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ECLAC SUBREGIONAL HEADQUARTERS FOR THE CARIBBEAN

Digital inclusion in Caribbean digital transformation frameworks and initiatives

A review

Dale Alexander
Lika Døhl Diouf
Kwesi Prescod

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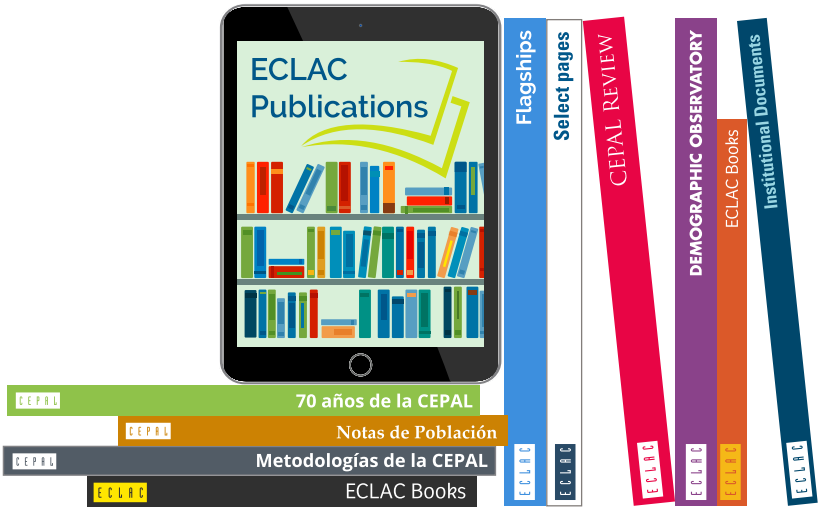

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Abstract

This study evaluates the extent to which digital inclusion is considered in Caribbean digital transformation frameworks. Digital inclusion considers the ways in which digital divides are created as the digital transformation of society progresses, and how societal inequalities affect and are affected by digital technologies. As such, digital inclusion is a lens through which the effects of the digital transformation can be assessed. The study assesses the digital transformation policies of 11 countries and territories of the Caribbean. It complements this analysis with qualitative data gathered through surveys and interviews from ICT focal points and policymakers in the region. The study finds that Caribbean countries and territories are in various stages of their digital transformation journeys, and that there is a lack of strategic direction. Few of the countries and territories studied have an ICT plan in force, and most do not yet consider digital inclusion in their policy frameworks. Most countries take a sectoral approach, and many focus almost exclusively on e-government. As there is a lack of strategic direction, digital inclusion efforts are frequently piecemeal and *ad hoc.* Reporting on implemented initiatives is frequently lacking, which calls into question the effectiveness of the initiatives. The lack of up-to-date data to guide policy making is also identified as a challenge. The study also suggests that digital skills in the public sector may be lacking, which may jeopardize efforts to digitally transform government and provide services that may encourage uptake among people. However, while most of the national frameworks do not discuss digital inclusion, most do explicitly value and promote inclusion in general. This could serve as a foundation for future digital inclusion efforts.

Introduction

The 2030 Agenda for Sustainable Development recognizes the potential of the spread of information and communications technologies (ICTs) to accelerate human progress, bridge the digital divide and develop knowledge societies.[1] This process of digital transformation within businesses and society has brought many benefits and opportunities. However, there are also risks and threats associated with it. These include increasing inequality and job loss, harm to the local economy due to the move to digital platforms, fraud, and cybersecurity hazards, including hacking.[2] As such, public policies aimed at guiding the digital transformation are critical to ensure that the spread of ICTs will support, and not undermine, the achievement of the Sustainable Development Goals.

Over the past two decades, the Caribbean region has made great strides towards increasing access to and use of ICTs. More people are covered by a mobile network and have access to broadband, and devices and connectivity have become more affordable. However, as the COVID-19 pandemic revealed, progress has been uneven. The onset of the COVID-19 pandemic and the subsequent move from in-person to online interactions highlighted how many people had been left out of the digital transformation so far. People without access to devices and connectivity were largely isolated and deprived of the many benefits ICTs can provide. For example, children in rural areas and underserved communities, especially children with disabilities, were disproportionately affected and unable to access online learning, leading to critical education loss.[3] Businesses that could not adopt digital payments and technologies struggled to survive,[4] impacting livelihoods and access to services. Government departments that could not pivot to online service delivery modalities were largely closed,

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1 A/RES/70/1: Transforming our world: the 2030 Agenda for Sustainable Development, para. 15.

2 Ziboud van Veldhoven and Jan Vanthienen (2021), "Digital transformation as an interaction-driven perspective between business, society, and technology", https://doi.org/10.1007/s12525-021-00464-5.

3 Amelia Bleeker and Ryan Crowder (2022), "Selected online learning experiences in the Caribbean during COVID-19" Studies and Perspectives series-ECLAC Subregional Headquarters for the Caribbean, No. 105 (LC/TS.2021/212-LC/CAR/TS.2021/7), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).

4 Acevedo and others (2021), "The Impacts of the COVID-19 Pandemic on Firms in the Caribbean", *Development through the Private Sector Series* (August 2021), Inter-American Development Bank Invest.

which significantly impacted those served by those institutions. Efforts to address these issues are underway in the Caribbean region, as evidenced by the development of the Vision and Roadmap for a Single ICT Space.[5] More broadly, eLAC2022, the digital agenda for Latin America and the Caribbean was developed with the intention of acting as as a catalyst for cooperation on digital matters in the broader Latin America and the Caribbean region.[6]

Unequal access to ICTs, often referred to as the digital divide, reflects and amplifies existing social, cultural and economic inequalities.[7] As such, the people left behind are often the most marginalized, including women, older persons, people with disabilities, indigenous peoples, migrants, refugees and rural populations. This goes counter to the principles of the 2030 Agenda to "leave no one behind" and "reach the furthest behind first", as well as SDG 10, which aims to "Reduce inequality within and among countries". Considering these principles, and the risks and threats associated with the digital transformation, it must be pursued with a focus on maximizing benefits and minimizing risks associated with the use of digital technologies, reducing inequalities in access, and empowering marginalized groups. This people-centred lens through which the digital transformation can be assessed, and inequalities can be remedied, can be referred to as digital inclusion.

This study seeks to evaluate the extent to which digital inclusion is considered in Caribbean digital transformation frameworks and provide recommendations to Caribbean policymakers on how they can move further towards inclusion. To this end, the study reviews the policy frameworks for digital transformation in 11 Caribbean countries and territories and considers similarities and differences among them with regard to digital inclusion. It supplements this with expert-derived information on digital transformation and digital inclusion initiatives.

A. Methodology

This study considers digital inclusion in relation to the digital transformation in 11 Caribbean countries and territories,[8] namely:[9]

(i) Anguilla

(ii) Aruba

(iii) Barbados

(iv) Belize

(v) British Virgin Islands

(vi) Grenada

(vii) Guyana

(viii) Jamaica

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5 Caribbean Telecommunications Union (2017), "Vision and Roadmap for a CARICOM Single ICT space", https://ctu.sightfactory.com/wp-content/uploads/2020/11/Vision-and-Roadmap-for-a-Single-ICT-Space-Final-Version-UPDATED.pdf.

6 Seventh Ministerial Conference on the Information Society in Latin America and the Caribbean (2020), Digital Agenda for Latin America and the Caribbean, LC/CMSI.7/4 https://conferenciaelac.cepal.org/7/sites/elac2020/files/20-00902_cmsi.7_digital_agenda_elac2022.pdf.

7 A/74/821 "Road map for digital cooperation: implementation of the recommendations of the High-level Panel on Digital Cooperation: Report of the Secretary-General" (Roadmap).

8 Anguilla, Aruba and the British Virgin Islands are non-independent territories.

9 In the selection of the study countries, the authors sought to provide a diverse selection of Caribbean countries and territories. Factors such as location, population size and composition, official language, and level of development were considered in the selection process.

(ix) Saint Lucia

(x) Saint Vincent and the Grenadines

(xi) Trinidad and Tobago

The evaluation consists of a review of digital inclusion in the policies setting out the national development aspirations of these countries and territories (hereinafter "national development plans", "NDPs"), and the policies setting out their aspirations in relation to ICTs or the digital transformation (hereinafter "ICT plans", "digital transformation frameworks"). Efforts were also made to review the state of digital transformation within each country and territory. However, the lack of data relevant to digital inclusion was a persistent challenge with regard to the conduct of this study. There is limited data available on access to and use of ICTs, and such data is rarely disaggregated. Reports on the implementation of digital transformation frameworks were largely inexistent, and administrative reports on digital inclusion initiatives tended to be lacking in terms of detail. The effectiveness of implemented initiatives was rarely considered. As a result, it was necessary to supplement the review of the digital transformation frameworks with qualitative information gathered from ICT focal points and policymakers from the 11 countries and territories (see Annex 3). To that end, the study surveyed these experts on the state of digital transformation and dimensions related to digital inclusion in their country or territory (Annex 1 presents the Survey Instrument). Furthermore, in-depth follow-up interviews were conducted with the experts to gauge their sentiments regarding aspects of the digital transformation journey of their country (Annex 2 presents the Interview outline). Given that the experts all worked in government, these questions primarily focused on government digital inclusion efforts, e-government services and digital skills in the public service.

The study consists of five sections:

(i) Concept clarification: digital transformation, digital divides, digital inclusion.

(ii) Identification of digital inclusion in the NDPs and ICT plans of 11 Caribbean countries and territories.

(iii) Comparative analysis of digital inclusion in available digital transformation frameworks and their implementation.

(iv) Expert views on digital inclusion in the Caribbean.

(v) Conclusions and recommendations.

I. Concept clarification: digital transformation, digital divide(s), digital inclusion

The terms "digital inclusion", "digital divide(s)" and "digital transformation" are often used in the literature and policy documents without elaboration, yet there appears to be little theoretical agreement on what the terms encompass and how they relate to other terms used when discussing the impact of technological progress on society. This section lays out the theoretical foundation necessary to understand the way these concepts are used in this study.

A. Digital transformation, digitalization, or digitization?

Recent literature reviews have demonstrated that the term "digital transformation" has not been used consistently among scholars and practitioners, and is often conflated with adjacent terms, such as "digitization" and "digitalization". "Digitization" and "digitalization" are often used interchangeably, and "digitalization" is often used interchangeably with "digital transformation". This is further complicated by the fact that much of the literature only consider these terms within the context of a business, while others consider them within the context of a society. Several authors have attempted to delineate the boundaries between two or more of these interconnected terms (Bockshecker and others 2018;[10] Frenzel and others 2021;[11] Gong and Ribiere 2021;[12] Morze and Strutynska 2021;[13] Reis and others 2020;[14] Van Veldhoven and Vanthienen 2021[15]). Based on these reviews, this study adopts the perspective that it is helpful to keep these three terms separate, as it allows for greater conceptual clarity.

[10] Bockshecker and others (2018).
[11] Frenzel and others (2021).
[12] Gong and Ribiere (2021).
[13] Morze and Strutynska (2021).
[14] Reis and others (2020).
[15] Van Veldhoven and Vanthienen (2021).

"Digitization" can be understood as the process of converting information from an analogue format (e.g. paper) into a digital format (i.e. binary code). "Digitalization" goes beyond digitization, as it encompasses the use of digital technologies and data (both digitized and natively digital) to improve and replace processes at the operational level. As such, digitalization efforts can be implemented as a series of projects. Lastly, "Digital transformation" goes even further, and involves fundamental change, and requires simultaneous action on multiple fronts.[16]

This study adopts the definition of "digital transformation" proposed by Gong and Ribiere (2021) as:

> "A fundamental change process, enabled by the innovative use of digital technologies accompanied by the strategic leverage of key resources and capabilities, aiming to radically improve an entity* and redefine its value proposition for its stakeholders. (*An entity could be: an organization, a business network, an industry, or society.)".[17]

This definition is useful to this study, as it allows for the examination of the strategic direction of and actions taken by Caribbean governments in the context of the global process of technological change, while accounting for their sustainable development aspirations. It therefore contains the seeds from which a discussion on the outcomes of digital transformation efforts can sprout.

B. Digital divide, or digital divides?

Discussions on the digital divide have been ongoing at the global level for over 20 years.[18] For example, in the 2000 Millennium Declaration, States resolved to "ensure that the benefits of new technologies, especially information and communication technologies, are available to all".[19] The term "digital divide" itself does not have a unified or generally agreed definition. Rather, the term is a label of convenience, a "good enough" term used to describe the various ways in which inequalities related to the access and use of technology exist.[20] The focus of early efforts to bridge the digital divide largely focused on the gap in access between countries, primarily in terms of infrastructure and affordability. However, as technology has progressed, new digital divides have emerged, and the discussion on the digital divide therefore focuses on multiple digital divides. Table 1 below displays some digital divides that have been identified.

Table 1
Digital divides

Divide	Description
Access	Availability of the physical infrastructure and hardware necessary to connect to the internet, for example telephone lines, mobile towers, fibreoptic cables, computers, tablets and mobile telephones.
Affordability	Income is a strong predictor of usage of digital tools by individuals, as devices and internet connectivity have associated costs.
Age	Due to a variety of factors, older persons will generally use ICTs less than younger persons. Technologies are often not built with the wants and needs of older persons in mind.
Bandwidth	International bandwidth varies greatly within and between countries. This limits what people who have access to the internet may be able to achieve.
Content	Relevant content in local language(s) is important to stimulate adoption of ICTs. The presence of harmful content online may also deter people from adopting ICTs.

16 Gong and Ribiere (2021), pp. 9-10.
17 Gong and Ribiere (2021), p. 12.
18 See e.g. Kofi Annan, "On the Digital Divide" 5 November 2002, https://www.un.org/sg/en/content/sg/articles/2002-11-05/digital-divide.
19 A/RES/55/2 United Nations Millennium Declaration.
20 Gerrard Goggin, "Afterword" in Ragnedda and Mutsvairo (eds.), *Digital Inclusion: An International Comparative Analysis* Afterword, p. 206.

Divide	Description
Disability	ICT and assistive technologies could support people with disabilities to access education, work, health services, and more. However, access to the necessary devices is often limited, services may not be available, and online content may not be accessible to persons with certain disabilities.
Education	The use of ICTs requires certain skillsets, including basic literacy and numeracy, which are primarily achieved through the education system. Highest achieved education level is a strong predictor of usage of ICTs.
Digital skills	Digital skills, including the abilities necessary to use technology, assess risk and critically evaluate information needed to maximize the benefits of and reduce the risks associated with the use of digital technologies.
Gender	Gender differences in internet usage are heavily context dependent. However, globally, there are differences in the access that men and women have to the internet, and in the ways that they use it.
Migration	While the internet is global, each country has a different digital ecosystem with local content. Migrants may not possess the same levels of digital skills as the population in their new country and if they do, may be subject to content and language divides.
Location	Rural and remote areas are often underserved in terms of access, speed and quality of services as compared to their urban counterparts.
Mobile	Mobile devices provide opportunities to bridge the access gap but can also introduce new forms of divides in terms of technology, speed and usage.
Speed	High internet speeds allow for different types of internet usage. Gaps exist between those that have narrowband and broadband access to the internet. The rollout of ultra-high internet speeds required by some fifth generation (5G) technologies is likely to create another divide in terms of possible utility of the internet.
Useful usage	What people can do with their access influences uptake of, and the benefits to be gained from the use of ICTs. For example, the existence of local e-commerce and e-government services may encourage uptake of ICTs.

Source: Authors' elaboration based on UN EGDI 2018.
Note: United Nations E-Government Survey 2018: Gearing E-Government to Support Transformation towards Sustainable and Resilient Societies, p. 24, Table 2.1.

The table summarizes various digital divides, some of which relate to technological aspects, such as infrastructure or internet speed, while others relate to societal aspects, including various identities. These aspects are interlinked, and when considering an individual or group cannot be seen in isolation. As noted in Fang and others (2018), "Individual lives cannot be reduced to single traits nor can single traits accurately depict understandings of individual experiences".[21] An intersectional examination of the digital divide is therefore necessary, and becomes possible with a focus on inclusion.

C. Digital inclusion

Some of the most impactful human cultural, economic, and social activities now occur in the digital realm. Therefore, exclusion from, or limited access to, the digital realm is an important source of inequality in society and can increase socioeconomic differences. There are, therefore, both opportunities and risks associated with the digital transformation of society.[22] Technology is not a panacea for the socioeconomic challenges that societies are facing, and may in fact exacerbate them, if digital inclusion is not considered and addressed.

The academic debate around digital inclusion began around the same time as that regarding the digital divide, but only recently regained traction.[23] Ragnedda and Mutsvairo (2018) note that scholars and policymakers interested in the digital divide and in the digital inclusion process have, over time, moved away from looking at the digital divide in terms of simple binary classifications related to access

[21] Hankivsky, O. (2014). "Intersectionality 101". Cal, 64(1), 238, quoted in Fang and others 2018, "Exploring Privilege in the Digital Divide: Implications for Theory, Policy, and Practice", 59:1 *The Gerontologist* (Feb 2019) https://doi.org/10.1093/geront/gny037.

[22] Massimo Ragnedda and Bruce Mutsvairo (2018), Digital Inclusion: Empowering People Through Information and Communication Technologies (ICTs), In Ragnedda, M., and Mutsvairo, B. (eds) Digital Inclusion. An International Comparative Analyses, London: Lexington Book, pp. vii-xx.

[23] Gerrard Goggin, "Afterword" in Ragnedda and Mutsvairo (eds.), *Digital Inclusion: An International Comparative Analysis* Afterword, p. 206.

to ICTs. Rather, three levels of the discourse on the digital divide are now recognized. The first level primarily considered inequality in access to ICTs. The second level considered inequality in use of ICTs, as studies began to note that the benefits of access to ICTs were not commonly shared by all users. By examining various digital divides, it became clear that personal, political, social and economic backgrounds affect both access to and use of ICTs. The third level, which is digital inclusion, examines the social benefits and tangible outcomes that different users can gain from access to and use of ICTs.[24] This third level can be defined as "the interaction between offline socially advantaged positions and digital inequalities in relation to the socially valuable resources we stand to gain from the Internet".[25] This view of digital inclusion recognizes that social and digital inequalities are strongly intertwined and influence each other, and that the level of digital inclusion is influenced by socioeconomic and cultural variables.

These ideas provide the rationale for examining the way in which digital inclusion is treated across the Caribbean. Each country is on its own digital transformation journey, and has its own, unique socioeconomic context in which digital divides appear, and digital and social inclusion interact. An examination of the strategic direction for and practical implementation of digital inclusion is therefore warranted.

[24] Massimo Ragnedda and Bruce Mutsvairo (2018), Digital Inclusion: Empowering People Through Information and Communication Technologies (ICTs), In Ragnedda, M., and Mutsvairo, B. (eds) Digital Inclusion. An International Comparative Analyses, London: Lexington Book, pp. vii—xx.

[25] Ragnedda (2017), cited in Massimo Ragnedda and Bruce Mutsvairo (2018), Digital Inclusion: Empowering People Through Information and Communication Technologies (ICTs), In Ragnedda, M., and Mutsvairo, B. (eds) Digital Inclusion. An International Comparative Analyses, London: Lexington Book, pp. vii—xx.

II. Digital inclusion in the NDPs and ICT plans of 11 Caribbean countries and territories

Of the 11 countries reviewed, nine have a national development plan that is in force. In addition, the British Virgin Islands has a draft plan that is undergoing national consultation, and is reviewed in this chapter, although the text is not final. Only Anguilla appears to have neither a publicly available national development plan nor ICT plan.

The review suggests that the countries studied are in various stages of their digital transformation journey. Some plans focus almost exclusively on infrastructure and access to the internet. Others envisage how the ICT sector might contribute to economic growth, or how ICTs can be used in specific sectors, such as education or health. And again, others consider the transformative potential of ICTs for sustainable development and the importance of digital inclusion. There are some recurring themes, such as the desire for e-government and a remodelling of the public service, the need for suitable legal frameworks on ICT, and the need to ensure universal access to ICT infrastructure and connectivity. Some recurring themes are analysed further in Section III below.

A. Aruba

Aruba has both a long-term national integrated strategic plan (Nos Aruba),[26] and a short term national strategic plan (Nos Plan).[27] The digital transformation strategy is articulated in its e-government roadmap[28] where the development of a national digital agenda is listed as one of the follow-ups from that. While Nos Aruba includes only a few points relating to the digital transformation, one of its goals is that there should be "accessibility for everybody to the internet" and "Aruba must become completely

[26] Government of Aruba, (2010) "Nos Aruba: National Integrated Strategic Plan 2010-2025" (Nos Aruba).
[27] Department of Economic Affairs, Commerce & Industry of Aruba, "Nos plan, nos futuro: National Strategic Plan 2020-2022" (Nos plan).
[28] Government of Aruba, "Building a Better Citizen Experience: e-Government Roadmap 2021-2025".

digital".[29] While the plan does not touch on digital skills specifically, it does set out goals relating to lifelong learning and personal development,[30] and that everyone, "without discrimination of gender, age, color, religion, nationality, socialeconomic [sic] status, disability (physically or mentally), has the right and possibility to develop in every way". This would presumably also include digital skills. Nos Aruba also includes some changes to be made to the public service to ensure good governance, such as placing government documents on the internet and that digital information must be acceptable.[31] A full digital transformation of the public service was not contemplated in Nos Aruba, but is included in Nos Plan, where one of the strategic objectives is to "implement digital transformation and e-government". Nos Plan also envisages the digital transformation of critical economic services. It also recalls that the knowledge economy, including ICTs, and the creative industries, including web design, are two of the six promising sectors identified in the economic policy of Aruba in which "more and inclusive jobs" can be created.

The e-government roadmap, while it covers only the public sector, is instructive as to the kind of policy that could be expected from the national digital agenda. In particular, the roadmap notes that its e-government model "is anchored in the principle of inclusion and to leave no-one behind". It specifies that all citizens of Aruba "regardless of their social or economic background and/or physical limitations" should be able to access core government services. Reference is made in this context to people with disabilities and older persons. The roadmap divides the e-government into three phases, where enhancing "digital inclusion based on lessons learned" is among the strategic objectives of the second phase.

B. Barbados

Barbados has a national strategic plan,[32] but no current ICT plan or policy, although a new strategy appears to be in development.[33] "Global Excellence, Barbadian Traditions: The National Strategic Plan of Barbados 2006-2025" (GEBT), situates the development of Barbados in the context of the emergence of a global economy, powered by the revolution in ICTs. Digital inclusion can be implied from the goals and targets of the plan. The plan has a cross-cutting view of the role of ICTs in society, considers various factors relating to the digital transformation of society and considers the needs of specific groups. The plan's various goals, objectives and strategies envisage the use of ICTs to enhance political participation,[34] remodel the public service,[35] in education and health, [36] to provide opportunities for young people, persons with disabilities and the aged to participate in society,[37] and to build stronger communities,[38] among others. Target 3.6 envisages that 100 per cent of Barbadian households will have access to computers and ICTs. ICTs are also envisaged to be used in environmental management and to develop the economy. Objective 5.6 of the plan, and its associated targets, aim at developing the information economy, access to devices, infrastructure, skills, regulation, e-government, the development of platforms, and usage of ICTs by businesses. Other relevant strategies include aims such as applying appropriate technology and growing e-commerce, establishing Barbados as a dominant place in information technology, and developing a national research and development and innovation centre equipped with state-of-the-art technology.[39]

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29 Nos Aruba, 3.1.1.
30 Nos Aruba, 3.1.1.
31 Nos Aruba, 3.4.
32 Government of Barbados (2007), "Global Excellence, Barbadian Traditions: The National Strategic Plan of Barbados 2006-2025" (GEBT).
33 https://www.gov.bb/news_article.php?id=31.
34 GEBT Objective 2.2.
35 GEBT Objective 2.4.
36 GEBT Objectives 3.1 and 3.2.
37 GEBT Objectives 3.4, 3.5 and 3.6.
38 GEBT Objective 3.7.
39 GEBT Objectives 5.7, 5.9 and 5.14.

C. Belize

The national development framework for Belize sets out a role for ICTs in improving access to education and in developing the domestic market, improving product quality and expanding exports. This includes the promotion of internet access across the country and providing access to online education, and reducing the costs of access to technology. Belize does not have a publicly available ICT plan, so no assessment can be made as to the extent to which digital inclusion is discussed. It is noted that according to a press release,[40] an ICT plan for Belize has been endorsed,[41] and that this national digital agenda, which aims at ensuring the integration of ICT at all levels of society, will be managed through the Ministry of Youth, Sports & E-Governance.

D. British Virgin Islands

The draft national sustainable development plan of the British Virgin Islands was released for public consultation on 15 January 2022. The draft, entitled "Vision 2036: Building a Sustainable Virgin Islands" (Vision 2036),[42] considers ICT as an essential enabler in achieving sustainable growth and development and the 2030 Agenda. The draft includes a reference to the five-year national ICT policy developed in 2019. However, though a national ICT policy was expected by the end of 2019,[43] it is unclear whether it has been finalized, and the draft is not available online. As such, the ICT policy could not be assessed. Nevertheless, Vision 2036 contains some material on ICT in the section on "Diversifying the economy by creating new industries", including a table on the "Strategic Thrust for ICT". The five dimensions of the Strategic Thrust are access, governance, inclusion, legislation and economy. While there is a separate dimension on inclusion, digital inclusion is reflected across several of the five dimensions. The dimension of access discusses universal deployment of broadband and the quality and affordability of services, governance includes skills development and accessibility, legislation considers the need to foster public confidence in the use of ICTs, and economy considers use of ICTs for economic diversification and entrepreneurship. Digital skills are also considered among the indicators to monitor one of the goals of Vision 2036.[44] As this forms part of the education indicators, it is envisaged that data collected on this indicator would be disaggregated by sex, rural/urban location, wealth quintile, disability status, indigenous peoples, and conflict-affected peoples, where possible.[45]

E. Grenada

As noted in its national sustainable development plan, Grenada has accepted ICT as a mainstream tool of national development and transformation.[46] The plan sets out three goals to achieve its national vision, including putting people at the centre of sustainable development. Several of the outcomes, core values and national responsibilities set out in the plan emphasize fundamental rights, human dignity,

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40 Government of Belize, Cabinet Brief, Belmopan. 10th November 2021. 5:15 p.m. available at: https://www.pressoffice.gov.bz/cabinet-brief-33/.

41 Government of Belize (2021), "Towards a Digital Belize: National Digital Agenda 2022-2025" (not published).

42 Government of the Virgin Islands, "Vision 2036: Building a Sustainable Virgin Islands" (draft for public consultation), available at: https://bvi.gov.vg/media-centre/national-sustainable-development-plan-public-consultation (Vision 2036).

43 "ICT policy promised by end of year", The BVI Beacon, August 1, 2019, available at: https://www.bvibeacon.com/ict-policy-promised-by-end-of-year/.

44 Vision 2036, Indicator 4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill.

45 Vision 2036, Indicator 4.5.1 Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated.

46 Government of Grenada, Ministry of Finance, Planning, Economic, and Physical Development (2019), "National sustainable development plan 2020-2035" (Vision 2035).

inclusion, equality, and equity. It also includes a section on the digital economy, which foreshadows the development of a comprehensive strategy and action plan to guide the transition into the digital economy and society. This section discusses the need to update legal frameworks, developing digital infrastructure to modernize e-government and e-business services, and capacity building, in particular for Grenadians to be able to develop locally relevant content and applications, and use online services. It also envisages developments in financial technology. While the section on the digital economy presents a wide variety of facets of society to be transformed by digital technologies, it does not discuss inclusion in the context of the digital transformation. There is also no clear indication that the results monitoring framework included in the plan will disaggregate data collected by geography or demography.[47] Grenada does not have a current national ICT plan, although a project to support Grenada's digital government strategy appears to be underway.[48]

F. Guyana

Inclusion is a theme that cuts across the national development plan of Guyana. However, its focus on ICT is limited. The plan notes that Guyana's economy is less telecoms-intensive than the regional average, and highlights some challenges identified in relation to ICT adoption, including low bandwidths, unreliable connections, high costs and poor infrastructure.[49] The main proposals in relation to ICT relate to improving infrastructure for connectivity, particularly to remote areas, and developing e-government. The plan expects that this would foster inclusive development and help the poorest communities to access economic opportunities and social services. ICT is also recognized as a cross-cutting component of the plan, and it is noted that efforts are underway to create an enabling environment for the use of ICT in the public and productive sectors. Work appears to be ongoing to develop an ICT Master Plan for Guyana,[50] but no draft was available for review. A digital governance roadmap also appears to have been developed and endorsed in 2018, but is unavailable online at time of writing.[51] Guyana also has a national e-commerce strategy that has not been evaluated here.[52]

G. Jamaica

The national development plan of Jamaica sets out "A technology-enabled society" as one of the national outcomes it wishes to achieve.[53] The plan recognizes the importance of ICT as an industry, and as "an enabler of all other sectors and industries, including the economic, social, environmental and governance sectors".[54] It notes that ICTs "have profound implications for poverty reduction and social well-being", and presents e-inclusion as an important aspect of the information revolution. It further notes the importance of ICTs for the achievement of the Millennium Development Goals, the predecessor to the SDGs.[55] The plan also identifies some challenges, including spectrum management, the regulatory framework, human resource development, access to infrastructure and risk resilience. Among the strategies for the ICT sector, the plan foreshadows the expansion of the broadband network island-wide, to be complemented by e-inclusion initiatives to increase access to affordable devices, in

47 Vision 2035, Chapter 7, Table 7.1.
48 https://www.worldbank.org/en/news/loans-credits/2019/08/29/grenada-digital-government-for-resilience-project.
49 Government of the Cooperative Republic of Guyana, "Green State Development Strategy: Vision 2040" (Vision 2040).
50 https://dpi.gov.gy/govts-ict-platform-to-improve-efficiency-productivity-president-ali/.
51 https://ndma.gov.gy/digital-governance-roadmap/.
52 https://mintic.gov.gy/wp-content/uploads/2022/01/National-E-Commerce-Strategy_2022.pdf.
53 Government of Jamaica, Planning Institute of Jamaica (2009), "Vision 2030 Jamaica: National Development Plan" (Vision 2030 Jamaica).
54 Vision 2030 Jamaica, National Outcome #11.
55 Vision 2030 Jamaica, National Outcome #11.

order to help bridge the digital divide in Jamaica.[56] The plan notes that the ICT industry suffers from the absence of quantitative data at both the micro and macro levels, and that there is inadequate information on the application of ICT in other industries and sectors. It also frames data as a necessity to better inform the decisions to "guide the creation of the technology-enabled society".

Jamaica also has an ICT policy,[57] and an ICT sector plan.[58] The ICT policy of Jamaica explicitly addresses the digital divide. The policy notes that the "definition of universal service should be expanded beyond physical access to networks, to encompass enabling elements such as information literacy and financing to enable Jamaicans to create and use content and applications". The policy also notes that the advancement of the e-government agenda is expected to result in increased social inclusion, among other outcomes. The strategy set forth to address the digital divide that exists "between communities and income groups" focuses on availability, accessibility and affordability of ICTs and related services. The "accessibility" dimension is there defined as the "opportunity for everyone to use the services without discrimination or preferential treatment among any class of users". Access for vulnerable persons, including persons with disabilities, is explicitly mentioned. The policy strategies in the document also set out that the government should keep unserved and underserved areas of the country under review and "pursue strategies to increase access to high-capacity services". Further it states that the government should support "programmes that specifically target vulnerable groups including low-income households, the elderly, youth and the disabled".

The ICT sector plan of Jamaica is based on eight dimensions, including "e-inclusion". The plan identifies the achievement of affordable, universal access to marginalized communities, remote areas, the disabled and the elderly as one of the main long-term challenges for Jamaica. The action plan for the ICT sector includes specific targets relevant to digital inclusion, in particular "Promote access to and utilization of ICT by marginalized groups, including the elderly, poor and rural households, and persons with disabilities".[59] Other targets that relate to affordability, public education and accessible e-government services are also included.

H. Saint Lucia

The development strategy of Saint Lucia is primarily focused on e-government, and the integration of ICTs in specific sectors, such as agriculture, education and healthcare.[60] It identifies the integration of ICT in Education as a fundamental challenge, and notes that a "strategic response is necessary to ensure that students possess the requisite skills to be marketable in the digital era". Saint Lucia does not have a current ICT plan, though its most recent plan, the "National ICT Policy and Strategy 2013-2018",[61] is still used as the de facto ICT Plan. Relevant policy objectives set out in the document include providing "universal access to electronic information and communications", facilitating equity of access through the inclusion of ICT in Education. The ICT infrastructure programme included in the policy has as its objective to "ensure that all citizens and businesses have universal affordable access to the ICTs that they wish to utilise for their personal or commercial benefit". It further notes that this would require the availability of an appropriate level of infrastructure in all communities of Saint Lucia, which is accessible by every individual in terms of availability and affordability. The policy also includes a community development component, meant to ensure wide-scale community access, that will address the specific

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[56] Vision 2030 Jamaica, 9-6.

[57] Government of Jamaica (2011), "Information and Communications Technology (ICT) Policy".

[58] Government of Jamaica, ICT task force, "Information and Communications Technology (ICT) Sector Plan 2009-2030".

[59] Jamaica ICT sector plan, Action plan for the ICT sector, 2.1.3.5.

[60] Government of Saint Lucia, Department of Economic Development, Transport and Civil Aviation (2020), Medium Term Development Strategy 2020-2023.

[61] Government of Saint Lucian, Ministry of the Public Service Information and Broadcasting (2013), "National ICT Policy and Strategy 2013 – 2018".

needs of older persons, persons with disabilities and the "disadvantaged". Saint Lucia is also a participant in the Caribbean Digital Transformation Project (CARDTP) of the Organisation of Eastern Caribbean States (OECS).[62] This project has three main components: The development of a positive enabling environment for the digital economy in the OECS; digital government infrastructure, including public sector modernization; and digital skills and technology adoption, targeting both individuals and businesses. It is expected that this project could further digital inclusion in the participating countries.

I. Saint Vincent and the Grenadines

The national development plan of Saint Vincent and the Grenadines recognizes that changes introduced by ICT to business and society have affected "every aspect of human activity", and that ICT have the potential to help tackle societal challenges such as poverty, inequality, and environmental degradation.[63] The plan outlines certain strategic interventions aimed at establishing a knowledge-based society "for all citizens" in which citizens have access to the full range of ICTs and capabilities, "with the opportunity to apply them in their daily lives". These interventions span across the private and public sectors and aim at ensuring that Vincentians have digital skills, access to devices and affordable connectivity, and an environment which encourages the use of digital services in the private and public sectors and stimulates capacity-development of ICT start-ups. In addition, the strategy wishes to see an increase in the range of businesses using modern ICTs, economic maturation of ICT, and improved incubators for ICT research and innovations. Of note, the plan also wishes to ensure an improvement in the "availability and dissemination accurate and timely public data". Saint Vincent and the Grenadines is also participating in the CARDTP programme. It does not have a publicly available national ICT plan.

J. Trinidad and Tobago

The national development strategy of Trinidad and Tobago considers that the potential of ICT to contribute to development depends on its ability to transform the daily lives of its population, as well as the operations of private and public entities.[64] As such, it notes that policies must be integrated with the use of ICTs, "backed by the requisite skill sets, institutional structure and capacity, supported by appropriate business models, and grounded in the relevant legislative and regulatory frameworks". It envisages the use of ICTs in the health and education sectors, as well as to enhance citizen participation in governance. It foreshadows the development of a modern ICT system that spans the nation, through the development of robust and reliable infrastructure and high-speed, affordable broadband connectivity.

The national ICT plan of Trinidad and Tobago, the "ICT Blueprint", is the country's third ICT plan. It notes inclusion and equity among the key principles that will form the basis for the work to be undertaken as Trinidad and Tobago transitions to a "more contemporary approach to ICT governance". The one of the elements of the vision of the plan is "Empowered People", defined as citizens that have pervasive access to ICT, are connected to a variety of affordable, high quality, safe and secure services via broadband, and that are deriving high value from the use of ICT.

The Blueprint is the first such plan to expressly promote digital inclusion. In particular, it aims at providing assistive technologies to people with disabilities and reducing the digital divide by promoting digital inclusion of ICTs to this group. Another strategy foreshadows awareness-raising, outreach and training programmes targeted to persons with disabilities, children and young people. It also envisages the design and implementation of a digital divide survey every 3-5 years to inform universal service projects.

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62 https://www.oecs.org/en/our-work/knowledge/library/projects/caribbean-digital-transformation-project-cardtp.

63 Government of Saint Vincent and the Grenadines, Central Planning Division, Ministry of Finance and Economic Planning, "National Economic and Social Development Plan 2013-2025".

64 Government of Trinidad and Tobago, "Vision 2030: National Development Strategy 2016-2030" (Vision 2030 TTO).

It is noted that the digital inclusion initiatives are geared primarily towards accessibility and affordability. However, the National Digital Inclusion Survey 2021,[65] does also consider other barriers to use, including privacy or security concerns, internet quality and speed, and cultural reasons. The household survey also seeks to collect demographic data, including regarding ethnicity, education level, ICT skills, occupation, income and disability.

[65] Telecommunications Authority of Trinidad and Tobago (2022), "National Digital Inclusion Survey 2021: Accelerating Digital Transformation" https://cso.gov.tt/wp-content/uploads/2022/06/National-Digital-Inclusion-Survey-DIS-2021-Final-Report.pdf.

III. Comparative analysis of digital inclusion in, and implementation of, Caribbean digital transformation frameworks

Of the 11 countries and territories reviewed in this study, only four have publicly available ICT plans that are being implemented, if Saint Lucia is included. The analysis that follows is primarily based on an assessment of these published frameworks. The policy frameworks were reviewed to identify initiatives relevant to digital inclusion, and interviews with relevant experts provided deeper insight into the rationales underlying the programmes that were initiated. Where available, this data has been supplemented with information gathered in the data collection phase of the study, including surveys and in-depth interviews with experts from the remaining countries and territories. This provided some insight on digital inclusion initiatives undertaken in those countries and territories that do not have a current, publicly available ICT plan. This section considers four relevant dimensions of digital inclusion:

(i) Affordable access to broadband.

(ii) Access to needs-responsive, internet-enabled devices.

(iii) Relevant online content.

(iv) Access to digital skills or literacy training.

With regard to digital skills and literacy, this section specifically examines which groups have been identified as candidates for digital skills training in the various countries and territories.

A common challenge noted for nearly all countries and territories reviewed was a lack of reports on the initiatives that had been implemented. Where reports were available, the content was often limited to basic information such as the number of participants, rather than analyses of the effectiveness of these programmes.

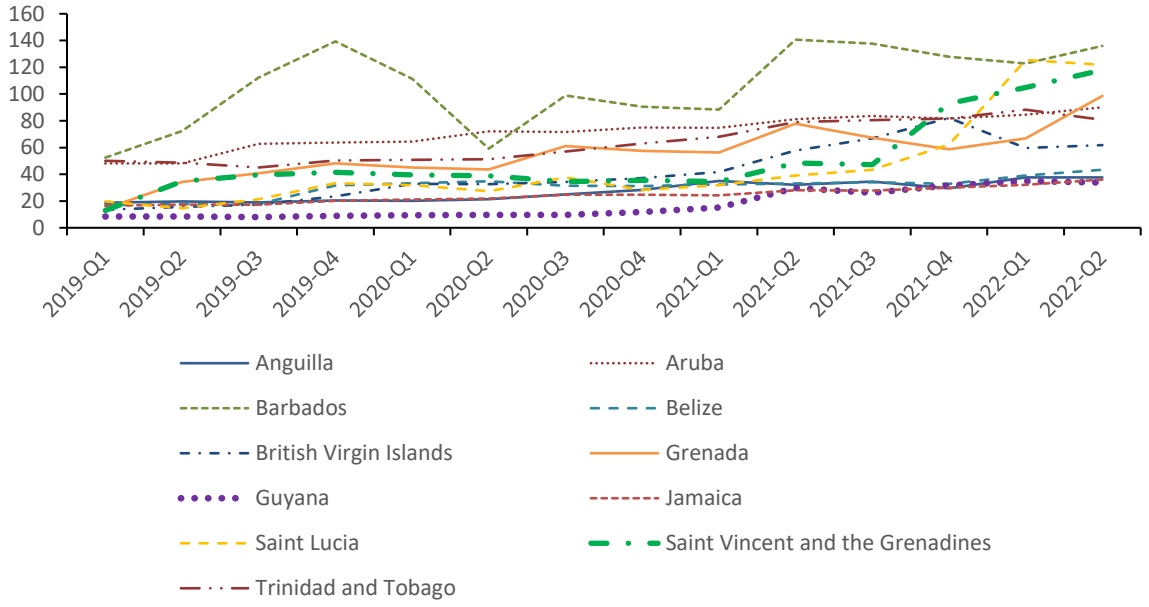
A. Affordable access to broadband

The expansion of broadband coverage, and ensuring affordable access to broadband, is the focus of initiatives across all countries and territories, regardless of whether they have current ICT plan.

Primarily, these initiatives to expand broadband access were driven by the telecommunications regulatory body, or through partnership with the State-owned or monopolist/duopolist telecommunications service providers, in countries where the liberalization of the telecommunications sector is not comprehensive or complete. Moreover, fixed broadband speeds are used within the context of sustainable development as an indicator of the quality of indicator subscriptions.[66]

Figure 1 below, shows the average fixed broadband download speed, based on network performance speed tests, for the 11 Caribbean countries and territories considered in this study. While all countries have experienced growth in average speeds, the onset of the COVID-19 pandemic appears to have negatively impacted internet speeds. However, this was followed by a resumption of the upward trend after the second quarter of 2020, which was probably indicative of the greater demands for online services experienced during the COVID-19 lockdowns.[67]

Figure 1
Average fixed broadband download speeds, 2019-2022 (quarterly)
(Mbps)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of, Speedtest by Ookla Global Fixed and Mobile Network Performance, 2019-2022.

Further, there are large disparities in speeds remain among the countries. For example, one the one hand, when compared with other countries, Guyana has lower average speeds, which started at 8.4 Mbps in the first quarter of 2019, and rose to 36.7 Mbps in the second quarter of 2022 (a more than

[66] Sustainable Development Goal 17, Indicator 17.6.1: Fixed Internet broadband subscriptions per 100 inhabitants.

[67] Annex 4 presents the within-country disparities of fixed broadband download speed for the ten (10) study countries, by districts and the percentage of the population that lives in each district, for which data is available for the second quarter of 2022.

quadrupling in speed). On the other hand, although Saint Vincent and the Grenadines had low average internet speeds at the beginning of the period at just under 13 Mbps, it experienced significant growth to 118 Mbps by the second quarter of 2022.

Within this context, national policies and initiatives consistently focused on ensuring that, at minimum, fourth-generation wireless technology (4G) services were available in rural communities. Additionally, incentives were frequently provided, including through Universal Service Programmes, to encourage the deployment of fibre services to these communities.

In communities where it was determined that accessibility or subscriptions were below the national average, the policy objective of affordable access to broadband was further pursued through the deployment of "ICT hubs". These ICT hubs were generally co-located in community centres established in rural communities and administered by community councils but were in some cases also established in or near other infrastructure, including schools. To facilitate the implementation of the ICT thrust, in most cases strategic partnerships were established in most cases where State subsidised funding is tied to the implementation of the ICT hub. While most were administered through central government, four examples diverged from this model:

(i) In Guyana, support for this policy objective was implemented through a project entitled the "Hinterland, Poor and Remote Initiative", in partnership with the United Nations Development Programme (UNDP), which provided funding and project implementation support. The project, which is ongoing, focuses on connectivity through a VSAT satellite communications system.[68]

(ii) Saint Lucia is implementing its Government Island-Wide Network (GINet) initiative in partnership with the Government of Taiwan. This initiative is focused on deploying Wi-Fi access nodes at specified traffic hubs, with a particular focus on encouraging e-commerce in these areas.[69] There are no publicly available reports on the impact of the initiative thus far. However, the second phase of the project was launched in 2019.[70]

(iii) The use of Universal Service Funds (USF) resources, through initiatives established as part of a Universal Service Programme. In this modality, there are two models of implementation, both being deployed by Trinidad and Tobago and Jamaica at different scales. First, the deployment of Wi-Fi hotspots in public places, undertaken by licensed telecommunications operators with reimbursement from the USF for implementation costs. In Trinidad and Tobago, the deployment is limited spaces are limited to public libraries, public buses and the waiting areas of public hospitals and transportation hubs at this time. There are no published reports on the impact of the initiative thus far. In Jamaica, the areas include parks, town centres, University Campuses, hospitals, schools and Ministries, Department and Agencies of Government.

(iv) The provision of telecommunications services by internet service providers (ISPs) to defined ICT Hubs. In Trinidad and Tobago, the ICT Hubs are bespoke government-owned and administered facilities. In Jamaica, the ICT Hubs are co-located with over 300 community-administered Community Centres.

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68 VSAT: Very small aperture terminal.

69 Government of Saint Lucia, "GINet Project" https://vepimg.b8cdn.com/uploads/vjfnew/6594/content/docs/1637467249ginet-project-overview-pdf1637467249.pdf.

70 Government of Saint Lucia, Department of the Public Service, "GINet prepares to launch Phase 2 of the project" 18 July 2019, https://www.govt.lc/news/ginet-prepares-to-launch-phase-2-of-the-project.

B. Access to devices

1. Access to devices for online learning

As noted in a previous study on online learning experiences, efforts to introduce ICTs in education, including online learning, were underway in the Caribbean prior to the COVID-19 pandemic.[71] However, efforts and results were disparate, and countries were in various stages of readiness to implement online learning in March 2020, when the first wave of school closures took place. The study showed that persons with disabilities, students from rural and/or poor areas, indigenous students, migrants, and other marginalized groups were shown commonly subject to reduced access to online learning.[72]

Most countries implemented initiatives to ensure access to devices for students to some degree. Devices were also donated to some countries during the course of the pandemic for use in education. In the online learning experiences study, initiatives to procure or distribute devices for use in online learning were discussed for five of the countries and territories of this study.[73] Several of those countries already had initiatives underway prior to the COVID-19 pandemic, yet nearly all were required to intensify their efforts to acquire devices to meet demand, with various degrees of success. Barbados, through a collaboration with the Republic of Kenya, acquired 20,000 devices for use in primary and secondary education, meeting demand by September 2020.[74] The British Virgin Islands had made significant progress towards blended learning, but experienced a significant setback during the 2017 hurricane season, when infrastructure was critically disrupted and many devices were destroyed. World shortages in devices during the COVID-19 pandemic led to insufficient numbers of devices across the country, though loan programmes were implemented for laptops and tablets to be used at the primary level.[75] Device availability was also a significant challenge in Guyana, which prior to the pandemic had planned to introduce devices slowly in a multi-phased approach.[76] Jamaica's Tablets in School (TIS) pilot project, which started in 2013, distributed tablets to students at the pre-primary, primary and secondary levels. This was reported in 2019 to have supported the distribution of 25,000 tablets in 38 institutions, though the impact of the pilot was limited due to several factors. However, a renewed effort to secure tablets for teachers and students was approved in March 2020, which led to the distribution of at least 16,000 tablets for teachers and 31,000 tablets for students by October 2020. As of February 2021, over 45,000 devices had been delivered, with 40,000 of those aimed at vulnerable groups.[77] In Trinidad and Tobago, a programme to provide laptops to students had previously been discontinued due to challenges in the implementation framework, until a large procurement of 13,600 laptops in 2018. However, by mid-2020, iGovTT and the Ministry of Education worked to source 19,000 laptops in preparation for online testing to be held in 2021.[78] The Ministry of Education is reported to have sourced another 20,000 devices from other corporate sponsors and donations.

News reports from the region suggest that initiatives to procure devices were ongoing in all the countries and territories studied. In Anguilla, the Ministry and Department of Education sourced laptops for students in need, which were distributed on a loan basis to students free of charge. The Government of Anguilla also approved the removal of custom duties on the importation of laptops for primary and

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71 Amelia Bleeker and Ryan Crowder (2022), "Selected online learning experiences in the Caribbean during COVID-19" Studies and Perspectives series-ECLAC Subregional Headquarters for the Caribbean, No. 105 (LC/TS.2021/212-LC/CAR/TS.2021/7), Santiago, Economic Commission for Latin America and the Caribbean (ECLAC).

72 Bleeker and Crowder (2022), p. 47.

73 Barbados, the British Virgin Islands, Guyana, Jamaica and Trinidad and Tobago.

74 Bleeker and Crowder (2022), p. 17.

75 Bleeker and Crowder (2022), p. 22.

76 Bleeker and Crowder (2022), p. 26.

77 Bleeker and Crowder (2022), p. 31.

78 Bleeker and Crowder (2022), p. 37.

secondary school students.[79] Information on access to devices in Aruba, which had the shortest duration of school closure of all Caribbean countries and territories (13 weeks),[80] is scarce. One report states that Setar, a national telecommunications agency, donated tablets to students that did not have a device, though the number is unknown.[81] In Belize, in September of 2020, the Belizean government announced its intention to purchase 15,500 tablets and accompanying software to be used for distance learning.[82] The extent to which this was implemented is unclear, but it has been reported that only four in ten schools were engaged in online learning. Many students also did not own a laptop and reported that their primary means to access online learning was through WhatsApp. A limited number of laptops were distributed throughout the country in 2022, targeting students without access to devices.[83] Grenada repurposed part of a loan from the Caribbean Development Bank (CDB) to procure 15,000 laptops to improve remote learning access for primary and secondary school students.[84] As of December 2020, at least 24,000 devices had been secured for students and teachers.[85] In Saint Lucia, at least 3,000 students received tablets following a donation from the Organization of Eastern Caribbean States (OECS).[86] In Saint Vincent and the Grenadines, a "One Laptop per Student" project began distributing laptops in 2014 with the aim of providing 12,500 laptops to secondary schools over time.[87] Prior to the eruption of La Soufriere in April 2021, tablets had been distributed to most classes from fifth grade onwards.[88]

2. Accessible devices for people with disabilities

Only one of the ICT plans considered included concrete measures aimed at providing needs-responsive, internet-enabled devices to persons with disabilities (PwD).

The ICT plan of Trinidad and Tobago foreshadows the implementation of universal service projects to, *inter alia,* close the access gap and provide assistive technologies to PwD. The biannual report of the Telecommunications Authority of Trinidad and Tobago (TATT) on proposed projects for the period 2020 to 2022, discusses a "Persons with Disabilities Initiative" administered by TATT through a Universal Service Programme.[89] The objectives of the initiative include to "reduce the digital divide by promoting digital inclusion of PwDs" and to "enhance quality of life by enabling those with disabilities

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79 Ministry and Department of Education of Anguilla, 6 May 2020, "Sixth Statement from Ministry & Department of Education on CoronaVirus Arrangements for Term Three" https://beatcovid19.ai/sixth-statement-from-ministry-department-of-education-on-coronavirus-arrangements-for-term-three/.

80 Luis Felipe Lopez-Calva, "Closing schools: Big and unequal learning losses in LAC", UNDP, 2 November 2021, https://www.undp.org/latin-america/blog/graph-for-thought/closing-schools-big-and-unequal-learning-losses-lac.

81 Diario Online, 11 February 2022, "Setar NV instalando fiber na tur scol na Aruba" https://diario.aw/categories/noticia/general/setar-nv-instalando-fiber-na-tur-scol-na-aruba.

82 News 5, 16 September 2020, "Government to Purchase 15 Thousand Tablets for Distance Learning", https://edition.channel5belize.com/archives/208697.

83 Amandala, 2 February 2022, "MOE gives laptops and scholarships to needy students", https://amandala.com.bz/news/moe-gives-laptops-and-scholarships-to-needy-students/.

84 Now Grenada, 15 March 2021, "Covid-19 responsible for Grenada repurposing CDB loan to buy laptops", https://www.nowgrenada.com/2021/03/covid-19-responsible-for-grenada-repurposing-cdb-loan-to-buy-laptops/.

85 Marta Ribes and others (2020), *COVID-19 Policy Reports for Recovery in the Eastern Caribbean: Analysis, Scenarios and Considerations for Opening to Tourism*, "Annexes: COVID-19 Epidemiological Situation and Response in Eastern Caribbean States" (December 2020), p. 73, https://www.isglobal.org/documents/10179/9036875/COVID19++Policy+Reports+for+Recovery+in+the+Eastern+Caribbean%2C+19march2021.pdf/5a344461-abb5-4edc-9584-5dca264546dd.

86 Loop News, 29 March 2022, "Govt receives 3000 tablets for primary school students" https://stlucia.loopnews.com/content/govt-receives-3000-tablets-primary-school-students.

87 iWitness News, 25 June 2014, "Gov't begins to distribute laptops to students" https://www.iwnsvg.com/2014/06/25/govt-begins-to-distribute-laptops-to-students/.

88 NBC Radio, 19 April 2021, "The Government of St. Vincent and the Grenadines has received more tablet computers for distribution to students" https://www.nbcsvg.com/2021/04/19/the-government-of-st-vincent-and-the-grenadines-has-received-more-tablet-computers-for-distribution-to-students/.

89 Telecommunications Authority of Trinidad and Tobago, "Universal Service Implementation Report: June 2020 - May 2022", 4.2 https://tatt.org.tt/DesktopModules/Bring2mind/DMX/API/Entries/Download?Command=Core_Download&EntryId=1658&PortalId=0&TabId=222.

to participate more fully in society".[90] The PwD Initiative is delineated into two highly complementary, mandatory initiatives:

(i) A pilot project entitled the "Caribbean Video Assistance Service" (CVAS), implemented in partnership with the Caribbean Telecommunications Union (CTU) and VTCSecure. The project will partially fund the introduction of secure on-demand video, voice and text call-centre services for the blind and deaf communities, including direct communication, relay services and video assistance.

(ii) The provision of subsidized mobile devices containing assistive technologies for the blind and deaf communities taking part in the CVAS project.

While digital inclusion is among the goals set out in the ICT Sector Plan of Jamaica and Aruba's e-Government strategy, neither plan includes any concrete measures aiming at increasing access to devices.

C. Access to digital literacy training

All the countries and territories studied have initiatives aimed at improving education and skills training in ICTs. Even where countries have no explicit ICT Strategy, they have implemented initiatives to provide ICT skills training to both those enrolled in school, and others.

In general, the initiatives aimed at developing basic skills geared towards the public are implemented through ICT in the educational curriculum, and skills development programmes offered through the network of ICT Hubs, where applicable. With respect to the efficacy of these initiatives, Jamaica provides the only administrative reports of enrolment annually. However, there is no comprehensive reporting on the outcomes of these initiatives. Saint Lucia was unique in identifying the need to treat with traditional literacy, as a precursor to treating with digital literacy.

1. Women, girls and the elderly

Experts from Belize and the British Virgin Islands noted that there is no policy specifically targeting skills training for women or girls at the national level. Instead, as initiatives and opportunities are open to all, women and girls are anticipated to access these benefits and services as part of the general public.

While the only ICT plan to explicitly target women, girls and the elderly is that of Trinidad and Tobago, all other countries identified some form of digital inclusion programme targeted specifically to these groups. However, the level of participation in or impact of these programmes could not be assessed, as no reports were publicly available.

Except for Guyana and Jamaica, all ICT skills training programmes targeted towards girls were being undertaken by the telecommunications regulatory bodies as part of "Girls in ICT Day", which is organized annually by the International Telecommunications Union (ITU). In the region, these efforts are led by the CARICOM "Girls in ICT" Partnership, which has organized events for over five years on this day. In Guyana, similar programmes targeting women, girls and the elderly were undertaken by the Ministry responsible for Science and Innovation. They are managed within an annual deployment schedule without reference to the ITU initiative. In Jamaica, digital literacy training targeted towards women, girls and the elderly is organized by the HEART Trust/NTA and its partnering agencies.

[90] Telecommunications Authority of Trinidad and Tobago, "Universal Service Implementation Report: June 2020 - May 2022", 4.2.1(iii)-(iv) https://tatt.org.tt/DesktopModules/Bring2mind/DMX/API/Entries/Download?Command=Core_Download&EntryId=1658&PortalId=0&TabId=222.

2. Indigenous peoples

Of the countries and territories studied, Guyana and Belize have large, distinct indigenous populations. However, their approaches to the implementation of ICT skills training vary.

In Guyana, it is estimated that approximately 10 per cent of the population is indigenous. This community is represented through the National Tashoas Council, and the Ministry of Amerindian Affairs, which ensures that their interests are mainstreamed into the National Agenda. Notwithstanding the absence of a national ICT Plan, Guyana implemented the "Hinterland, Poor and Rural Communities project", mentioned above. The project is still in its implementation phase, and the monitoring and evaluation framework has yet to be brought into operation. Consequently, there are no reports as yet on the impact of this initiative.

While Belize has developed a draft ICT Plan, it has taken the policy decision to not directly target the indigenous populations. The Plan instead defines initiatives by geographic areas. Despite this, the geographic segmentations in the Plan does include areas which correlate with the majority presence of the indigenous populations in Belize. As a result, initiatives in these areas have a disproportionate impact on indigenous peoples in comparison to initiatives in other areas.

The remaining countries and territories studied have smaller indigenous populations, that are not always identified as distinct. Where the populations were clearly identified, no specific initiatives targeting these groups were laid out in the available ICT Plans. It is noted that the indigenous groups are not excluded, as they are offered the same opportunity to access and benefit from the programmes and initiatives undertaken by the governments. It is noted, however, that data on ICT in relation to indigenous populations is limited at this time in most countries, and that it is therefore difficult to assess whether these populations are excluded in effect.

3. Youth

Every country under consideration sought to infuse ICT in their education plans and policies. This took four general forms in the ICT Plans and initiatives under review:

(i) The adjustment of school curricula to facilitate basic ICT skills training in secondary school. However, no jurisdiction seemed to require students to study ICT to graduate.

(ii) The use of ICT in the provision of education. Both teachers and students were trained in the use of e-learning tools and systems. In some instances, efforts were made to establish mechanisms to overcome lack of broadband access at home. In many ways, the effects of the pandemic and its externalities have forced the education systems in all countries to implement some model of ICT in Education. As discussed above in relation to access to devices, all the countries and territories studied implemented some degree of ICT in education, and several fast-tracked and expanded their plans with regard to the introduction of ICT in education as a result of school closures and other public health measures.

(iii) The hosting of annual training camps with a focus on ICTs and associated disciplines, including robotics, coding competitions and Hackathons, etc. Different models of implementation were discussed. In Saint Lucia, Saint Vincent and the Grenadines and the British Virgin Islands, these activities were organized by their national telecommunication regulators as part of the Universal Service Programmes. Guyana, Jamaica and Barbados have identified specific government agencies with the mandate to undertake these initiatives. All three have the stated intention of ensuring that the outputs from the competitions are developed to market readiness. In Jamaica and Barbados, some programmes included internships with foreign-based firms in the ICT sector, while in Guyana the exercise was described as more focused on domestic applicability. In Anguilla

and Trinidad and Tobago, the organization of ICT training camps and similar initiatives depended on an apparently informal mix of public and private sector initiatives. In Trinidad and Tobago in particular, there was express discussion of partnerships between TATT and local tertiary institutions.

(iv) Encouraging post-secondary education and training in ICTs. A few specific programmes were identified across the countries under review. In Jamaica, HEART/NSTA, the national vocational training agency, reports annually on certification of persons annually in Jamaica, in a variety of skills including Data Analytics, Software development and User Interface design. HEART/NSTA's mandate also includes tracking the placement of graduates from its programmes. In Trinidad and Tobago, the ICT Blueprint proposed the development of specific grant programmes geared towards encouraging students to undertake tertiary level studies in ICTs, in conjunction with offering vocational programmes in ICTs through the University of Trinidad and Tobago (UTT). Lastly, citizens of all countries have access to ICT-based tertiary education programmes at the University of the West Indies.

D. Relevant online content

All countries and territories studied signalled an intention to bring most government services online. However, only the ICT plans of Jamaica and Trinidad and Tobago include specific reference to policies and initiatives geared to broadening the availability of online content other than e-Government services.

With respect to electronic transactions and e-commerce, all the countries and territories studied have some legislation in place or in progress, regardless of whether they have a current ICT Plan. For many, this is likely related to the outcomes of the CARICOM HIPCAR project, which included model policy guidelines on e-commerce transaction and evidence.[91]

With regard to e-participation, the United Nations e-participation index (EPI) shows that of the eleven countries and territories studied here, EPI scores in the eight independent States considered vary significantly.[92] Barbados and Trinidad and Tobago have high EPI scores, and the remaining have middling scores. However, as table 2 below demonstrates, the scores vary significantly for each country within the stages measured. The EPI utilizes a scale to measure e-participation divided into three stages related to online service provision:

(i) Provision of information: Does the government provide information to people?

(ii) Consultation: Does the government consult individuals on policy or service delivery at different stages of the process?

(iii) Decision-making: Does the government involve people in decision-making?

[91] https://caricom.org/projects/hipcar-project/.

[92] United Nations, *E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development* https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20(Full%20Report).pdf.

Table 2
United Nations e-participation index: rank, score, percentages for eight Caribbean countries

Country	EPI 2020 Rank	EPI	EPI level	Total Utilisation *(percentages)*	Stage One *(percentages)*	Stage Two *(percentages)*	Stage Three *(percentages)*
Trinidad and Tobago	85	0.619	High EPI	62.79	74.07	52.38	27.27
Barbados	90	0.5952	High EPI	60.47	61.11	61.90	54.55
Saint Vincent and the Grenadines	118	0.4643	Middle EPI	47.67	59.26	33.33	18.18
Guyana	122	0.4524	Middle EPI	46.51	50.00	61.90	0.00
Saint Lucia	134	0.3929	Middle EPI	40.70	48.15	33.33	18.18
Jamaica	137	0.369	Middle EPI	38.37	46.30	33.33	9.09
Grenada	148	0.3333	Middle EPI	34.88	40.74	33.33	9.09
Belize	163	0.2976	Middle EPI	31.40	37.04	33.33	0.00

Source: Extract from "Table 16. E-Participation Index and its utilisation by stages", retrieved from Data Tables 2020, United Nations E-government Knowledge Base.[93]

The table demonstrates that of 193 countries assessed, the Caribbean countries of this study range from 85th to 163rd place. Some states are advanced in terms of providing online services for e-participation, while others have yet to begin implementing the third stage of e-participation, i.e., decision-making. No data is collected for any of the territories in this survey.

[93] https://publicadministration.un.org/egovkb/en-us/Data-Center.

IV. Expert views on digital inclusion in the Caribbean

Given that most of the countries studied do not have a current, publicly available ICT Plan, and the otherwise limited availability of information specifically addressing digital inclusion in the Caribbean, it was necessary to supplement the information gathered on digital inclusion with local expert views.

As a first step, administrative records on digital transformation and e-government activities were reviewed to gain a sense of the state of online services within the country. This review, which was conducted in November 2021, was followed up by a survey administered to each of the ICT Focal Points of the governments of the 11 countries and territories of this study. Lastly, in-depth follow-up interviews were held with the ICT Focal Points and other experts in government to gain a sense of their views regarding the state of digital inclusion within their country. Given that the experts are all working in or with government, the questions focused primarily on strategic direction, digital divides and e-government services.

The review of the administrative records showed that reports on digital transformation initiatives, including e-government, are not readily available in most cases. This challenge was shared across the countries and territories studied. Notably, even those countries with longstanding ICT Plans and programmes were largely unable to share overviews of their progress related to provision of online government services. This suggests that governments across the Caribbean experience challenges related to the reporting of and, more broadly, the management and follow-up of the initiatives that are being undertaken. The administrative data that such reports could provide regarding participation in programmes, in particular their demographic composition, would be extremely valuable to future efforts to further digital inclusion.

The survey and interviews conducted demonstrated that experiences with digital inclusion and the digital transformation journey vary greatly. Nevertheless, some common threads and areas of divergence could be identified across the responses of the experts.

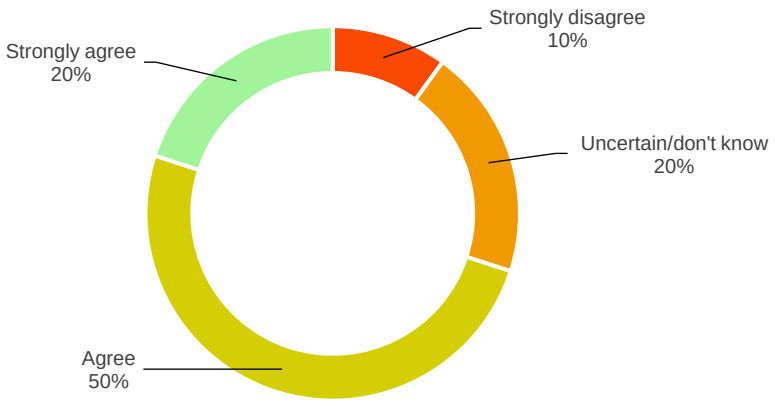
A. Digital strategies applicable to the public service

The experts were consulted regarding the existence of executive-led digital strategies for the public service, the extent to which these are cross-cutting and supported by effective operational IT delivery, and whether there is a delivery plan mandated to deliver a common digital platform, process and working practices that is applicable to the whole public service. The responses were largely divided into two groups: The first group, which included the countries that have a current, publicly available ICT plan, and some that have ICT plans in draft, responded positively to most of these questions. Experts were also consulted regarding digital inclusion in the preparation of the digital strategy, such as whether the design and implementation of the digital strategy included targeted inputs from interest groups representing e.g., women, youth, indigenous peoples and persons with disabilities. They were also asked whether the digital strategies include targets for improvements in, and reporting mechanisms that specifically focus on, vulnerable groups. Responses here were mixed, as experts from some of the countries that had current ICT plans were unaware as to whether vulnerable groups had been considered. Experts also expressed a greater degree of uncertainty with regard to this topic. However, the majority of respondents from countries with an ICT plan in effect or in draft agreed that vulnerable groups had been consulted and that progress was being monitored. Overall, this suggests that in the countries where ICT is more of a priority, as indicated by the existence of an ICT plan, or efforts to develop such a plan, digital inclusion is on the agenda, with a focus on specific groups.

B. Access to the internet and internet-enabled devices

With regard to access to the internet, in particular broadband, the vast majority of experts agreed that there are defined areas in their country or territory where the provision of broadband would be an economic challenge to providers, and that providers are aware of where connectivity gaps exist in terms of both geographic locations and socioeconomic groups (see figure 2).

Figure 2
Connectivity providers are aware of connectivity gaps[a b]



Source: Authors' elaboration based on survey and interviews with experts.
[a] Responses for 10 Caribbean countries and territories.
[b] Question: There are defined areas where it is identified that provision of broadband access would be an economic challenge to operators. All connectivity providers are aware of the geographic locations or socio-economic groups where connectivity gaps exist and thus, where infrastructure investment is required.

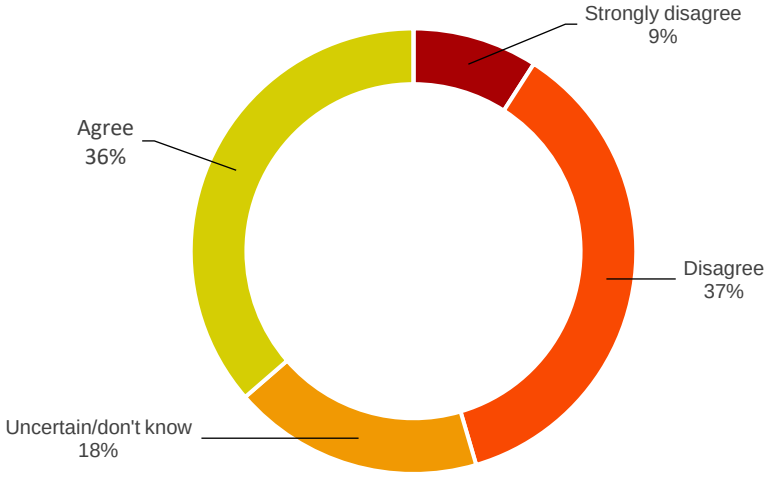
It also appears that in nearly all the countries and territories concerned, there are established community-based locations that provide internet access and devices for access, as well as facilities for public access to the internet, such as public Wi-Fi nodes. Belize reported not having established either, while Anguilla reported not having public facilities for internet access.[94]

While there is an awareness of where the gaps are, and arrangements in place to ensure public access to devices and the internet in most countries, the expert responses show that in most countries, digital inclusion efforts are not targeted towards marginalized groups. The experts expressed uncertainty as to the existence of initiatives to ensure access to devices to marginalized groups, and broadband or devices to those that cannot afford it. When read together with the data on access to broadband, and public arrangements for connection, this suggests that countries and territories have largely focused on expanding access without marginalized groups in mind. Additionally, it appears that most countries do not have programmes aimed at identifying groups in need of support.

C. Digital skills

Regarding digital skills, it appears that only a minority of countries and territories provide incentives for the provision of courses for the general public in ICT, including bursaries or grants to schools or participants. However, most countries report having specific initiatives targeting marginalized groups. With regard to the public sector, most countries appear to have virtual networks for internal teams and key stakeholders to discuss and share information and ideas. However, respondents were largely uncertain as to whether, or disagreed with the idea that, digital skills are valued for all members of the public sector workforce. The responses also suggested that there is a lack of internal learning programmes on digital skills, and knowledge sharing for public sector employees (see figure 3).

Figure 3
Public sector: internal learning programmes on digital skills and knowledge sharing[a b]

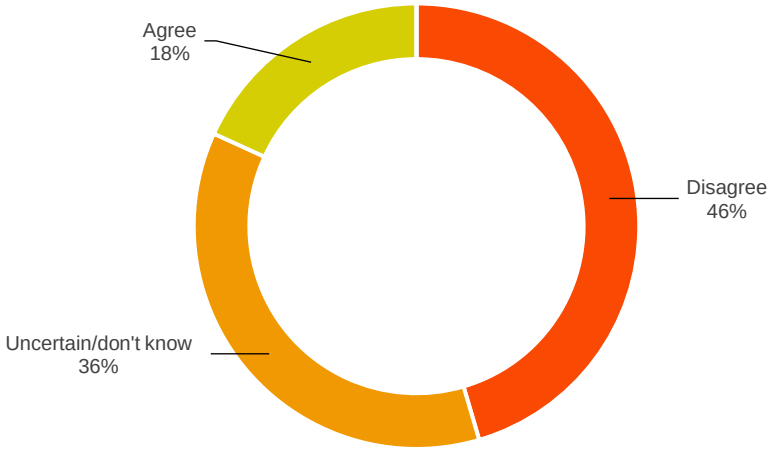


Source: Authors' elaboration based on survey and interviews with experts.
[a] Responses for 11 Caribbean countries and territories.
[b] Question: There are internal learning programmes on digital skills, sharing employee experiences, knowledge and best practice.

94 Barbados did not provide a response to this question.

Additionally, half of the respondents disagreed that all public sector employees are aware of the digital tools and techniques that might enhance their work, and that there are common tools and platforms across the public service for the completion of common administrative tasks. Another four respondents were not sure whether that was the case. Furthermore, in response to whether learning and development is designed holistically to support fast-track digital adoption, and whether employees were comfortable and competent in using digital tools and electronic information, only two respondents agreed. The remaining respondents were fairly evenly split between being uncertain as to whether that is the case, or disagreed entirely (see figure 4). Altogether, this suggests that there is a lack of necessary digital skills within the public sector workforce. If true, this could potentially jeopardize digital transformation and digital inclusion efforts, as those that will be implementing the initiatives may not have the skill set required to do so.

Figure 4
Public sector: learning and development is holistically designed.
Employees are comfortable in using digital tools and electronic information[a b]



Source: Authors' elaboration based on survey and interviews with experts.
[a] Responses for 11 Caribbean countries and territories.
[b] Question: Learning and development is designed holistically across the business to support fast-track digital adoption – considering employees, suppliers, partners and the public. Employees in particular are comfortable and competent in using digital tools and electronic information in everything they do, wherever they work.

D. E-participation: public consultations

As regards the use of digital tools in public consultations, the views of respondents appeared to vary without any correlation to their EPI scores noted above, or to whether they have an ICT plan in effect or in progress. In six countries, respondents agreed that consultations are held in public by using social media.[95] Among the three that disagreed, none had an ICT plan in effect, but two were in the process of developing or finalizing one. In six countries, with some overlap, respondents agreed that digital techniques are leveraged to improve the reach and impact of consultations.[96] And in five countries,

[95] "Consultations are conducted 'in public' by using social media tools to publish and broadcast materials, meetings and returns".
[96] "Digital techniques are leveraged to improve the reach and impact of consultation to engage different audiences and evaluate effectiveness".

again with some overlap, respondents agreed that there is training in skills to identify and use the most appropriate digital tools for each stage of the consultation process.[97] Interestingly, Barbados, which had the second highest EPI score among the eight study countries ranked by the 2020 EGDI, disagreed with all three statements. Belize and Saint Lucia also responded negatively, or with uncertainty regarding these topics. As such, the perceived level of digital tool usage in public consultations does not appear to be correlated with EPI score. The use of digital tools in public consultations might therefore warrant further investigation.

E. Data privacy and cybersecurity

As regards data privacy and security, respondents were asked a series of questions regarding the existence of clear rules with respect to:

(i) The control of information collected from individuals in the facilitation of transactions.[98]

(ii) The disclosure or sale of information by service providers.[99]

(iii) Definitions of illegal content.[100]

(iv) Definitions of illegal online activities and illegal access.[101]

The questions sought to gauge both the existence of specific rules, and the awareness of service providers and consumers or users around these rules. Notably, only in Jamaica and Trinidad and Tobago did respondents agree that these rules existed regarding all the areas discussed. For the British Virgin Islands, respondents agreed only with regard to illegal online activities. All other respondents either disagreed or expressed uncertainty across the board on these questions. It is unclear from the responses whether the challenges lie in the existence of the rules, or the awareness of providers or the public.

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97 "There is training in skills to identify and use the most appropriate digital tools for each stage of the consultation process".

98 "There are clear rules with respect to the control of information collected from individuals in the facilitation of transactions. All operators, in the public and private sectors, are aware of the rules with respect to the management of information collected. Customers are aware of the rules with respect to the management of information provided in gaining service".

99 "There are clear rules with respect to the disclosure and/or sale of information by service providers who collect personal information. Customers are aware of their rights with respect to the types of personal information that have to be disclose, and how that information can be used by the recipient".

100 "There are clear rules and definition for what content is deemed illegal. The public is aware of these rules and are where of the implications for the creation, storage and transmission of "illegal content". The liabilities of intermediaries are clear for hosting and/or transmission of illegal content".

101 "There are clear rules and definition for what online activity is deemed illegal. The public is aware of these rules and are where of the implications for the participation in "illegal access". The liabilities of intermediaries are clear for the facilitation of illegal access".

V. Conclusions and recommendations

A. Conclusions

The data collected as part of this study demonstrates that countries and territories across the Caribbean have taken different paths to digital transformation, and that digital inclusion is not as yet a priority in most of the study countries. Few countries have digital transformation frameworks that are currently in effect, and digital inclusion is not considered in all the frameworks that do exist. However, inclusion does tend to be considered in the national development plans of many countries, and some countries are explicitly considering inclusion within the context of the digital transformation. As such, most of the study countries have a foundation upon which they can build, should they wish to pursue digital inclusion as a policy priority.

The lack of data regarding the digital transformation in the study countries severely limited the ability of this study to analyse the level of transformation that has taken place in the study countries. Furthermore, the lack of administrative data, in particular with regard to initiatives that had been undertaken to further the digital transformation or digital inclusion, was another severe limitation. Given that digital inclusion efforts require information regarding populations that are excluded, this lack of data suggests that digital inclusion efforts may be *ad hoc* or may encounter challenges in the future. At present, given that few digital inclusion efforts have been undertaken, any well-designed effort is likely to have a positive impact. However, bearing in mind the principles to "leave no one behind" and "reach the furthest behind first", efforts to identify not only who is left behind, but also who is furthest behind, should be made as soon as possible. As noted in the Roadmap, a set of metrics to measure digital inclusion would be essential for evidence-based policymaking.[102] In that context, it is important that the metrics, and the processes envisaged to acquire the data and information, are suited to the Caribbean context. A review of existing metrics in the light of Caribbean circumstances could be an important first step in this regard. The development of methodologically sound, contextually

[102] Roadmap, p. 10.

appropriate metrics to facilitate action on digital inclusion would be an appropriate future step. The Core List of ICT Indicators, developed by the Partnership on Measuring ICT for Development, could be a helpful starting point in this regard.[103]

The review of the ICT Plans of these 11 countries revealed that digital transformation efforts in the Caribbean were still primarily government focused. At the same time, our survey, and interviews with experts from across the region, revealed that digital skills within the public service in most countries are lacking, and that there is a lack of awareness surrounding digital tools. The overall perceptions also suggest that only in a few countries are public servants seen as comfortable in using digital tools and electronic information. The lack of targeted learning programmes for public servants in ICT skills suggests that the implementation of e-government measures may encounter human resource challenges in the future. A future area for study in this regard could be an assessment of self-reported skills among public servants in the Caribbean and their perceived readiness to implement digital transformation agendas within their departments.

Data privacy and cybersecurity were other areas in which countries appeared to experience challenges. A past ECLAC study has comparatively assessed the data regulations of several Caribbean countries against the European Union General Data Privacy Regulations.[104] Given that security and trust are important to consider in the context of digital inclusion, a future area for study could be to examine the relationship between cybersecurity and digital inclusion, particularly as regards attitudes to ICT.

B. Recommendations

Develop cross-cutting, multisectoral digital transformation plans that are people-centred and that aim at ensuring digital inclusion for all

As this study has demonstrated, the countries that have ICT Plans tend to have more digital inclusion initiatives in place, and a more holistic approach to the digital transformation. These ICT Plans should be concrete, identify relevant marginalized groups, and have specific provisions regarding review and reporting.

Ensure regular reporting related to existing digital inclusion initiatives

Reporting on current digital inclusion initiatives is severely lacking, which calls into question the longevity and effectiveness of these programmes. Due to the nature of digital inclusion, governments should expect to continually adjust and redirect their efforts to the most marginalized. Ensuring that its own administrative data is adequately captured is an important first step to facilitate such evidence-based practice.

Discuss the development of digital inclusion metrics to further digital inclusion in the Caribbean

Metrics on digital inclusion that are tailored to the Caribbean context are needed to facilitate efforts. Opening a regional discussion on what metrics are appropriate for the Caribbean context could ensure that Caribbean countries can learn from each other as they attempt to reduce digital divides within their borders and within the Caribbean region.

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[103] Partnership on Measuring ICT for Development (2022), "Core list of ICT indicators: March 2022 version". https://www.itu.int/en/ITU-D/Statistics/Documents/coreindicators/Core-List-of-Indicators_March2022.pdf.

[104] Amelia Bleeker, "Creating an enabling environment for e-government and the protection of privacy rights in the Caribbean: A review of data protection legislation for alignment with the General Data Protection Regulation", ECLAC Studies and Perspectives.

Intensify efforts to increase the ICT skill level of the Caribbean populace, in particular the public service

A lack of digital skills is a major hurdle to digital inclusion, and must be prioritized in order to reap the benefits of digital transformation efforts. As the digital transformation of government is currently the primary focus of most of the countries and territories studied, governments should as a matter of priority secure training to increase the skill level of public servants in ICT. This will ensure that digital transformation efforts are not hampered by a lack of needed human resources within government. Such training must cut across all departments, and in particular those providing public-facing services.

Raise awareness regarding data privacy and cybersecurity

The study showed that further awareness regarding the regulatory framework on data privacy and cybersecurity is needed. Given that these are important considerations for digital inclusion, further efforts should be made to deepen understanding of the public, service providers and public servants on these topics. Data privacy and cybersecurity should be integrated into courses on ICT skills to ensure that people are able to use digital tools safely and effectively, while consciously managing their personal data.

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Annexes

Annex 1
Survey Instrument

The primary source of data collection for this project was a stakeholder questionnaire, a copy of which follows in this section. The objective of the questionnaire was to gain contextual information related to digital transformation and digital inclusion efforts in the countries and territories studied.

UNITED NATIONS

ECLAC

Digital inclusion while advancing digital transformation

DRAFT

Stakeholder Questionnaire

Section 1: Identifying the Responder

1. Name of Organization: _____

2. Country (please tick):

☐ Anguilla ☐ Aruba ☐ Barbados ☐ Belize ☐ British Virgin Islands

☐ Grenada ☐ Guyana ☐ Jamaica ☐ Saint Lucia ☐ Saint Vincent and the ☐ Trinidad and Tobago

3. Please tick the description which best describes your organization:

☐ Statutory/ Regulatory Authority ☐ Government Department/ Ministry ☐ Non-Government Organization

Please complete as much of the questionnaire as possible. All information shall assist in compiling the profile of your country for the Survey.

Section 2: Strategy Articulation

4. Does your country have a published **Digital Transformation** Strategy? ☐ Yes ☐ No
If "Yes", please go to question 5. If "No", please go to question 11

5. (1) Please provide the name(s) of the Strategy or the locations of its constituent elements.[105]

[105] Where the Digital Transformation Strategy is not aggregated in one document, please provide the name of the document (s) the constituent elements are included in and page number.

(2) Please provide the url for access to the Strategy, or the documents with its constituent elements

(3) Please identify the agency responsible for the implementation of and reporting on the Strategy

6. Does your country have a published **Digital Inclusion** Strategy? ☐ Yes ☐ No
If "Yes", please go to question 7. If "No", please go to question 11

7. (1) Please provide the name(s) of the Strategy or the locations of its constituent elements.

(2) Please provide the url for access to the Strategy, or the documents with its constituent elements

(3) Please identify the agency responsible for the implementation of and reporting on the Strategy

8. In the pursuit of Digital Transformation, please indicate your perceived accuracy of the following statements.

1: Strongly Disagree; 2: Disagree; 3: Uncertain; 4: Agree; 5: Strongly Agree

		1	2	3	4	5
A	**Leadership and Governance**					

		1	2	3	4	5
1	There is a digital strategy, agreed by the Executive for all parts of the Public Service. The process of strategy formulation and implementation demonstrates business value.					
2	A new risk model for the conduct of business as a whole is in place, recognising the reliance on technology for reputation, service, cost and future success.					
3	There is a digital leader and an Executive-led digital programme, cutting across the whole Public Service, supported by effective operational IT delivery.					
4	There is an overarching digital roadmap or delivery plan which has a mandate of sovereignty over every service area and department, to deliver a common digital platform, process and working practices.					
5	The digital programme is a regular topic for deliberation by the Executive as a whole. Long-established working practices and processes are challenged openly and positively.					
B	**Shills and Service Focus**					
1	All Public Officers are aware of the impact of 'digital' and what the change this implies for them – in what they do and how they do it, in being more accountable and responsible, in operating more swiftly. They know their responsibility for improving their digital adoption as part of the digital strategy – identifying, prioritizing and harnessing digital opportunity in their day-to-day work.					
2	Learning and development is designed holistically across the business to support fast-track digital adoption – considering employees, suppliers, partners and the public. Employees in particular are comfortable and competent in using digital tools and electronic information in everything they do, wherever they work.					
3	'Digital by default' is the norm in service planning, and services are developed to empower service users (customers, suppliers, and employees) and intermediary service providers to use digital methods. Web design starts with the user and encouraging take-up of digital dictates IT policy and practice.					
4	Entire 'customer-facing processes' are digitised and personalised, and customer experience is consistent across all channels. Digital services are designed in collaboration with users, as well as across the supply chain and with partners. 'Digital by default' empowers users and is designed for take-up and equality of access, not just for efficiency.					
C	**Inclusion of the Vulnerable**					
1	The design and implementation of the digital strategy included targeted inputs from interest groups representing the vulnerable, including women, youth, indigenous people or the differently-abled.					

		1	2	3	4	5
2	The digital strategy includes targets for improvements in the status of vulnerable groups. There are reporting or feedback mechanisms which specifically focus on these vulnerable groups, including women, children, indigenous people or the differently-abled, attaining set targets.					

Section 3. Legislative and Institutional Framework

9. Please identify the which of the Legislative Frameworks necessary for Digital Transformation that are (i) passed into law and (ii) in force in your country. Please also identify the administrative body identified in statute to ensure implementation, and advise on whether that body is in operation.

#	Legislative Framework	Passed (Y/N)	In force (Y/N)	Administrative Body	Active (Y/N)
1	Telecommunications – Universal Service				
2	Electronic Transactions				
3	Electronic Signatures				
4	Data Protection and Privacy				
5	Cyber Crime				
6	E-Money and E-Payments				
7	Competition Management				
8	Freedom of Information				
9	Intellectual Property Rights				
	Other (please specify)				
10					

10. For the legislative frameworks identified in (8), where applicable, please identify the url to access the most recently published administrative or implementation reports.

#	url's	#	url's
1		6	
2		7	
3		8	
4		9	
5		x	

Section 4. Online Service Provision

11. Please identify the number of e-Government Services available to the public for each of the following transaction types:

1. ☐	2. ☐	3. ☐	4. ☐	☐
Information presentation	Information capture	Partial transactional	Fully transactional	Information unavailable

12. In the provision of Government online services, please identify your perceived accuracy of the following statements.

1: Strongly Disagree; 2: Disagree; 3: Uncertain; 4: Agree; 5: Strongly Agree

		1	2	3	4	5
A	**Service re-design**					
1	There is an approach whereby existing processes that are to be made digital are reviewed and redesigned.					
2	There is the prioritization of systems to review in a systematic way.					
3	There are established protocols for sharing of information for service processing progress across various departments. Information is shared between processing parties in MDA's and the customer.					
4	There is a mix of participants in each review, in particular, with consideration of the customer's viewpoint					
5	Back office and front office business processes are digitized and boundaries blurred.					
B	**Engagement**					
1	There is continuous review of the potential for new digital tools for customer engagement in all service areas.					
2	Digital techniques are leveraged to improve the reach and impact of consultation to engage different audiences and evaluate effectiveness.					
3	There is training in skills to identify and use the most appropriate digital tools for each stage of the consultation process.					
4	Consultations are conducted 'in public' by using social media tools to publish and broadcast materials, meetings and returns.					
5	Access to social media is enabled for all employees.					
6	There is published guidance on the use of social media and training for employees in communications, customer service and front-line roles.					

		1	2	3	4	5
C	**Ways of working**					
1	The digital skills of the workforce are assessed. IT literacy amongst staff is high; IT skills are valued (and expected) for all.					
2	There are online facilities for internal processes so that any work-related activity that an employee might want to use should be available by default online.					
3	There are internal learning programmes on digital skills, sharing employee experiences, knowledge and best practice.					
4	All employees are at least aware of all the digital tools and techniques that might enhance their jobs. There are common tools and platforms for across the public service for the completion of common administrative tasks					
5	There are virtual networks for internal teams and key stakeholders to discuss and share information and ideas					
6	Employees are encouraged to use social media channels for internal communication and relationship-building, in line with the organisation's guidelines and policies					

13. (1) Please identify, if possible, the percentage of small and medium-sized enterprises (SME's) in your country with online transaction channels to the public by type.

1. ☐	2. ☐	3. ☐	4. ☐	☐
Social Media Page	Brochure centric website	Order aggregation web sites	Full e-commerce enabled web	Information unavailable

(2) Please identify, if possible, the percentage of large enterprises (with more than 500 employees) in your country with online transaction channels to the public by type.

1. ☐	2. ☐	3. ☐	4. ☐	☐
Social Media Page	Brochure centric website	Order aggregation web sites	Fully e-commerce enabled web presence	Information unavailable

14. In the facilitation of e-commerce and online services, please identify your perceived accuracy of the following statements.

1: Strongly Disagree; 2: Disagree; 3: Uncertain/don't know; 4: Agree; 5: Strongly Agree

		1	2	3	4	5
A	**Data and Data Management**					
1	There are clear rules with respect to the control of information collected from individuals in the facilitation of transactions. All operators, in the public and private sectors, are aware of the rules with respect to the management of information collected. Customers are aware of the rules with respect to the management of information provided in gaining service.					
2	There are clear rules with respect to the disclosure and/or sale of information by service providers who collect personal information. Customers are aware of their rights with respect to the types of personal information that have to be disclose, and how that information can be used by the recipient					
3	There are reports published regularly for public consumption on the compliance of the public and private sector service providers on the appropriate management of personal information collected from the public. There are reports detailing statistics and information on the efficacy of IT security systems of service providers.					
4	There are identified reporting mechanisms where concerns of the public may be lodged. The record of the complaints for a given period are available for the scrutiny of the public and/or Parliament					
5	There are clear rules and definition for what content is deemed illegal. The public is aware of these rules and are where of the implications for the creation, storage and transmission of "illegal content". The liabilities of intermediaries are clear for hosting and/or transmission of illegal content.					
6	There are clear rules and definition for what online activity is deemed illegal. The public is aware of these rules and are where of the implications for the participation in "illegal access." The liabilities of intermediaries are clear for the facilitation of illegal access.					
B	**Online facilitation Services**					
1	There are a variety of digital payment solutions available to the public. The public has a choice of using reliable alternatives to facilitate settlement, via credit (debt) or debit solutions to facilitate online transactions. There are online payment options targeted the so-called underbanked to facilitate wider access to online payment for services.					
2	There is widespread use of online payment solutions in the public sector to facilitate complete transactions online.					

		1	2	3	4	5
3	There is widespread use of online payment solutions in the private sector to facilitate complete transactions online.					
4	There are developing online facilitation services/apps being established as intermediaries between customers and online merchants' traditional channels. These services support customer interaction with merchants in trusted way to ease online commerce.					
5	There are clear rules for online facilitation (including ID and payment) service providers. Customers, both corporate and individual, are aware of their protections in law from malfeasant operations. There is a reporting mechanism where the operations of online facilitation services are provided to the public. There are clear forms of enforcement for breach of customer protection and other obligations to enhance public trust.					

Section 5. ICT Access and Skills

15. Please identify the latest available information with respect to availability of broadband networks in your country:

1. ☐ Percentage of population covered by 3G mobile network _____
2. ☐ Percentage of population covered by 4G mobile network _____
3. ☐ Percentage of population covered by 5G mobile network _____
4. ☐ Mobile penetration per capita _____
5. ☐ Mobile broadband penetration per capita _____
6. ☐ Fixed broadband penetration per capita _____
7. ☐ Fixed broadband penetration per household _____
8. ☐ Fastest fixed broadband speed offer to residential customers _____
9. ☐ Most common fixed broadband speed subscribed _____

16. In the managing the development of the ICT Sector, please identify your perceived accuracy of the following statements.

1: Strongly Disagree; 2: Disagree; 3: Uncertain; 4: Agree; 5: Strongly Agree

		1	2	3	4	5
A	**Accessibility and Usability**					
1	There are defined areas where it is identified that provision of broadband access would be an economic challenge to operators. All connectivity providers are aware of the geographic locations or socio-economic groups where connectivity gaps exist and thus, where infrastructure investment is required.					

		1	2	3	4	5
2	There are community-based locations established with access to the Internet and devices for access. These locations may include libraries, repurposed spaces in community activity centres, public transportation hubs, etc. Usage of the locations' facilities are reported annually for evaluation.					
3	There are facilities/arrangements made where the public may have access to the Internet. These include the establishment of Internet kiosks, or public WiFi nodes. Usage of the locations' facilities are reported annually for evaluation.					
4	There is a framework of sustainable, market-oriented provision of needs-responsive Internet-enabled devices to targeted audiences, including differently-abled and indigenous groups, women and the youth.					
5	There is a framework for sustainable, market-oriented access to Internet-enabled devices to the economically marginalised/or vulnerable groups including women, youth or indigenous peoples.					
B	**Affordability**					
1	There are programmes to identify those groups and persons that cannot afford access to broadband specifically. These programmes report regularly and at least annually on the status of these groups and persons.					
2	There are programmes to identify those groups and persons that cannot afford needs-responsive Internet-enabled devices specifically. These programmes report regularly and at least annually on the status of these groups and persons.					
3	There are programmes to identify those groups and persons that cannot afford ICT-based skills training specifically. These programmes report regularly and at least annually on the status of these groups and persons.					
C	**Content and Skills Development**					
1	There are domestic data centres with hosting and/or cloud services provided in the country.					
2	There are incentives to encourage the use of data centre and hosting facilities to incubate or operationalise online services targeted for local audiences. Reports on the activity with respect to operationalization of locally targeted services are published annually for assessment of progress.					
3	There are incentives for the provision of out-of-school courses for the general public to facilitate upskilling/training in basic, intermediate and advanced IT skills and literacy.					
4	Qualified courses are recognised within the incentive programmes, through bursaries or grants to schools and/or participants.					

		1	2	3	4	5
	Reports on the activity of the programmes are published annually for assessment of progress.					
5	There are a range of engagements with the general public encouraging the application of ICT-based skills. Private and public sector support provide attractive incentives, including prizes, frameworks for employment/internships. Reports on the activity of the programmes are published at least annually for assessment of progress.					
6	There are specific initiatives targeting women, youth and the indigenous populations geared to assessing and improving ICT literacy or ICT-based skills. There are specific initiatives targeting online presentation and curation of content targeting these groups					
7	Reports on the activity of the initiatives targeting the groups of interest are published at least annually for assessment of progress.					

17. Please provide any further context or commentary on the areas of perspective in the sections identified below:

Leadership and Governance (500 word limit)
Service Re-Design (500 word limit)
Engagement (500 word limit)
Way of Working (500 word limit)

Data and Data Management (500 word limit)
Online Facilitation (500 word limit)
Accessibility and Usability (500 word limit)

Name: _____ Date:_____

Signature:_____

Title/Designation: _____

Thank You!

Annex 2
Interview Outline

Subsequent to the receipt of the responses to the questionnaire, specific interview questions were developed for each target country to address gaps that arise from the analysis of their responses. While the actual specific of question were targeted to the prior responses of countries to the Survey instrument, the outline on the overleaf provides the general framework of questions that were asked of all participants.

1. Identification of vulnerable groups

(i) Is there a significant population of indigenous peoples in [country]? Are they organised into social, socio-economic or political action groups? How does [country] generally treat with including their needs into the national development agenda?

(ii) With the advent of the pandemic and its disruption to economic and social activities, has there been any recorded enhanced impact on access to ICT-based services to those seen as vulnerable, i.e., women, children, economically marginalised or indigenous peoples? What strategies have been put into place to treat with this?

(iii) Can you provide insight to the range of initiatives targeting young women, children or persons with disabilities to provide access to ICT and/or ICT skills training? Who are the lead agencies in these initiatives? Are there output reports of take up? Output reports of impact?

(iv) (Optional depending on the combination of responses received in the Survey):

- In your responses there is uncertainty about the general existence and administrative oversight of any published or articulated strategy for digital transformation or digital inclusion. However, there was affirmation that there was the involvement of marginalised and vulnerable groups in the development of some strategy. What was the strategy document that engaged these groups, and what was the modality of engagement (meetings, workshops, written responses?).

2. Skills training and human capacity development

(i) Can you provide some insight into the activities undertaken to encourage skills development? A significant component of digital inclusion is creating trust in ICT and increasing citizen's motivation to use ICT. What initiatives are there with such a focus? Has the pandemic helped or hindered these initiatives?

(ii) There is consistent implied challenge with respect to the reporting and publication of such reports. How is the use of ICT's measured? What reports of usage and outcomes exist in relation to the various initiatives for access in remote communities, skills training, skill competitions and education?

(iii) Are there programmes by the regulator in conjunction with international bodies such as the ITU? Examples include: The World Telecoms Day, The Girls in ICT initiative?

- If not...Why not?
- If so...how is the take up at these initiatives measured? And where are they reported? Further, is there any evaluation of the impact of these events in ICT usage in Jamaica?

(iv) (Varied based on the specific trends in responses)

- Given the responses to the statements regarding "existence of a strategy" and "ways of work" show weak sentiment, the inverse appears with respect to "service redesign", "blurring of back office and front office operations" and the "inclusion of vulnerable groups in feedback". How do you explain this apparent inconsistency? How is service redesign strong, despite comparatively weak direction from an ICT Strategy?

3. Motivation to go online

(i) With respect to e-Government services, how has the pandemic, and its concomitant shutdowns impacted the developments in that space? How was this measured? Are there reports outlining trends in online adoption of e-Government services?

(ii) Is there any update on the number of eGovernment services that are available in accordance with the segmentations identified (information only, data collection, semi-transactional and full transactional)?

(iii) With respect to SME and merchant online services, how is this measured? How has the pandemic, and its concomitant shutdowns impacted the developments in that space? Are there reports outlining trends in online adoption of online services provision.

(iv) Has the governance framework outlined in the ICT Plan been implemented? Are interim reports of progress available online for review?

(v) (Optional for countries where the responses suggested no e-Government/digital Government Strategy in place)

- In the absence of a Digital Transformation Strategy, what guides the Govt of [country]'s e-Gov initiatives? What is the policy drive to enhance the transaction between Govt of [country] and its citizens? How is this suite of activities managed and reported on? Are reports available for perusal.

4. Trust in the safety of online systems

(i) With respect to e-Payment and other e-Service facilitation (online Trust Services) can you provide a brief overview of what's happening in [country]? How is this sector being administered? Are activities in this sector being reported in published documents?

(ii) Is there any insight on the emergence of online payment options for the underbanked and unbanked, and the use of these platforms for services by the State and government?

(iii) (Optional depending on the existence of the Act and the supporting administrative framework)

- As there is no Data Protection Act in force in Barbados, according to what standards is information sharing between departments facilitated? Is this online data transfer or traditional non-digital transfer?

5. ICT Connectivity and Usability

(i) There was strong sentiment with respect to the use of community-based initiatives geared to gaining connectivity online. Can you provide an overview of these initiatives? Is there data on the usage of these locations? Is such data published or is it only for internal use by the implementing agencies? Has the pandemic and its impacts resulted in measurable changes in usage?

(ii) How is use of actual take up of Community-based ICT access centres being measures and reported? IS the report public? Given the reported [full] coverage provided by networks, has there been a concomitant fall off in use of community-based centres for Internet access? How have programs previously developed for communities been modified given the levels of Internet coverage reported?

(iii) (Optional, for those countries without defined Universal Service Programmes)

(iv) There is no universal service programme, but there was strong sentiment to the existence of "arrangements or facilities for people to access the Internet in rural communities". Can you elaborate on what these arrangements or facilities entail? How is usage of these facilities measured? Who measures it? Is the measurement subject of a report which is published for public consumption?

Annex 3
List of experts interviewed

Table A1
List of experts interviewed

Country	Organization	Designation	Name
Anguilla	Ministry of Economic Development, Commerce, Information Technology & Natural Resources	Permanent Secretary	Ms. Chanelle E Petty Barrett
	Department of Information Technology & E-Government Services	Department Head, Director	Mr. Vaughn Hazell
	Public Utilities Commission Anguilla	Executive Director	Mr. Kenn Banks
Aruba	Office of the Minister of Economic Affairs, Communications and Sustainable Development	Advisor	Mr. Gerald Kock
	Office of the Minister of Tourism, Public Health and Sports	Innovation Advisor	Mr. Yuri Feliciano
Barbados	Ministry of Innovation Science and Smart Technology	Director Digital Infrastructure (Ag)	Mr. Clifford Bostic
	National Council for Science and Technology	Director	Mr. Charles Cyrus
Belize	Ministry of Youth, Sports and E-Governance	Chief Executive Officer	Mr. Jose Urbina
	Ministry of Youth, Sports and E-Governance, e-Governance & Digitization Unit	Director	Ms. Alexia Peralta
British Virgin Islands	Office of the Premiere	Strategy Adviser	Ms. Lizette George
	Department of ICT	Network Administrator	Mr. Kamarie Manning
	Department of ICT		Mr. Claudius Rhymer
	Telecommunications Regulatory Commission	Chief Executive Officer	Mr. Guy L. Malone
Grenada	Ministry of National Security, Public Administration, Youth Development, Home Affairs, Information & Communications Technology and Disaster Management	Permanent Secretary, ICT	Mr. Finley Jeffrey
Guyana	Office of the Prime Minister, Industry and Innovation Unit	Director	Mr. Shahrukh Hussain
	Office of the Prime Minister, Industry and Innovation Policy Unit	Planning Coordinator	Mr. Shawn Coonjah
Jamaica	Ministry of Science, Energy and Technology	Chief Technical Director of ICT	Ms. Wahkeen Murray
	Ministry of Science, Energy and Technology	Director of Post and Telecommunications	Mr. Cecil McCain
	Ministry of Science, Energy and Technology	Director of Technology	Mr. Gary Campbell
Saint Lucia	Ministry of Education, Sustainable Development, Innovation, Science, Technology and Vocational Training, Innovation Division	Director of Innovation	Ms. Lennel Malzaire
Saint Vincent and the Grenadines	Ministry of Finance, Economic Planning and Information Technology, Department of Telecommunications	Senior Economist	Ms. Tricia Pompey

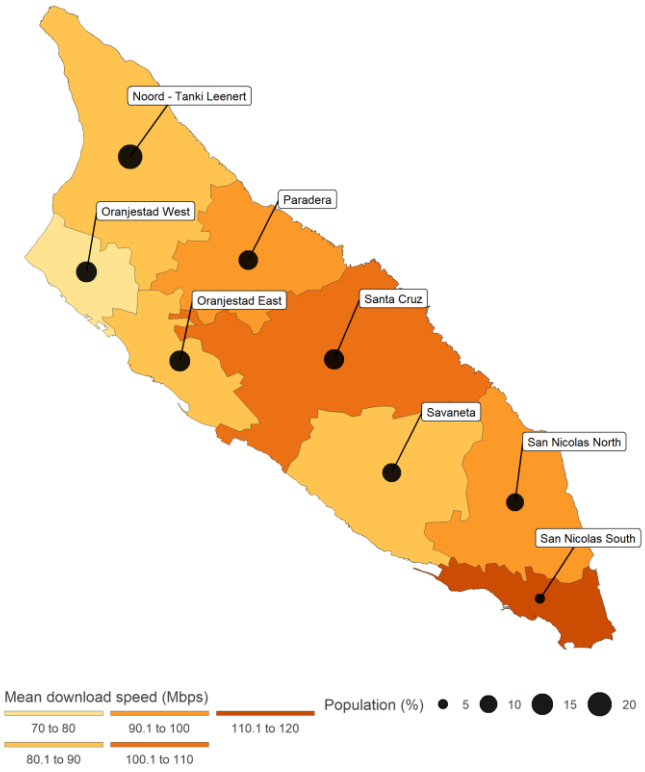
Country	Organization	Designation	Name
Trinidad and Tobago	Ministry of Digital Transformation	Senior Executive Manager Head, External ICT Relations	Ms. Shelley-Ann Clarke-Hinds
	National ICT Company Ltd (iGovTT)	Business Transformation Professional	Ms. Natasha Ottley
	Ministry of Finance, Information and Communications Technology Division	ICT Director	Mr. Carlos N. Lewis
	Telecommunications Authority of Trinidad and Tobago	Executive Officer, Policy	Ms. Annie Baldeo

Source: Authors' compilation.

Annex 4
Within-Country disparities of fixed broadband download speed (Q2 2022)

This annex shows the disparities in internet speeds that has been observed between districts within the ten (10) study countries[106] for which data is available for the second quarter of 2022, 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 tests.[107] For each country, the respective maps also present the percentage of the population that lives within each district.

Map A1
Aruba

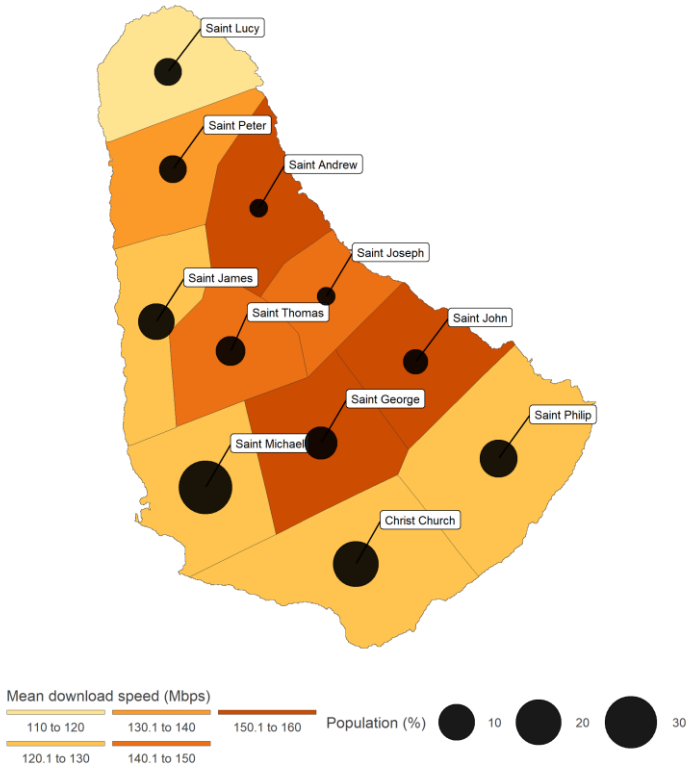


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of, Speedtest by Ookla Global Fixed and Mobile Network Performance, 2022 and Central Bureau of Statistics of Aruba, *Fifth Population and Housing Census*, 2010.

[106] Study countries with available data: Aruba, Barbados, Belize, British Virgin Islands, Grenada, Guyana, Jamaica, Saint Lucia, Saint Vincent, and Trinidad and Tobago.

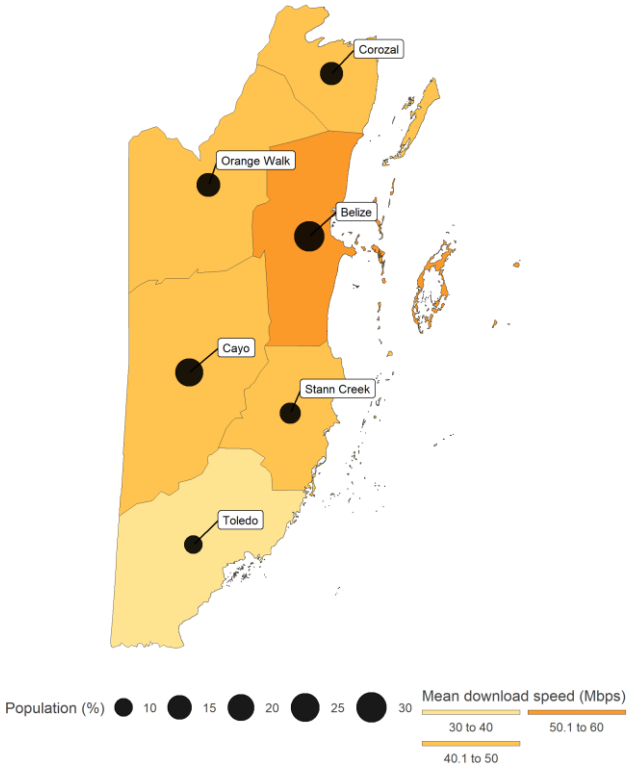
[107] Ookla's Open Data Initiatives, https://www.ookla.com/ookla-for-good/open-data.

Map A2
Barbados



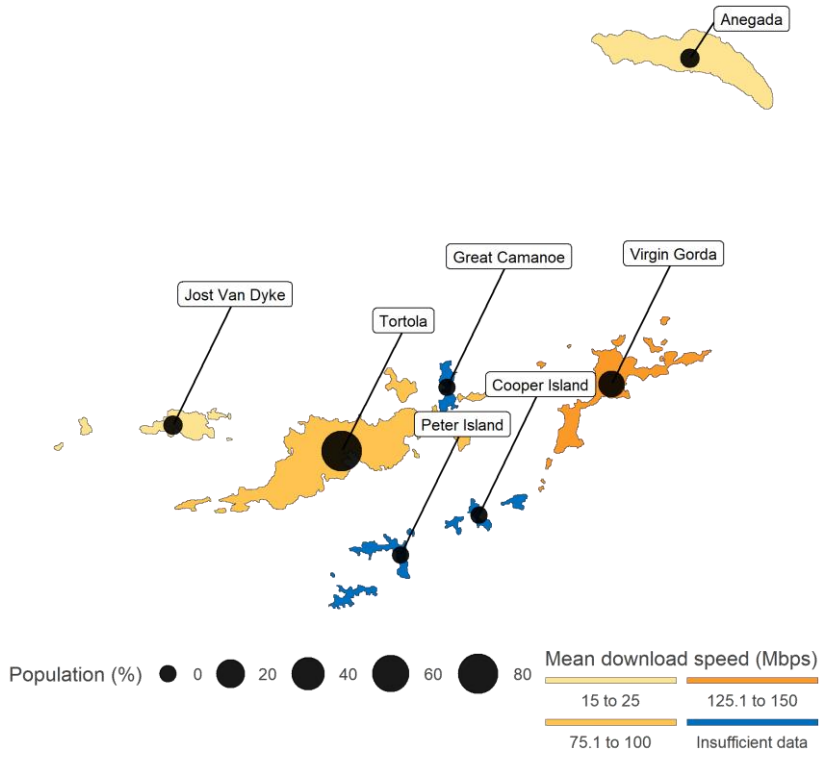
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of, Speedtest by Ookla Global Fixed and Mobile Network Performance, 2022 and Barbados Statistical Service, *2010 population and housing census*, 2013.

Map A3
Belize



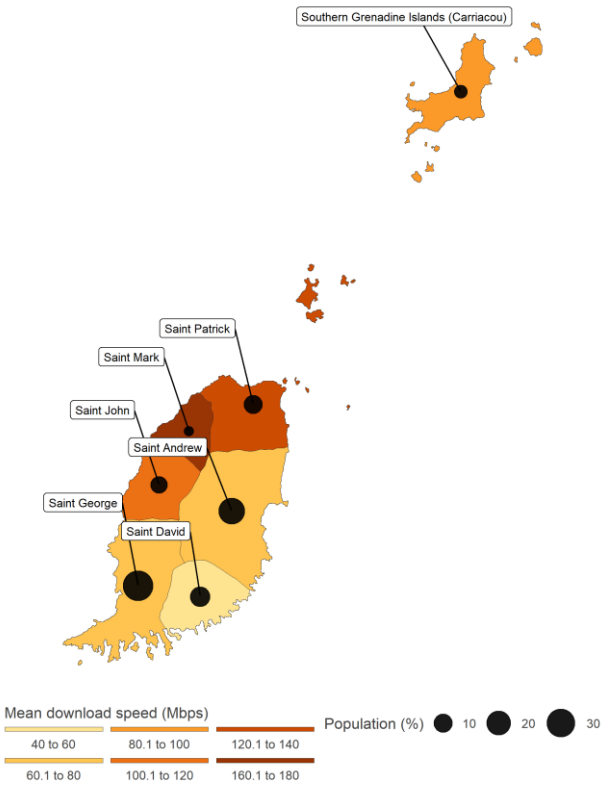
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of, Speedtest by Ookla Global Fixed and Mobile Network Performance, 2022 and Statistical Institute of Belize, *Belize population and housing census*, 2013.

Map A4
British Virgin Islands



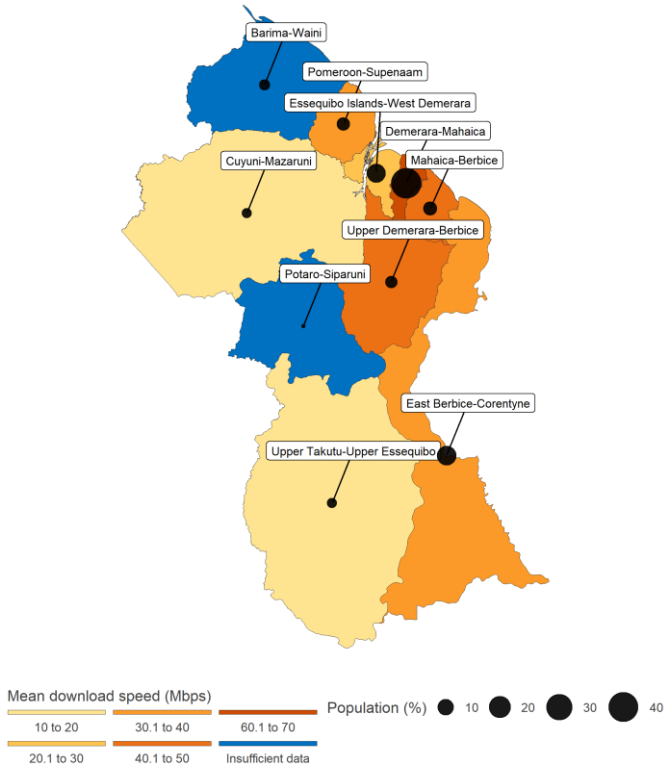
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of, Speedtest by Ookla Global Fixed and Mobile Network Performance, 2022 and Government of the Virgin Islands, *2010 population and housing census report*, 2010.

Map A5
Grenada



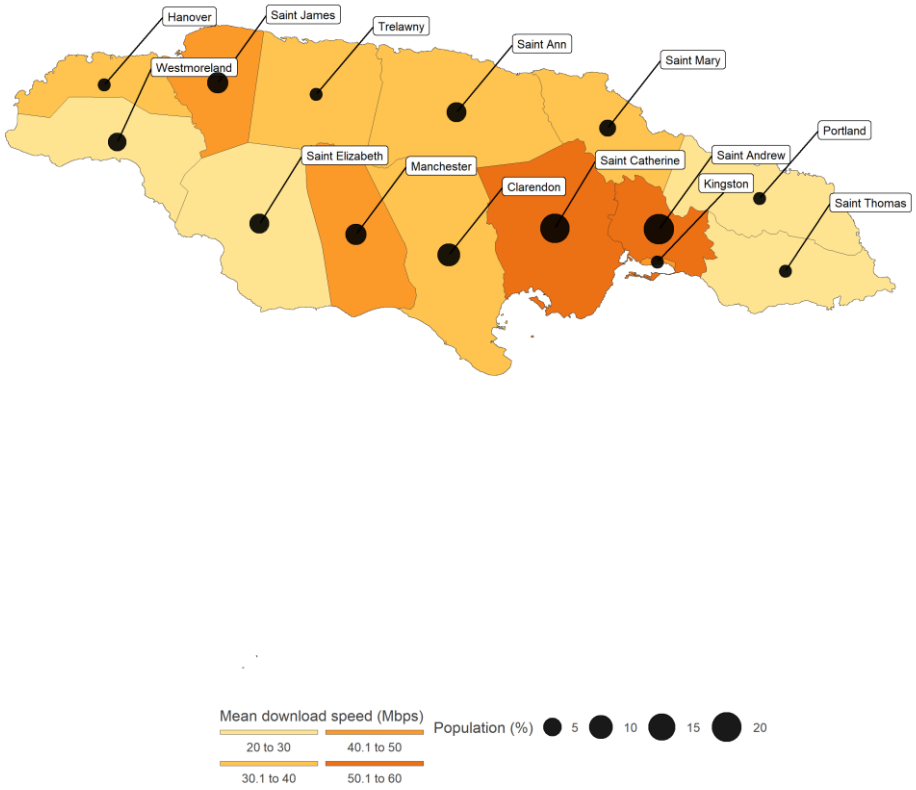
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of, Speedtest by Ookla Global Fixed and Mobile Network Performance, 2022 and Central Statistical Office of Grenada, *Grenada national population and housing census report 2011*, 2011.

Map A6
Guyana



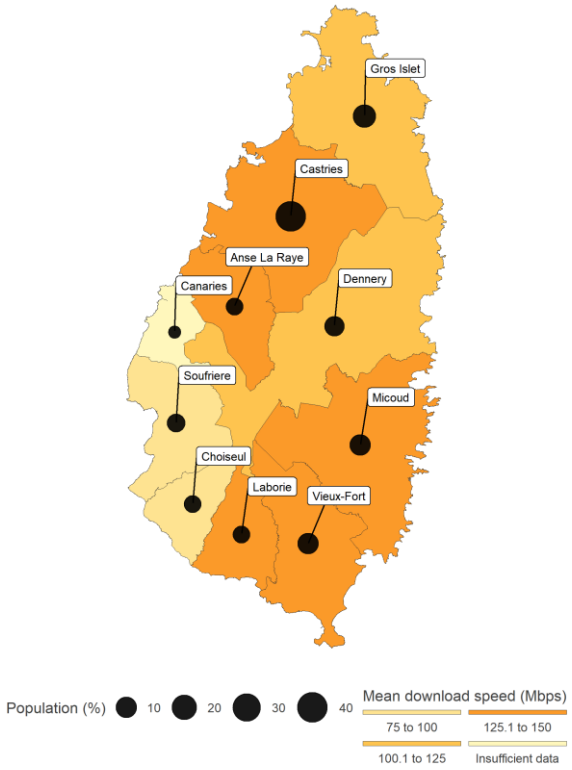
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of, Speedtest by Ookla Global Fixed and Mobile Network Performance, 2022 and Guyana Bureau of Statistics, *Guyana population and housing census 2012: Preliminary report*, 2014.

Map A7
Jamaica



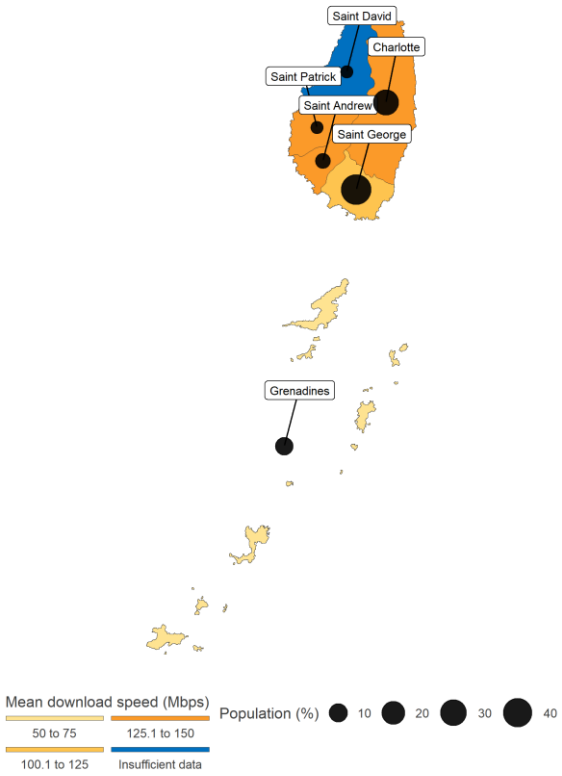
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of, Speedtest by Ookla Global Fixed and Mobile Network Performance, 2022 and Statistical Institute of Jamaica, *Population and housing census 2011: General report*, 2012.

Map A8
Saint Lucia



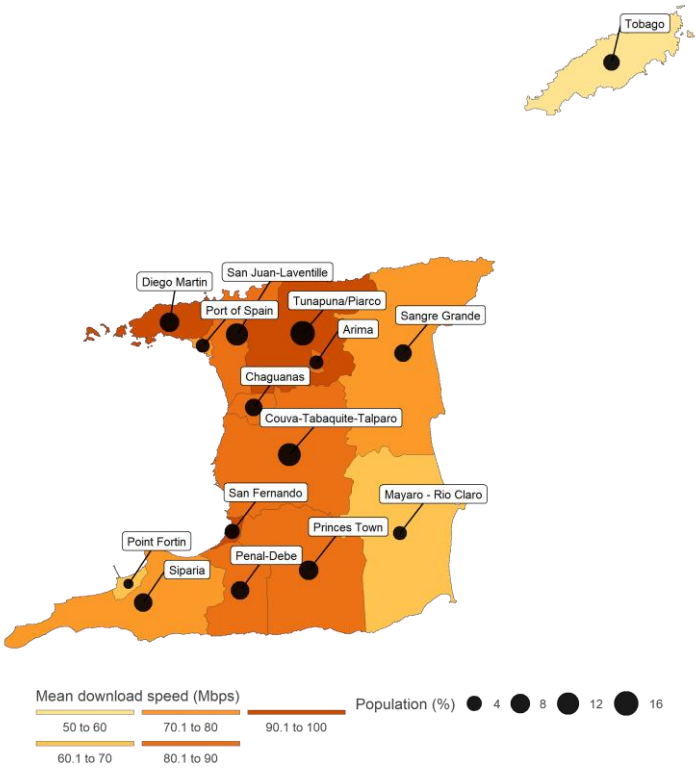
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of, Speedtest by Ookla Global Fixed and Mobile Network Performance, 2022 and Central Statistics Office of Saint Lucia, *2010 population and housing census: Preliminary report*, 2011.

Map A9
Saint Vincent and the Grenadines



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of, Speedtest by Ookla Global Fixed and Mobile Network Performance, 2022 and Statistical Office of Saint Vincent and the Grenadines, *Population and housing census report 2012*, 2012.

Map A10
Trinidad and Tobago



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of, Speedtest by Ookla Global Fixed and Mobile Network Performance, 2022 and Central Statistical Office of Trinidad and Tobago, *2011 population and housing census demographic report*, 2012.

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