

Country Infrastructure Briefs: Caribbean Region

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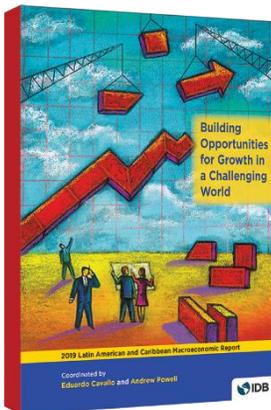


Abstract

This policy brief summarizes challenges in the infrastructure sectors of The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago. It also includes recommendations to overcome these challenges, along with an overview of the PPP framework, national development plans, and ongoing initiatives.

Key Words: Infrastructure, Capital, Public Goods, Public-Private Partnerships, Economic Growth, Transportation, Water and Sanitation, Energy, Environment, Telecommunications

JEL Codes: D24, H41, H54, L32, L90, O18, Q53



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Contents

The Bahamas	3
Barbados	7
Guyana	11
Jamaica	16
Suriname	20
Trinidad and Tobago	24

The Bahamas¹

Allan Wright

1. INFRASTRUCTURE CHALLENGES

The Bahamas, a small open archipelagic economy dependent on the tourism and financial sectors, has an estimated per capita GDP of US\$30,500. The country relies greatly on sea and air transport to connect its people and local economies and faces peculiar development challenges, which require the provision of resources across the sea and sometimes sparsely populated landcover, the cost of which continues to rise despite limited fiscal space and growing government debt commitments. To understand the state of the country's infrastructure and its contribution to economic development we examine issues relating to efficiency, reliability, cost, and vulnerability to disasters and climate change impacts. We additionally present arguments on existing national plans and ongoing interventions in place.

The critical challenges for infrastructure are aging maritime, airport and energy systems requiring modernization to deliver timely service. Furthermore, the nation's island geography demands climate-resilient infrastructure to protect fragile ecosystems.

Environment: Vulnerability and readiness indices were measured at 0.421 and 0.484, respectively, as disastrous climatic shocks exacerbated by The Bahamas' geography, fragile ecosystems, and concentrated population make the nation's infrastructure highly vulnerable to climate change and risk.² Recommending the strengthening of preparedness and risk reduction policies, including setting up a natural disasters savings fund, will enhance fiscal and economic resilience. Additionally, the insuring of public assets, encouraging the stronger usage of private insurance, along with investing in resilient infrastructure and maintaining up-to-date building codes, land use, and zoning guidelines were all essential elements outlined in recent reports by the International Monetary Fund (IMF, 2018) and the United Nations Economic Commission for Latin America and the Caribbean (ECLAC, 2016). The recommendation of implementing a disaster relief fund was reflected in the recently passed Fiscal Responsibility Legislation (2018) as well as an IDB \$100 million Contingent Credit Facility approved in the 2nd quarter of 2018.³

Water and Sanitation: The country's national agency Water and Sanitation Corporation (WSC) supplies less than 50 percent of overall potable water demand in The Bahamas. Currently, only 14 percent of the population has access to improved sewerage and sanitation facilities, with

¹ This document describes the challenges that the country faces in the development of infrastructure in the following sectors: i) environment energy, ii) water and sanitation, iii) technology, iv) energy and v) transportation. The identification of the challenges is based on the Borensztein et al. (2014) development gap methodology.

² www.emdat.be

³ The Contingent Credit Facility for Natural Disasters (US\$100 million) was approved by the IDB Board in June 2018, while the Climate Resilient Coastal Infrastructure and Management Program (US\$35 million) was approved in November 2017.



negative impacts on the water and sanitation sector.⁴ However, physical equipment upgrades and technological efficiency measures introduced under the WSC Support Program (BH-L1028), contributed to reducing non-revenue water losses by 60 percent. Additionally, WSC has implemented several Smart Water Infrastructure Technologies. Nonetheless, further work is needed on customer interaction tools and automated meter reading.

Technology: In the Technological Innovation sector, key development indicators are below expectations.⁵ These include cellular and broadband subscription rates, the publication of scientific papers, the granting of patents by the United States Patent Office and expenditure on technology. Mobile and broadband price rates are among the highest in the world.⁶ Mobile penetration rates, measured at roughly 85 percent, are comparable with rates in developing economies.⁷

Energy: With an old power generating infrastructure, The Bahamas suffers from frequent power outages. Electrification and electrical outages indicators were below expected performance. The combination of limited productivity and volatile oil prices has contributed to making electricity tariffs among the highest in the Caribbean economies. The Government of The Bahamas (GoBH) has recently appointed a new board of management at The Bahamas Power and Light (BPL) and tendered proposals for the building of a new generating plant with a capacity of 80 MW. In 2019, the BPL will issue a bond of US\$650 million to help refinance its legacy debt and fund systems upgrades (IMF Article IV 2018 Report). With minimal penetration of renewable energy (RE), The Bahamas has set an ambitious goal of increasing renewables to 30 percent of the energy mix by the year 2030.

Transportation: Shipping to the more remote southernmost islands remains the greatest challenge for the government, as many port and shipping facilities are outdated, inefficient and fragmented, and they need to be modernized to aid further development as well as to maintain connectivity (National Development Plan, Vision 2040 report). With over 53 licensed airports, air connectivity⁸ is comprehensive, and getting better, as The Bahamas caters to all the leading air carriers of North America and some from Europe. Through the newly formed Civil Aviation Authority, the government continues to meet all its international obligations as one of the most encapsulating air transport systems among developing economies. However, as is the case for shipping transportation, the Family Islands require substantial investment in aviation transport and connectivity, with recent estimates⁹ suggesting almost US\$140 million is needed to upgrade

⁴ No tariff adjustments have been granted for several years, and current tariffs presently represent about 60 percent of the cost of service in New Providence, and only 30 percent in the Family Islands (where the cost of service provision is higher and the tariff lower than in New Providence).

⁵ Despite recent advances in Information and Communication Technologies (ICT), challenges remain that affect e-commerce. The Bahamas ranks 22nd in LAC in mobile telephone penetration (only above Ecuador, Haiti, Guyana, and Belize), and 15th in wireless broadband penetration, which indicates substantial room for improvement in the development of technological solutions that could result in significant benefits for the population, including additional financial inclusion. Mobile broadband penetration is increasing steadily, but the country's geography presents significant challenges for the deployment of fixed-line infrastructure.

⁶ The Bahamas Telecommunications Company Ltd (BTC) was partially privatized in 2011, and cellular licenses to operate in that market have been granted in the last two years.

⁷ <http://www.bahamas.gov.bs/wps/portal/public/Electronic/>

⁸ While competition in domestic aviation market is among only a few domestic airlines in the Bahamas, international seat supply is indeed more competitive and fragmented. Foreign carriers occupy a dominating position, accounting for a 75 percent market share in terms of seat capacity (IDB Transportation Division 2014 report).

⁹ National Development Plan (www.vision2040bahamas.org).



its obsolete and inadequate airport infrastructure¹⁰ and systems to comply with international aviation standards (Vision 2040 report).

2. RECOMMENDATIONS TO OVERCOME CHALLENGES

The nation's infrastructure challenges provide evidence that upgrades are needed in the water and sanitation, energy, air and maritime, road network and transport sectors. The implementation of a disaster relief fund, along with the enhancement of preparedness and risk reduction policies, will improve current climate-reliant infrastructure. Better customer interaction tools and the strengthening of the automation processes in meter reading will help reduce wastage while enhancing access to sewerage and sanitation amenities. The implementation of a robust renewable energy policy and the upgrading of current systems will reduce outages and lower consumption costs to businesses and residential customers. The southernmost islands appear to be the region in greatest need as maritime and airport infrastructure will have to be upgraded to comply with international safety standards. As noted above, an investment of almost US\$140 million is needed for the upgrade.

3. PUBLIC-PRIVATE PARTNERSHIPS FRAMEWORK: QUALITY AND IMPLEMENTATION

The GoBH issued a policy document¹¹ on the potential benefits of using Public Private Partnerships (PPPs), to deliver public assets and services, such that PPPs are developed effectively and efficiently, and in a way that achieves value for money, both for the Government and service users. It also aims to guide the private sector on what they can expect in developing and implementing PPP projects with the Government of the Bahamas. The government intends to use PPPs for the development of renewable energy (RE), primarily within the southernmost islands; the construction of maritime and airport facilities; improving road networks and transportation; and enhancing technological innovation, communication and urban development¹².

4. NATIONAL DEVELOPMENT PLANS ON INFRASTRUCTURE

While the National Development Plan (Vision 2040 report) recognized that the systems and networks of roads within The Bahamas remain acceptable by developing economy standards, some areas require urgent attention. There is neither an adequate and efficient public transportation system¹³ nor a public-school bus system. With limited space to expand, primarily

¹⁰ Airport Infrastructure loan (US\$35 million) was approved in January 2017, roughly six years after the Air Transport Reform Program (\$47.5 million) loan in December 2011.

¹¹<https://www.bahamas.gov.bs/wps/wcm/connect/5a74940c-6125-406c-8140-5584eaf525d4/Public+Private+Partnerships+Policy+Sept+2018.pdf?MOD=AJPERES>

¹²A PPP Steering Committee will be established to provide direction to the PPP program and oversee the development and implementation of PPP projects. The unit has not yet been created.

¹³ Public transport system operates with little coordination, low standards of quality, and limited accessibility. The system is not unified and encourages competition among independent jitney operators that do not consistently follow assigned routes, therefore increasing the system's unreliability (IDB Transportation Division 2014 report).



in New Providence, public safety concerns arise from increased vehicular density (Vision 2040 report).¹⁴ With limited fiscal space, the example shown of the Lynden Pindling International Airport (LPIA) concession provides some evidence on the partnership public and private entities can employ in reviving and developing critical infrastructure sectors (IMF 2018). The IMF World Economic Outlook (October 2018) report measures investment by the GOBH through the proxy of net acquisition of non-financial assets and finds that it increased to 3.2 percent of GDP for the period 2017/18, up from the five-year average of roughly 2.3 percent of GDP. The IMF Article IV 2018 report suggests that the output gap will narrow in FY2018/19 to 1.1 percent of GDP from 2.8 percent the previous period, as additional foreign direct investments within the high-end segment of the tourism sector and higher capital accumulation through infrastructural projects estimated at roughly US\$200M will help bring projected GDP growth levels to over 2 percent for FY18/19.

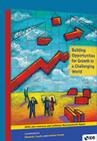
5. POLICIES AND INTERVENTIONS UNDER CONSIDERATION

Considering the challenges, the Government has prioritized several infrastructure efforts, beginning with the promotion of energy reform through the appointment of a new board of management at the BPL and plans to develop a new 80MW generating plant. The floating of a US\$650m bond will help retire legacy debts and provided needed resources to update aging equipment. The Bahamas receives financing from the Bank, and loans have been approved to help develop resilient climate infrastructure as well strengthen air transport reform and airport infrastructure.

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¹⁴ The country could benefit from implementing transit demand management policies and applications that encourage modal changes and regulate demand behavior throughout the day.



Barbados¹⁵

Laura Giles Álvarez and Kimberly Waithe

1. INFRASTRUCTURE CHALLENGES

Barbados has high-quality infrastructure by international standards, which has been a driver of economic growth throughout the past few decades. Based on a Cobb-Douglas decomposition, capital growth has been the main factor of production in Barbados, accounting for over 50 percent of GDP growth since 2000 and reflecting an adequate supply of good quality infrastructure. In fact, the country ranks 30th among 138 countries in the 2016-2017 Global Competitiveness Report (GCR) Quality Infrastructure Index, topping the Caribbean region. That ranking, however, was eight positions lower than in the 2012-2013 GCR, with impacts on key sectors of the economy. Aging infrastructure, outdated regulations and tariffs, and inefficient infrastructure use represent key challenges for infrastructure. At the same time, Government investment in infrastructure in Barbados (measured as the net acquisition of non-financial assets) has been declining to an average of around 2 percent of GDP over 2014-2018, markedly lower than the 5 percent level recorded during the pre-crisis years of 2000-2008.

Transportation: With 4.4 km of roads per km², 80 percent of which are paved, Barbados has some of the highest road density levels in Latin America and the Caribbean. However, most of the network is at least 20 years old and in need of repair, maintenance and upgrading to accommodate the large increase in motor vehicles in recent years. Quality of roads remains one of the lowest scoring sub-indexes for Barbados in the GCR Quality of Road Infrastructure Index, ranking 49th among 138 countries. The cost of upgrading the public transportation system and undertaking essential road and bridge repairs is estimated to be US\$30 million (0.6 percent of GDP).¹⁶ In addition, the Grantley Adams International Airport (GAIA), which is the sole port of entry for individuals arriving by air in Barbados, has been facing challenges with regards to ageing and weakening infrastructure as well as inadequate capacity. Other inefficiencies in the transport sector lower the returns to existing infrastructure. For example, there are recorded inefficiencies in the processes at the port, which make exporting slower and more expensive despite high quality infrastructure, nautical access and availability of equipment.

Energy: The regulatory framework and market design pose challenges in the energy sector. A high dependence on imported heavy fuel oil, reaching 74 percent of fuel inputs for electricity in 2015, underlies electricity tariffs, which are more than 30 percent higher than the average residential tariff in the Latin American and the Caribbean region in 2017. Nonetheless, the existing regulatory framework does not adequately accommodate renewable energy, which could contribute to electricity cost reductions. Tariff reviews, moreover, are infrequently undertaken. For instance, the most recent tariff review for the Light and Power company and for the Barbados Water Authority (BWA) took place in 2009.

Water and Sanitation: Barbados has a weak centralized sanitation system and has been experiencing sewage leakages. The South Coast Sewerage Plant has been malfunctioning and

¹⁵ This document describes the challenges that the country faces in the development of infrastructure in four specific sectors: i) energy, ii) telecommunications, iii) transportation and iv) water and sanitation. The identification of the challenges is based on the Borensztein et al. (2014) development gap methodology.

¹⁶ The total US\$30 million cost estimate includes the repair and purchase of new garbage trucks and buses and undertaking critical road and bridge repair (IMF, 2018b).



has caused overflows of wastewater on the streets in the south of the island, with negative impacts on individuals, businesses and the environment. Estimates suggest a cumulative cost of US\$38.5 million (0.8 percent of GDP) is required to address the challenges in the South Coast sewage system, whereas fixing the South Coast and Bridgetown sewage plants will have an immediate remedial cost of an estimated US\$11 million (0.2 percent of GDP). In the water sector, there are institutional challenges, including the fact that the BWA lacks authority to set its own tariff structures, which are insufficient to cover the operating costs, afford capital expenditures, and service its debt.¹⁷

Telecommunications: Despite Barbados's comparatively extensive telecommunications infrastructure and information and communication technology (ICT) service coverage, low levels of ICT development, adoption and use prevail in both the public and private sectors. According to the World Economic Forum, in 2015 Barbados ranked 101st among 143 countries in government ICT usage, 79th of 143 in business-to-business internet use and 80th of 143 in business-to-consumer internet use. These results partly reflect the small market size and high concentration of actors in telecommunications, which increase costs.

2. RECOMMENDATIONS TO OVERCOME CHALLENGES

Overall, Barbados' infrastructure stock has good coverage and quality. The latter, however, is deteriorating. At the same time, greater operational and maintenance spending and investment will be challenging in the current fiscal environment. Developing alternative financing arrangements, such as public private partnerships (PPPs), can support resilient infrastructure financing.

Additional key recommendations have been developed to address the abovementioned challenges. First, more sustainable financing mechanisms for roads could be promoted. Greater private sector participation could be an alternative for long-term maintenance and rehabilitation of road contracts. Second, increasing the use of renewable energy, coupled with energy efficiency measures (such as the use of power monitors), would likely reduce electricity costs and the island's dependence on fossil fuels by up to 71 percent (Moore et al., 2012). This would have significant implications for household and business costs and positive effects on the current account balance; these measures could also lead to the reduction of greenhouse gas emissions. At the same time, more frequent reviews of the tariff structure mechanisms could assist in ensuring that tariffs remain in line with sector costs. Third, greater investments in key water and sanitation infrastructure is needed, particularly given the sewerage crisis. Finally, promoting greater competition in key markets, such as telecommunications, could reduce the concentration of actors and potentially reduce costs for the end user.

3. PUBLIC-PRIVATE PARTNERSHIPS FRAMEWORK: QUALITY AND IMPLEMENTATION

Given the challenges and the recommendations described above, a more robust public-private partnership (PPP) framework would be advisable to overcome infrastructure challenges in the country. According to the International Monetary Fund (2018a), gross fixed capital formation has fallen from an average level of 18.4 percent of GDP in 2000-2008 to 16.6 percent of GDP in 2009-2017, mainly due to reductions in public sector investments. Going forward, fiscal consolidation

¹⁷ Some key tariff structures could be reviewed, such as those applied to commercial customers. These are volumetric fees that do not change based on the volume of water consumed.



will further constrain public investment and maintenance spending. However, due to the lack of institutional structures and as a result of an inadequate underlying regulatory framework, it will be difficult to complement public sector activities with those of the private sector PPPs. In this regard, the appropriate regulations and the institutional framework relating to PPPs should be reviewed and updated. To date, any PPP initiative needs to be addressed through the Financial Management and Audit (Financial) Rules (2011). However, the Public Procurement Bill (2018), which has not yet been approved, shows the intention to explicitly consider PPPs under the procurement law.

4. NATIONAL DEVELOPMENT PLANS ON INFRASTRUCTURE

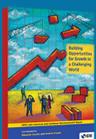
The Government of Barbados considers infrastructure a key priority for the country's medium-term development, as portrayed in the Barbados Growth and Development Strategy (BGDS) for 2013-2020. This is reinforced in the Barbados Labour Party Manifesto, which underpins the current government's policy. Two key components of the government's vision for growth and development include i) reducing dependence on imported fossil-fuels, ensuring environmental sustainability and combating climate change; and ii) upgrading and modernizing infrastructure. Specifically, the BGDS outlines interventions with regards to improving and upgrading sewerage, sanitation, roads, public transport, housing and water infrastructure. More recently, the Town and Country Planning office developed a Physical Development Plan Amendment in 2017, which provides a vision for sustainable growth and development by setting out policies to guide relationships among land uses, built form, mobility, community facilities and physical infrastructure.

5. POLICIES AND INTERVENTIONS UNDER CONSIDERATION

In line with its policy priorities and in response to some of its challenges, the government has prioritized investments in the energy, transport and telecommunications sectors. As a means of improving its energy security and promotion of renewable energy and energy efficiency measures, the government has received financing from multilateral and bilateral institutions. In this regard there are various programs towards the deployment of cleaner fuels and renewable energies as well as a Public Sector Smart Energy Program, which seeks to retrofit public sector buildings with renewable energy and efficient energy technologies. The government has also worked towards improving the quality of its road infrastructure and its connectivity through a US\$25 million Road Rehabilitation and Improving Connectivity of Road Infrastructure project. This project is currently in its execution phase, and aims to rehabilitate approximately 31 km of the country's road network. In October 2018, US\$40.4 million were provided to upgrade infrastructure and services at Grantley Adams International Airport. In ICT, the authorities are seeking to enhance the digitization of public services, in line with the recommendations stemming from the World Bank's Doing Business Report, through a public sector modernization and efficiency loan that is expected to be approved in 2019.

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Guyana¹⁸

Victor Gauto and Elton Bollers

1. INFRASTRUCTURE CHALLENGES

Guyana is a small open economy that is rich in natural resources and commodities, predominantly gold, rice, and bauxite, which represented approximately 78 percent of total merchandise exports in 2017. Guyana has a population of 780,000 and a GDP per capita of US\$ 4,580, placing Guyana 19th out of 26 countries in Latin America and the Caribbean (LAC). Like other small economies, Guyana relies on imports to satisfy most of its domestic demand, particularly for capital and intermediate goods, with imports equivalent to half of GDP. Guyana faces development challenges on several fronts, including the government's institutional capacity and weaknesses in infrastructure, health and education. In the midst of this challenging environment, Guyana is transitioning to becoming an oil producer beginning in 2020, which is expected to have significant economic and fiscal impacts. Since 2015, 10 oil discoveries have been made with estimated recoverable resources of more than 5 billion oil-equivalent barrels. According to the International Monetary Fund's World Economic Outlook (2018), Guyana's economy is expected to grow at an average annual rate of 19 percent between 2019 and 2023. Similarly, the value of exports is expected to grow by 37 percent per year and that of imports by 14 percent over the same period. Government revenues are projected to increase 15 percent per year. Government oil revenues, moreover, are expected to exceed US\$3 billion in 2028, in an economy with a current GDP of US\$ 3.6 billion.¹⁹ Infrastructure investment averaged 3.4 percent of GDP between 2011 and 2015, below the LAC average of 3.7 percent (Infralatam, 2016). Government investment in Guyana, as measured by net acquisition of nonfinancial assets as a percentage of GDP, is below the 10-year average of 8.5 percent, but has been increasing since 2015 and is expected to reach 8.7 percent in 2019 and 13 percent of GDP in 2022.

Guyana's main challenge in the medium-term will be to translate the government's newfound sources of income into an agent for economic transformation and development. The infrastructure stock is inadequate to support delivery of public services or facilitate private sector growth. The country's transportation infrastructure (roads, airports and seaports) requires substantial improvements to support the growth of the private sector. The energy sector also hinders private sector development. Guyanese firms report high energy costs as a major obstacle to business operations (Compete Caribbean, 2014). In fact, in the World Bank's 2019 Doing Business report, Guyana's rank dropped from 126th to 134th, mainly due to a significant decline in the score for electricity. In water and sanitation, despite limitations in the quality of water, sanitation, and drainage, the United Nation (2015) reports that 98 percent of the population has access to

¹⁸ This document describes the challenges that the country faces in the development of infrastructure in four specific sectors: i) energy, ii) telecommunications, iii) transportation and iv) water and sanitation. The identification of the challenges is based on the development gaps methodology described in Borensztein et al. (2014).

¹⁹ The basis for the IMF estimates is the assumption that the volume of oil reserves was 3.3 billion oil-equivalent barrels. Five more discoveries of oil were made in 2018 and ExxonMobil claims the gross recoverable petroleum resources are now estimated at more than 5 billion oil-equivalent barrels. See "ExxonMobil Increases Stabroek Resource Estimate to 5 Billion Barrels; Makes 10th Discovery," ExxonMobil press release, December 3, 2018. Available at <https://news.exxonmobil.com/press-release/exxonmobil-increases-stabroek-resource-estimate-5-billion-barrels-makes-10th-discovery>.



improved drinking water sources and 84 percent has access to improved sanitation facilities. Guyana also underperforms relative to countries in the region on telecommunications as measured by United Nations technology indices.

Transportation: The country possesses one of the sparsest road networks in South America with 3,995 km of roads serving a country of 214,920 km² for a ratio of 0.018 km/km²; the regional average is approximately 0.17 km/km² (ECLAC, 2014). Eighty percent of roads, moreover, are unpaved. Guyana's transportation challenges also extend to trade connectivity with the rest of the world. According to the 2018 edition of Doing Business, Guyana dropped in world ranking from 139 in 2016 to 142 in 2018 in terms of the "trading across borders" pillar despite progressing in the index used to create the rank. On a scale from 1 to 100, Guyana advanced from 66.7 to 75 between 2006 and 2018, indicating that other countries are making faster progress on trade. Guyana's port processes and related infrastructure requires operational modernization. Moreover, there are currently no paved roads connecting Guyana to Brazil, and there is no bridge connecting the major coastal highways of Guyana and Suriname. Motorization is high for the size of the population, however, which causes congestion in urban areas. Increased accidents and fatalities are a major concern, but institutional capacity, legislation, planning and resources are lacking to improve road safety. Guyana's estimated number of road deaths, 138 per 100,000 population, is higher than the Caribbean average of 82 (WHO, 2015).

Energy: Guyana's infrastructure of electricity generation and transmission is not adequate to handle growing demand. Guyana ranks relatively low in the region on electricity infrastructure and quality. The Guyana Power and Light Inc. (GPL) is the main official supplier of electricity in Guyana, and service is characterized by high cost and service interruptions. It is considered a significant challenge to doing business in Guyana. In 2017, most of the electricity was generated from imported heavy fuel oils (HFOs), which exposes the economy to volatile fuel prices and energy dependence. The average tariff for electricity in Guyana is US\$ 0.30/kilowatt hour (kWh) representing one of the highest rates in Latin America and the Caribbean, where the average tariff is US\$ 0.18/kWh. Because of the system's compromised service, many Guyanese firms source power from generators and many households own generators to supplement GPL transmission, representing significant private costs to the economy.

Water and Sanitation: Information on underground water resources is lacking, and the quality of surface water is affected by many contaminants. The Government of Guyana created the National Water Resources Council to support the local government structure (27 Neighborhood Democratic Councils, NDCs, and five Municipalities) in protecting and managing the resources, but the quality of surface water is affected by waste water, agriculture and mining, while information relating to underground water resources is insufficient. The lack of wastewater treatment facilities and limited expansion of sewers results in poor sanitation. Although about 84 percent of the population has access to improved sanitation facilities, sewers only exist in the capital, covering 13 percent of the population. The remaining coverage consists of individual solutions such as septic tanks and pit latrines.

Telecommunication: The government faces important challenges to incorporating telecommunications into its public administration. In 2018, the United Nations e-Government Development Index (EGDI) ranked Guyana 124th out of 193 countries, placing it in the "Middle EGDI"²⁰ group. Additionally, Guyana ranks 140th on the United Nations e-participation index

²⁰ The EGDI is made up of other composite indices such as the online service index, the telecommunications infrastructure index, and the human capital index. The online service index measures the scope and quality of online government services, the telecommunication infrastructure index measures the status of the sector's development, and the human capital index captures educational levels (United Nations, 2018).



(EPI), which measures citizens' engagement through information technologies in policy and decision-making, highlighting limitations in promoting access and inclusion. This places the country in the "Middle EPI" group. The public sector's low productivity is in large part explained by relatively low automation, meaning that civil servants still work predominantly with paper documents and files, which hinders transparency and accountability and contributes to inefficiency. It is therefore not surprising that businesspersons' perception of government efficiency is more negative than the average for commodity-exporting small economies. In 2015, the Ministry of Telecommunications was created, with the mandate of establishing a digital government and developing an enabling environment for the increased use of information and communications technology.

2. RECOMMENDATIONS TO OVERCOME CHALLENGES

In transportation, the main policy recommendations include:

- The improvement of coverage and quality of road infrastructure through the definition and implementation of interventions for roads, both paved and unpaved. This should be the result of an analysis of technical alternatives and economic profitability around new industries to facilitate urban growth away from the flood-prone coastal plain.
- The development of a transportation corridor linking Brazil with Guyana to improve investment and stimulate economic activity along the path, which has been part of a broader study in combination with a deep-water port on the coast of Guyana.
- Improving the port infrastructure to reduce the cost of transport in and out of the country, which would complement the development of the transportation corridor with Brazil. This would require investments to bring Guyana's ports up to international standards using information technology.
- Investment in bridges to cross the country's extensive river system.

In energy, the main policy recommendations include:

- Diversification of the energy matrix as the government is seeking to shift power generation from heavy fuels-based sources, potentially towards natural gas and renewable sources of energy such as mini hydroelectricity, biomass, wind and solar sources, to supply electricity in the most economical and reliable way.
- Increasing private sector participation in the energy sector. Transparent and publicly available guidelines for the development of open tenders to encourage private sector participation are needed to set the path for optimal and economical expansion of the generation system in Guyana.
- The establishment of policies to ensure sustainable electricity provision in rural Guyana to foster development in interior communities.

In water and sanitation, the recommendations include:

- Strengthening Guyana Water Incorporated (GWI) to reduce its reliance on government support and improve information availability and quality. Ongoing support to GWI's route towards self-sustainability, through efficiency improvement (NRW reduction, Energy Efficiency and operational efficiencies), consolidation of the governance structure of the sector, and expansion of the potable water supply as well as wastewater collection and treatment should continue.
- Supporting Guyana's access to climate financing to improve drainage infrastructure. Climate change has impacted the coastline drainage system, which has aged and has become unreliable. Hence, policy intervention in the drainage sector should focus on



supporting the Government in accessing climate financing for resilient infrastructure (e.g., sea defense), increasing knowledge through means such as a georeferenced asset database to guide maintenance activities, and modelling of the surface and underground water systems.

3. PUBLIC-PRIVATE PARTNERSHIPS FRAMEWORK: QUALITY AND IMPLEMENTATION

The government has worked to formulate a public-private partnership (PPP) policy framework in recent years, completing a handbook for that framework in April 2018. The policy identifies aspects that need to be developed, such as affordability of projects for users, the legislative environment, institutional arrangements and capacity building. In terms of the legislative environment the policy recognizes that a PPP regulatory framework must be developed to mitigate the risk of political and regulatory risks of PPP projects. That is, Guyana does not have a PPP law and plans to develop this capacity through the framework. The policy framework highlights the need for clear and unambiguous institutional arrangements among the Ministry of Finance, Public Infrastructure, and Business.

4. NATIONAL DEVELOPMENT PLANS ON INFRASTRUCTURE

Guyana's main development plan is the Green State Development Strategy (GSDS), which presents a vision for growth based on investment, jobs, and environmental sustainability to 2040. The plan describes the sectors of the economy the government plans to support as well as priority areas of infrastructure development. Currently, there is no specific integral infrastructure national development plan, even though the IDB plans to support the elaboration of one through a technical cooperation (Infrastructure Development Master Plan) in 2019.

5. POLICIES AND INTERVENTIONS UNDER CONSIDERATION

Considering these challenges, private-sector investment levels in Guyana, as measure by gross fixed capital formation, are relatively low with respect to the region. Private investment as a share of GDP is 8.3 percent, compared to the Latin America and the Caribbean regional average of 16 percent. Correspondingly, as noted in 2018 World Economic Outlook of the International Fund, the share of public investment is relatively high at 8.1 percent, compared to the regional average of 5 percent. While productivity-enhancing developments such as roads, logistics, and energy are delayed, the private sector will continue to face uncertainties that are detrimental to investment and job creation.

In this regard, one of the areas of greatest priority is improving the energy sector by expanding the distribution of electricity, improving the quality of service, and moving away from relatively costly heavy fuels towards cleaner resources such as natural gas and renewable sources of energy. Efficiency improvements could contribute to reducing the relative cost of electricity in the long term, which would significantly contribute to enhancing private sector competitiveness.

In the energy sector, the government has articulated its objectives in the "Update of the Study on System Expansion of the Generation System 2018," which models growing electricity demand and proposes several options to fill that demand based on natural gas and renewable sources of energy. Guyana is committed to environmentally sustainable economic growth, and the recent discovery of petroleum reserves has allowed for the possibility of continuing to use and improve



its electrical transmission system during the transition to cheaper and cleaner sources such as natural gas and before phasing in renewable energy options.

In transportation, the GSDS prioritizes improving the road network in the coastal region, connections to the Brazilian border, and repairs and upgrades to the Georgetown Port. A deep-water harbor at a yet undecided location is also in discussion.

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Jamaica²¹

Henry Mooney

1. INFRASTRUCTURE CHALLENGES

Jamaica is a small lower-middle income economy, with nominal per capita GDP of about US\$4,750 at the end of 2017. The economy is highly concentrated in a few productive sectors, with services (particularly tourism) responsible for the largest share at about 71 percent of total output, followed by industrial activities at 21 percent, and agriculture at about 8 percent. Real GDP has increased by an average of only 1 percent annually since the 1980s, with poor performance linked to imprudent or inconsistent policies leading to inflation and output volatility, government over-borrowing, and resulting debt and financial crises. The country has also suffered from political and social unrest, rampant crime, and high levels of economic informality. Productivity growth has been stagnant over the past several decades, further limiting the scope for any meaningful increase in output. Since entering into the first of two successive IMF-supported programs in 2013, policies, institutional capacity, and related outcomes have improved markedly, including via the maintenance of large fiscal surpluses, rapid debt reduction, the establishment of binding fiscal rules, and the modernization of central bank policies and objectives. While these and related strides are praiseworthy, further reforms of public and other economic institutions in Jamaica are required to set the stage for more rapid and sustainable growth in the years to come.

Infrastructure, particularly for energy and logistics, appear to be constraining growth. Years of economic contraction prior to 2013, followed by fiscal adjustment undertaken under two successive IMF-supported programs, have led to underinvestment in capital projects, and the maintenance of infrastructure, including roads, bridges, energy, and water. Economic uncertainty has also contributed to low levels of private investment in infrastructure-related areas.

Transportation: Fiscal constraints led to insufficient road maintenance, and significant deteriorations in road quality. Logistics performance is weak for a small island state, with deficits in areas such as goods clearance processes at ports and airports, including because of limited automation of document processing and tracking (e.g., the absence of a trade single window). While the performance of the ports with respect to transshipment has been strong and improving, there have been limited investments in infrastructure to support development of value-added logistics services, which would help increase sector market share and profitability, and diversify its customer base. Finally, Jamaica performs well on the quality of ports (as above), and the quality of air transport, and traffic mortality is low.

Energy: Access to electricity in Jamaica, including in rural areas, is above average for comparable countries. In addition, the country has made important advances in renewable energy in recent years. However, the sector displays weaknesses, including the high cost of energy. This results from dependence on expensive and outdated fuel generators, and on high system losses, including those due to theft. In addition, the country experiences frequent power outages. Transportation, electricity generation, and the bauxite and alumina sectors account for a large

²¹ This document describes the challenges that the country faces in the development of infrastructure in four specific sectors: i) energy, ii) telecommunications, iii) transportation and iv) water and sanitation. The identification of the challenges is based on the Borensztein et al. (2014) development gap methodology.



proportion of all petroleum consumption. The remainder is shared among cooking and lighting, manufacturing, and petroleum refinery activities.

Water: Insufficient and outdated or aging infrastructure remains a central challenge for Jamaica, reflected for instance, in a high share of lost revenue from unremunerated water. The National Water Commission (NWC), a Government-owned utility that supplies approximately 90 percent of the population, is the dominant service provider in Jamaica. While Jamaica compares favorably with other developing countries in potable water supply, significant work remains to develop an efficient water delivery system. At present, about 75 percent of the country's population is connected to water distribution systems—over 90 percent in urban areas and around 45 percent in rural areas. Sanitation services exist in most areas, but less than half of the population has access to centralized sewerage facilities (most are connected via on-site sewage disposal systems such as septic tanks and absorption pits or tile fields). A major problem facing the sector is the efficiency of NWC's operations in the Kingston Metropolitan Area (KMA), and other urban areas. While the NWC has achieved better performance in other areas (e.g., the North Coast), high levels of non-revenue water (NRW) in the KMA and other urban centers has adversely affected financial and operational viability.

Telecommunications: The telecommunications sector is well-developed in Jamaica. Most key indicators display positive gaps when compared with peer countries, particularly in terms of the population with services available (e.g., both 2G and 3G network coverage), and the number of mobile phone subscriptions. In this context, there do not appear to be major investment requirements in this sector at this time.

2. RECOMMENDATIONS TO OVERCOME CHALLENGES

As Jamaica begins to consider fiscal priorities for the post-IMF program environment beginning in 2020, increasing infrastructure investment will become an important focus. Fiscal austerity in the context of a Fund-supported fiscal adjustment program has been an important driver of underinvestment in key infrastructure areas in recent years. The level of public investment (i.e., defined as the net acquisition of non-financial assets) relative to total government outlays fell from as high as 30 percent in the 1990s to less than 6 percent in 2014, when fiscal constraints linked to the IMF program began to take hold. Public investment increased to about 9 percent in 2017.

Additional investments in lagging areas mentioned above could have significant positive impacts on economic output and potential, as well as on the investment and business climates. As a first priority, the government should focus on rehabilitating existing transportation infrastructure that has suffered from underinvestment and insufficient maintenance in recent years, including roads, rail, and traffic infrastructure, as well as other public and industrial transport investments. Another area of focus should include investments in energy to reduce costs, improve reliability, and facilitate a transition to renewables to replace ageing fossil-fuel generation. Similarly, measures to increase efficiency could reduce electricity costs and the island's dependence on fossil fuels. This is an important consideration, as Jamaica currently displays 93 percent external energy dependence, compared with 7 percent for the Caribbean region as a whole. In this context, reducing the need for fuel imports would increase national income, improve external imbalances, and help shift consumption from imports to locally-produced consumables. Lower costs and greater reliability would also encourage private sector investment and growth.



Another key area of focus relates to water and sanitation, where significant investments are needed to rehabilitate older water treatment plants and distribution networks and minimize NWC's commercial losses through improvements in operational procedures, as well as improve the NWC's energy efficiency indices. Most importantly, further efforts are needed to improve the NWC's management structure and processes, including by improving capacity to fund investments, for planning, operational capacity, and maintenance protocols.

3. PUBLIC-PRIVATE PARTNERSHIPS FRAMEWORK: QUALITY AND IMPLEMENTATION

The government of Jamaica issued its public-private partnership (PPP) framework, "Shaping New Partnerships for National Development: Policy and Institutional Framework for the Implementation of a Public-Private Partnership Program for the Government of Jamaica: The PPP Policy," in 2012. The Privatization Agency and the PPP unit within the Development Bank of Jamaica (DBJ) centralized the management and co-ordination of the PPP program, with the objective of ensuring that each PPP project is identified, developed, evaluated and implemented through a consistent process. The PPP node within the Ministry of Finance and Planning (MOFP) is responsible for value-for-money assessments and for managing the fiscal impacts of PPP projects. Jamaica has a comprehensive legal framework for the identification, development, assessment, implementation and management of PPPs. Projects must be viable, achieve value for money, be marketable and be consistent with the objective of fiscal responsibility. PPPs are limited to assets with a value greater than US\$10m and tenure of at least 10 years. The Cabinet and the Privatization Committee of the Cabinet are responsible for strategic oversight of PPPs, while the PPP unit of the DBJ and the PPP node within the MOFP are tasked with operational management of PPPs. The Cabinet has final decision-making power over issues, including the PPP priority list, contract approval and renegotiation, and changes to the PPP policy. The main challenge the government of Jamaica faces is building the institutional capacity and knowledge to be able to execute projects in a consistent and efficient manner, particularly as it relates to the design of projects and risk allocation. Looking forward, the government is in the process of reviewing the PPP framework, with technical and other support from the IDB, with a view to tabling a number of revisions in 2019.

4. NATIONAL DEVELOPMENT PLANS ON INFRASTRUCTURE

Jamaica's national infrastructure plan, "Vision 2030 Jamaica: National Development Plan", was launched in 2009. The plan focuses on developing infrastructure in areas including transport, telecommunications, water supply and sanitation infrastructure, and it explicitly emphasizes the role of PPPs in the infrastructure, construction and tourism sectors, as long as they meet specific selection criteria. Objectives include improving and rationalizing road transport infrastructure, ensuring the completion of an island-wide highway network, improving the flow of traffic in urban centers, and planning modern railway linkages along key routes. Domestic and international air transport infrastructure and services are also targeted for improvement, as well as port and transport logistics infrastructure to support establishment of Jamaica as an integrated maritime center and shipping hub. The plan also considers broadband and telecommunications infrastructure for improvement, as well as water and sanitation services.



5. POLICIES AND INTERVENTIONS UNDER CONSIDERATION

As noted above, many large-scale infrastructure projects have been on hold owing to the constraints of the IMF-supported program and related fiscal objectives. In the near term, the government has allocated the bulk of its infrastructure budget to major road works projects, including the Southern Coastal Highway Improvement Project, and road rehabilitation projects, along with the construction of smaller rural and farm-related roads and updating urban traffic infrastructure.

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Suriname²²

Jeetendra Khadan

1. INFRASTRUCTURE CHALLENGES

Suriname's infrastructure has improved over the years but still faces critical challenges, as indicated by the World Economic Forum's Global Competitiveness Report of 2013, which ranked the country 79th out of 148 countries with respect to the quality of overall infrastructure. Transportation and provision of other public utilities to the populations that reside in areas accessible only by river or airplane are limited and make internal integration challenging. Infrastructure planning is further complicated by the country's susceptibility to natural disasters and climate change given the heavy concentration of population and economic activity in the coastal regions.

Ageing infrastructure, institutional gaps, limited capacity and resources to maintain existing infrastructure, and legislative and regulatory gaps are the key challenges for infrastructure.

Transportation: Suriname needs to foster greater infrastructure investment, improve maintenance policies for existing assets and support the related institutional setting. The road network is affected by a high motorization rate (303 vehicles/1,000 population in 2015 compared to an average of 204/1,000 population for Latin American and the Caribbean (LAC),²³ relatively high population density in the coastal area, and capacity and maintenance challenges, which all contribute to congestion in urban areas.²⁴ Congestion is also related to an inefficient public transportation system and parking arrangements for private and public buses in the city. Limited availability of designated lanes for motorcyclists and bicyclists and a lack of pedestrian walkways, risky practices such as speeding, and limited capacity for law enforcement are the key factors that contribute to safety issues and a high fatality rate (19.1 road fatalities/100,000 population in 2013 compared to an average of 16.7 for LAC, as reported by the World Health Organization), with most victims being motorcyclists and auto drivers. The institutional responsibility for the road sector spans three government entities and, as suggested by IDB (2016), increasing the number and capacity of staff is required to achieve organizational objectives. In maritime transportation, challenges relate to port capacity constraints and infrastructure quality. Moreover, few direct connections and a small number of service providers result in low connectivity. According to the United Nations Conference on Trade and Development (UNCTAD), in 2018 Suriname had a liner ship connectivity index of 6.01 (on a 100-point scale), one of the lowest in LAC.²⁵ Moreover, the entrance to the Suriname River channel prevents large ships from entering the Jules Sedney Port, which in part has a draft of only 6.5 meters. Although the country's internal waterways are already being used to move people and materials, their use could be formalized and better structured to form a comprehensive network for accessibility. Air service is challenged by issues related to terminal and passenger services, plane services, and ground facilities. Challenges also extend to unreliability and infrequent flights and logistical issues for both international and domestic flights.

²² This document describes the challenges that the country faces in the development of infrastructure in four specific sectors: i) energy, ii) telecommunications, iii) transportation and iv) water and sanitation. The identification of the challenges is based on the Borensztein et al. (2014) development gap methodology.

²³ IDB (2016).

²⁴ International Organization of Automobile Manufacturers, available at: <http://www.oica.net>

²⁵ Source: <https://unctadstat.unctad.org>. The liner ship connectivity index measures the extent of a country's connection to global shipping networks.



Energy: Electricity access varies between urban and rural areas: in 2015, data from the World Bank showed that 87 percent of the total population and 96.4 percent of the urban population had access to electricity, but only 69 percent of the rural population had access (compared to the LAC rural average of 94.2 percent). The challenge to providing affordable electrification to isolated rural villages in the country's interior is related to geographic distances, remote locations, low population density and limited infrastructure. In the main electric grids, while public and private investments have contributed to an increase in power generation capacity, investments in infrastructure to improve transmission and distribution have lagged in both expansion and upgrades, which creates a bottleneck affecting service quality (IDB, 2016). Below-cost electricity tariffs do not allow for full cost recovery: in 2017, average generation, transmission and distribution costs were estimated at US\$ 0.12/kWh (0.88 SRD/kWh) resulting in a transfer of public funds to subsidize electricity (Castalia, 2018).²⁶ It is estimated that electricity subsidies averaged 1.7 percent of GDP in 2011–13, compared to the LAC average of 0.8 percent (IDB, 2016). Interruptions in electricity service pose another major challenge as shown by a relatively higher SAIDI index: outages last an average of 14.4 hours, compared to 12 hours for LAC. In addition, about 81 percent of private firms surveyed in 2014 reported experiencing power interruption, of which 81 percent reported experiencing 1 or 2 interruptions in a typical month (PROTEqIN, 2014). Institutional weaknesses are reflected in a lack of publicly available data on the generation, sale and consumption of electricity and individual grids' capacity and peak demand, as well as deficiencies in the sector's legal and regulatory framework (IDB, 2016).

Water and Sanitation: Infrastructure and institutional deficiencies that contribute to high non-revenue water and a lack of wastewater treatment facilities are among the main challenges facing Suriname's water and sanitation sector. Access to basic drinking water services varies between urban and rural areas. The World Bank estimates that in 2015 94.7 percent of the total population, use at least basic drinking water services, compared to the LAC average of 96 percent. The urban and rural figures are 98.2 percent and 87.8 percent, respectively, compared to respective LAC averages of 99 percent and 86 percent. Perhaps the most important challenge facing the Suriname Water Company (SWM) is reducing non-revenue water, which is estimated at 45 percent and leakage, estimated at 28 percent (IDB, 2017). Although water production facilities appear to be generally in good condition, the transmission and distribution network is aging with most of the piping is functioning beyond their designed life of 30-50 years (IDB, 2017). Improving water service is also constrained by inadequate storage and the presence of standby generators for continued production during power outages (IDB, 2017). Governance of SWM and the water sector is further inhibited by the lack of a public regulator; the government, which is also the owner of SWM, is currently functioning as the regulator. In the sanitation sub-sector, the World Bank estimates that 79.2 percent of the population were using at least basic sanitation services in 2015, with urban and rural levels of 88.4 percent and 61.4 percent, respectively. This compares to respective LAC figures of 86 percent, 90 percent and 68 percent. Inadequate infrastructure such as the lack of wastewater treatment facilities and the absence of cost recovery mechanisms are the main challenges facing the sanitation subsector. The absence of wastewater treatment plants in Suriname results in the discharge of storm and sanitary wastewater directly into the Suriname River via sluices or drainage pumps. Moreover, challenges with sluice gates and discharge pumping contribute to flooding, which affects about 6,685 households (IDB, 2017). Finally, there are deficiencies in the design and construction of household septic tanks, which eventually leads to the discharge of improperly stabilized septic waste into the environment.

Telecommunications: Digital connectivity with respect to internet usage and secure internet servers are relatively low. The World Bank estimated that in 2015 about 45.4 percent of the population used the internet, which is lower than the LAC average of 57.4, while Suriname has

²⁶ Castalia group report on Suriname's Electricity Sector Plan 2019-2023.



204 secure internet servers per 1 million population, compared to the LAC average of 998. The state of Suriname's telephony is more positive, with 15.8 fixed telephone subscriptions per 100 people, similar to the LAC average of 16.3, 12.6 fixed broadband subscriptions per 100 people, similar to the regional average of 12.1, and 141.3 mobile cellular subscriptions per 100 people, much higher than the LAC average of 107.4. In the public sector the use of digital technology in public sector management can be boosted by an accelerated agenda to achieve most of the objectives in the government's E-Government Strategy of 2012-2016, as well as an update of the latter.

2. RECOMMENDATIONS TO OVERCOME CHALLENGES

A mixture of investment, policy changes and regulations is suggested to overcome the main infrastructure challenges identified above. For the transportation sector, measures to improve governance and capacity of institutions to manage and maintain the existing infrastructure are needed. In addition, upgrades and expansion of the road network, the introduction and or expansion of safety measures to protect road users and pedestrians and establishing strategic linkages among the various modes of transportation to form an efficient interconnected transportation network can contribute to improving the transport sector's performance. To improve Suriname's energy sector performance, policies and incentives are needed to augment access, increase investments in transmission and distribution, revisit tariffs, improve the reliability of service, and provide better information to inform decision-making. Improvements in the water and sanitation sector should focus on improving the institutional setting, particularly the availability of data to objectively assess the sector's challenges, reviewing and enforcing the reporting systems to promote better transparency and establishing stronger legal and regulatory frameworks to improve governance of the sector. Finally, in the area of telecommunication and digital connectivity, a greater effort is needed to implement the priorities set out in the 2012-2016 E-Government Strategy.

3. PUBLIC-PRIVATE PARTNERSHIPS FRAMEWORK: QUALITY AND IMPLEMENTATION

Suriname faces limited fiscal space over the medium-term to increase public investment. Although gross fixed capital formation steadily increased from 38 percent of GDP in 2010 to 71 percent of GDP in 2014, it has declined to 57 percent of GDP in 2017, as reported by the World Bank. In this context, a public private partnerships (PPP) framework could help the country foster long-term infrastructure investments and close the infrastructure gap in energy, telecommunication, transportation and water and sanitation. However, Suriname does not have a PPP framework, and the World Bank (2014) found that there are no laws, policies, detailed guidelines, dedicated units or dedicated project preparation funding in place and that the percentage of staff with PPP experience was classified as low. Although the country lacks a framework, it does have some PPP experience, especially in the energy sector, through a 189MW hydroelectric plant, built by Alcoa Aluminum in 1958, that provided up to 60 percent of Suriname's electricity under a power purchase agreement (World Bank 2014).

4. NATIONAL DEVELOPMENT PLANS ON INFRASTRUCTURE

The Government of Suriname considers infrastructure an "enabling sector" in achieving its long-term development goals. In this regard, the country's National Development Plan (NDP) for the



period 2017-2021 provides an assessment of the challenges facing the country, including its physical infrastructure needs. The focus on infrastructure in the NDP covers issues related to deficiencies in the legal framework and institutions as well as in the quality of and access to basic infrastructure. Government investment in Suriname, measured as net acquisition of non-financial assets, has decreased from an average 4.7 percent of GDP over the period 2012-2014 to 2.9 percent in 2015-2017, according to data from the International Monetary Fund's 2018 World Economic Outlook database. The NDP estimates that total infrastructure development financing for the period 2017-2021 would be US\$1,987 million (58 percent of GDP), of which 41 percent is expected to come from government funding and 59 percent from private investments (NDP, 2017). However, the NDP does not account for the extent to which these activities could potentially contribute to jobs and output or to other private sector activities.

5. POLICIES AND INTERVENTIONS UNDER CONSIDERATION

Suriname's main short-term challenge relates to improving its macroeconomic performance, particularly as it relates to fiscal imbalances and increasing debt levels. Thus, addressing energy and water service provision challenges, along with strengthening the PPP framework, can help the country realize important benefits in the short to medium term in regard to both fiscal performance and closing the country's infrastructure gap in an efficient and cost-effective manner. Pursuant to these goals, the government's ongoing fiscal strengthening program calls for the creation of a PPP Unit, along with improvements to public investment system and strengthening public financial management. In the energy sector, the government is considering policy interventions to improve energy efficiency and electrification of rural areas.

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Trinidad and Tobago²⁷

Zubin Deyal and Lodewijk Smets

1. INFRASTRUCTURE CHALLENGES

Government investment in infrastructure has decreased substantially in Trinidad and Tobago. During the period 2016-2018, infrastructure spending, proxied by the net acquisition of non-financial assets, averaged 2.47 percent of GDP, down from 4.50 percent of GDP during the period 2010-2015. Trinidad and Tobago's infrastructure is therefore in need of improvements to support productivity growth and achieve the country's development goals. The country ranks 59th out of 138 countries in the 2017-2018 Global Competitiveness Report Infrastructure Index. High automobile ownership and inadequate road infrastructure have led to congestion problems, while ageing water and sanitation facilities cause frequent supply problems and severe wastage. On the other hand, Trinidad and Tobago's energy and telecommunication infrastructure is well developed, but efficiency improvements are nonetheless possible in those sectors.

Transportation: High automobile ownership, low use of public transportation and inadequate road infrastructure has led to congestion problems which affect productivity. Trinidad and Tobago has the highest motorization rate in the Caribbean (583 vehicles per 1,000 persons, compared to the global average of 148 as of 2010). In recent years, economic growth has led to a further increase in the ownership of private vehicles (from 353,273 in 1995 to 786,202 as of 2016) and a corresponding decrease in the use of public transport. The effects of the growth in automobiles are particularly severe in the limited connections between the capital, Port-of-Spain, and large residential areas, especially along the East-West corridor. Approximately 260,000 vehicles are forced to enter the city daily through four main connections that are narrow and poorly aligned, with bottlenecks at key intersections. Moreover, a large portion of the road network is in poor condition, despite significant capital expenditure, which indicates inefficiencies in allocation and lack of road maintenance (Oxford Business Group, 2018). These inadequacies in the road transport system cost users an estimated US\$267–345 million annually in lost time, reliability and fuel (Inter-American Development Bank, 2016). A development gap analysis confirms that paving roads and improving infrastructure are areas that require urgent attention.

Regarding maritime transport, Trinidad has two major ports, one in Port-of-Spain and the other in Point Lisas. The major transnational port in the capital has an 11-meter draft, which restricts the size of the vessels entering and the time they may enter. Currently, the largest vessels (Panamax sized) may only enter once every 24 hours. Coupled with an insufficient number of cranes and low productivity of existing cranes, the handling time for containers aboard these ships is more than triple that of more efficient ports. Furthermore, the main transnational port's location in the capital has limited land for storing containers and further contributes to traffic congestion in this area. Despite growth in the overall number of arrivals at the country's two international airports, Piarco in Trinidad and Crown Point in Tobago, the country is still behind other small open

²⁷ The following is a brief overview of the infrastructure development challenges of Trinidad and Tobago, including those in the transport, energy, water and sanitation, and telecommunication sectors. The development gap analysis used follows Borensztein et al. (2014).



economies in the availability of airline seats. As such, although the airports can accommodate large wide-body aircraft, full-length parallel runways should be developed on both sides of the existing taxiway to increase peak-hour capacity. Furthermore, low-visibility landing systems should be installed to enhance safety (Oxford Business Group, 2018).

Water and Sanitation: Despite almost all persons having access to centralized water services (96 percent in urban areas and 93 percent in rural areas), Trinidad and Tobago's water and sanitation system still presents constant challenges. Many of these issues surround the Water and Sewerage Authority (WASA), which acts as both the country's Water Resources Agency and its Utility. With regard to water distribution, there is high non-revenue water of approximately 50 percent (compared to the 45 percent average for Latin America and the Caribbean) due to leakages and the lack of water consumption meters (Inter-American Development Bank, 2016). Because of the existing system's ageing pipes, many of which have not been replaced in 50 years, only 20 percent of the population of Trinidad has a continuous water supply. Furthermore, the use of a flat rate tariff for 96 percent of customers has encouraged severe wastage and operational losses, which are covered by the Government of Trinidad and Tobago. These same issues of ageing infrastructure and low tariffs affect wastewater systems. Only 30 percent of the population has access to wastewater treatment facilities, while the rest use on-site sanitation services (Inter-American Development Bank, 2016). As a result, a large amount of untreated effluent is discharged into existing watercourses. This not only poses significant health and environmental risks, but also raises the costs of water treatment. These risks are exacerbated by climate change, which has increased the frequency and intensity of flooding in the country. In 2018 alone, Trinidad and Tobago experienced several flooding events with substantial financial loss and reduced productivity. Additionally, missing stormwater drainage infrastructure and uncoordinated solutions to flooding have led to poor drainage facilities, especially in Port-of-Spain. The lack of both a central authority responsible for drainage and a plan in response to flooding has worsened the impact of heavy rainfall. Likewise, there is no single body governing the management of solid waste. Disposals take place in five sites, and limited recycling and recovery are practiced.

Energy: Trinidad and Tobago's energy infrastructure is well developed and extensive but nonetheless suffers from inefficiencies. Around 96 percent of the country's electricity is produced using natural gas, which entails large opportunity costs. The sector itself consists of the government-owned electricity transmission and distribution utility, the Trinidad and Tobago Electricity Commission (T&TEC) and three independent power producers (Espinasa and Humpert, 2016). Both rural and urban access to electricity are at 100 percent of the population, significantly higher than the respective global averages of 77 and 97 percent (World Bank, 2016). However, while the transmission system benefits from minimal losses of 2.3 percent (the global average is 8.3 percent), power generation at independent plants is relatively inefficient with a wastage rate of 70 percent. Despite significant upfront costs, upgrading existing plants to combined cycle units would increase efficiency to around 50 percent for significantly reduced energy wastage (Regulated Industries Commission, 2018). Furthermore, while high levels of energy subsidies give the country the lowest retail electricity price in the Caribbean region (about US\$ 0.05 per kWh in 2017 versus US\$ 0.30 - 0.40 per kWh in other islands), below-market rates do not incentivize investment in energy efficiency or renewable energy systems. The subsidies have resulted in the overconsumption of electricity and left the country's emissions per capita from energy-related activities approximately 2.5 times higher than the world average.



Telecommunication: The telecommunications infrastructure is significantly developed. The country has the eleventh highest number of mobile subscriptions globally, around 160 for every 100 persons, compared to the global average of 101 (World Bank, 2018). Large-scale internet usage by over 73 percent of the population is also greater than the global average of 52 percent. Over 70 percent of households have a computer and access to the internet, compared to a worldwide average of 50 percent, and bandwidth per internet user is 2.5 times greater than the global average (ITU, 2017). However, Trinidad and Tobago still lacks the robust legal and regulatory framework required for eBusiness, eCommerce and eServices. Legislation governing electronic transactions and data protection has only been partially proclaimed, and key regulations not yet been passed.

2. RECOMMENDATIONS TO OVERCOME CHALLENGES

Improving the quality of roads would reduce congestion and increase productivity, which could in turn benefit private sector output. Port development including the government's proposed drydock facility at La Brea would increase both the size and number of shipping vessels visiting the country and allow the new large ships from the Panama Canal's expansion to dock. Along with low fuel costs, this could position the country as a hub for cargo shipments. Revitalizing WASA through metered connections, increasing tariffs on water and addressing leakages would significantly reduce non-revenue water and the government's cost of running the entity. Furthermore, improving governance at WASA is needed for sustained positive outcomes in the water and sanitation sector. Upgrading electricity plants—that is, substituting simple-cycle gas turbines with combined-cycle plants—and removing fuel and electricity subsidies would boost energy efficiency and promote renewable energy investments. The creation of mechanisms that permit “wheeling,” the feeding of electricity from independent operators into the grid, would further improve the energy sector. Finally, completing policy reforms in the telecommunications sector and enhancing public service delivery would protect both end users and investors.

3. PUBLIC-PRIVATE PARTNERSHIPS FRAMEWORK: QUALITY AND IMPLEMENTATION

The national PPP policy was approved by the cabinet in 2012 as an institutional framework for the development and implementation of PPP projects. In principle, PPP projects are covered by the National Procurement Act, which was approved in 2015, but the guidelines and regulations relating to PPP were not proclaimed law. The PPP framework is ranked as slightly below the quality of the global average. Taking a regional perspective, Trinidad and Tobago's PPP framework ranks 14th out of 19 Latin American and Caribbean countries. Major constraints on financing (low capital market development, limited institutional investors and a small insurance market), regulation (lack of fairness and openness in bids and contracts), and institutions (no project preparation facilities) affect its overall capacity (Infrascope, 2018). As a result, only a few projects have been executed through PPPs (e.g., low-income housing). Recently, the Tobago House of Assembly identified five potential PPPs, while one PPP project for underground water production is being analyzed in Trinidad.



4. NATIONAL DEVELOPMENT PLANS ON INFRASTRUCTURE

The overarching “National Development Strategy 2016-2030 (Vision 2030)” lays out very broad long-term infrastructure goals for the country in the transport, utility, and telecommunications sectors. Specific project details and budgeted amounts are determined annually in the Public Sector Investment Programme (PSIP) produced by the Ministry of Planning and Development. This document provides cost estimates, though without a breakdown, and states the expected amounts financed through the government, consolidated fund, and borrowing. For certain projects, but not all, the PSIP also outlines the potential benefits to employment, economic output, and the private sector. Trinidad and Tobago additionally has a National ICT Plan 2017-2021—“fastforward II”—that provides a detailed overview of the steps needed to improve the country’s Information Communications Technology (ICT) landscape, and the impact such changes would have on competitiveness.

5. POLICIES AND INTERVENTIONS UNDER CONSIDERATION

To address deficiencies in infrastructure, the government is undertaking several initiatives. With respect to transport, the government is investigating the extension of two highways to north and south Trinidad and improving the infrastructure for public transportation. Work is also underway for an interchange that will be constructed in east Trinidad, with the purpose of easing traffic congestion coming into the capital city. Furthermore, the government is considering the development of renewable power generation as well as the development of a waste-to-energy plant. The Water and Sewage Authority (WASA) has sought the help of an Israeli-based company to assist in reducing the amount of water lost due to leaks. Furthermore, a new wastewater treatment plant is expected to become operational soon. Additionally, the Regulated Industries Commission (RIC) has embarked on a review exercise for both water and electricity rates. Started in late 2017, the exercise was originally expected to be completed in mid-2018; however, the final results of this exercise are yet to be finalized. Finally, the government is investigating how to improve the governance at WASA.

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