Disaster Risk Reduction and the Caribbean Private Sector: The role of the telecommunications sector in the context of COVID-19

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DISASTER RISK REDUCTION AND THE CARIBBEAN PRIVATE SECTOR: THE ROLE OF THE TELECOMMUNICATIONS SECTOR IN THE CONTEXT OF COVID-19

Key Messages

- The Caribbean region is exposed to a high level of vulnerabilities due to the structure of its economies. In particular, the region is exposed on account of the high trade/GDP ratios, a heavy reliance on the foreign exchange earnings from the tourism sector, export-oriented resource-based industries, and financial remittances from diasporic communities which have been disproportionately impacted by loss of lives and livelihoods during the COVID-19 pandemic.
- The telecommunications sector importance has expanded in the context of COVID-19. The sector has become indispensable in aiding the public health agenda of building public awareness through communications as well as providing the means for tasks like tracking and tracing coronavirus cases. It has also proven to be critical for facilitating increased business connectivity, digital trade and e-commerce and for scaling up of working-from-home arrangements and the expanded provision of online services in the health, financial, education and entertainment sectors.
- Companies through the region have been assisting families by providing COVID relief in the form of hampers, free internet access for business continuity and education along with education content. Cases of support to SMEs, 54 percent of which operate within the informal economy and struggled in receiving public assistance during the pandemic, have been documented. Telecommunications companies became instrumental in connecting the informal sector with the information necessary to respond to COVID-19.
- Ensuring that basic infrastructures, such as telecommunication, sustain during a crisis requires a level of investment from both public and private sectors. Investing in resilient businesses ensures that the economy is able to sustain through a crisis. Moreover, investing in proper basic infrastructure, ensures that everyone is able to withstand shocks and better cope with a disaster. That requires economic diversification and investment of all stakeholders.
- The telecommunications sector has emerged as a key stakeholder in DRR. Public-private collaboration to ensure a resilient telecommunications sector can have important benefits for reducing disaster risks in the Caribbean.

INTRODUCTION

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COVID-19, in the space of a few months, has had an unprecedented impact on the global economy, with the threat of compromising the achievement of the sustainable development goals in developed and developing countries with significant implications for the role of the private sector. In this context the private sector has historically suffered significant losses from infrastructure damage and consumption declines, disruption of business and customer services, and displacement of staff and related suppliers. Additionally, the private sector, in many instances, plays a critical role in disaster risk reduction, management and recovery.

The Sendai Framework recommends reforming business models to include disaster management policies, forming private-public partnerships to create greater synergies in disaster risk reduction, promote a whole-of-society implementation of the framework and cooperating with international organizations to build resilient societies.[1] As such, from a disaster risk reduction perspective, the global pandemic has huge implications for the private sector in terms of both direct economic and financial impact as well as with regards to its role in mitigating the public health, economic and social risks. From this standpoint it is important to examine the role of the private sector as a key stakeholder in the creation of risk-resilient societies.

The aim of this exploratory paper is to provide some critical perspectives and insights on the role of the private sector in disaster risk reduction, in particular

1 See: Farrah Ramlochan and Nneyka Prescod. Pursuing Resilience: Private Sector and Disaster Risk Reduction in the Greater Caribbean Region. Association of Caribbean States. http://www.acs-aec.org/index.php?q=disaster-risk-reduction/pursuing-resilience-private-sector-and-disaster-risk-reduction-in-the-greate

with regards to the impact of the COVID-19 pandemic and the recovery process. As a biohazard, COVID-19 and the related public health protocols such as lockdowns, social distancing and restricted human mobility illustrate the vulnerabilities of modern societies to the increasing spillover effects of zoonotic diseases[2] to human populations, thereby impacting lives and livelihoods and disrupting economic activities worldwide, along with trade in international services, tourism and global supply chains. In effect, COVID-19 highlights the importance of biosafety and biosecurity as disaster risk reduction mechanisms.[3] Even more so, the systemic nature of risk in COVID-19, "compels new conceptual and analytical approaches to improve understanding and management of risk dynamics and complex, cascading risk drivers at a range of spatial and temporal scales".[4] For that reason, a multi-hazard approach in disaster prevention is imperative to the decrease of future risk.

The telecommunications sector importance has expanded in the context of COVID-19 in terms of the dealing with both the public health and socio-economic impacts of the pandemic disaster. From a public health perspective, the telecommunications sector has become indispensable in aiding the public health agenda of building public awareness through communications as well as providing the means for tasks like tracking and tracing coronavirus cases. The telecommunications sector has also proven to be critical for facilitating increased business connectivity, digital trade and e-commerce and for scaling up of working-from-home arrangements and the expanded provision of online

2 Recent examples of emerging diseases are the Rift Valley Fever, Severe Acute Respiratory Syndrome (SARS), pandemic influenza H1N1 2009, yellow fever, Avian Influenza (H5N1), Avian Influenza (H7N9), Ebola, West Nile virus, the Zika virus and the Middle East Respiratory Syndrome coronavirus (MERS-CoV).

3 Daniel Gerstein and James Giordano, Biosecurity is the Lesson We Need to Learn from the Coronavirus Pandemic. The RAND Blog, May 11, 2020. https://www.rand.org/blog/2020/05/biosecurity-is-the-lesson-we-need-to-learn-from-the.html

4. https://www.preventionweb.net/news/view/71228

services in the health, financial, education and entertainment sectors.[5] From this perspective, it can be argued that the telecommunications sector has emerged as a key stakeholder from a disaster risk reduction framework given its contribution to disaster preparedness, mitigation, response, recovery and reconstruction.

As such the aim of the paper is to document and assess the contribution of the telecommunications sector as a case study in how the private sector plays a role in disaster risk reduction. The Caribbean countries of the Dominican Republic, Saint Lucia, and Trinidad and Tobago have been selected for this paper, which allows for some comparison given the differential impact of the pandemic on the public health of the populations, in addition to its impact on socio-economic and industrial capabilities. The country selection also takes into account the different sizes of these countries' economies and variables like location, demographics, as well as geographic and population size.

5. International Finance Corporation. "COVD-19's Impact on the Global Telecommunications Industry. https://www.ifc.org/wps/wcm/connect/1d490aec-4d57-4cbf-82b3-d6842eecd9b2/IFC-Covid19-Telecommunications_final_web_2.pdf?MOD=AJPERES&CVID=n9nxogP

THE CARIBBEAN CASE

©Photo: Michael Atwood / UNDP

The Caribbean region provides a useful case study because of the high level of exposure to natural and biological hazards from a historical perspective. For example, the region was ravaged by three waves of the cholera pandemic in the nineteenth century with significant loss of lives and livelihoods. Back then, as now, many of the same public health mechanisms such as quarantining and social distancing were in play. The region is also considered a hotspot for climate change impact and subject to significant losses from extreme weather such as hurricanes as well as earthquakes and volcanic activity.

The Global Assessment Report (GAR 2019) provides data on economic losses due to natural hazards to SIDS in the Caribbean subregion and how this loss translates to disaster and risk resilience. The data presented utilizes the annual average loss (AAL) which is the average financial loss that a country could expect annually over the long term for disasters. AAL presented as a percent of capital stock provides an indicator of the relative risk to the country and is used to determine disaster and risk resilience.

Figure 1 above highlights the high risk that natural hazards (multi-hazards) pose to the Small Island Developing State (SIDS) in the Caribbean subregion. Five of the SIDS

in figure 1 above are among the list of top ten countries with the highest relative multi-hazard AAL and, consequently, highest relative risk to natural hazards. In addition, the data on the SIDS shown in fig 1, emphasizes the need for more effective disaster risk reduction and climate adaptation strategies as these countries have large disaster risk constraints that impacts their ability to promote sustainability. Many of the Caribbean countries are already feeling the economic effects of their vulnerability to climate change with GDP losses, decline in export earning, unemployment, and loss of critical and essential infrastructure. Minimizing the effects of climate change especially through disaster risk reduction is critical in achieving the sustainable development goals (SDGs) and the Sendai Framework for Disaster Risk Reduction 2015–2030 adopted by the members of the United Nations.

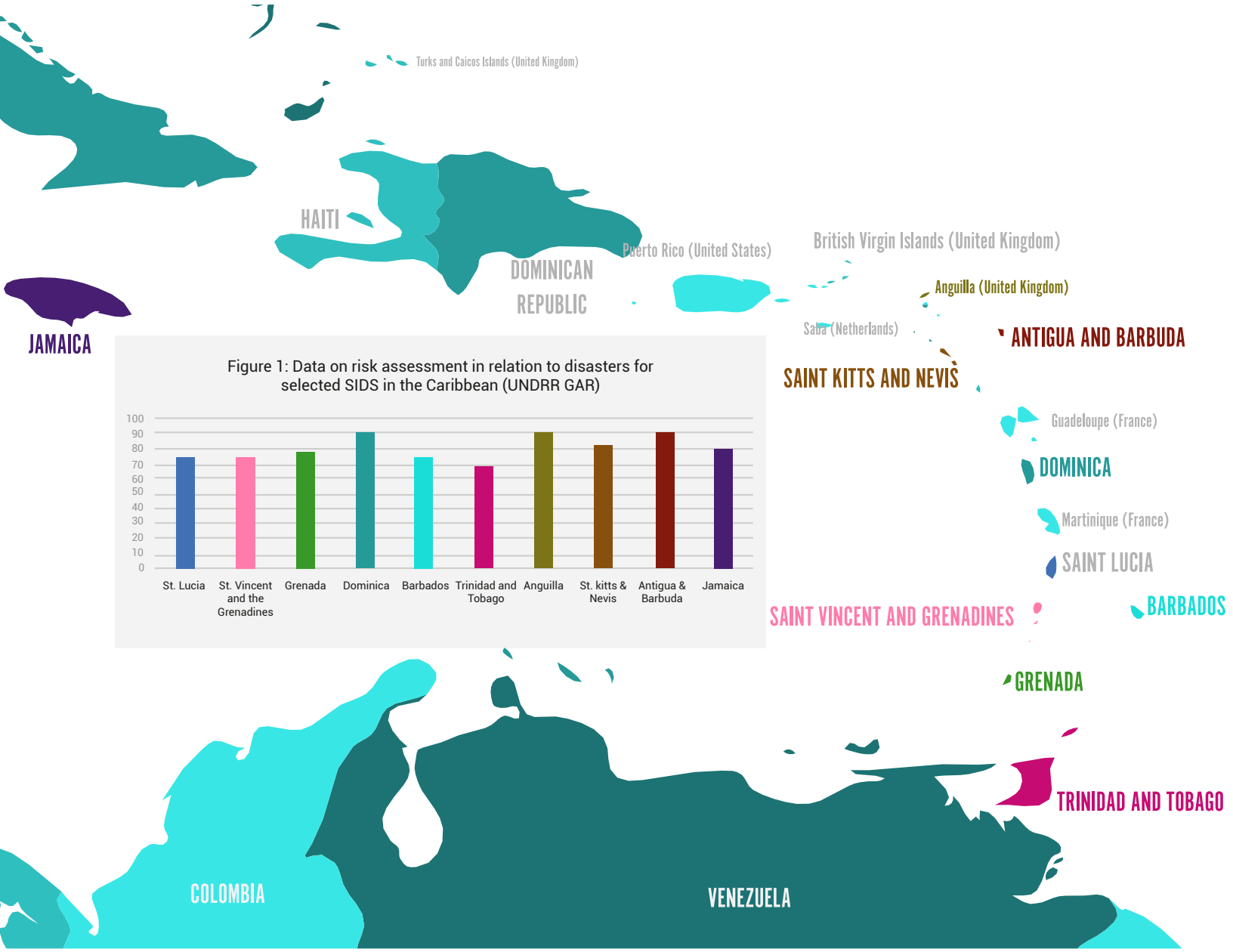

Figure 1: Data on risk assessment in relation to disasters for selected SIDS in the Caribbean (UNDRR GAR)

ENTER COVID-19!

The outbreak of the COVID-19 global health pandemic has resulted in significant loss of lives and livelihoods. At the time of writing, the number of confirmed cases among the 14 CARICOM countries was 50,487 and the number of deaths 1,164.[6] The equivalent data for the Dominican Republic 140,922 confirmed cases and 2,317 deaths.

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In relative terms, several Caribbean countries, especially the small island territories, have had low rates of infection and low numbers of deaths. The small island states of Antigua, Dominica, Saint Kitts and Nevis, Grenada, Saint Vincent and the Grenadines, which closed their borders early and imposed strict lockdown measures have been able to manage the pandemic thus far. Saint Lucia falls into this category with only 2 deaths but has a below average recovery rate is 45.8 percent due to a recent surge of cases with community spread (see Table 1). It is presumed that the surge of cases has come from undocumented travel by sea from the neighboring French territory of Martinique, which has a significantly higher infection profile with 5,413 cases and 40 deaths.

These tourism dependent economies have been able to manage the partial reopening of the local economy and sustain a tight regime for border openings, particularly in terms of flights from major tourism destinations, albeit at levels that are a small fraction of pre-COVID numbers. Cruise ships have not been allowed back and so the tourism industry and

6. For data on the CARICOM countries see: https://moodle.caribdata.org/lms/

ancillary industries are severely affected. Several of these territories facilitate limited intra-regional travel among "bubble countries", countries with low infection rates.

The twin-island hydrocarbon economy of Trinidad and Tobago represent a case of a country experiencing a second wave of infections after the initial lockdowns and border closures. The second wave came after national elections and a surge of undocumented migrants from neighboring Venezuela which has 101,215 cases and 884 deaths. At the time of writing, the confirmed cases in Trinidad and Tobago are at 6,570 with 5,680 recovered and 116 deaths. This converts into a fatality rate of 1.8 and a recovery rate of 86.5 percent. The government has a very restricted border entry policy where travelers require an exemption from the Minister of National Security to travel in and out of the country. As a result, there are thousands of nationals that are stranded abroad in North America, Europe, the Caribbean region and further afield.

The Dominican Republic, with a significantly larger population when compared with CARICOM neighbors and a large diaspora based in the US and particularly New York city, was subject to a high level of exposure and risk in the early phase of the pandemic. The confirmed cases were 140,922 with recovered cases of 113,687 and deaths of 2,317. This translates into a fatality rate of 1.6 percent and a recovery rate of 80.7 percent. Similar to Trinidad and Tobago the infection rates surged after the hosting of national elections. Neighboring Haiti, which shares the island of Hispaniola, has a significantly lower confirmed cases (9,256) and recorded deaths (232) but has a higher fatality (2.5%) and recovery rates (85.6%) when compared with the Dominican Republic.

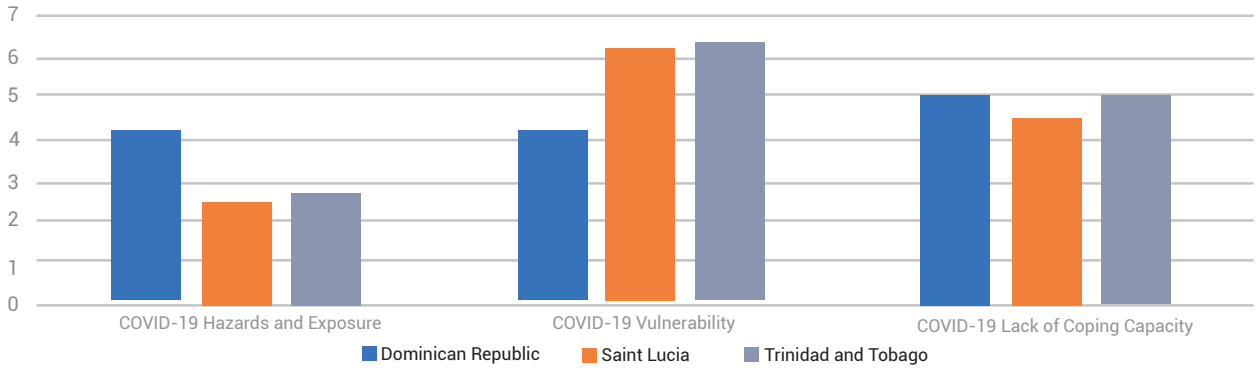
Table 1: COVID-19 Profile for Select Caribbean Countries

	Confirmed Cases	Recovered Cases	Deaths	Fatality Rate (%)	Recovery Rate (%)
Dominican Republic	140,922	113,687	2,317	1.6	80.7
Trinidad and Tobago	6,570	5,680	116	1.8	86.5
Saint Lucia	238	109	2	0.8	45.8

Source: CoronaTracker (www.coronatracker.com) accessed November 27, 2020.

The large-scale prolonged effects of COVID-19 combined with the potential impact of other hazards and recent events carry the potential to generate concurrent damage and destruction to vital infrastructure and to the life support systems of large parts of societies and economies. The socio-economic effects of the COVID-19 pandemic in the region will be of historical dimensions.[7] Data from the INFORM COVID-19 Risk Index provides some perspective on the level of risk faced by the three countries under examination (see Figure 2). What is evident is that the Dominican Republic is in the medium to high risk category while Trinidad and Tobago is in the medium and Saint Lucia is considered to be relatively low. Recent data on infection spread and institutional capacity to respond to the health crisis suggests this is a realistic assessment.

Figure 2: Profile of COVID-19 Hazard, Vulnerability and Capacity
Source: INFORM COVID-19 Risk Index 2020



However, when an economic assessment is included, Saint Lucia is considered at high risk because of the high dependence on the tourism sector in terms of its contribution to GDP, employment and export earnings. High levels of external indebtedness are also considered a key area of vulnerability (see Figure 3). Figure 4 illustrates that Saint Lucia is highly exposed to the COVID-19 threat given that it is estimated to experience an eleven percent decline in GDP for 2020 when the average for SIDS is seven percent. Trinidad and Tobago is estimated to experience a two percent GDP decline as it is less dependent on tourism. However, with the recent dramatic decline in prices for hydrocarbons it is estimated that the impact on the Trinidad and Tobago economy will be more significant. While, in the Dominican Republic, the GDP is expected to decline by 1% in 2020, but increase by 4% in 2021.[8]

7 See: https://cepalstat-prod.cepal.org/forms/covid-countrysheet/index.html?country=DOM
8. https://www.nordeatrade.com/en/explore-new-market/dominican-republic/economy

What the above analysis shows is that **the Caribbean region is particularly exposed on account of the high trade/GDP ratios, a heavy reliance on the foreign exchange earnings from the tourism sector, export-oriented resource-based industries, and financial remittances from diasporic communities which have been disproportionately impacted by loss of lives and livelihoods during the pandemic. Early assessments by international development agencies highlight the high level of vulnerabilities that the Caribbean region is exposed to due to the structure of the economies.**[9]

Figure 3: Tourism and External Debt as Share of GDP- Caribbean and other SIDS, 2018 (UNCTAD 2020)

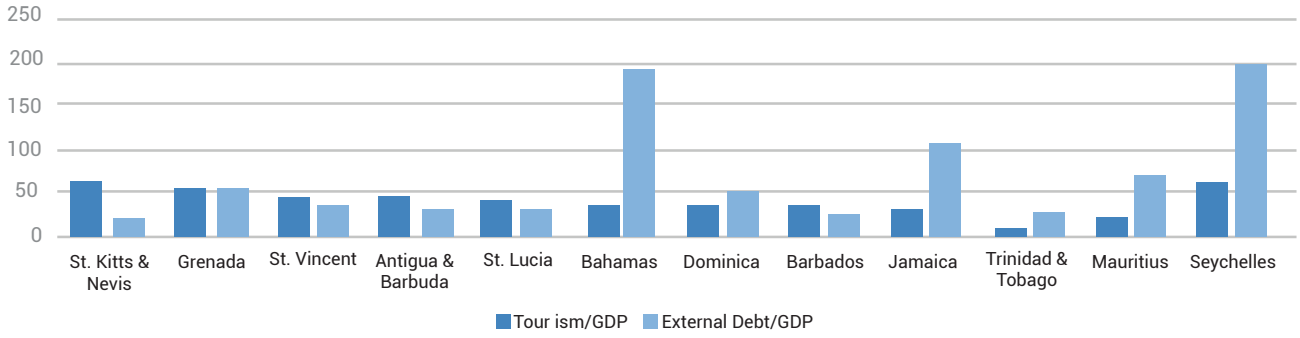
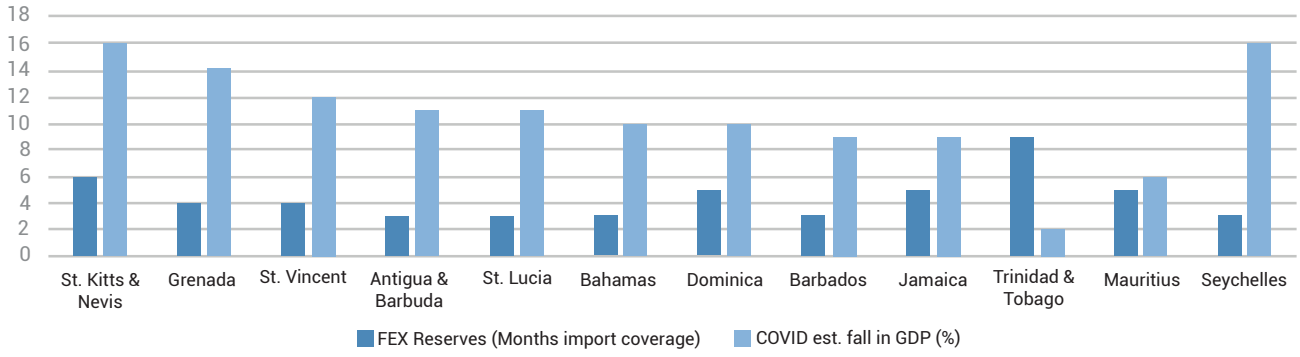


Figure 4: Foreign Exchange Reserves and the GDP Impact of COVID- Caribbean and other SIDS, 2019 (UNCTAD 2020)



9. See: IDB. Caribbean Economies in the time of the Coronavirus. https://publications.iadb.org/publications/9english/document/Caribbean_Quarterly_Bulletin_Volume_9_Issue_1_April_2020.pdf

THE ROLE OF THE TELECOMMUNICATIONS SECTOR IN DISASTER RISK REDUCTION

The role of the private sector is often perceived as a financial or economic driver. However, the private sector plays a critical role in reducing risks in the social, economic, and environmental dimensions, based on the technological and logistics capabilities in essential services like telecommunications. This approach has an underlying capacity to foment resilience through improvement of communication systems that enables prevention, preparedness, and effective response strategies. This is evident in how **the telecoms sector has emerged to be a major stakeholder in the contemporary digital and knowledge-based economy**.

©Photo: Digicel Trinidad and Tobago Foundation

Prevention strategies are inherently vital to business models, and strategic plans yet are not always integrated. The viewpoint is of managing risks to prevent disasters. These prevention strategies include risk policy frameworks, risk transference strategies resulting from a multi-hazard assessment that includes biological hazards (pandemics or epidemics), and access to finance. Although pandemics have historically been part of human experiences, COVID-19, due to the global connectedness, has revealed vulnerabilities in our interdependencies in the systems—communication, supply chain, and socio-economy. Therefore, **telecommunication systems provide an outlet for adaptation to**

manage risks through various structures—from the accessibility of information to finances management. Furthermore, telecom prevention systems can track and identify critical points of hazard impact. From a pandemic perspective, it could help identify points of spread, ensuring that the government does not require to implement extreme measures affecting the economy. Economically, the importance of prevention strategies is the incorporation of inclusive policy frameworks, integrating continued access to financial schemes, and providing development structures for businesses. Specific to SMEs, concerning COVID-19, the telecoms sector has played a significant role in providing them with opportunities to develop skills, diversify the economy, and access business systems. Prevention is key to supporting preparedness and mitigation strategies.

Telecommunication infrastructure and the planning and management of their services are critical to mitigate and manage disaster risk. Implemented strategies, such as business continuity for telecommunication companies are instrumental to ensure that communication is available during and after a natural hazard. For instance, in anticipation of the hurricane season or any natural hazards telecommunication companies ensure that their equipment, infrastructure and technical support is in a state of readiness for any potential disruptions to their telecommunication services or increased demand. These plans work in tandem with government, national risk and emergency management agencies, and the regional body the Caribbean Disaster Emergency Management Agency. An example of disaster preparedness among telecom operators is how Cable and Wireless have built data centres outside the hurricane belt in territories like Curacao, Colombia, Panama, and Miami, USA. The company counts with a ship docked in Curacao and it has equipment which can pull up the fibre optics that connects the region.[10]

Disaster preparedness has become an area of increasing concern for the telecoms sector with the rise and intensity of hurricanes in the region. The telecommunications industry has been heavily impacted by hurricanes due to reduced earnings from a decline in consumer spending on telecommunication services and as a result of damages to critical infrastructure. For example, Digicel experienced a major drop in earnings in 2017 on account of the impact of hurricanes Irma and Maria which devasted several territories in the region.[11] Digicel also had to draw down on US$100 million to finance hurricane response and recovery.[12] In a study of the impact of

10. See: http://jamaica-gleaner.com/article/business/20190602/private-sector-praised-storm-preparedness

the 2017 hurricane season it is estimated that the damage and losses was generalized across the whole region and a wide range of telecom operators. The following quote provides useful perspectives on the scale of the impact and the response.

> For the telecommunications industry, **the hurricanes had a direct impact on over 50 per cent of the 71 mobile network operators (MNOs) in the [Caribbean] region, with some MNOs experiencing over 95 per cent damage to their infrastructure in several markets.** Restoring communications quickly was critical, not only for MNOs to get back to business, but also for affected populations to communicate and for local and international agencies to deliver humanitarian assistance. The series of hurricanes in the Caribbean reinforced, once again, the urgent need for communications in times of crisis, the importance of preparedness, and the need to have comprehensive partnerships and strategies in place to respond faster.[13]

The establishment of national contingency plans and a governance structure are critical dimensions of the disaster risk and reduction strategy. For instance, in Trinidad and Tobago, the Office for Disaster Preparedness and Management has drafted a national emergency communications plan[14] which covers a wide array of issue areas:

- Upgrades the existing land mobile radio communications system, enabling all emergency responders to communicate and share information on a reliable and flexible system across all agencies in the event of a threat or hazard, as needed and when authorised.
- Identifies a contingency system which allows emergency response agencies to maintain communications in the event of damage to or destruction of their primary communications infrastructure.
- Develops a resilient system for public notification, alerts, and warnings.
- Establishes systems and processes for the restoration of basic telecommunication services (voice and data) within 72 hours in affected areas.
- Proposes appropriate upgrades for the reporting of local emergencies by the

11. See: https://www.irishtimes.com/business/technology/caribbean-hurricanes-lead-to-flat-digicel-earnings-1.3296193
12. See: http://jamaica-gleaner.com/article/business/20171213/digicel-draws-us100m-hurricane-spending#:~:text=Hurricanes%20in%20the%20Caribbean%20and,and%20Maria%20during%20the%20season.
13. See: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/04/Mobile-Industry-Impact-and-Response-in-the-Caribbean.pdf
14. See: http://www.odpm.gov.tt/sites/default/files/National%20Emergency%20Communications%20Plan%20Consultative%20Edition%2009_05_17.pdf

public to include voice, video, and data messages.

- Establishes a contingency emergency communications system for contacting regional and international agencies.

The telecommunication industry are also agents of reconstruction through their financial resources which have been used in the Caribbean region to facilitate a wide array of activities to rebuild after natural hazards. For example, the telecommunications industry in the Caribbean, through its Corporate Social Responsibility Program has been involved in the post-hurricane recovery in Dominica and Bahamas. In Dominica, Digicel committed to rebuilding schools and homes from its experience with school infrastructure in Haiti after its 2010 earthquake. Digicel also committed US $500,000 to the relief and restoration of Bahamas after Hurricane Dorian.[15]

In the Dominican Republic, disaster preparedness is implanted in laws and regulations (i.e., Law No. 147-02), which defines the relationship between public and private sectors in disaster risk reduction and management. This interrelationship is important; however, it does not stipulate each entity's responsibilities, offering less structure for applicability. Nonetheless, the private sector provides support during disaster response rather than preparedness and mitigation during a national crisis—as they are considered economic drivers to Disaster Risk Reduction (DRR) systems. Earlier in 2020, the Dominican Institute of Telecommunications (INDOTEL) and the Emergency Operations Center (COE) coordinated actions to prevent natural hazards prior to the arrival of tropical storm Isaías.[16] The coordination between these entities established an alliance for the proper use of telecommunication systems as catalyst to better disseminate information to the public. This inherently includes the SMEs, as they are concurrently adapting to the political, environmental, social, and economic environments of the 'new normal'.

From a regional perspective, in recent years, since the institution of ARISE,—the Private Sector Alliance for Disaster Resilient Societies led by the business community with the

15. See: https://www.businesswire.com/news/home/20190903005907/en/CW-Communications-Reaffirms-Commitment-Bahamas.
16. https://www.indotel.gob.do/noticias/indotel-y-coe-anuncian-instalaci%C3%B3n-call-center-para-llamadas-por-covid-19/

support of UNDRR[17] —organizations have begun to introduce disaster risk reduction concepts within their policies and procedures. As such, during the global platform for disaster risk reduction in 2019, Isidoro Santana, former Minister of the Ministry of Economy, Planning and Development (MEPyD) of the Dominican Republic stated that advancements had been made "within the private sector … through technical support and training programs in risk management, with corporate social responsibility, promoting activities that improve the performance of its operations and creating adequate conditions for employees and the community's welfare in general".[18] This resonates with current events, as corporate social responsibilities highlights a necessary role in ensuring the safety of all, especially the influence of the private sector in supporting the public sector.

17. https://reliefweb.int/report/grenada/arise-expands-caribbean-grenadas-chamber-industry-and-commerce-joins-private-sector
18. https://www.preventionweb.net/english/policies/v.php?id=68489&cid=52

THE ROLE OF THE TELECOMMUNICATIONS SECTOR IN THE CONTEXT OF COVID-19

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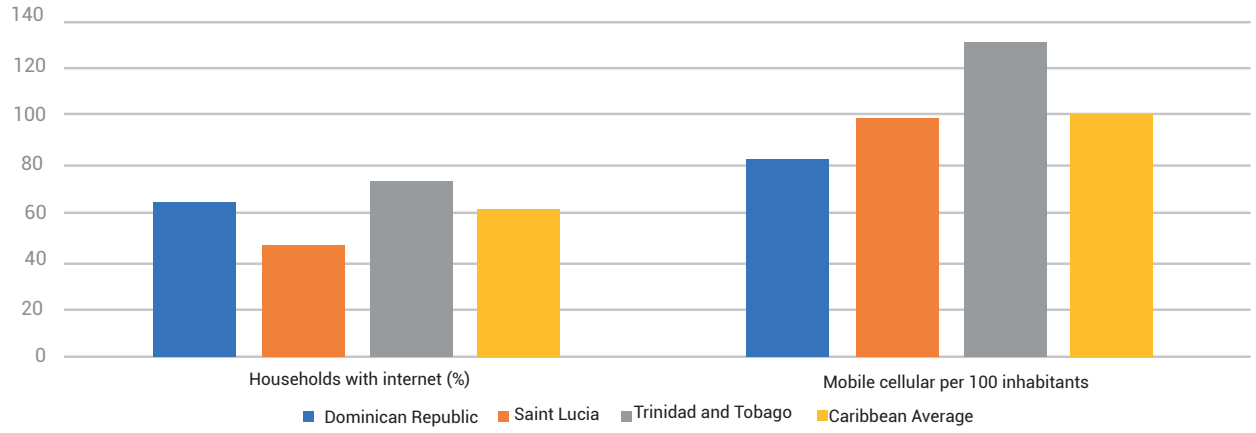
In the Caribbean region the telecommunications sector plays a critical role in the digital transformation process. Data on telecoms access in the three countries is such that in terms of households with Internet, Saint Lucia is the country that is below the Caribbean average and by a significant margin. In terms of cellular access Trinidad and Tobago is the country that exceeds the regional average (see Figure 5).

Figure 5: Profile of Telecommunications Access in the Caribbean, 2019
Source: Health Security Index 2020



The role of the Telecommunications sector has been further elaborated in the context of the COVID-19 pandemic as more families are at home and as more employees are working from home. This has resulted in increased network usage, demand for data, and connectivity. According to the Chief Executive Officer of Telecommunications Services of Trinidad and Tobago, Dr. Ronald Walcott, "tech companies need to accelerate technological transformation to help societies to deal with the new demands of the age". He noted also that "our work lives are going to be defined more and more by physical distancing and remote working, using technology. Social distancing is here to stay, even if it is applied less aggressively than at the height of the lockdown".[19]

The COVID-19 pandemic has brought about a number of social distancing measures that has changed the way consumers interface with their workplace and businesses. E-commerce platforms allow businesses and consumers to remain connected whether through online banking, bill payment or grocery shopping. For example, Digicel since March 18th, 2020 facilitated the following:

1. Calls to all major local health care facilities and airlines are zero-rated so that customers can place free calls to health institutions to seek help if needed, and to airlines for reservation changes.
2. All major relevant websites have also been zero-rated so customers can now access the websites of: WHO, CARPHA, PAHO, Ministry of Health, Ministry of Communications, ODPM, LoopTT, Newsday, Guardian, Express, TTT, CNC3 and TV6 without incurring data charges or having their data depleted.
3. All Mobile customers will get 1 GB Free LTE data as well as Free Data Nights from 10pm to 5am.
4. All Postpaid customers will get 100 free anywhere minutes.
5. The LTE data caps for all unlimited pre-paid plans have been removed.
6. Pay-as-you-Go data rates have been reduced to make them 10 times cheaper.
7. As people now seek additional means of entertainment for their families, all new Premium TV Add-ons on Digicel Home and Entertainment have been discounted by 50% and all new downloads of D'Music app will come with 30 days free."

Another example comes from the Telecommunications Service of Trinidad and Tobago. TSTT, the other main telecoms provider in the Anglophone Caribbean has outlined a six-point plan of action on COVID:

19. https://www.whoswhotnt.com/press-releases/tstt-poised-to-lead-in-post-covid-recovery/

i. Network Stability and Quality Assurance
ii. Disseminating Vital Information
iii. Connecting Vital Services
iv. Corporate Social Responsibility
v. Institutional Assistance
vi. Business Continuity and Social Distancing

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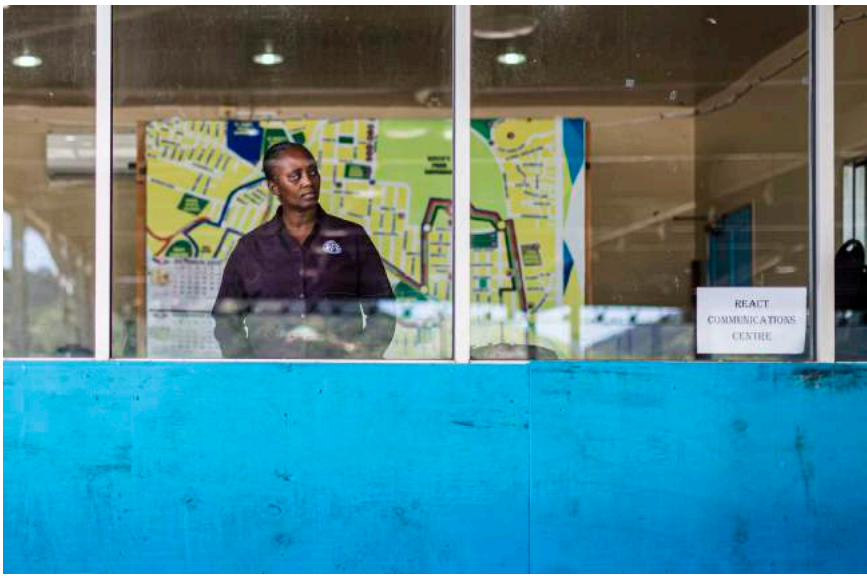
The Telecommunications Industry of Trinidad and Tobago and the OECS have focused heavily on education and emergency telecommunication as their main strategy in their COVID response. In response to COVID-19 and the upcoming hurricane season the three major players have played their part in assisting the populace transition to work from home and remote schooling while making infrastructural investment to contend with any adverse weather in the coming months. The telecommunications industry has also been doing their part in corporate social responsibility by providing free services to students and teachers, food and financial aid where necessary and initiatives to make telecommunications more affordable during countless policy changes announced by the government in response to changing COVID-19 cases and available science.

Companies through the region have been assisting families by providing COVID relief in the form of hampers, free internet access for business continuity and education along with education content. Prevention in the Caribbean region has primarily taken the form of educational programs. Through application such as the Disaster Preparedness App for Special Needs Persons made by Digicel, the Flow Study Program or Zero-Rated Data access to educational websites, telecommunication companies have used their platforms to prevent and reduce the impact of disasters on the most vulnerable persons.

In the Dominican Republic it is estimated that 80 percent of the population has mobile broadband coverage, yet there is still limited technological penetration.[20] This is mainly due to the limitations in the outreach to marginalized communities, in which there is a lack of connection with the private sector. Even with such limitations, during COVID-19, telecom centers collaborated with the COE to provide information on the measures stipulated by the President during the state of emergency. **As for the SMEs, 54 percent operate within the informal economy and struggled in receiving public assistance during the pandemic.** Nonetheless, through the International Finance Corporate, it granted US$60million to Banco BHD Leon, a private bank, to provide loans to SMEs that have been affected by COVID-19.[21] **Telecommunications companies, thus, contributed in connecting the informal sector with the information necessary to respond to COVID-19.**

As exemplified by ECORED, a National Business Support Network for Environmental Protection, its telecommunications partners have aided response by increasing infrastructural support, sending out text messages to the public with streamlined information on public measures, and providing educational and entertainment platforms for all users.[22] Furthermore, with the assistance from the telecom sector, the Ministry of Health incorporated an e-platforms called Aurora MPS to digitally connect the public with doctors. This requires a stable network, so users are able to continuously be informed and receive assistance. Similarly, C5i, a unified command center, has provided assistance in



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20. Abuelafia, E., Astudillo, J. A., Barrios, J. J., Coj-Sam, J., Del Carmen, G., Díaz, A. K., ... & Linares, J. (2019). Country Infrastructure Briefs: Central America, Mexico, Panama and the Dominican Republic
21. https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19.
22. http://www.ecored.org.do/nuestros-socios-se-unen-en-la-lucha-contra-el-covid-19/

centralizing the information between the public and private sector on availability of medical personnel and available supplies. It generates computer models that helps predict behavior of the virus in the country. [23]

In a report on COVID-19 business impact in three CARICOM countries (Jamaica, Trinidad and Tobago and Barbados) it is estimated that several of the key concerns for businesses are in the realm of telecommunications.[24] For example, under key areas of concern three of the five issues related to digital risks and cybersecurity (48%), remote working (32%) and technology resilience issues (30%) (see Figure 6). Similarly, when the issue of future planning was examined respondents indicated that the top issues were cybersecurity (47%), remote working capabilities (38%), IT infrastructure (38%) and moving to the cloud (26%) (Figure 7).

Figure 6 - Key Areas of Concern for Businesses

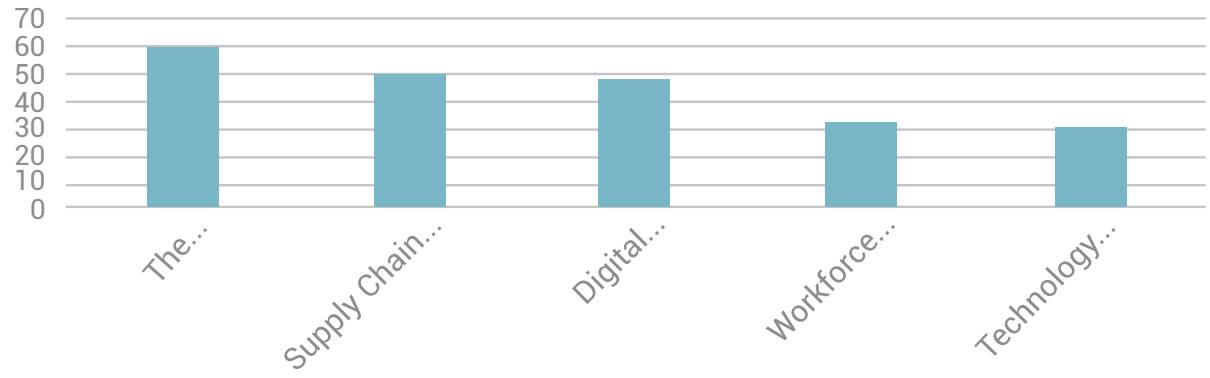
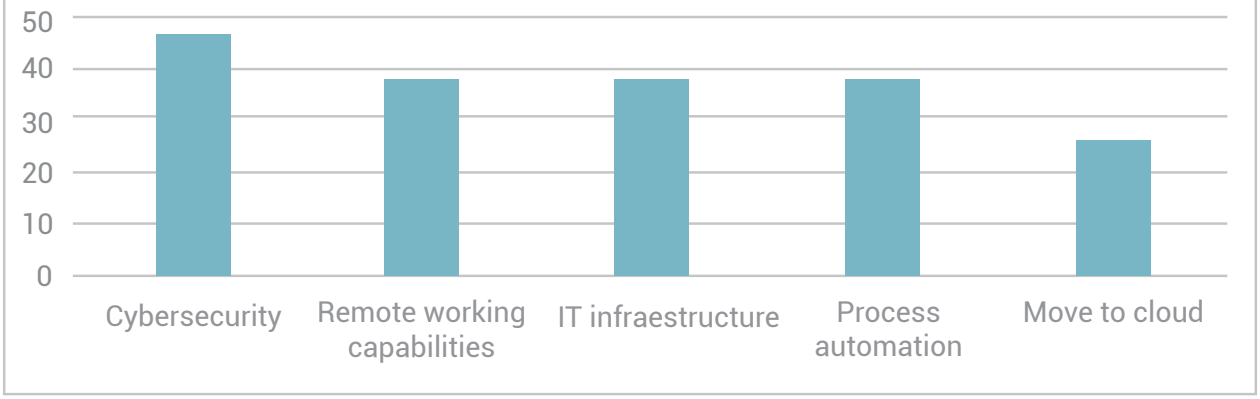


Figure 7 - Future planning - Key priorities for businesses



23. https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19
24. Coyne Research. DIGICEL Business. COVID-19 Business Impact. May 2020.

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KEY INSIGHTS AND RECOMMENDATIONS

Combined with existing economic vulnerabilities, the COVID-19 context is one of great potential losses in lives and particular livelihoods on account of the economic, social, political, and environmental instabilities in the Caribbean. The overall lesson learned is the importance of well-established partnerships between public and private sector that inculcates structured plans for prevention and further preparedness and mitigating strategies of multi-hazards. **Telecommunications systems have demonstrated a vital role, primarily to support the institutions with educational platforms, flexibility in work locations, and to inform the public.** Even more important, public-private partnerships is key to reducing risks. Hence, the need for preparedness and mitigating strategies from the private sector must incorporate collaboration between the public sector to adequately use local resources to respond to multi-hazards.

Within policy frameworks, private and public sectors must incorporate strategies on resilient investments. These fall into two keystones:

infrastructural and human resources—in which these should be adaptable, flexible, inclusive and sustainable.

Ensuring that basic infrastructures, such as telecommunication, sustain during a crisis requires a level of investment from both public and private sectors. Investing in resilient businesses ensures that the economy is able to sustain through a crisis. Moreover, investing in proper basic infrastructure, ensures that everyone is able to withstand shocks and better cope with a disaster. That requires economic diversification and investment of all stakeholders. This is also why the private sector has influence on gearing the focus of policies.

Effective risk governance requires the combined effort of key stakeholders influencing risk management in-house and at governmental level. These should include key actors that have an influence on prevention strategies—scientists, academics, local members, and other fellows from various sectors and roles (finance, security, technology). Furthermore, good risk governance should effectively comprehend legal, political, social and economic frameworks and contexts in the process of disaster risk reduction.

Although risk analysis is important, efforts should go beyond understanding risks. Enhancing risk governance ensures that there is a structure that is inclusive of all actors and considers accessibility to these systems. For COVID-19, and from the analysis of the cases of St. Lucia, Trinidad and Tobago, and the Dominican Republic, the telecommunication system contributed to breaching the gap observed in the access to aid and information of some vulnerable groups and businesses. The inclusion of telecommunications within risk governance frameworks can assist in mitigating the negative impact of disasters on informal economies. The studied sector can contribute to the accessibility of vulnerable actors to information and aid as well as to the inclusion of informal sectors - including SMEs - into the risk governance and disaster response mechanisms. Public-private collaboration to ensure a resilient telecommunications sector can have important benefits for reducing disaster risks in the Caribbean.

COVID-19 RESPONSE

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