

Digital Infrastructure in Trinidad and Tobago: Analysis, Challenges, and Action Plan

**Institutions for
Development Sector**
**Connectivity, Markets,
and Finance Division**

**DISCUSSION
PAPER N°
IDB-DP-928**

Antonio García Zaballos
Pau Puig Gabarró
Enrique Iglesias Rodríguez

Digital Infrastructure in Trinidad and Tobago: Analysis, Challenges, and Action Plan

Antonio García Zaballos
Pau Puig Gabarró
Enrique Iglesias Rodríguez

February 2022



<http://www.iadb.org>

Copyright © 2022 Inter-American Development Bank. This work is licensed under a Creative Commons IGO 3.0 Attribution-NonCommercial-NoDerivatives (CC-IGO BY-NC-ND 3.0 IGO) license (<http://creativecommons.org/licenses/by-nc-nd/3.0/igo/legalcode>) and may be reproduced with attribution to the IDB and for any non-commercial purpose. No derivative work is allowed.

Any dispute related to the use of the works of the IDB that cannot be settled amicably shall be submitted to arbitration pursuant to the UNCITRAL rules. The use of the IDB's name for any purpose other than for attribution, and the use of IDB's logo shall be subject to a separate written license agreement between the IDB and the user and is not authorized as part of this CC-IGO license.

Note that the link provided above includes additional terms and conditions of the license.

The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.



Abstract

This document presents an analysis of the state of digital connectivity in Trinidad and Tobago and an action plan to close the existing gap between the countries of Latin America and the Caribbean (LAC) and those of the Organisation for Economic Co-operation and Development (OECD). There is also a large gap within the country between urban, densely populated regions and rural, remote, or difficult-to-access regions. Among the impediments to closing the gap are: lack of investment in infrastructure in the most remote areas; limited bandwidth of citizens, institutions and companies that are far from this infrastructure; and lack of competition among internet companies. The government is making efforts in the areas of a universal service fund, spectrum management, and the formulation of the national ICT plan to improve access conditions in the country. Finally, the document estimates the investment gap in the LAC region and in Trinidad and Tobago specifically.

JEL Codes: L11, L38, L51, L96

Keywords: connectivity, telecommunications, public policy, regulation, broadband, Trinidad and Tobago

Table of Contents:

DIGITAL SECTOR BACKGROUND	3
<i>MARKET OVERVIEW</i>	3
<i>UNIVERSAL SERVICE FUND</i>	4
<i>COMPETITION</i>	5
<i>INFRASTRUCTURE SHARING</i>	5
<i>SPECTRUM MANAGEMENT</i>	6
<i>ICT PLAN</i>	7
<i>INVESTMENT GAP</i>	8
CONCLUSIONS AND OPPORTUNITIES	9
REFERENCES.....	11

List of Figures

Figure 1. Broadband Fixed Penetration (% of population)	3
Figure 2. Broadband Wireless Penetration (% of population)	3
Figure 3. Affordability (% of first quintile income)	4
Figure 4. Spectrum Assigned for Wireless Broadband in LAC	7
Figure 5. National ICT Plan Digital Transformation Initiatives	8

List of Tables

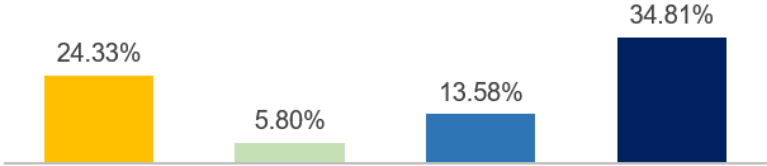
Table 1. Estimated CAPEX Needs for Latin American and Caribbean Countries to bridge the Connectivity Gap with the OECD.....	11
---	----

Digital Sector Background

Market Overview

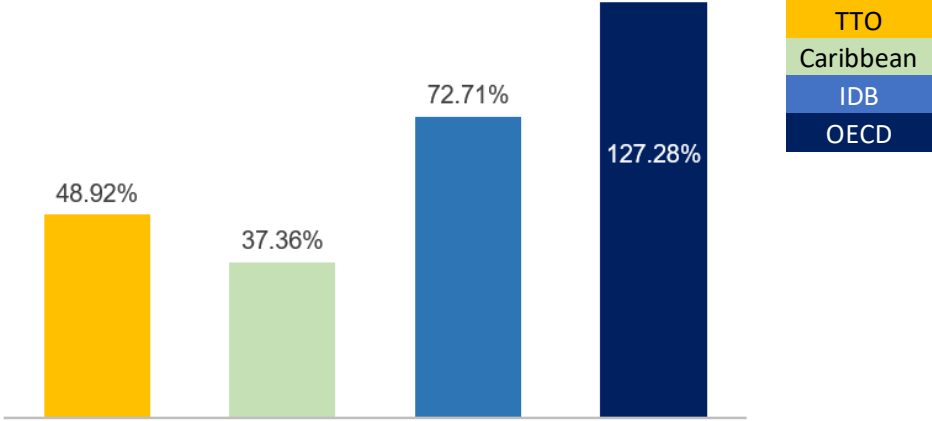
The digital sector in Trinidad and Tobago is underdeveloped. The levels of fixed and wireless broadband subscriptions are low, especially when compared to OECD countries (Figures 1 and 2).

Figure 1. Broadband Fixed Penetration (% of population)



Source: IDB (Undated).

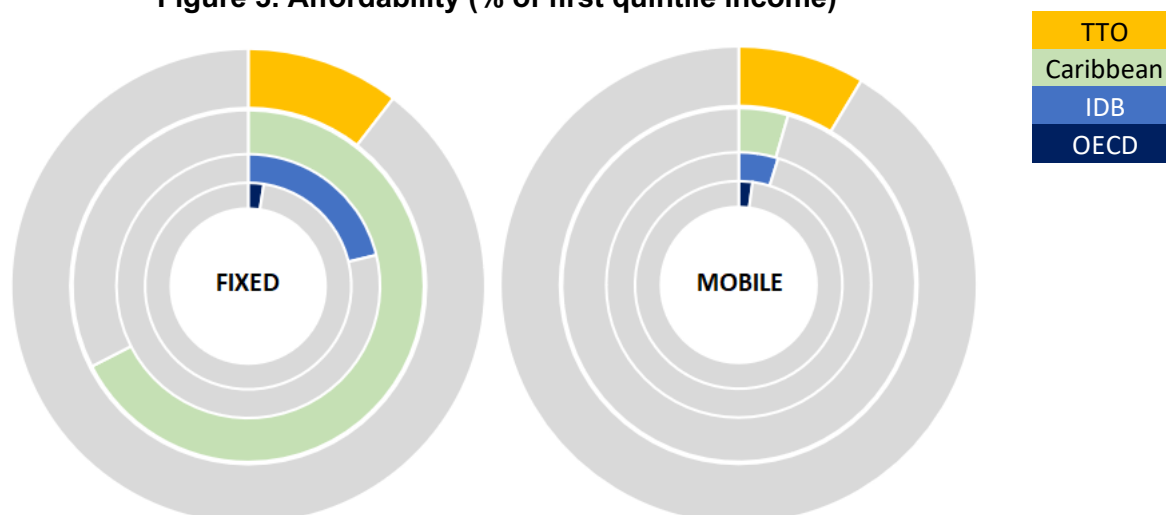
Figure 2. Broadband Wireless Penetration (% of population)



Source: IDB (Undated).

Even though the coverage of 4G networks (the main technology that is bringing people online) is high (95 percent), there are still regions of the country that lack access to high-speed fiber optic networks and services are not as affordable as in other regions.

Figure 3. Affordability (% of first quintile income)



Source: IDB (undated).

The main causes of this problem are: (i) lack of investment, partly motivated by lack of competition in both the fixed and mobile markets and (ii) an outdated regulatory framework.

The Telecommunications Act of 2001 (Government of Trinidad and Tobago, 2001) with its subsequent amendments governs the telecommunications sector. The following entities have authority over the country's telecommunications market:

- Ministry of Public Administration and Digital Transformation (MPADT, undated): line Ministry with responsibility for overseeing telecommunications regulation in Trinidad and Tobago. The Minister of Public Administration and Digital Transformation acts as a key figurehead in approving recommendations sent forward by the Telecommunications Authority of Trinidad and Tobago (TATT).
- Telecommunications Authority of Trinidad and Tobago: established in July 2004 by the enactment of the Telecommunications Act 2001, amended in 2004, as the independent regulatory body responsible for the transformation of the telecommunications sector from a virtual monopoly to a competitive environment.
- Telecommunications Services of Trinidad and Tobago (TSTT): public-private operator, jointly owned by National Enterprises Limited (NEL) which in turn is majority owned by the Government of the Republic of Trinidad and Tobago (GoRTT), and Cable & Wireless (West Indies) Limited, (C&W). NEL owns 51 percent of TSTT's issued share capital, while C&W holds 49 percent. TSTT is the country's largest provider of communications solutions to the residential and commercial markets.

Universal Service Fund

The Universal Service Fund in Trinidad and Tobago (USFTT), administered by the TATT, has the mission of expanding access to underserved areas. The specific objectives are:

- Facilitate the achievement of the policy objectives in both the Authority's Universal Service Framework and GoRTT's Universality Policy.
- Ensure that an unfair financial burden is not placed on any concessionaire.
- Promote the use of competitive market forces in funding communities and population groups in the access gap.

All concessionaires operating a public telecommunications network or providing a public telecommunications service are required to contribute to the USFTT in a manner to be prescribed by the Authority.

According to the latest available report (TATT, undated), there are currently two ongoing initiatives:

- National free Wi-Fi, with a budget around US\$8 million
- Connecting persons with disabilities, with a budget around US\$4 million

Additionally, the following projects were projected:

- Provision of Information and Communication Technologies (ICT)-enabled devices and Internet connectivity access service for three months to students in Trinidad and Tobago (budget around US\$15 million).
- Establishment of five community-based ICT access centers in Trinidad and Tobago (budget around US\$6 million).
- Free public mobile Wi-Fi in buses, water taxis, and inter-island ferries operating within Trinidad and Tobago (budget to be determined).
- Broadband internet access infrastructure project—Brasso Venado/St. John's Parish (budget to be determined).

Competition

The level of competition is relatively low in both the fixed and mobile markets. According to the latest figures published by the TATT in its quarterly report (TATT, undated), the Herfindahl-Hirschman Index (HHI) in the mobile market is 5,194 (an HHI above 5,000 represents a concentrated market). In the fixed internet market, the situation is better, with an HHI of 2,822.

Infrastructure Sharing

The telecommunications (access to facilities) regulations, developed in 2006, describe the procedures by which the telecommunications providers must provide access to other operators in a nondiscriminatory way.¹ Regulations establish that prices must be

¹ A concessionaire shall provide access under the same terms and conditions and of the same quality as it provides for its own networks and services, the networks and services of its subsidiaries and partners or the networks and services of any other concessionaire to which it provides access.

calculated following cost-oriented methodologies established and supervised by the TATT. Regulations foresee the sharing of the following elements:

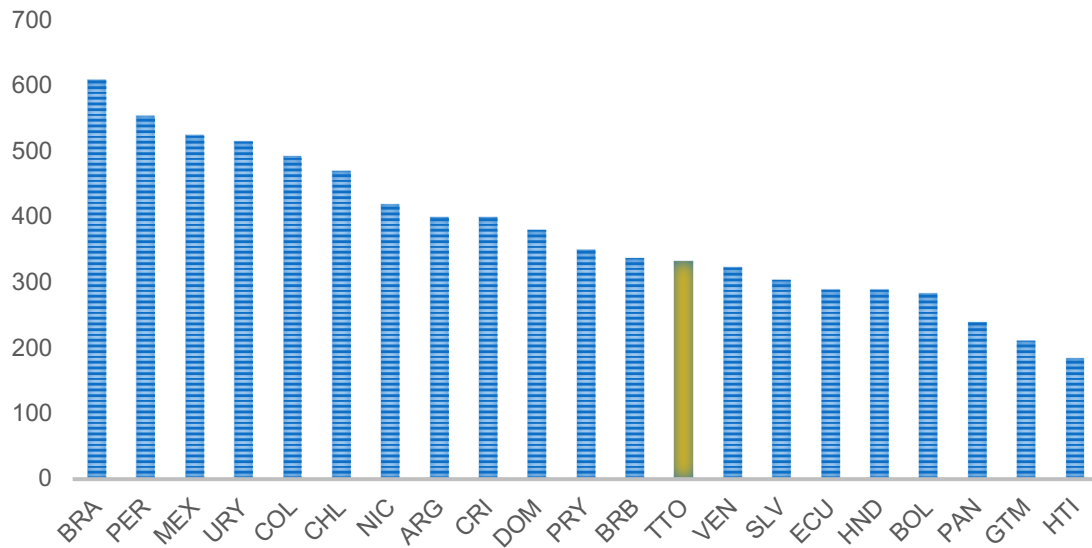
- Local access loop
- Line-side facilities, including the connection between an access loop termination at the main distribution frame and the switch line card or functionally equivalent points
- Trunk-side facilities, including the trunk-side cross connect panel and a switch trunk card or functionally equivalent points
- Trunk-connect facilities, including the connection between trunk termination at a cross connect panel and a switch trunk card or functionally equivalent points
- Inter-office transmission facilities
- Signaling networks, including signaling links and signaling transfer points
- Service control points
- Ducts, poles, and towers used to support or carry telecommunication facilities

Spectrum Management

The National Spectrum Plan provides a framework for regulating the use of spectrum in an orderly manner in accordance with the Authority's mandate. This includes the allocation, reallocation, assignment, and re-assignment of spectrum.

The International Telecommunications Union (ITU) recommended a minimum of 1,280 MHz available for mobile broadband services by 2020. According to Trinidad and Tobago's Spectrum Plan for the Accommodation of Public Mobile Telecommunications Services, (TATT, 2017), there are 332 MHz assigned to mobile services in the bands of 700 MHz, 850 MHz, 1,900 MHz and 1,700/2,100 MHz. This is far below the recommended ITU minimum spectrum, and also behind other countries in the LAC region.

Figure 4. Spectrum Assigned for Wireless Broadband in Latin America and the Caribbean



Sources: IDB (Undated), TATT (Undated).

The two operators that dominate the mobile market in Trinidad and Tobago—Digicel and Bmobile—have spectrum in all bands for their 2G, 3G, and 4G deployments.

ICT Plan

In 2018, the MPA launched Trinidad and Tobago’s 2018–2022 National ICT Plan blueprint. (Government of Trinidad and Tobago, 2018). The plan outlines the National ICT Agenda, building on the country’s past performance in ICT, and declares a bold vision of a future, transformed through ICT and characterized by empowered people, competitive businesses, and transformational government. The plan proposes a comprehensive set of initiatives to dynamize the digital transformation process. Figure 5 provides a summary of the proposed strategic thrusts.

Figure 1. National ICT Plan Digital Transformation Initiatives

	ST 1	ST 2	ST 3	ST 4	ST 5
STRATEGIC THRUST	IMPROVING CONNECTIVITY	INCREASING HUMAN CAPACITY	ADVANCING DIGITAL GOVERNMENT	FOSTERING ECONOMIC DEVELOPMENT	ADVANCING THE ENVIRONMENT FOR SOCIETAL BENEFIT
STRATEGIES	S1 - Enhancing ICT Infrastructure	S4 - Building ICT Human Capital	S7 - Offering End-to-End eServices	S11 - Advancing eCommerce	S14 - Promoting Green ICT
	S2 - Modernising the Legal and Regulatory Framework	S5 - Improving Access to ICT Human Capital	S8 - Driving User Adoption	S12 - Diversifying the Economy Through ICT Sector Development	
	S3 - Strengthening Safety, Security, Resilience and Risks	S6 - Promoting Digital Inclusion	S9 - Increasing Government Efficiency	S10 - Promoting Open Government	S13 - Advancing Digital Content Production
PROGRAMMES	10 Programmes	8 Programmes	10 Programmes	8 Programmes	8 Programmes

Source: TATT (undated).

The plan states that ICT must be made accessible and affordable to all. It aims to further bridge the digital divide in Trinidad and Tobago by ensuring that all members of society have equal access to ICT infrastructure, content, and services, with increasing opportunities to leverage ICT innovations to address national challenges. Infrastructure (basic utilities and network connectivity) must be enhanced in underserved regions to allow citizens to gain access to and benefit from the internet and internet-enabled services. The plan aims to adopt different strategies for the two segments of the population, the abled and the differently-abled, to bridge the digital divide by providing the means for basic ICT literacy skills and the tools for digital inclusion. While bridging the divide, it is also recognized that threshold ICT literacy would evolve with the ICT training framework to incorporate more advanced skills as well as continue the promotion of local digital content and service.

Investment Gap

The IDB has developed a high-level methodology to estimate investment needs to cover the gap that exists between the Organisation for Economic Co-operation and Development (OECD) and LAC countries. Based on the sociodemographic characteristics of the countries and current penetration levels, the model calculates the needs for capital expenditure (CAPEX), both for fixed and mobile broadband, and the direct employment originated. Likewise, an additional scenario has been simulated, which would consist of increasing fixed and mobile broadband penetration in each country by 10 percentage points. Table 1 shows the results obtained for the region.

Table 1. Estimated CAPEX Needs for Latin American and Caribbean Countries to Bridge the Connectivity Gap with the OECD

País	hab./km2	Penetración de BAF	Penetración de BAM	Escenario: Aumento de la penetración (10%)			Escenario: Cierre de brecha con la OCDE			Inv. Rural
				CAPEX MÓVIL +10%	CAPEX FIJO +10%	Aumento de empleo	CAPEX MÓVIL OCDE	CAPEX FIJO OCDE	Aumento de empleo	
Argentina	16,26	19,10	67,30	261.537.770,78	2.244.736.478,51	305.798,58	1.406.288.593,46	3.285.952.467,95	1.045.960,76	20,69%
Bahamas	38,53	22,58	60,85	2.266.784,02	15.283.472,76	2.650,40	13.650.932,75	17.060.253,22	9.459,82	38,06%
Barbados	666,61	31,17	59,94	1.684.869,92	1.112.569,55	1.970,01	10.300.175,03	286.163,25	6.275,00	86,97%
Belice	16,79	6,44	30,21	2.251.683,49	19.170.172,49	2.632,74	20.458.796,16	52.340.462,21	15.554,65	77,88%
Bolivia	10,48	4,44	79,87	66.733.535,98	635.281.956,90	78.027,05	274.967.003,59	1.861.366.344,02	275.059,26	56,25%
Brazil	25,06	14,91	88,11	1.231.256.445,99	9.431.017.050,54	1.439.625,60	4.057.805.055,36	17.758.097.269,13	3.727.628,41	30,95%
Chile	25,19	17,36	91,58	110.089.618,60	842.056.089,71	128.720,41	324.686.069,13	1.379.604.469,86	295.263,04	29,03%
Colombia	44,75	13,45	52,32	291.833.952,81	1.874.420.416,24	341.221,87	2.006.378.306,60	3.803.526.628,28	1.519.161,21	41,30%
Costa Rica	97,91	16,70	97,19	29.386.611,73	139.657.570,21	34.359,79	70.176.210,89	238.010.760,63	70.304,93	42,86%
Ecuador	68,79	11,44	54,69	100.421.500,28	552.880.000,33	117.416,13	666.634.444,03	1.233.195.390,10	520.673,44	62,79%
El Salvador	309,88	7,67	54,53	37.741.001,63	86.597.724,61	44.128,02	251.119.678,20	225.788.081,06	204.336,66	52,60%
Guatemala	160,95	3,05	10,08	101.382.256,03	374.308.282,36	118.539,47	1.125.241.659,64	1.148.699.141,86	839.725,24	74,24%
Guyana	3,96	8,34	26,30	4.578.969,55	53.104.157,37	5.353,88	43.397.126,41	134.873.937,38	32.169,57	89,02%
Haiti	403,60	0,28	29,98	65.381.800,54	113.164.128,38	76.446,56	595.543.938,98	378.651.741,41	476.061,43	70,21%
Honduras	85,69	3,70	32,12	56.355.257,81	283.859.712,60	65.892,42	501.252.454,36	852.678.252,77	392.006,65	68,48%
Jamaica	270,99	9,70	51,19	17.251.017,54	44.518.083,08	20.170,46	120.552.178,38	107.009.967,55	94.719,07	70,21%
México	64,91	14,55	69,97	741.746.865,40	4.175.484.709,99	867.274,87	3.790.612.055,80	8.013.328.139,65	3.048.263,99	42,86%
Nicaragua	53,73	2,98	18,67	38.004.152,89	229.271.527,81	44.435,71	389.163.291,93	705.331.037,99	295.862,29	67,58%
Panamá	56,19	12,93	79,15	24.551.573,88	145.770.740,87	28.706,51	102.929.473,97	303.296.269,90	90.038,21	58,54%
Paraguay	17,51	4,61	57,67	40.887.642,76	344.471.679,76	47.807,18	259.247.538,12	1.003.433.445,90	221.190,67	64,77%
Perú	24,99	7,18	64,19	188.032.191,10	1.441.388.152,77	219.853,43	1.069.530.775,39	3.827.997.488,88	917.205,54	45,83%
Rep. Dominicana	219,98	7,48	60,82	62.466.258,05	188.994.903,06	73.037,61	376.349.280,13	496.322.338,24	315.922,56	39,71%
Suriname	3,69	12,70	42,09	3.385.663,29	39.765.727,57	3.958,63	26.739.098,21	83.649.644,67	19.795,73	60,71%
Trinidad y Tobago	270,93	24,54	40,68	8.169.556,84	21.086.628,02	9.552,11	65.673.664,46	19.403.107,25	42.788,65	72,68%
Uruguay	19,71	28,34	123,85	20.274.908,82	165.693.748,20	23.706,09	(5.636.220,54)	89.540.611,07	3.110,34	13,64%
Venezuela	32,73	9,02	54,53	169.698.414,47	1.203.180.210,34	198.416,98	1.129.186.787,50	2.974.694.669,56	905.420,30	34,62%

Source: Authors' elaboration.

According to this methodology, a total CAPEX of more than US\$68,000 million would be required in the 26 countries of the region, and more than 14 million jobs would be directly generated. Although the private sector makes significant investment efforts each year in most countries, strategic public investment is needed to articulate public-private partnerships that would make it possible to reach the most remote and disconnected areas of the region. The percentage of rural investment that is necessary in each country has been estimated, based on population density and the percentage of rural population. The higher this indicator, the lower the expected financial profitability and the more necessary it will be for the government to intervene.

In Trinidad and Tobago, the model estimates a gap of approximately US\$85 million, out of which US\$62 million are related to digitalization in rural areas, that is, unprofitable investments that will probably require public support to become a reality. Reducing this gap in rural areas is expected to increase GDP by 6.7 percent, increase productivity by 5.5 percent, and create more than 20,000 direct jobs.

In addition to these efforts, which focus mainly on national investments, international connectivity may be a bottleneck, especially for an island country. An assessment of the current and future needs for capacity to connect internationally must be undertaken to determine whether it is necessary to invest in a new submarine cable. Typically, these types of investment involve various stakeholders, including public and private sector actors, content providers, telecom operators, and others. The MPADT can play an important role in highlighting the need for a new cable and supporting, both technically and financially, the necessary studies and the deployment of the cable.

Conclusions and Opportunities

The main conclusions that can be drawn from the comprehensive analysis of Trinidad and Tobago's telecoms sector are the following:

- **Development of Infrastructure:** Analyze the relevance of generating large infrastructure projects such as strengthening a national fiber optic backbone network and backhaul networks (long-distance transport) and connecting public

institutions (health centers, schools, and other entities), especially in areas without service or with poor coverage. Rural infrastructure operators must be deployed and community networks promoted through the allocation of free and dynamic use spectrum.

- A **market analysis** is necessary to improve competition. Defining different markets in the telecommunications sector is a well-recognized tool that regulators use to identify markets that need additional regulation and control. Trinidad and Tobago only differentiates between fixed and mobile markets. A more in-depth analysis would be beneficial for the country's telecom sector.
- With respect to **interconnection**, the results of the recent analysis will foster a more competitive environment by lowering the costs to enter and enabling the use of the main operators' infrastructure in the country.
- **Infrastructure sharing** will help reduce costs and reach remote and poorly connected areas. Secondary legislation and specific initiatives targeted to ease the use of existing infrastructure will facilitate effective sharing among operators.
- As for **spectrum resources**, the country has assigned significantly less spectrum frequencies than other countries in the region and than ITU's recommendations for 2020. The recent award of the 700 MHz spectrum is expected to improve the coverage of 4G networks.
- Timely execution of the projects described in the **National ICT Plan** is crucial to support the digital transformation process. The plan will need to be updated to re-assess the status of ICT and the country and establish new, more ambitious targets. Ensuring that high-quality infrastructure reaches all regions, not just urban areas, will be crucial to ensure that the benefits of digital transformation reach everyone.

References

Government of Trinidad and Tobago, Ministry of Public Administration.

Telecommunications Act of 2021. Port of Spain, Trinidad and Tobago:

Government of Trinidad and Tobago. Available at:

http://www.sice.oas.org/investment/NatLeg/TTO/Telecom_e.pdf

_____. Ministry of Public Administration. Undated. Available at: <https://mpadt.gov.tt/>

_____. Ministry of Public Administration. 2018. Trinidad and Tobago's National ICT Plan. ICT Blueprint 2018–2022 Empowered People. Competitive Businesses. Transformational Government.

Available at: https://mpa.gov.tt/sites/default/files/file_upload/publications/NICT%20Plan%202018-2022%20-%20August%202018.pdf

IDB (Inter-American Development Bank). Undated. Digilac. Washington, DC: IDB.

Available at: <https://digilac.iadb.org/>.

TATT (Telecommunications Authority of Trinidad and Tobago). Undated. Available at:

<https://tatt.org.tt/>.

_____. Undated. ICT Blueprint—National ICT Plan 2018-2022. Available at:

<https://tatt.org.tt/StrategicDirection/NationalICTPlan2018-2022.aspx>

_____. Undated. Universal Service Implementation Report June 2020 – May 2022.

Available at: [https://tatt.org.tt/DesktopModules/Bring2mind/DMX/API/Entries/](https://tatt.org.tt/DesktopModules/Bring2mind/DMX/API/Entries/Download?Command=Core_Download&EntryId=1427&PortalId=0&TabId=222)

[Download?Command=Core_Download&EntryId=1427&PortalId=0&TabId=222](https://tatt.org.tt/DesktopModules/Bring2mind/DMX/API/Entries/Download?Command=Core_Download&EntryId=1427&PortalId=0&TabId=222)

_____. 2017. Spectrum Plan for the Accommodation of Public Mobile

Telecommunications Services. Available at:

[https://tatt.org.tt/DesktopModules/Bring2mind/DMX/API/Entries/](https://tatt.org.tt/DesktopModules/Bring2mind/DMX/API/Entries/Download?Command=Core_Download&EntryId=1028&PortalId=0&TabId=222)

[Download?Command=Core_Download&EntryId=1028&PortalId=0&TabId=222](https://tatt.org.tt/DesktopModules/Bring2mind/DMX/API/Entries/Download?Command=Core_Download&EntryId=1028&PortalId=0&TabId=222)