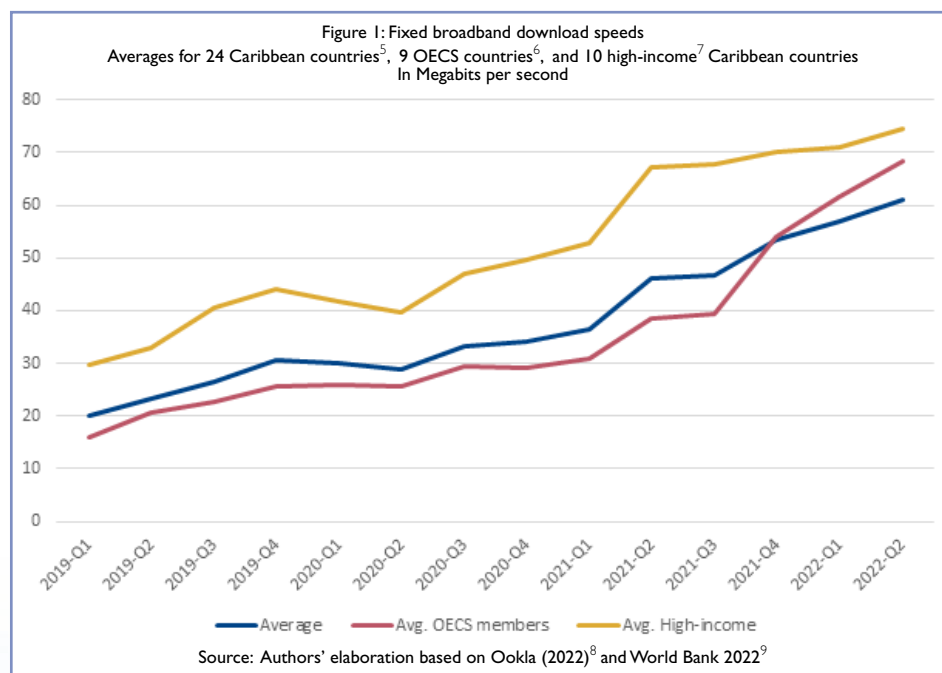
Lika Døhl Diouf and Dale Alexander¹ *

Discussions on digital inclusion and the digital divide have been ongoing at the global level for over 20 years. While early discussions focused primarily on the gap in access to digital technologies between countries, new digital divides have emerged as the technology has become more advanced and its impact on society has increased.

One such divide is internet speed, as this affects what content and services internet users can access. Speed divides exist both between those with narrowband access and those with broadband access, and among those with broadband access, depending on the speed available².

Fixed broadband speed is used in the sustainable development context as an indicator of the quality of internet subscriptions. Sustainable Development Goal 17 includes “Indicator 17.6.1: Fixed Internet broadband subscriptions per 100 inhabitants, by speed”, related to access to science, technology and innovation. The Connect2030 Agenda of the International Telecommunication Union, which sets out a framework for achieving universal and meaningful connectivity, has also set a target for all fixed-broadband subscriptions to provide at least 10 Mbps of speed by 2030³.

This article presents and analyses some statistics related to internet speeds in the Caribbean. Instead of looking at the speed of internet subscriptions, which refers to the speed offered



by telecommunications providers, it will examine actual fixed broadband download speed, as measured by Ookla. Ookla's Open Data Initiative provides open access to fixed and mobile network performance, quality, and availability data from global crowdsourced network tests⁴.

Speed tests can be used to check whether broadband signals meet set targets and provide the exact geographic location of the user at the time of the test.

As such, the data collected is highly granular and can provide policymakers with information necessary to guide decisions on future infrastructure

¹ Lika Døhl Diouf and Dale Alexander are, respectively, Associate Programme Officer and Chief of the Caribbean Knowledge Management Centre of the Economic Commission for Latin America and the Caribbean, subregional headquarters for the Caribbean.

² Dale Alexander and others (forthcoming), “Digital inclusion in Caribbean digital transformation frameworks and initiatives: a review”, Studies and Perspectives: ECLAC subregional headquarters for the Caribbean.

³ Global Connectivity Report 2022, p. 20, table 2.1 Aspirational targets for 2030 and current situation

⁴ Ookla's Open Data Initiatives, <https://www.ookla.com/ookla-for-good/open-data>

⁵ Average of all Caribbean countries for which data is available for the relevant period, namely Anguilla, Antigua and Barbuda, Aruba, The Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Cuba, Curaçao, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Montserrat, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago.

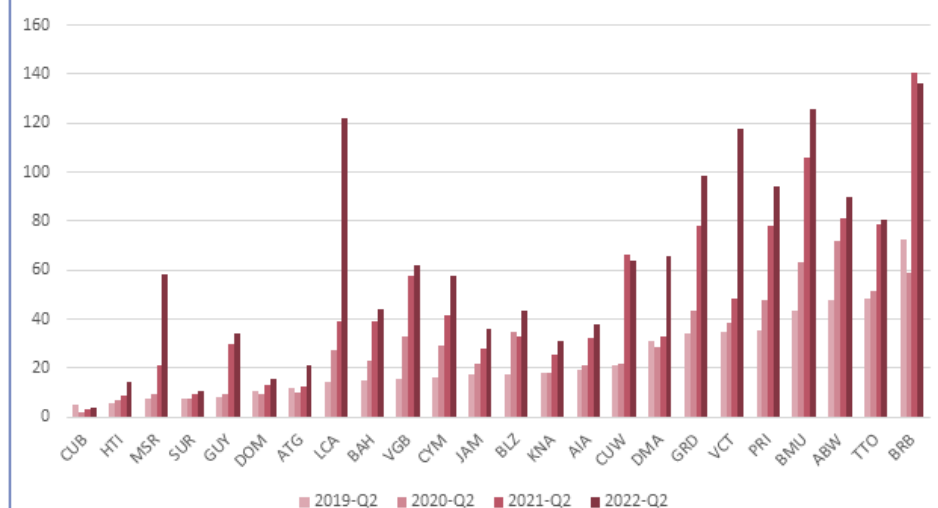
⁶ The average includes all OECS members and associate members out of the 24 Caribbean countries for which data is available.

⁷ The average includes all the countries among the 24 listed above that are classified by the World Bank as high-income countries, i.e., that have a Gross National Income per capita of \$13,205 United States Dollars or more in 2022, namely Antigua and Barbuda, Aruba, The Bahamas, Barbados, Bermuda, Cayman Islands, Curaçao, Puerto Rico, Saint Kitts and Nevis, and Trinidad and Tobago.

⁸ Ookla (2022), Mean Fixed Broadband Download Speed (Mbps): Speedtest by Ookla Global Fixed and Mobile Network Performance Maps was accessed on 15 September 2022 from <https://registry.opendata.aws/speedtest-global-performance>. Speedtest® by Ookla® Global Fixed and Mobile Network Performance Maps. Based on analysis by Ookla of Speedtest Intelligence® data for Q1 2019 to Q2 2022. Provided by Ookla and accessed 15 September 2022. Ookla trademarks used under license and reprinted with permission.³⁰ World Bank, 2022, GNI per capita, Atlas method (current US\$) <https://data.worldbank.org/indicator/NY.GNPPCAPCD>

⁹ World Bank, 2022, GNI per capita, Atlas method (current US\$) <https://data.worldbank.org/indicator/NY.GNPPCAPCD>

Figure 2: Fixed broadband download speeds
Averages for 24 Caribbean countries
In Megabits per second



Source: Authors' elaboration based on Ookla (2022)

investments, and support decision-making by providing a better understanding of the type, level, and quality of actual network connectivity¹⁰.

INTERNET SPEED AND THE COVID-19 PANDEMIC

As illustrated in Figure 1, four key observations can be made regarding the overall trends of internet speeds in the Caribbean within the recent past, and in particular, since the onset of the COVID-19 pandemic.

First, internet speeds have increased significantly across the Caribbean within the past four years, from an average of 20 Mbps to over 60 Mbps.

Second, speeds were rising across the Caribbean prior to the onset of the COVID-19 pandemic, with sharper increases in the high-income countries.

Third, the onset of the pandemic negatively impacted internet speeds, as evidenced by the dips in the Caribbean average and the average for the high-income countries, and the flattening of the growth curve for the OECS countries between the fourth quarter of 2019 and the second quarter of 2020. This is likely due to the surge in uptake of internet usage in that period, which was witnessed globally.

Fourth, internet speeds recovered quickly, and continued to increase into 2022, with the OECS countries surpassing the regional average and nearly catching up with the high-income country average.

THE CARIBBEAN INTERNET SPEED DIVIDE

Breaking down the averages by country provides some insight into the internet speed divide among Caribbean countries, and how speeds have changed since the onset of the COVID-19 pandemic. Figure 2 orders the countries of the Caribbean based on the fixed broadband download speed available in the second quarter

(Q2) of 2019, prior to the onset of the COVID-19 pandemic, and compares that figure to the speed available in the second quarters of 2020, 2021 and 2022.

Except for Cuba, all Caribbean countries saw increases in internet speed from Q2 of 2019 to Q2 of 2022 (see Figure 2). Within that period, some countries experienced dramatic increases in internet speed. In four countries (Grenada, Montserrat, Saint Lucia, and Saint Vincent and the Grenadines), speeds increased at least six-fold.

In Montserrat, average speeds increased from under 8 Mbps in Q2 of 2019 to nearly 60 Mbps in Q2 of 2022. During the same period, Saint Lucia saw an increase from around 27 Mbps to over 120 Mbps, the third highest reported speed of the subregion.

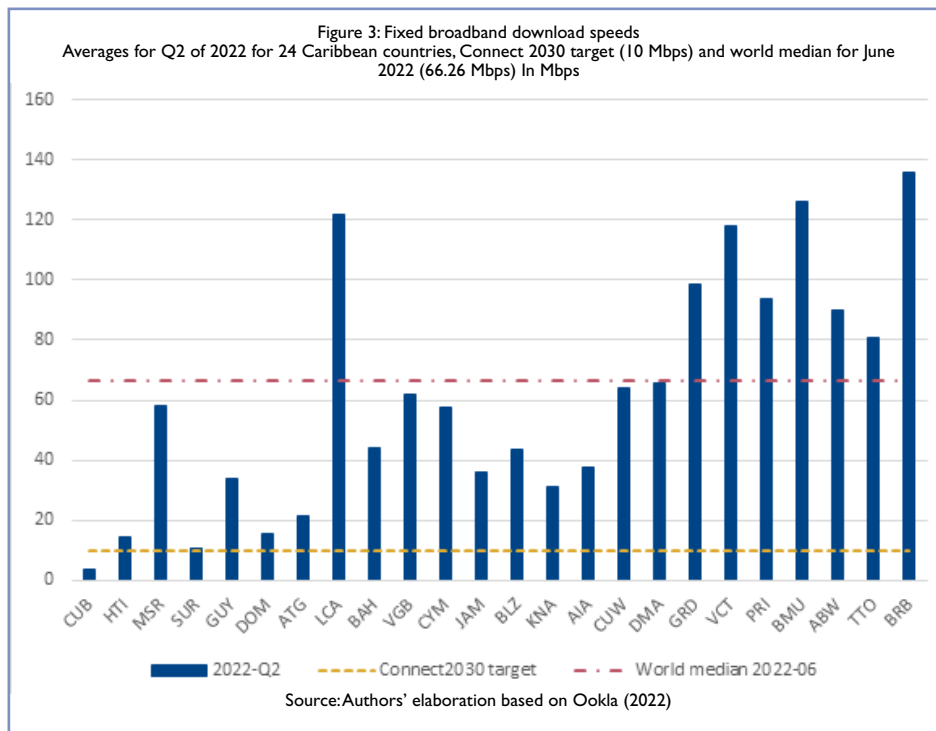
Several other countries experienced significant increases in speed over that period, with 18 countries seeing at least a doubling of speeds. The six remaining countries are a diverse group, consisting of countries like Aruba, Barbados and Trinidad and Tobago, that already had high internet speeds prior to the onset of the COVID-19 pandemic, and countries where internet speeds remain relatively low, such as Antigua and Barbuda, Cuba, and the Dominican Republic.

CARIBBEAN INTERNET SPEEDS IN A GLOBAL CONTEXT

To place this data within a global context, Figure 3 compares the average fixed broadband download speed for Q2 of 2022 to the ITU's Connect 2030 Agenda target and the global median for June of 2022.

Figure 3 demonstrates that except for Cuba, all Caribbean countries have already met ITU's target for broadband speed for 2030. Eight countries, i.e., one third of the sample, also have speeds exceeding

¹⁰ Global Connectivity Report 2022, p. 157



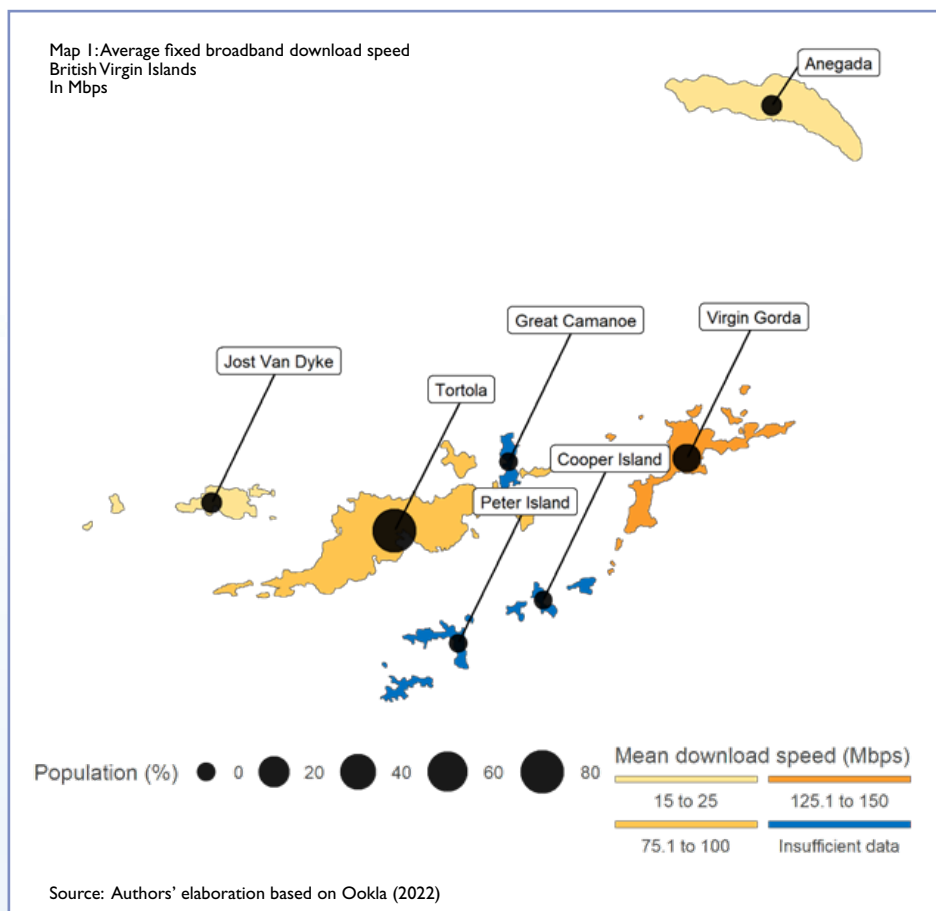
the world median. Among the remaining countries, experiences vary, with some only just exceeding the 2030 target, and others nearing the global median.

SPEED DIVIDES WITHIN CARIBBEAN COUNTRIES

Speed divides can also be found within countries. The analysis below utilizes second quarter 2022 speed test data from Ookla, to illustrate the disparities in internet speeds that has been observed between districts within four sample Caribbean countries, namely the British Virgin Islands, Grenada, Guyana, and Saint Vincent and the Grenadines¹¹. Each respective map also presents the percentage of the population that lives in each district.

BRITISH VIRGIN ISLANDS

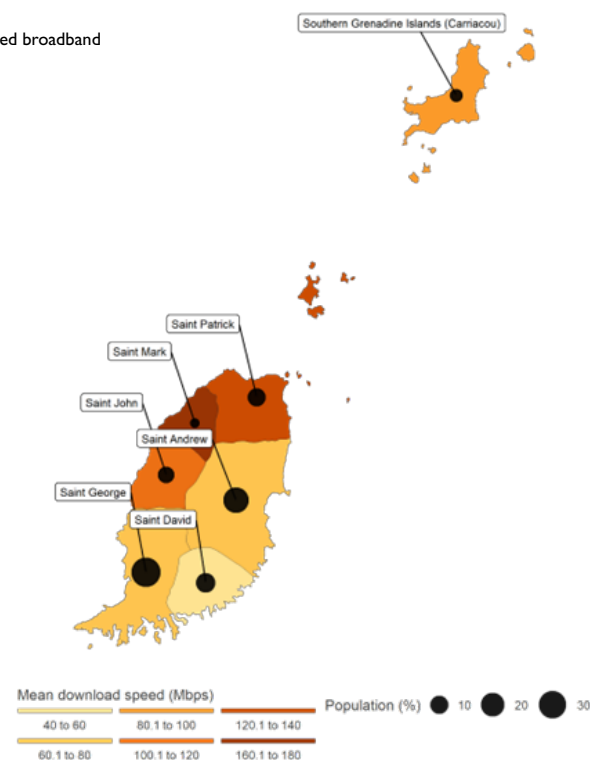
In the British Virgin Islands (BVI), average fixed broadband download speeds range from 15 Mbps to 150 Mbps (see Map 1). At the lower end, Jost Van Dyke and Anegada, each of which holds about 1 per cent of the BVI population, report average speeds between 15 and 25 Mbps. Tortola, by far the most populous region¹², reports speeds between 75 and 100 Mbps, while Virgin Gorda, home to approximately 15 per cent of the BVI population, reports average speeds between 125 and 150 Mbps. There are also three districts where there is insufficient data to compile a reliable average: Cooper Island, which at the 2010 census had only 12 households; Great Camanoe Island, which had only four households; and Peter Island, which is a privately-owned island with a single resort hotel.



¹¹ "District" in this section refers to a first-level administrative division within a country, such as a region or parish.

¹² 82.9 per cent of households according to the Virgin Islands 2010 Population and Housing Census Report http://www.bvi.gov.vg/sites/default/files/resources/virgin_islands_population_and_housing_census_2010.pdf

Map 2: Average fixed broadband download speed
Grenada
In Mbps



Source: Authors' elaboration based on Ookla (2022)

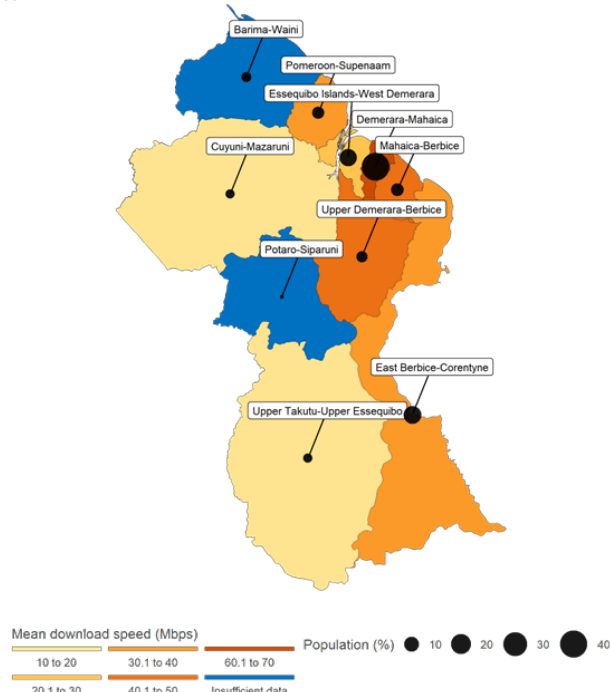
GRENADA

The disparities in internet speed are also quite large in Grenada, ranging from 40 Mbps to 180 Mbps, depending on location (see Map 2). The highest speeds are found in the least populated district, Saint Mark¹³, where speeds average between 160 and 180 Mbps. The lowest average speeds are found in Saint David, home to about 4 per cent of the Grenadian population, followed by Saint Andrew and Saint George, the two most populous districts.

GUYANA

The unique geography of Guyana, with a densely populated coastal plain and more sparsely populated forested internal regions, is reflected in the internet speeds available in the country (see Map 3). The four least populous regions¹⁴, known as the Hinterland, all located in the western part of the country, either have insufficient data, or report the lowest speeds available within Guyana, between 10 and 20 Mbps on average. It is noted that large parts of the Guyana Hinterland have been unconnected until recently, and that projects are ongoing to roll out ICT hubs connecting communities to the internet using satellite dishes to bridge the gap in access¹⁵. The highest average speeds, ranging from 60 to 70 Mbps, can be found in the Demerara-Mahaica region, which houses over 40 per cent of the Guyanese population.

Map 3: Average fixed broadband download speed
Guyana
In Mbps



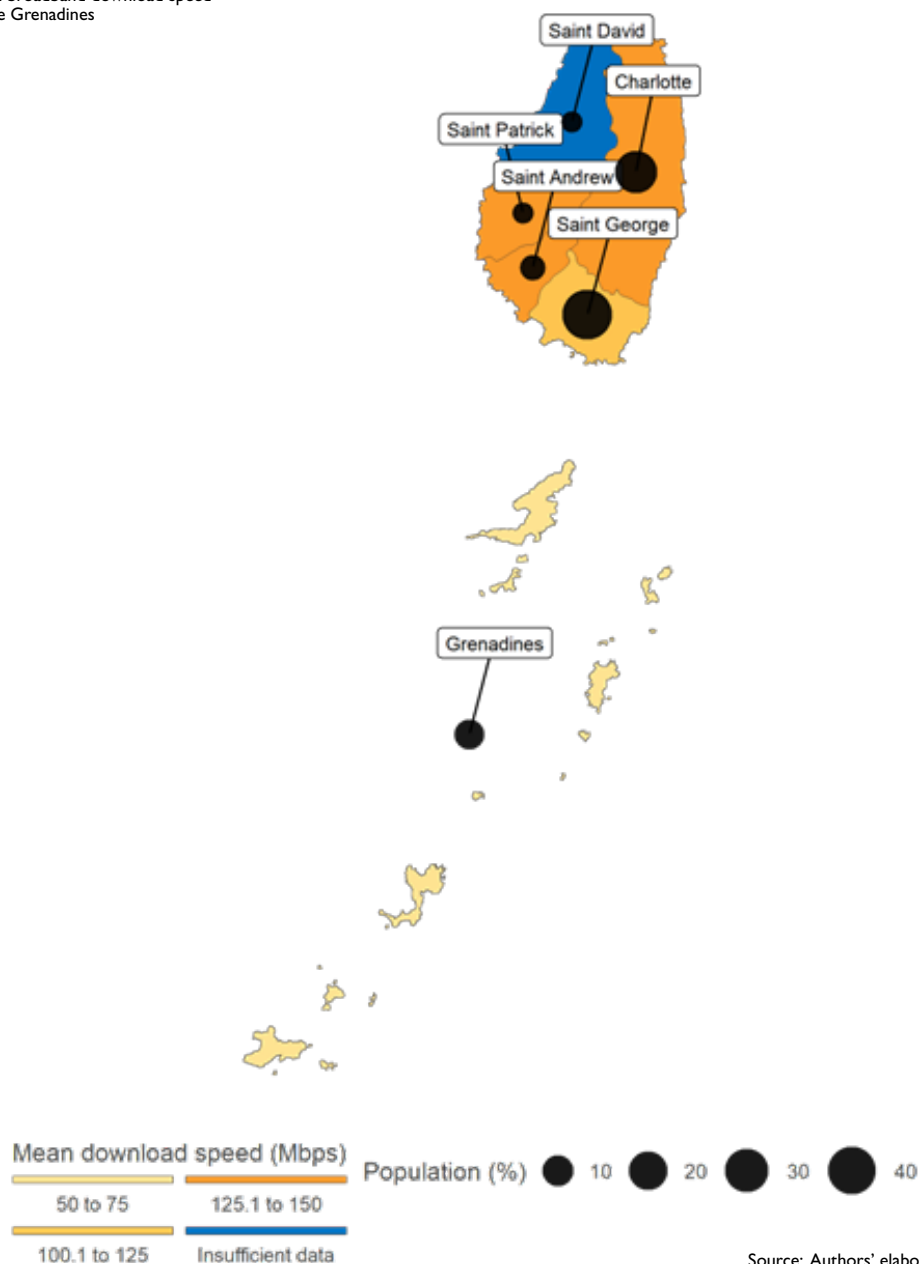
Source: Authors' elaboration based on Ookla (2022)

¹³ Government of Grenada, Ministry of Finance, Total Population Count by Parish 2011, <https://www.finance.gd/images/TotalPopulationcountbyParish2011.pdf>

¹⁴ Statistics Guyana, Guyana Population and Housing Census 2012, https://statisticsguyana.gov.gy/wp-content/uploads/2019/10/2012_Preliminary_Report.pdf

¹⁵ Government of Guyana, 200 ICT hubs for hinterland, riverine communities, <https://dpi.gov.gy/200-ict-hubs-for-hinterland-riverine-communities/>

Map 4: Average fixed broadband download speed
Saint Vincent and the Grenadines
In Mbps



Source: Authors' elaboration based on Ookla (2022)

SAINT VINCENT AND THE GRENADINES

Internet speeds in Saint Vincent and the Grenadines are fairly high, ranging between 50 and 150 Mbps depending on the district (see Map 4). The lowest average

speeds are recorded in the Grenadines, home to about 9 per cent of the country's total population¹⁶. There is insufficient data to produce an average for the region of Saint David, which in 2012 housed an estimated 5,756 people. It is noteworthy that the La Soufrière volcano is located

within this region, and that thousands of people were displaced from their homes in 2021 following a series of eruptions¹⁷. As a result, it is unclear how many people currently live in this region, which would affect how the map should be interpreted.

¹⁶ Saint Vincent and the Grenadines, Census Division, Population and Vital Statistics Report 2012 <https://stats.gov.vc/wp-content/uploads/2019/03/Population-and-Vital-Statistics-Report-2012.pdf>

¹⁷ The Guardian, St Vincent hit by power cuts after another 'explosive event' <https://www.theguardian.com/world/2021/apr/11/st-vincent-volcano-la-soufriere-explosive-event-power-cuts>

CONCLUSIONS

Internet speed is one possible measure of internet quality, for which highly accurate data that can be disaggregated by geography is available for nearly all Caribbean countries. The available data shows that internet speeds have, on average, increased significantly in the Caribbean since the onset of COVID-19, but there are large disparities among countries in the subregion. Average fixed broadband download speeds in

the subregion ranged from 3.69 Mbps in Cuba to over 136 Mbps in Barbados in the second quarter of 2022. Seen within a global context, about one third of Caribbean countries have internet speeds above the global median, while the rest fall below.

Disparities can also be seen within countries. In this regard, the patterns of where internet speeds are highest, vary. In some countries, the least populous districts have the highest speeds, while

in others, they have the lowest. Among the regions that have insufficient data, some are remote or have difficult terrain, while others are sparsely populated, either naturally or due to displacement from natural disasters. These disparities could likely be explained by other factors, which are beyond the scope of this article, but the figures and maps illustrate the possibilities that this granular internet speed data could hold for policymakers and decision makers across the Caribbean. ■



INVESTING IN AN INCLUSIVE DIGITAL FUTURE FOR THE CARIBBEAN

By Lika Døhl Diouf and Bevil Wooding^{1*}

The Caribbean is undergoing a digital transformation: More people than ever have access to digital technologies and the internet, and both businesses and government entities are increasingly providing online services. While significant disparities remain both within and among Caribbean countries in terms of access to digital technologies and infrastructure, the influence of digital technologies on the subregion has increased significantly in recent years, particularly in response to the public health measures implemented to mitigate the impacts of the COVID-19 pandemic.

National development plans across the subregion acknowledge the transformative potential of digital technologies, and envision the way that ICTs could contribute to the achievement of their sustainable development aspirations². However, it is well-established that the adoption of digital technology is not a panacea for societal ills. In fact, the adoption of digital technologies can exacerbate existing challenges, increase social inequality and further the marginalization of already marginalized groups. This became evident during the early stages of the COVID-19 pandemic, when the digital divides within Caribbean countries came into stark focus.

People who did not have access to an internet connection, an appropriate device, or the skills to access online content, were excluded from schooling, work, healthcare services and social services, among others. In addition, low-income populations, and unbanked or underbanked people were more limited in their ability to take advantage of the opportunities offered by the internet, as access to online services frequently required payment.

According to the World Bank, in 2021, only 73 per cent of the population of Latin America and the Caribbean aged 15 and over, was reported to have held an account at a bank or financial institution

or used a mobile money service. Among Caribbean countries, 2021 figures are only available for two countries: the Dominican Republic, where account ownership stands at 51 per cent; and Jamaica, where it stands at 73 per cent³. These figures hint at the possibility of large segments of the Caribbean population being excluded from access to paid online services, and highlights the link between social and digital exclusion.

To fully reap the benefits of the digital transformation while also minimizing the potential for harm, the development and deployment of new technologies needs to have a solid foundation in human rights⁴. However, achieving this goal will require digital technologies to be designed specifically for Caribbean circumstances, and to respond to Caribbean needs. It will not be sufficient for Caribbean countries to wait for digital technologies to “trickle down” from more industrialized countries. As such, there is a need to grow indigenous, flourishing innovation ecosystems within the Caribbean, that are adapted to the Caribbean social, political and economic environment.

Innovation ecosystems cannot be directly imported or transposed from other regions, as they are complex systems resulting from decades of dedicated planning, policymaking and public investments in education and technical development. Governments that have

tried to do so have failed, expensively. Bringing inclusive innovation to the top of the development agenda could support the development of strong, self-sustaining indigenous enterprises that create their own technologies and intellectual capital. Facilitating this will require bold decisions at several levels, including related to investment.

In the longer term, Caribbean governments must invest in strengthening critical infrastructure and in increasing relevant human resource capacity. Private and public sector stakeholders must participate in this process of digital upgrading, and governments, telecommunications operators and technology companies must join forces to create a robust digital ecosystem. However, the lack of accessible funding remains a major impediment to such efforts.

IN PARTICULAR FUNDING IS NEEDED TO:

1. Expand access to network infrastructure and upgrade it as network technology advances.
2. Encourage the adoption of digital technologies through dedicated programmes and initiatives on the benefits of connectivity.

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² Dale Alexander and others (forthcoming), “Digital inclusion in Caribbean digital transformation frameworks and initiatives: a review”, Studies and Perspectives, ECLAC Subregional headquarters for the Caribbean.

³ World Bank Global Findex 2021, Account (% age 15+), <https://www.worldbank.org/en/publication/globalfindex/Data>

⁴ Report of the Secretary-General, Question of the realization of economic, social and cultural rights in all countries: the role of new technologies for the realization of economic, social and cultural rights, A/HRC/43/29

3. Support the development of local content, including local platforms and services.
4. Develop digital skills, including skills related to cybersecurity and mitigating online risks and harms.

A main challenge for policymakers is to weave policy imperatives into financing decisions, as digital investment frameworks need to be supported by bold and visionary public policy. While good policy will provide the enabling environment necessary for increased private sector investment, funding priorities should be derived from the set policy priorities and address identified gaps in a country's development agenda. This will require careful, dedicated planning, to ensure that the national policy and institutional frameworks always inform the mobilization of public funding instruments in the country.

IN FUNDING DIGITAL TRANSFORMATION EFFORTS, GOVERNMENTS SHOULD ENSURE THAT THE INTERVENTION:

- Provides leverage, meaning that the use of funds should be structured to attract additional private capital;
- Seeks impact, i.e., to drive progress towards sustainable development aspirations, meet national targets and close universal access and SDG gaps; and
- Provides financial returns for private investors in line with market expectations, based on real and perceived risks.

Given the broad range of potential sources

of financing, and the many gaps that remain as regards connectivity, adoption, innovation and inclusion, it is imperative that strategic ways are found to increase available funding to close these gaps. While infrastructure deployment remains important, the COVID-19 pandemic highlighted the need to facilitate digital inclusion and the digital transformation of Caribbean economies.

THIS WILL NECESSARILY INVOLVE THE PRIORITIZATION OF:

1. Demand-side investment to facilitate digital adoption, with a focus on motivation and usage, support for micro-, small, and medium-sized enterprises, the development of local content and services and digital skills.
2. Research, development and innovation to facilitate the development of innovative local digital applications and technologies, prioritizing those that can have a clear developmental impact.
3. Mainstreaming digital inclusion in all programmes and projects, by making the involvement of marginalized and underrepresented communities a priority, and addressing their needs as a condition for access to funding.
4. The development of tools that will facilitate investment, such as shared research, baseline data or infrastructure maps.

One financial tool that has been used at national and regional levels in various parts of the world to close gaps and

reduce disparities is structural funds. Universal Service Funds (USFs) are commonly used structural funds that aim to increase access to telecommunication services, through projects funded by legally mandated contributions from telecommunication providers.

At least 10 countries across the Caribbean have USFs in place. Traditionally, USFs have been used to expand telephone and broadband networks into geographical areas, that private telecommunication companies would otherwise view as unattractive for investment. The use of USFs has also been discussed within the context of providing access to ICTs for people with disabilities.

However, one challenge that has been identified is that USFs have focused on universal service (i.e., connectivity) at the expense of universal access (i.e., accessible services through the provision of skills, equipment, and support)⁵. This example highlights the need for structural funds to be designed specifically to advance digital inclusion. The use of structural funds also requires a delicate balance between the use of public money in areas where market failure has been identified. The types of funding sought would depend on the nature of the initiative or project to be funded. These include state ownership, regulation, in-kind support, and incentives, including subsidies, grants and loans issued through structured funds, sovereign funds, and partnerships with private companies and bilateral or multilateral development agencies.

An appropriate and effective financing toolbox should, therefore, contain a mix of funding mechanisms and financial solutions, as well as non-financial incentives. Funding should be transparent and accountable, with annual audit reports published for public review. The eligibility requirements should be clear and available for all to consider, and target

⁵ A. Bleeker, "Using universal service funds to increase access to technology for persons with disabilities in the Caribbean", Studies and Perspectives series-ECLAC Subregional Headquarters for the Caribbean, No. 79 (LC/TS.2019/59-LC/CAR/TS.2019/2), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC), 2019.

projects should be developed within the context of pre-defined strategies and programmes. Some established financial solutions include bonds and notes, infrastructure bonds, loans, microfinance, financing for small- and medium-sized enterprises and private equity funds. This can be supplemented by newer solutions, such as digital bonds, impact investing bonds, venture capital funds, crowdfunding, and a fund of funds.

Altogether, there are many options available for financing the inclusive digital transformation of the Caribbean. The challenge, however, lies in identifying which solutions would be appropriate for the regional, subregional, and national contexts of each government. In reviewing their funding and financing options, Caribbean governments must therefore expend considerable effort on mapping current policies, goals and priorities, the current financing and funding environment, applicable regulations, and the institutional landscape.

THE FOLLOWING STEPS WILL ASSIST GOVERNMENTS IN SETTING TARGETS AGAINST WHICH VARIOUS DIGITAL INCLUSION GAPS CAN BE MEASURED:

- Prioritizing activities.
- Achieving cost-effectiveness.
- Identifying key actors.
- Addressing cost and risk challenges that are associated with the financing of these projects.
- Promoting private-sector investment.
- Supporting coordination and cooperation in the achievement of the digital transformation, digital inclusion, and sustainable development objectives of Caribbean countries.

It may also reveal which existing funds have outlived their relevance and which do contribute to an improved distribution of resources. Most importantly, this mapping exercise would provide ample opportunity for the involvement of marginalized communities, and the prioritization of their needs, in line with the principles of the 2030 Agenda to “leave no one behind” and “reach the furthest behind first”. Ultimately, this will help to ensure the relevance and effectiveness of the programmes and initiatives to these groups, further digital inclusion, and support the social inclusion of and reduction of inequality in relation to these groups. ■

RECENT AND UPCOMING MEETINGS

2022

NOVEMBER

22 NOVEMBER 2022

Addressing coordination and data sharing challenges for better environment, climate change and disaster indicators

DECEMBER

13 DECEMBER 2022

Workshop on the Preparation of Reports for the 10-Year Review of SAMOA Pathway

14 DECEMBER 2022

Workshop on Measuring Digital Inclusion in the Caribbean

List of Recent ECLAC Documents and Publications

Listed by Symbol Number, Date and Title

LC/CAR/TS.2022/3

September 2022

Addressing gender disparities in education and employment: A necessary step for achieving sustainable development in the Caribbean

AUTHOR: Aita, Diogo

December 2022

Proposal for the implementation of a ferry service through Public Private Partnerships (PPP's) in the Eastern Caribbean Region

LC/TS.2022/217

December 2022

Science, technology and innovation for sustainable development: Lessons from the Caribbean's energy transition



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