United Nations Development Programme
Barbados and the Eastern Caribbean

GRENADA SMART SMALL STATE

Developing the Vision

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1. EXECUTIVE SUMMARY

In May 2019, Dr. The Rt Hon. Keith Mitchell, Prime Minister of Grenada, wrote an Op-Ed for CNN stating that Grenada and other Small Island Developing States (SIDS) are on the front line in the war against climate change. Extreme weather-related events have damaged the housing and infrastructure sectors, and devastated the crops, trees and livestock of farmers around the country. Species of fish have been decimated by warming waters and acidifying oceans, and coastal landscapes and ecosystems have disappeared over time. The time has come for Grenada and other Caribbean leaders to take the lead on the politics, economics, and impacts of climate change, in order to build a better future for the generations to come[1]. With this context in mind, this report had the objective of creating a vision of a Smart Small State (SSS) for Grenada, including defining the government's priority areas for digitalisation, identifying comparative approaches and good practices around emerging technologies for all relevant sectors of Grenada's' economy, conduct and review an inventory of ongoing initiatives for resilience building around digital tools being implemented by the government and other stakeholders, and a rapid analysis of the synergies and complementarities among the existing initiatives with regards to Smart Small States, and provide recommendations and guidance for implementation. A total of 23 active projects were identified, 12 of which directly related to digitisation/digitalisation, while nine other projects were related to capacity-building and changes to infrastructure to support digitalisation. Another 13 projects were in conceptual stages having not yet officially started.

Considering the criteria of technology, resilience, and livelihoods in determining Grenada's future direction, it is clear that a vision of a Smart Small State for Grenada, or Smart Grenada, should focus on integrating approaches to disaster preparedness, resilience, and natural resources, with emerging technologies and data for sustained economic growth, and ought to be driven by a government commitment to innovate and experiment. For this reason, we define a Smart Small State (SSS) as one that leverages the power of data and digital technologies to strengthen the country's resilience, enhance sustainability, and improve the wellbeing of its people by creating economic opportunity that is led by an agile and efficient government.

Grenada can leverage digital tools and data to strengthen disaster preparedness, enhance resilience to environmental and external shocks, and maximise the natural resources at hand in a sustainable way, with the aim of improving livelihoods under the Green and Blue Economies. Natural Digital Strategies refers to the transformation of the Government of Grenada to better fit the needs of a SSS, by adopting digital technologies to change its workflows. The Government should integrate values of experimentation and innovation and make this commitment explicit with a national SSS transformation agenda that outlines a vision and commitment to culture change. The vision ought to be followed by the creation of new ways for working for all government agencies via the digitisation of government workflows. A digital identity for citizens and business can be adopted, enabling the provision of efficient online government services. Data must be considered a driver of economic development that informs all government policies, and be accessible to the private sector so local companies design and implement business solutions based on data. Lastly, the private sector should have the adequate conditions to experiment and test innovative solutions that contribute to Grenada's transformation into a SSS, via a package of regulations and policies that foster an enabling environment.

Digital Society focuses on the important role that civil society will play in Grenada's SSS transformation. Under this pillar, the digital economy should continue developing Grenada's ICT infrastructure and create the jobs that will maintain a functioning digital economy. Efforts must be undertaken to make the digital economy a regional priority, in partnership with other Organisation of Eastern Caribbean States (OECS) countries, in order to allow better flow of human capital, shared solutions, and funds. Digital Literacy refers to the ability of Grenadian society to integrate digital tools into everyday aspects of life. Lastly, the process of creating a digital society ought to be inclusive allowing women, men, boys, girls, individuals with disabilities, coming from all social backgrounds to contribute and benefit from this transformation to a SSS. This is an essential step to foster a new generation of entrepreneurs and innovators.

The development of this project was framed taking into account the Grenada National Sustainable Development Plan (NSDP) 2020-2035, the Climate Smart Cities Grenada Initiative in partnership with New York University's (NYU) Marron Institute of Urban Management, and existing digital transformation and modernisation projects being implemented in Grenada by the government and private sector agencies.

The relevance of this SSS vision lies in providing the government of Grenada with a birds-eye-view of all the existing efforts that have been undertaken by the government to transform its workflows and service delivery. Until now, even though calls have been made by the Prime Minister urging the digital transformation of the country, no vision or strategy have been proposed. This SSS vision is a first attempt that brings together all the projects under implementation, conceptual projects, and ties them together with an umbrella vision to guide the creation of a strategy, that leverages Grenada's strengths by the way of its natural resources: agriculture, marine environments, and tourism, and doubles down on its vulnerability to environmental and external shocks. Furthermore, the SSS vision emphasises the need for the Government to lead this process, beginning with a whole-of government culture change.

Going forward, Grenada can implement seven recommendations outlined at the end of this report. A summary is outlined below:

1. Grenada should leverage its population size and territorial extension and think of itself as a smart city, allowing for more cost efficient, agile, and nimble capacity to experiment with different smart city solutions and concepts.

2. The process of transformation into a Smart Small State (or nation) must be led by the government, via the creation of a SSS Management Transformation Agency (or Digital Transformation Agency) to help government agencies adapt and manage change.

3. The government should create a data governance framework that enables the efficient, transparent, reliable, and secure use of data as a driver of sustainable and resilient economic development.

4. Grenada should work with regional partners in the Eastern Caribbean and other international partners to share resources including shared digital infrastructure management, human capital, and financial resources, and consider joining a forum or sisterhood of smart cities, in order to get access to a network of experts, best practices and use cases. Furthermore, applicable international best practices should also be re-scaled for Grenada and the Eastern Caribbean

5. Grenada needs to work together with the private sector to drive this transition by having an alliance approach, where established technology leaders work in partnership with the Government to develop the Smart Small State (or smart city) concepts, allowing the government to provide incentives for SME's to digitise, develop climate smart solutions, and increase financial inclusion through the country.

6. Grenada must establish an Innovation Hub to develop the tools, competences, and skill-sets of local businesses and people

7. Grenada should tap into the Grenadian diaspora living abroad to contribute to Grenada's development, particularly in building the human capital of the country.

Grenada should first conduct a country diagnostic or regulatory assessment before pursuing a transition to a SSS. This diagnostic will identify the critical laws and policies that need to be established. Grenada should then leverage existing institutional capacities and designate a government agency to oversee and manage the transformation to a Smart Small State. This process should be backed by existing government agencies via a public statement. Eventually, a new government agency could be established to see the process through.

1.1 Definition of a Smart Small State

In thinking about a Smart Small State, one might imagine a country like Estonia, with a fully functioning online infrastructure that has enabled it to be one of the most advanced smart societies in the world. More recently Bangladesh is making headlines with a unified digital vision to transform government services. A2i in Bangladesh is the flagship programme of the Digital Bangladesh Agenda, a citizen-centric public service innovations platform. The platform has the mission of simplifying and optimising public service delivery via five core areas: e-governance, Innovation Lab, Innovation culture, Data2Policy, and south-south cooperation[2]. While a2i was founded as a government services platform, it has evolved to also provide individual citizens with access to capacity building apprenticeships, skill development portals, job matching platforms, e-commerce development sites, and 5000 digital centres that provide internet access through the country[3]. Another recent example is the SMART Rwanda Master Plan, that outlined the vision of transforming the country into a prosperous and knowledgeable society by building seven core pillars: health, finance, business & industry, agriculture, education, governance, and smart cities.[4] Last year, Rwanda partnered with the country's largest digital health provider, a move that has enabled citizens with a cell phone to have online medical appointments within minutes and able all medical prescriptions and services online, setting the stage for the country to become a regional powerhouse on digital health.

As the previous examples emphasize, as countries embark on their digital transformation journeys, having a clear idea of the desired goals, and having accurate insight into contextual realities is an essential first step to crafting a coherent vision. As we develop a vision of a SSS for Grenada, it is necessary to first define what we mean by the term, and how it can be applied to the local context.

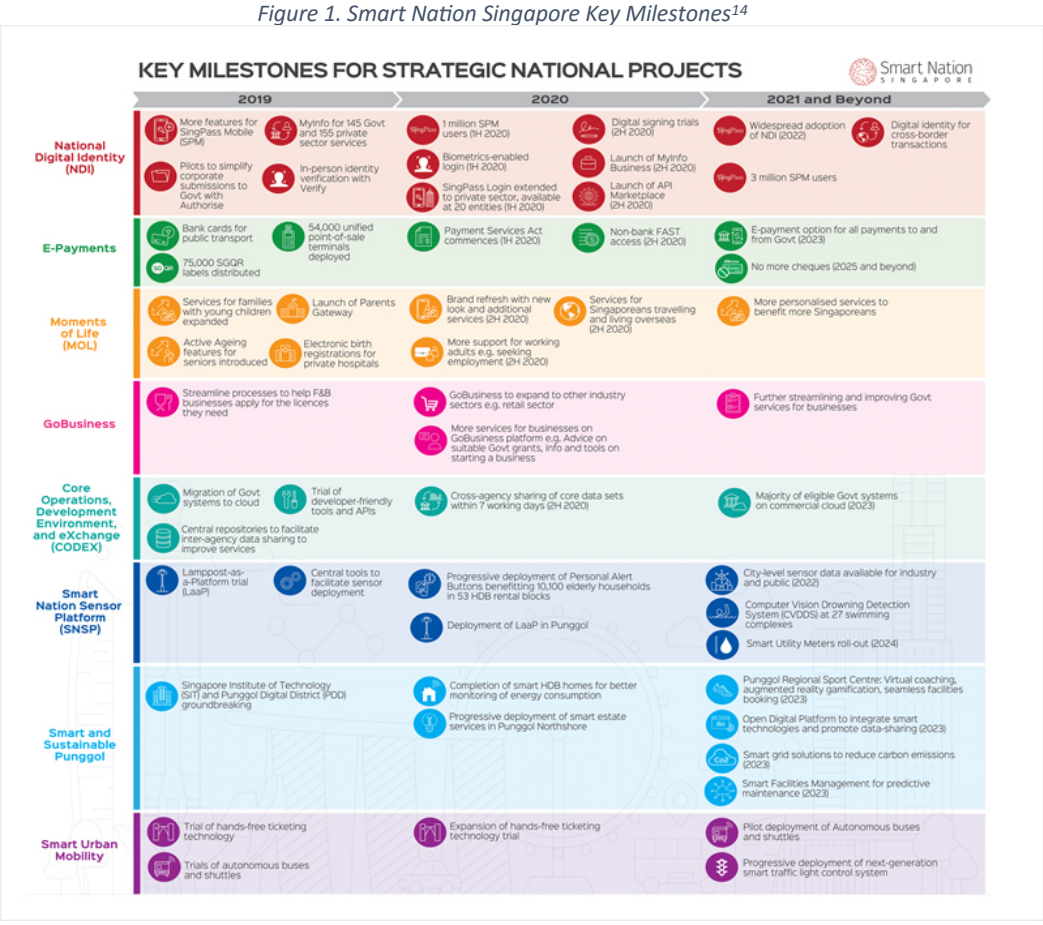
Grenada is a tri-island Small Island Developing State (SIDS), composed by the islands of Grenada, Carriacou, and Petite Martinique, located at the southern end of the Lesser Antillean Islands. Grenada has an extension of 344 squared kilometres and an estimated population of 112,003 as of 2019.[5] Grenada's economy is largely led by the tourism sector, followed by agriculture production, which has been declining since hurricanes Ivan and Emily hit the island in 2004 and 2005 respectively. [6]Grenada's Human Development Index (HDI) score for 2019 was 0.763, ranking 79 among 189 countries. Approximately 59% of the population use the internet, and there are 102.1 mobile phone subscriptions per 100 inhabitants.[7] Given its location, economy type, and size, Grenada is highly vulnerable to the effects of environmental and external shocks[8].

Given the size and population of Grenada, it is helpful to look into definitions of smart cities as a way to frame our thinking. Deloitte advises cities to create smart city strategies by leveraging digital technologies and innovations in the economy, environment and energy, government and education, living and health, mobility, and safety and security, in order to enhance quality of life, economic competitiveness, and sustainability[9]. McKinsey & Company states that three things need to happen to make a city smart: a solid technology base composed by high smartphone penetration rate and connected devices with access to open data, multiple applications should leverage that data to create tools to generate usable insights, and there should be a widespread adoption of

said tools by the public.[10] UN Habitat's flagship programme *People-focused-smart-cities* advocates a smart city approach where technology and innovation are used to ensure sustainability, inclusivity, prosperity, and human rights, by working with national and local governments to build the human capital of government and society to reap the scale and reach of digital technology in inclusive and ethical ways.[11] A broader concept spearheaded by Tufts University's Institute for Business in the Global Context dives into the concept of a Smart Society, defining it as "one in which digital technology, thoughtfully deployed by governments, can improve on three broad outcomes: the well-being of people, the strength of the economy, and the effectiveness of institutions."[12]

More practical definitions can be found from the examples of small island countries that have already undergone a transformation to become smart states, particularly those countries that are more comparable in context. Singapore has been a leader among Small Island Developing States in digital transformation and may offer a practical model to follow. The Government of Singapore defines it Smart Nation vision by the use of digital technologies as a way to empower its citizens to lead more fulfilling lives, create opportunities for businesses in the digital economy, and creating international partnerships to deliver digital solutions at the global level.[13] To drive pervasive adoption of digital and smart technologies throughout Singapore, the government has identified key Strategic National Projects, as key enablers in the Smart Nation drive, under core pillars such as national digital identity, e-payments, moments of life, urban mobility, etc, as shown below.

Figure 1. Smart Nation Singapore Key Milestones[14]



The Government of Estonia, dubbed the most advanced digital society in the world, argues that the process of digital transformation is not about adding a digital layer for society, businesses and governments to interact, but about changing the whole system based on the challenges and opportunities that are unique to each context.[15]As all these examples show, there are multiple definitions, concepts, and approaches available with regards to smart cities and countries, but each of these caution on the importance of tailoring concepts to local realities. With this context in mind, a definition or concept that is appropriate for Grenada should take into account its vulnerability to external shocks, the size of its population, and its reliance on tourism and agriculture as main drivers of economic growth. For this reason, a Smart Grenada leverages the power of data and digital technologies to strengthen the country's resilience, enhance sustainability, and improve the wellbeing of its people by creating economic opportunity that's led by an agile and efficient government.

This report seeks to provide the Grenada with a basic understanding of its strategic value with regards to digital technologies, and their potential to improve resilience, livelihoods, and the economy. It is a vision that Grenada can choose to adopt in its transformation journey to become a Smart Small State and provides the basis for this process. As this report outlines, Grenada has already undertaken steps in this direction, with digital and smart initiatives across government at various stages of implementation. This report aims to provide an overarching vision, definition and recommendations which can help to bring these efforts together in a more connected and unified manner, ideally eventually under a single, existing government unit that should be designated to oversee this transformation. A subsequent step will be to build interest and political will for the vision of a Smart Small State, such as through the implementation of high visibility projects and to further elaborate this vision into an actionable strategy.

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1.2 OVERVIEW OF RESEARCH

What this report delivers is a vision of a Smart Small State for Grenada, including the government's priority areas for digitalisation, identified comparative approaches and good practices around emerging technologies for agriculture and other relevant sectors of Grenada's' Economy, a review an inventory of ongoing initiatives around digital tools being implemented by the government and other stakeholders in Grenada, a rapid analysis of the synergies and complementarities among the existing initiatives with regards to Smart Small States, and it provides recommendations and guidance for implementation. A total of 23 active projects were identified, 12 of which directly related to digitisation/digitalisation, while 9 other projects were related to capacity building and changes to infrastructure to support digitalisation. Another 13 projects were in conceptual stages having not yet officially started. Furthermore, once UNDP's Digital Readiness Assessment is completed in mid-January 2021, Grenada will be in a position to identify projects within the private sector and civil society organisations revolving around digital transformation.

A team was assembled by the UNDP Barbados and the Eastern Caribbean office to write this report, including the Eastern Caribbean Innovation Specialist, the Head of UNDP in Grenada, a national consultant, and an international consultant. The national consultant was tasked with assembling an inventory of ongoing initiatives and performing a rapid analysis of project synergies and complementarities in partnerships with UNDP's Chief Digital Office in New York. The international consultant was tasked with bringing together the perspectives, projects, and inputs from the team to craft the overall vision of the project.

The majority of the research was conducted via desk-based research available from online sources including government websites, UNDP-available information on relevant projects applicable to the context of Grenada, and websites from international organisations and foreign governments. A total of twenty-six interviews and phone calls were held with select Stakeholders from the Government, and additional consultations were held with members of UNDP's Global Centre for Technology, Innovation and Sustainable Development in Singapore, UNDPs Chief Digital Office, and UNDP's Small Island Developing States (SIDS) Programme. For a full list of the interviews please refer to Annex 1.

2. VISION

Smart Grenada is a holistic approach to transform Grenada's government, society, and economy by 2035, and to leapfrog towards a more sustainable, inclusive, and prosperous future by:

- Integrating approaches to disaster preparedness, resilience, and natural resources, with emerging technologies and data for sustained economic growth
- The digitisation of government workflows and processes
- A government-led commitment to innovation, iteration, and experimentation
- Connecting people to government, financial services, and markets via online tools
- Building skills, fostering innovation, and enabling livelihoods via digital tools

Grenada is already living the consequences from flooding, degradation of the environment, extreme weather, and weakened livelihoods. Climate change is no longer a future threat, it is a reality. Likewise, COVID-19 global restrictions have also affected the Grenadian tourism sector. As 2020 has shown, disaster can strike at any moment, and the ability of people to recover will be a crucial pillar of Grenada's journey to become a SSS. As Grenada transforms into a smart society, it will do so with citizens and institutions that are adaptable to external shocks caused by natural or man-made crises. Individuals will be able to emerge from the aftermath of a hurricane or co-exist with a once-in-a-century pandemic, knowing that they have the means to receive immediate financial assistance from the government or relatives living abroad. The widespread adoption of financial services will be facilitated by an agile government that leads by example, uses data as a driver of economic transformation, and has fully digitised and streamlined its workflows and processes. The backbone of this process will be the digitisation of the national ID system, and by increasing its e-payment penetration rate, followed by a full range of public service online delivery.

As the government leads the transformation of Grenada to become a SSS, it will encourage experimentation and innovation amongst its businesses and citizens. Government bodies will be tasked with designing their own transformation strategies following a national vision, reflecting values of collaboration, efficient service delivery, and data-informed decision-making. The Grenada SmartLab or Innovation Hub will allow Grenadians to exchange ideas on innovative solutions to local problems, prioritizing those that focus on making Grenada climate smart, sustainable, and digitally literate. International speakers will be invited to provide their expertise to service Grenada's journey to becoming a SSS. Overtime the Lab could evolve into a platform to find implementing partners, recruit employees, or envision future projects. The most promising ventures will be provided with funding and coaching to test their solutions, and other ideas will be stored in an "Ideas Bank" to develop in the future.

As Grenada embarks on this transformation journey to become a Smart Small State, milestones and targets should be set by the Government in order to achieve the vision of a Smart Small State Grenada by 2035. Periods of 3 years should be set so the Government can reconvene and evaluate which milestones have been met, which areas need improvement, and ideas and actions to meet lagging milestones.

By 2035 Grenada will be a smart society with a digitally literate population that is adaptable and resourceful in the face of external shocks. Grenadian citizens will enjoy high levels of trust given the efficient delivery of public services, and an enabling environment that allows businesses and new ideas to thrive, creating thousands of jobs in the process. As the world's nations begin to live the consequences of climate change, Grenada will have the capacity to export climate-smart solutions on disaster preparedness, tourism, agriculture, fisheries, and coastal management, given the integrated approach it took to creating a Smart Small State with resilience, technology, and innovation as its foundation.

Vision Statement for Smart Grenada:

Smart Grenada leverages the power of the Blue, Green, and Digital economies to be the most resilient, sustainable, and smart society in the Caribbean (EC, World)

The Smart Grenada vision will deliver economic growth and development. Harnessing digitalisation as an enabler will yield increased productivity in existing areas including:

- Tourism
- Administration
- Commerce
- Education
- Agriculture

It will also open new developmental opportunities in:

- Financial Services
- Creative Arts
- Digital Media
- IT and application development
- Medical Research
- Blue economy Disaster Preparedness and climate change adaptation

3. PILLARS

In determining a vision that was relevant to Grenada, it is important to establish certain criteria or pillars to ascertain where Grenada's strategic advantages lie, but also being cognizant of Grenada's contextual realities. In this process, we considered Resilience, National Digital Strategies, and Digital Society as the core pillars of any transformation journey to take place in Grenada.

3.1 Resilience

Resilience refers to the ability of the country and its citizens to bounce back and recover from external shocks. Even though special attention is paid to extreme weather events and Climate Change threats, the focus on resilience refers to any type of external shock that has the potential to erode livelihoods, this can include man made crises, natural disasters, economic recessions, or a global pandemic. Under this conceptualisation, individuals should have the tools to get back on their feet after an emergency strikes, which includes having the financial means to meet their basic needs and having access to the internet in order to receive information updates and to communicate with their loved ones. If individuals have the means to withstand external shocks of any kind, it also means that businesses and society will be able to recover faster. Under this view of resilience, we see a SSS as one that leverages digital tools and data to strengthen disaster preparedness and climate resilience, and one that maximises the natural resources at hand in a sustainable way with the aim of improving livelihoods.

Disaster Preparedness:

The best way to prepare for a disaster and avoid the loss of life is through early warning systems. For example, countries like Chile and Japan have long suffered the devastating effects from earthquakes and tsunamis. Both countries have created high-tech early warning systems that consist of networks of sensors near fault zones that alert coastal populations when an earthquake occurs. An alert is sent to land that is then broadcasted via mobile networks, notifying people to seek higher ground as soon as possible. [16]

Technologies like the Internet of Things (IoT) can be leveraged by the government to obtain data to inform their decision making. Sophisticated sensors can be placed in strategic locations to get accurate real time data on events unfolding and be used to inform the population to seek shelter. Sensors can be used to measure temperature changes, water quality, smoke, humidity, and other changes to environmental conditions. The data can also be fed to first responders and government decision makers to get accurate real information on how to coordinate their disaster response and allocate resources. These IoT sensors can also be placed in critical infrastructure such as bridges, ports, airports, and levees to monitor risk factors that could cause a potential disaster. Lastly, in the wake of a disaster, the data can also be used to provide individuals with mobile phones with accurate information that can help them make better decisions.[17]

Climate Resilience:

The United Nations Office for Disaster Risk Reduction has identified ten essential principles that should be undertaken to build and maintain resilience, these include: planning for future scenarios, pursuing urban development and design, safeguarding natural buffers to enhance ecosystems' protective functions, strengthening institutional capacity for resilience, strengthen the societal capacity for resilience, and ensure

effective disaster response amongst others.[18] In the case of Grenada, coral reefs and ecosystems are essential to their fishing industry, as well as being main drivers of the tourism industry. Digital technologies can be leveraged to monitor reefs as well as local marine plant and wildlife populations. By using digital technologies for coastal management, Grenada can maintain these natural buffers that protect the Island from land erosion and flooding. The UNDP Barbados and the Eastern Caribbean Blue Bot project uses semi-autonomous robots to monitor and map Caribbean coral reefs using artificial intelligence (AI) and evolving technologies.[19] As will be further explained in section 6 of this report, Grenada should replicate the BlueBot project and use it as a tool in its coastal management strategy. This project should be used as a flagship project to signal to other government bodies, the private sector, and civil society on the benefits of using emerging technologies that leverage Grenada's natural resources. More information will be provided on the BlueBot project in section 6 of this report.

Grenada is already working on an ambitious project to strengthen its resilience by building and updating its infrastructure, taking into account the threats of extreme weather, land erosion, and degradation of the environment. The Government has partnered with NYU's Marron Institute of Urban Management on the Climate Smart Cities Initiative, which includes nine projects that address different aspects of climate change resilience and adaption. The initiative contemplates workshops and partnerships between the public and private sectors to build or update the infrastructure to strengthen Grenada's climate change resilience.[20] More information will be provided on the Climate Smart Cities initiative in section 5.2 of this report

Green/Blue Economy:

The most important aspect that was revealed in consultations with the current project stakeholders was the need for individuals to get back on their feet after external shocks to the system. This refers to the ability of individuals to have the financial means to recover after any crisis. While this assumption implies elements of financial inclusion that will be discussed in the following section of the report, it also merits an analysis into the jobs available at the moment in Grenada and tacking stock of the sectors that drive Grenada's economy: tourism, agriculture, and fishing. When considering resilience, it was necessary to integrate it into Grenada's economy, which is mostly dependent on the available natural resources at hand. With this context in mind, a valid assumption is that resilience in Grenada is inextricably linked to agricultural and maritime resources. For this reason, we consider two concepts of the economy as central to the resilience pillar, the Circular Economy and the Blue Economy. The two concepts are not mutually exclusive.

The Ellen MacArthur Foundation states that the circular economy "*is based on three principles: Design out waste and pollution, keep products and materials in use, and regenerate natural systems*".[21] The World Bank defines the Blue Economy as the range of economic sectors and policies that together can determine if the use of oceanic resources is sustainable.[22]

Blue Economy

- Provide social and economic benefits for current and future generations
- Restore, protect, and maintain the diversity, productivity, resilience, core functions, and intrinsic value of marine ecosystems
- Be based on clean technologies, renewable energy, and circular material flows that will reduce waste and promote recycling of materials

Source: The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries – World Bank

It is worth noting that both conceptualisations of the Circular Economy and the Blue Economy align with Grenada's National Sustainable Development Plan 2020-2035 (NSDP), where there is a subsection highlighting the need for Grenada to embrace the Blue Economy to maximise the potential of the tourism and fishing industries, as well as promoting other activities such as aquatic sports, marina services, and marine academic research. The NSDP also highlights the need for Grenada to transition to a Green Economy, which relates to synchronising economic activity and environmental sustainability, aligning perfectly with the concept of the circular economy.[23]

An integration of both definitions can help contextualise how emerging technologies can be leveraged to increase resilience in Grenada by improving the livelihoods of its people, while optimising the use of natural resources. For example, emerging technologies can be leveraged to maximise the production of key goods and products. The Food and Agriculture Organisation (FAO) of the United Nations identifies several use cases for Blockchain technology in agriculture, including agricultural insurance systems, land registrations, fisheries, and forestry[24]. Olyver Wyman coined the term Agriculture 4.0, stating that agriculture practices need to use science and technology to look at both supply and demand aspects of the supply chain in order to deal with issues of food scarcity. New farms will use technologies such as sensors, devices, machines, information technology, robots, drones, GIS, GPS, and others in order to maximise productivity.[25] It's important to note at this point that we do not intend for technology to automate farmers. The focus of this pillar is livelihoods, for this reason new technologies will work side by side with farmers who know best how to farm the land. Technology should be seen as an aide to farming and as a way to optimise practices and make farms more efficient and sustainable. However, it is important that when Grenada embarks on this journey it should communicate the need for change and offer avenues of training so people can better adapt and learn new traits and raise their human capital in order to better integrate into working with emerging technologies. For Grenada to maximise the production of its local resources, an analysis should be conducted with regards to the agricultural products considered to have the best export potential. The analysis should be

demand oriented, with the aim of ascertaining how much is needed to guarantee internal consumption and how much can be exported.

Furthermore, echoing back to the Blue Bot project mentioned above, digital technologies coupled with Artificial Intelligence (AI) and Machine Learning algorithms can also provide real-life data and information on the development of the local marine and wildlife population. For example, if one species is being overfished, the Government could issue a temporal ban on specific fisheries, allowing them to replenish and instead incentivising the fishing of other species. This could pave the way for sustainable fishing on the island. One possibility is for the government or a local tech provider to design an app that has the entire repertoire of fish species surrounding the Grenadian coast. The app could let fishing boats know which fish species are available for fishing and which are currently on hold. Fishermen could also provide real-time updates from the sea, based on their daily catches. This whole process is just the beginning of what could be a complex value chain that is tracked and traced via emerging technologies, creating a more cost efficient, sustainable, and transparent supply chain in the fishing industry.

Use cases of data obtained from marine sensors and semiautonomous submarine robots

- -Early warning system
- -Fisheries management
- Warning of invasive species
- Safeguarding natural buffers to enhance ecosystems' protective functions – Coral reef management
- -Protecting maritime borders
- -Detection of water pollutants
- -Provide information on marine environments for academics (Ie. Marine Biologists)
- -Provide information on diving sites and local species for tourists interested in scuba diving and other aquatic sports

Natural Digital Strategies refers to the digitisation of government workflows, as well as the creation of new ways of working for all government ministries, agencies, and employees. We also include in this pillar the digitisation of public service delivery, enabling citizens to connect and interact with the government online. However, the most important aspect of this pillar will be the Government's commitment to digitisation via a change in culture that will allow it to adapt and manage change, innovate and experiment, and ultimately lead the journey to a Smart Grenada.

Vision and Culture Change:

On September 2020 Dr. The Rt Hon. Keith Mitchell, Prime Minister of Grenada, made a public call to the 12 members of the Caribbean Telecommunication Union (CTU), to craft a new digital transformation strategy for the Caribbean. The Prime Minister spoke of the importance of enhancing public service delivery via online platforms and creating a platform to exchange knowledge and other innovations across the region. The Government of Grenada is ideally positioned to undergo a transformation into a SSS, based on the Prime Minister's signalling that such a change is necessary for the region's economic growth. Even though this is a process that involves all sectors of Grenada, the Government should take a bold step in leading this transformation to a SSS.

The conversations held during the research phase for this project, highlighted an urgent need for culture change if the government was

going to succeed in their transformation towards becoming a SSS. Several Grenadian stakeholders were adamant in mentioning that government culture needed to change in order to embrace and reap the benefits of new technologies. The government should birth a new mindset that has technology and data intelligence as one of its core foundations. Research by the Boston Consulting Group shows that in a study of 40 digital transformation companies, those that focused on the culture change were five times more likely to succeed and achieve successful performances in comparison to those that neglected culture.[26] Furthermore, Deloitte's *Future of Risk in the Digital Era* report cites a digital transformation failure undertaken by a government agency that tried to automate a financial system but did not work on reinforcing the cultural values of transparency, accountability and willingness to experiment amongst its employees.[27]

Successful transformation to smart cities around the globe have all referenced the need and importance of culture change leading the transformation journey, instead of the technology driving the change (See figure below).

On Culture Change for Smart Nations

- *"To enable a culture of innovation & experimentation, facilitate innovation by the public and private sector, we need appropriate policies and legislations, and support for research and co-creation"* **Smart Nation Singapore**
- *"For us, e-Estonia has led to creating a society with more transparency, trust, and efficiency. We have learned that developing e-solutions is not merely about adding something (a digital layer) but changing everything."* **e-Estonia**
- *"Digital is about more than improving IT systems and processes. In the broadest sense, it means doing things differently in an increasingly connected world -using new mindsets, skillsets, technologies and data to benefit people, government and the economy"* ***Digital Government New Zealand***

For this reason, before Grenada embarks on a transformation journey to become a SSS, there should be an explicit commitment to change the government culture and mindset. Calum Handforth, Smart Cities expert at UNDP's Global Centre for Science, Technology, and Sustainable Development in Singapore emphasises that three things need to drive the culture change: there should be a political champion at the highest level of government to lead any culture change effort, a mid-level team composed by various members of government to operationalise a strategy that drives culture change, and lastly, the culture change strategy should be embedded in the system in order for it to survive political administrations and keep the engines going. The Organisation for Economic Co-Operation and Development (OECD)

highlights six dimensions of a digital government in *The OECD Digital Government Policy Framework,* these are: Digital by Design, Data-Driven, Government as a Platform, Open by Default, User Driven, and Proactiveness[28]. The outlined dimensions in the OECD Digital Government Framework reflect the values of experimentation, data intelligence, adaptability, and resilience that we believe should inform the Government of Grenada's approach to create a Digital Government.

While some aspects of culture change rely on the enabling and regulatory environment with regards to forward thinking policies and laws that enable innovation, experimentation and risk taking, we suggest that any transformation to become a SSS initiative should also require all government ministries and agencies to draft their own perspectives on the process in alignment with the central government. Independent government agencies and bodies are best suited to identify how to create new values and norms that encourage smart transformation in their agencies, while also making sure they are able to uphold their current mandates and missions. The challenge here will be for the government to skilfully coordinate actors, implement initiatives, and fight institutional inertia to change. For this reason, any whole-of-government (WoG) approach to transform into a SSS will necessitate a change management process that is focused on communicating to government employees the need for the change, and the need for employees to update their skill sets (and offering training avenues for this purpose).[29]

Furthermore, as the Government of Grenada embarks on a transformation process into a SSS, it should integrate values of ideation, experimentation, and innovation to its core. Given Grenada's size, it is ideally positioned to use smart city approaches, allowing it to be more nimble and use innovation and experimentation to solve its local challenges. The change in government culture should underpin innovation as the core value.[30] Lastly, as Grenada embarks on this transformation into a SSS, the Government should make this commitment explicit with a national digital transformation agenda, defined by the Digital Impact Alliance as "the documented and explicit vision, mandate, goals, agenda, priorities, strategies, and plans for how digital transformation will be realised at the national level, as well as the actors, process, and outcomes involved."[31]

Digitisation of Government Workflows:

Digitising government workflows and processes refers to the notion of having governments being able to access critical information online, efficiently communicate online, and being able to make decisions and grant authorisations online in real-time. In short, it is the application of Information and Communication Technologies (ICTs) in government operations.[32] Having digital government workflows is a steppingstone into having a fully functioning digital government, which is defined by the OECD as "the use of digital technologies as an integrated part of governments' modernisation strategies, to create public value".[33]

It is important to note that digital government and e-government are not the same thing. E-government refers to the action of digitising analogue methods and processes, while digital government refers to exploiting new opportunities introduced by digital transformation to enable a positive realignment of policy and services between government agencies and its citizens.[34] The recommendation of the team is that the Government of Grenada should begin the process of leapfrogging into a fully functioning digital government, in order to be able to lead the country in its journey to becoming a SSS.

Grenada has already begun the process of digitising its government workflows and processes. In March 2020 the government announced a series of reforms to improve efficiency of the decision-making process, including launching the E-Cabinet system, which allows for the inclusion of evidence and analysis to proposals submitted by government ministers. The system also allows ministers to conduct meetings online and to issue decisions remotely.[35] This first step is essential given that it shows that if there were to be a natural disaster, or if for example government officials couldn't meet given the COVID 19 pandemic, there is a functional system in place that enables government officials to keep working, coordinating, and making decisions on a real time basis.

Furthermore, the Government of Grenada is working with the World Bank on the *Digital Government for Resilience Project (DG4R)*, as was revealed by our consultations with national stakeholders. The project has the objective of improving the efficiency, usage, and resilience of the Ministry of Infrastructure Development, Public Utilities, Energy, Transport and Implementation, and is also working towards establishing legal and regulatory foundations to enable information sharing and collaboration amongst government agencies.[36] Moving forward, Grenada needs to design a Digital Government strategy integrating initiatives such as the E-Cabinet System and DG4R project, that pave the way for fully digitised government pathways.

Digital Identity:

The issue of legal identity is highlighted in target 16.9 of Sustainable Development Goal (SDG) # 16: *Promoting peaceful, inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.*[37] *Target 16.9 states that* legal identity for all, including birth registration should be a achieved by 2030. Legal identity is a human right, and the ability to guarantee this for all individuals has increased since the adoption of digital technologies.

As we mentioned above, Grenada should undertake the steps to leapfrog into a digital government. As the country begins this process, having a digital identification system will greatly improve the efficiency of public service delivery amongst its citizens, and should be considered a key step into having a fully functioning digital government. McKinsey defines a digital ID as a "foundational set of enabling technologies that can be pivotal in a wide range of interactions between individuals and institutions."[38] The World Bank's *Identification for Development Programme (ID4D) Practitioners Guide* focuses on guiding policy makers on implementing digital ID systems that provide individuals with proof of their legal identity, which is what is commonly required of individuals to access basic services, rights, and protections. This is something known as foundation ID systems which include civil registries, national identifications, and population registers. [39] As our consultations revealed, if the Government ever needs to reach people in the aftermath or a disaster, or have the means to deliver financial assistance, having a digital ID that feeds a national population register is an essential step for Grenada to become more resilient. The World Bank ID4D programme could be a potential programme to implement a national digital ID system in Grenada.

It's important to note that there are different types of digital IDs, and while the focus of this report is not to do a deep dive on this subject, it is worth noting that another type of digital ID system, in addition to the foundation ID systems explained in the paragraph above, is the functional ID system. Functional ID systems have the function of managing the identification,

authentication, and authorisation for specific sector use-cases, which include voting, taxation, social protection, travel and much more.[40]

As Grenada embarks on this transformation process to become a SSS, it should take stock of its current legal identity system and perform a stakeholder analysis on all the actors that coalesce around the subject of identity. As the ID4D report emphasises, in any jurisdiction there are several government and private sector identification systems that make up the whole identity ecosystem. Each ecosystem is unique and has multiple actors that all have different responsibilities and interests, making the identity ecosystem complex and unique to each specific context.[41] For this reason, when Grenada begins this process it should do a complete ecosystem mapping of all the actors and entities that comprise its identity ecosystem, in order to better understand how to move forward in creating a digital ID for its people, and in creating a digital ID ecosystem that also works in favour of an enabling business environment.

Recognizing that the identity ecosystem is complex, another relevant framework for the creation of a digital ID has been led by the ID2020 Alliance, which advocates a market-based approach to solve identity challenges between the government and the private sector. The ID2020 Alliance believes that in order to get digital ID systems right, countries should be careful of the values that are associated with the system.[42] For example, in 2018 it was revealed that India's digital ID system Aadhar had cyber security vulnerabilities that could have resulted in identity and data breaches. Likewise, transparency and privacy should be the underlying principles of any digital ID system, preventing criminally intent actors or authoritarian regimes from using these systems to cause harm to populations.[43]

As mentioned in the beginning of this section, the most important thing to enable a whole-of-government transformation process is a change in culture, and a vision to use digital in inclusive and experimental ways that benefit society. The values of ideation, inclusivity, experimentation have been at the core of the transformation strategies of countries like Estonia, Singapore and New Zealand, which all have successful digital governments. The values that will underpin the transformation of the Government in Grenada, should also be applied to the digital transformation process of Grenada's legal identity system, with the aims of creating a digital ID that is safe, secure, and inclusive.

Digital Government Services:

Consultations with Grenadian stakeholders revealed a pressing need for individuals to be able to receive financial assistance from the Government or their relatives in case disaster strikes. In order for Grenada to be more resilient as a country, making sure that citizens have the immediate financial means to meet their basic needs in the aftermath of a crisis, is a crucial point that should be addressed in the transformation of the country to become a SSS. Interviewed stakeholders explained that the government should increase its e-payment penetration rate or debit card penetration rate, as a way for people to get funds and be able to withdraw them to cover their needs, without having to travel to receive a check or cash voucher. This issue is directly linked to financial inclusion, but also sets the scene for a wider discussion on access to government services, and the trust that people place in government services.

Before the Government embarks on the transformation of the country to a SSS, building an adequate picture on the interaction between citizens and the governments will be a crucial point in designing a transformation strategy. The

United Nations E-Government development Index (EGDI) assesses the development of e-governments at the national level, based on data collected by the International Telecommunications Union (ITU), the United Nations Educational, Scientific and Cultural Organisation (UNESCO), and the United Nations Department of Economic and Social Affairs (UNDESA). The EGDI ranks the UN's 193 Member States on their capacity to use ICTs to deliver public services and is built with data provided by three other indices: The Telecommunications Infrastructure Index, the Human Capital Index, and the Online Service Index. Additionally, the EGDI also features a supplementary E-participation Index that measures Member States use of online services for outreach purposes and to bring citizens into decision making processes.[44] Together the EGDI and the E-participation index, coupled with UNDP's Digital Readiness Assessment, which will be explained in further detail in section 7 of this report, are useful tools that the Government of Grenada can use as a snapshot of where it stands in its transformation, and to benchmark its transformation journey to become a SSS. It's important to note that the EGDI uses the term e-government and digital government interchangeably and makes no distinction between the two terms. However, as was highlighted earlier under the *Digitisation of Government Workflows subsection,* we believe the terminology and concept that should be adopted by Grenada is one of digital government, signaling the intention to leapfrog with a forward-thinking vision.

Data from the EGDI index (see Table 1) rank Grenada on place 102 among 193 UN Member States and give it a score of High E-government development, that is built by combining the weighted average score of very high human capital, high telecommunication infrastructure, and middle online service. Additionally, Grenada also has been placed in the Middle category of the e-participation index group.

Table 1.

Grenada Snapshot E-Government Development Index		
E Government Development Index (EGDI) Score (0-1)	0.5812	High EGDI (0.50-0.75)
Online Service Index (OSI) Score (0-1)	0.3412	Middle OSI
Telecommunications Infrastructure Index (TII) Score (0-1)	0.5549	High TII
Human Capital Index (HCI) Score (0-1)	0.8576	Very High HCI
E-Participation Index (EPI) Score (0-1)	0.3333	Middle EPI
EGDI Level	**High**	
Rank EGDI (193 Total)	**102**	

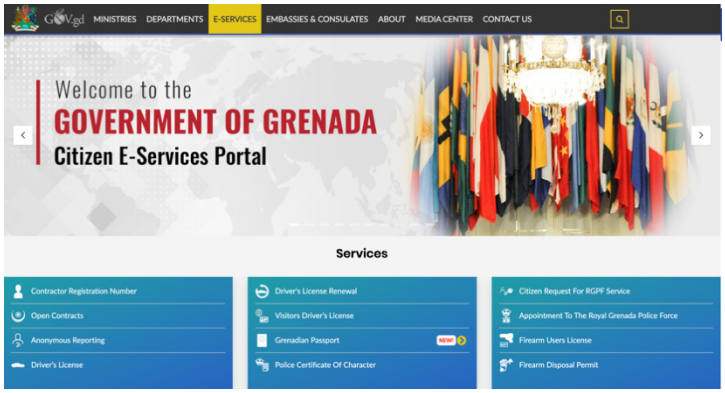
Source: Adapted from UNITED NATIONS DEPARTMENT FOR ECONOMIC AND SOCIAL AFFAIRS. DESA, UNITED NATIONS E-GOVERNMENT SURVEY 2020

The results from the EGDI suggest that Grenada is well positioned to undergo a transformation process to become a SSS, given its high scores on human capital and ICT infrastructure. These are encouraging signs for Grenada and solid starting points. However, in the online service index and e-participation index scores Grenada has been placed in the Middle categories, suggesting that more work needs to be done with regards to the provision of online services, and in informing, communicating, and encouraging citizens to use online services. For additional information on

Grenada's score on the EGDI, please refer to Annex 4.

Grenada has already developed a solid foundation for the delivery of online government services with the creation of its Citizen – E-Services portal. Citizens can go online and access a variety of resources including: Birth certificates, death certificates, building permits, medical & dental council registrations, investment services, social support, fishing licenses, business tax ID, amongst many other services.[45] Two of the most important services offered in the portal include the eTax Filing system[46], where citizens and businesses can file taxes online and request tax records, and the Online Payment portal,[47] where payments required for government permits and licenses can also be made online. Together, these two services, coupled with all the other resources in the E-services portal are a solid foundation that Grenada has in its SSS transformation journey.

Image 1.



Source: Grenada Government E-Services Portal, available at: https://gov.gd/services-page

The findings from the EGDI suggest that more work needs to be done in increasing the online service offering on behalf of the government, and in communicating the existence of these services to Grenadian citizens. Moving forward, the Government should conduct a root analysis to understand why greater use of its online services is not occurring, and then create plans to mitigate and increase usage by citizens. Any potential strategy should acknowledge that there should be a communication and marketing effort that reaches all citizens, in particular those living in rural areas and removed from urban centres. As solid a foundation that Grenada has with the creation of its e-services portal, the effort remains in making sure that services are used by citizens, and most importantly that citizens are able to understand and use online services.

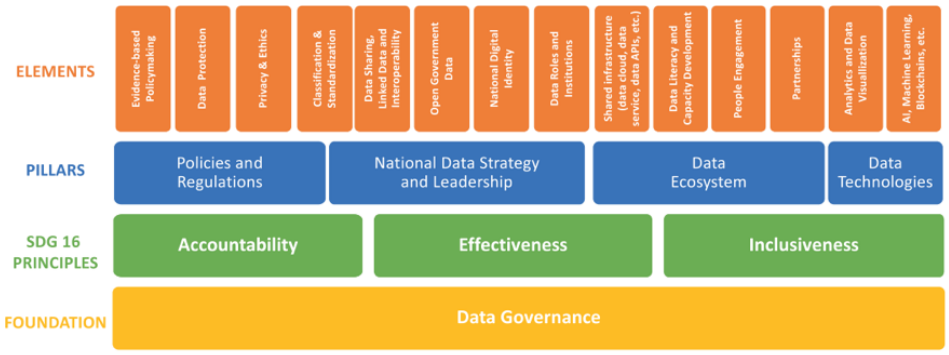
Data Intelligence:

Consultations with local stakeholders revealed that Grenada lacks an authoritative data management platform. Even though there is a central government statistical office responsible for gathering, analysing, managing, and publishing online information, it does not meet the criteria to be considered a data authority agency. The OECD Digital Government Policy Framework, considers a data driven public sector, as one of the six dimensions of successful digital governments.[48] The UN's E-Government Development Index shows that the number of governments that have set up open government portals (OGD) increased from 46 in 2014 to 152 in 2020, evidencing a global trend of governments adopting data as drivers of economic development.[49]

The purpose of this report is to help Grenada craft a SSS vision that is ambitious and forward thinking, and leverages the power of data and digital technologies to strengthen the country's resilience to external shocks. One of the main vulnerabilities Grenada faces is extreme weather and other related climate change threats, as was contextualized in the introductory section of this report. Consultations with NYU's Marron Institute of Urban Management revealed that there is no central authoritative data source to inform the public on issue related to sea level rise, and other climate change-related phenomena. This was one of the issues that was first identified in designing the climate change mitigation projects included in the Climate Smart Cities – Grenada Initiative. This finding also coincides with NSDPs National Outcome #7, Climate Resilience and Hazard Risk Reduction, of National Goal # 3 Environmental Sustainability and Security" which identifies that there is no data storage and no data management systems in place at the moment, which determines that a core strategic action to meet said goal is to set up clearinghouse and data management unit in relation to climate change data and update data regularly.[50] Doubling down on the importance that the Government of Grenada has placed on data driven approaches to development in the NSDP, is the fact that several mentions are made to create data driven policies on issues of education, gender, and health.

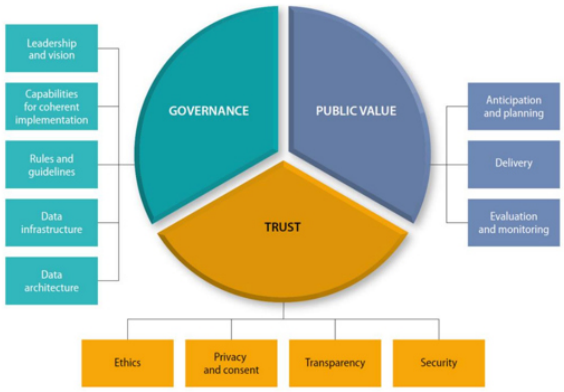
As was highlighted in the previous section, Grenada already has a solid foundation to enable a digital government via the current offering of online services. However, as is outlined in the NSDP, data should be a next step in enabling a more robust digital government that is resilient to external and environmental shocks. Images (2) and (3) offer similar frameworks on how governments can leverage the use of data in their day-to-day operations. The UN's EGDI Survey includes data governance as one of the key tenets of digital government transformation and define it as the "strategic and professional management of data to enable data-driven policymaking and access to information through open government data, among other data access and use priorities."[51] In this report, the concept of data governance is underpinned by four pillars: policies and regulations, national data strategy and leadership, data ecosystem, and data technologies. Having a data governance framework is best suited to address the complex ecosystem of actors, policies, regulations, and laws that coalesce on issues related to government data.[52] The OECD's report, *The Path to become a Data Driven Public Sector,* establishes governance as a pillar, as well as public value and trust. Each of these pillars have different values and actions that should inform the use of data on behalf of governments. In this case, the pillar of trust relates to the enabling environment, including values of privacy and security, the pillar of governance deals with the infrastructure and human capabilities to handle data, and the public value pillar is tasked with the use of data as a driver of economic transformation.[53]

Image 2:



Source: UNITED NATIONS DEPARTMENT FOR ECONOMIC AND SOCIAL AFFAIRS. DESA, UNITED NATIONS E-GOVERNMENT SURVEY 2020

Image 3:



Source: The Path to Become a Data Driven Public Sector. OECD 2019

Both approaches offer a valid framework that governments can use to integrate data into their SSS transformation. It is important to note that the subject of data is complex, and as evidenced by these two frameworks, requires more in-depth analysis into the ecosystem, laws, policies, and regulations, in order for Grenada to design a data regime or framework that is suitable to it needs.

UNDP's SIDS programme offers a more practical approach that takes into account the local realities of SIDS and the challenges with regards to external and environmental shocks, and hence could be a potential blueprint for Grenada's data regime framework. UNDP SIDS states that data should be the backbone of any resilient digital government, and should follow four steps to achieve this goal: digitise data, implement a data storage strategy to mitigate data loss and risks, cooperation in digital

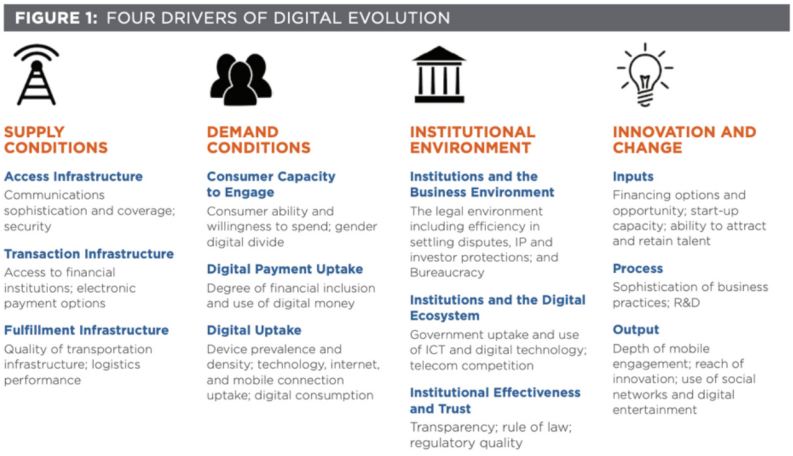
infrastructure management, and joint policy planning across SIDS.[54] The digitisation of the data refers to having all paper-based and analogue data digitised, the data storage strategy refers to having safe data storage capacities with mechanisms to prevent data loss, cooperation in digital infrastructure refers to having shared regional data infrastructure hubs by region, or having the data saved in remote locations to avoid data loss due to natural disaster. Lastly, joint policy planning across SIDS refers to having mechanisms to exchange information, shared data storage centres to allow for affordability, or joint platforms to monitor weather events and other climate related phenomena.[55]

Bearing in mind that the vision of a SSS for Grenada should be as forward thinking as possible, the concept of data intelligence should be a core part of Grenada's transformation to become a SSS. Data intelligence refers to "the practice of using artificial intelligence and machine learning tools to analyse and transform massive datasets into intelligent data insights, which can then be used to improve services and investments."[56] Even though there is still much work to be done before data intelligence becomes a reality, having that vision in place can help establish the foundations that Grenada should follow in order to make data a driver of economic development.

Enabling Environment:

Consultations with Grenadian stakeholders revealed that even though some conditions have been improved by the Government with regards to having an enabling environment to allow a transition to become a SSS, there was still a lot of work to be done. Tufts University provides a pertinent framework to measure the enabling conditions for a SSS transformation to happen in its *Digital Evolution Index,* which states that digital evolution has four key drivers: supply conditions, demand conditions, institutional environment, innovation and change.[57]

Image 4:



Source: Digital Evolution Index 2017. The Institute for Business in the Global Context, Tufts University. Available at: https://sites.tufts.edu/digitalplanet/files/2020/03/Digital_Planet_2017_FINAL.pdf

Image (4) shows a relevant composition of drivers, which together create an environment in which digital transformation can hinder or thrive, depending on the prevalence or not of

enabling conditions. The supply conditions deal with all aspects of having access to communications, access to the internet, the ability to have a bank account and to make payments online, and the fulfilment infrastructure required to enable a successful e-commerce industry. As described in the introductory section of the report, 59% of the population in Grenada use the internet, and there are 102.1 mobile phone subscriptions per 100 inhabitants. At the moment, people in Grenada are primarily connected online via a mobile device, which means that there is a working telecommunication infrastructure - a required condition for an enabling environment. Furthermore, this year will see the completion of the Caribbean Regional Communications Infrastructure Programme (CARCIP), which has the objective of expanding connectivity and internet services across community centres and schools in Grenada and other Eastern Caribbean countries, enabling higher bandwidth and 4G/LTE services (more information on the CARCIP project is available in section 5.3 of this report). The World Bank's Global Findex Database is the most comprehensive database available containing indicators on financial inclusion, financial health, amongst others. Information on Grenada is limited, but as of 2017, it listed that there were 44.1 ATMs and 25.2 bank branches available per 100,000 inhabitants in the country.[58] Given that no other financial inclusion indicators are available for Grenada in the Global Findex database, these numbers could be used as proxies to assess the current state of financial inclusion in the country, and suggest that more efforts should be undertaken to increase the transaction infrastructure, or the availability of ATMs for individuals to obtain cash when necessary. The government has set-up an e payment platform, which is a welcome first step in having a transaction infrastructure that works in the information age. Additionally, the World Bank's DG4R project is also working to enhance and integrate the electronic payment system in order to make it more user friendly, and to have the same interphase for the tax administration, customs administration, and financial management information systems, which as of now are vulnerable to fraud. These actions are also geared in reducing the amount of check and cash deposit payments received by the Government. [59]

The demand conditions relate to people's capacity to spend online, the degree of financial inclusion and use of digital money, and the uptake or prevalence of connected digital devices. As explained above, people are connected and using the internet in Grenada given the indicators on mobile phone ownership and connections to the internet, the main challenges at the moment are financial inclusion and education. The Government should make an outreach effort to inform citizens of the ability to make payments online, but also on educating them on how to navigate the e-service portal. For this to happen, increasing financial inclusion should be a strategic action in a future SSS strategy that follows the vision outlined in this report. Having people connected to the financial system, and then having people be engaged in the financial system will be an education and advertising challenge that merits its own analysis. However, this is a necessary condition in order to drive the digital economy (covered later in the report) in the country and create a booming consumer base. More importantly however, having people engaged in the financial system is directly related to the core pillar of resilience outlined in this report, which is linked to citizens ability to get financial assistance from the government or relatives in the immediate aftermath of a crisis. This process should be considered a cross-sector partnership with the existing financial institutions in Grenada, inviting them to innovate on how to get more people to

transact online, and should also be an invitation to new market players to devise solutions to get people to pay online. More information on the role of the private sector will be included in the conclusions section this report.

The institutional environment includes all the legal mechanisms available to solve disputes, providing investor protections, the use of new technologies in government processes, and the rules and values of transparency, accountability, and standards on the institution's that govern Grenada. The World Bank's Ease of Doing Business ranks 190 economies on their ease of doing business. A high ranking means that the countries' regulatory environment is more business enabling, and more conducive to start and operate a local business. In its 2020 version, the rank is led by New Zealand, followed by Singapore, two countries that have undergone successful transformation processes.[60] In 2020, Grenada ranked 146 amongst 190 economies, and got a doing business score of 53.4, the same score it obtained in 2019. The ease of doing business scores are reflected on a scale of 0 to 100, where 0 is the lowest possible score a country can obtain and 100 represents the best performance.[61] This analysis suggests that Grenada has not improved nor decreased in its ease of doing business over the course of a year. The findings suggest that Grenada needs to create a more optimal environment for business to thrive in the country and needs to draft laws that protect investors and enable better credit seeking mechanisms in the country. According to the Ease of Doing Business Ranking, Grenada scores 30 in getting credit, and ranks 152 from 190 countries in this category.[62] It is essential that Grenada work with the private sector in order to increase the ease and access to obtain credit, as a way to nurture innovation and reduce restrictions on new businesses to be created. In addition, when comparing overall Ease of Doing Business Rankings amongst OECS Member States, Grenada ranks the lowest amongst its neighbours, even though other OECS countries rank low in their ease-of doing-business. (See table 2). This finding suggests that in order to foster an enabling environment for new businesses to innovate, experiment, and help Grenada transform into a SSS, it might be beneficial to have a regional approach. This is even more relevant given that OECS countries share the Eastern Caribbean dollar currency. For more information on Grenada's Doing Business ranking and score, please refer to Annex 5.

Table 2.

Ease of Doing Business Ranking OECS States 2020	
Antigua and Barbuda	113
Dominica	111
Grenada	**146**
Montserrat	NA
St. Kitts & Nevis	139
Saint Lucia	93
St. Vincent and the Grenadines	130
British Virgin Islands	NA
Anguilla	NA
Martinique	NA
Guadeloupe	NA

Source: Adapted from World Bank Group Doing Business Rankings 2020. Available at: https://www.doingbusiness.org/en/reports/global-reports/doing-business-2020

A potential framework that Grenada can adopt in order to foster an enabling business environment is to adopt a digital approach to improve the ease of doing business. A good methodology is offered by Tufts University's Ease of Doing Digital Business Index (EDDB), which is built following the World Bank's Doing Business Methodology. In the EDDB's methodology, a good approach for governments to create an enabling digital business environment is to identify potential digital businesses as well as institutional barriers and

boosters to said businesses.[63] Image (5) offers a quick snapshot of barriers and boosters to four different value chains: e-commerce, digital media, sharing economy, and online freelancing. These are examples that Grenada can use to assess how its current regulation can enable on hinder these four type of value chains. However, taking into account the pillar of resilience of this report and the principles of the Blue and Green Economy that are encapsulated under that pillar, the government should review its regulation with regards to the application of technologies for agriculture, fisheries, and tourism, and make sure that it identifies the relevant barriers and the boosters, to enable regulation that enables innovation and experimentation on those key components of the vision.

Image 5:

	E-Commerce	Digital Media	Sharing Economy	Online Freelance
Institutional Barriers and Boosters	**Ease of Fulfillment** Legal framework for consumer protection, registering property, ease of arranging shipments **Ease of Cross-border Trade** Efficiency of the clearance process, time and cost to export/ import goods across-borders, taxes on international trade **Ease of Market Entry** Wholesale FDI regulatory restrictiveness indicator, anti-monopoly policy, regulations on foreign direct investment (FDI)	**Institutional Environment for Creation of Local Content** Tolerance for immigrants, cyber attacks, government spend per capita on public broadcasting networks **Institutional Openness to Global Content** Web Index's Content Blocking Index, Internet shutdowns **Institutional Censorship** Freedom of the Net, Google government removal requests, net neutrality protections	**Government Stance** Availability of ride-sharing at airports, ride-sharing regulations, home-sharing regulations **Level of Security** Crime, violence, against women **Pushback** Taxi union strength, protests and violence	**Transaction Enablers** E-invoicing promotion, received digital payments in past year **Worker Protection** Paid maternal leave, paid annual leave

Source: Ease of Doing Digital Business Index 2019. The Institute for Business in the Global Context, Tufts University. Available at: https://sites.tufts.edu/digitalplanet/files/2020/03/Ease-of-Doing-Digital-Business-2019_2020.pdf

Furthermore, Grenada will have to devise a set of incentives and breakthrough ideas that leverage its strengths with an enabling business environment. For example, tourism is one of the economic drivers in the country that can be leveraged to promote freelance visas for foreigners. Foreigners with high skills could be invited to relocate to Grenada and work remotely for a temporary period of time. One of the requirements of this visa could be to allocate some time to work in projects that advance Grenada's transformation to become a SSS.

With regards to the use of new technologies in government processes as part of an enabling environment, this whole section of the report has focused on providing the government with a vision of how it should leverage digital into its whole operation, in order to become a fully functioning digital government. The most important aspect will be a vision and commitment to innovate that drives all other aspects of change within the government. However, in addition to the multiple strategies already outlined, the Government is already on its way to creating an enabling environment for

its multiple bodies and agencies via the World Bank's DG4R project. For more information on the World Bank's DG4R project, please refer to section 5.3 of this report.

3.3 Digital Society

The last pillar, Digital Society, focuses on the importance and role that civil society will play in Grenada's transformation journey to become a SSS. Digital Society refers to the ability of all citizens to gain the skills to understand and interact via online tools, and subsequently use these tools to find employment opportunities, generate income, and ultimately improve their livelihoods. This section of the report will revolve around the national digital transformation of Grenada defined as "the economic and societal effects of digitalisation as it disrupts and reinvents innovative domains across the economy and society of a country, including government institutions (covered in previous sections)."[64]

Digital Economy:

As was highlighted in the Resilience Pillar section, the NSDP highlights the need for Grenada to embrace the Blue Economy and Green Economy as drivers of development in the country. The Digital Economy is also included as one of the main sources of economic development under the NSDPs vision.[65] Consultations with stakeholders also revealed that this should be one of the main components of Grenada's SSS vision, and hence it's a key part of the Digital Society pillar. The NSDP establishes that a transition to a digital economy should include the development of Grenada's technology infrastructure to modernise the governments services and e-business services and support the creation of a digital Eastern Caribbean (EC) dollar, and provide the capacity building to develop technological applications and innovations.[66] The NSDP has a provided a clear direction of what the digital economy is going to look like in Grenada and underscores three key aspects: a regional approach, a digital currency, and emerging technology applications.

With regards to the use of a digital currency, The Eastern Caribbean Central Bank (ECCB) launched in March 2019 the *DXCD Caribe Pilot Project*, which has the objective of assessing potential efficiency gains, financial inclusion, economic growth and resilience in the Eastern Caribbean countries, by introducing a digital currency. The project enables financial transactions between merchants, consumers, and individuals via the use of smart devices.[67] This proof-of-concept project, if successful, has enormous potential in the region and can drive the creation of multiple businesses that will create livelihoods and economic development in the region. The key aspect that should happen with this project, is that the results of the pilot need to be adequately communicated to all of society and businesses, in order to encourage widespread adoption.

The emerging technology applications of the Digital Economy were also highlighted in the Resilience pillar, were we outlined a SSS vision that integrates emerging technologies to leverage Grenada's natural resources in sustainable ways, and in maximising the tourism, agriculture, fishing, and maritime industry via the Blue and Green economies. Adding to this repertoire of options, the use of emerging technologies in the digital economy, will provide a wide range of services that can drive the transformation processes, by creating solutions for businesses that are looking to have an online presence, or by providing solutions to local challenges. Whereas the Green and Blue economies focus on natural resources related to agriculture and maritime environments, the application of emerging technologies in the Digital Economy can be leveraged to provide quality services at scale, and provide solutions to other pressing problems, including

transportation, security, construction, gig economy, gastronomy, amongst others.

Section 6 of this report contains a list of immediate actionable projects that Grenada can begin implementing, given their demonstrating effect. One of the projects that will be further explained in Section 6 is the Grenada SmartLab or Innovation Hub, that was briefly conceptualised in the vision section. The Centre has the objective of allowing Grenadians to exchange ideas and build enterprises based on providing solutions to local problems, finding implementing partners, and piloting disruptive projects. The Centre can be the birthplace of new ideas, while the proving ground will happen within the conditions enabled by the Digital Economy.

Digital Literacy:

The NSDP establishes building the digital literacy of Grenada as a strategic action of National Outcome #4 of *Broad based, inclusive, and sustainable economic growth and transformation*, and deems this action essential to develop the country's enterprise architecture to support e-commerce activities in the private sector, and the online service delivery of the public sector.[68] For the purposes of this report digital literacy is defined as the ability of individuals to use ICT technologies to find, analyse, create, and communicate information through cognitive and technical skills.[69] In short, digital literacy relates to the ability of individuals to use ICTs for multiple purposes including work, relationships, entertainment, amongst others. The national SSS transformation of Grenada will need digital literacy to be built amongst its citizens, in a way that obeys to the countries' needs and realities.

While the government undergoes a transformation process, it should provide its employees with the necessary skills to navigate and implement this change. However, in the case of the digital literacy amongst society, there should be multiple actors involved in the process, including education bodies at all levels, the private sector, civil society organisations and other relevant actors. It is worth noting at this point, that a clear distinction should be made about the types of skills individuals will need to work. For example, a farmer does not need to learn to code in order to tag a product that will eventually be traced via blockchain technologies. Digital skills can be different and context specific. This is not to say that high level skill building is not important, on the contrary, it is essential for a SSS transformation process, but it does not mean that everyone needs to become a coder or web developer. The most important aspect of Digital Literacy is that Grenadian society should learn to integrate digital tools into everyday aspects of life, whether it be using the government's e-services portal, using a mobile money application to pay for groceries, or using the government's e-payment portal to pay taxes, etc.

The NSDP states that digital literacy should underpin the development of Grenada's Digital Economy.[70] To achieve this goal the use of ICT should be integrated into the education curricula of schools and higher education institutions. Furthermore, businesses should create skill development programmes to train their staff on digital technologies. The NSDP also sees the potential of implementing Technical and Vocational Education and Training (TVET) on ICT, digital technologies, amongst others.[71] TVET projects have become a trend in the world of technology via the implementation of coding bootcamps, defined by the World Bank as "intensive short-term programmes designed to train participants in programming skills to make them immediately employable in entry-level tech positions". These bootcamps combine aspects of vocational training with the structure and intensity of military bootcamps for new recruits, providing trainees with intensive training on the

necessary technical and soft skills required to get a job.[72] Coding bootcamps or other TVET skill building projects can be potential ideas to form new businesses that offer accelerated skill building as their core product. Individuals wishing to learn coding or other skills can go to local providers, enrol on a course and get a certificate. It is important to note at this point that this new model of education will also require a communication effort with established institutions, that might see these disruptive education programmes as a threat to their existence.

Other potential applications of coding bootcamps can be government programmes. For example, the Colombian Government recently launched the programme Youth 4.0, which aims to train 100,000 coders between 2020-2022, with select local training providers in multiple cities.[73] The Grenada SmartLab or Innovation Hub can also serve as a technology training centre, offering different level courses to develop new skills. It is important at this point, that skill-building projects be applied to specific contexts for example in agriculture or fishing, allowing for applied technology development that is contextualized to Grenada and maximising the impact on livelihoods and resilience.

In the end, digital literacy will be one of the most important aspects of Grenada's Digital Society, one of the core pillars of this SSS vision. Digitally literate citizens will drive the transformation of Grenada to become a SSS by engaging online, creating businesses online, and engaging with the government online.

Digital Inclusion:

While Grenada embarks on a national transformation to become a SSS, a gender lens should be incorporated into the strategy. The report *Bridging the Digital Divide* by the OECD states that women and girls suffer additional constraints and barriers to benefit from the opportunities brought on by new technologies. Some of these constraints include lack of or complications to access technology, lack of education and technical literacy, biases, and socio-cultural norms.[74] GSMA, an industry organisation that represents the interests of mobile telecommunication companies worldwide, launched its report *Connected Women: The Mobile Gender Gap Report in 2019,* in which a few key findings were emphasized regarding the state of the digital gender divide. Amongst the main findings one that stands out is the fact that "across low- and middle-income countries, 313 million fewer women than men use mobile internet, representing a gender gap of 23%".[75] Whereas the aforementioned findings are mostly concerned with the use of mobile phones, evidence also shows that women are underrepresented in jobs in the STEM (Science, Technology, Engineering, Math) field. Research by the World Bank indicates that in 80 economies women made up 40% of the workforce in ICT jobs in only 12 countries.[76]

The previous findings show a general trend in which women are not participating in the digital economy as much as men. These findings represent a general reality of the world of technology that permeates borders. The transformation to become a SSS will require taking stock of the contextual realities in the country and analysing the gender dynamics in place. The NSDP makes gender and inclusion a priority, as encapsulated in National Outcome 3 # - "*A resilient, Inclusive, Gender-Sensitive, and Peaceful Society,*"[77] and makes a call for the design of all national strategic plans to incorporate a gender lens.

McKinsey's report *Closing the Gender Gap through Philanthropy and corporate social responsibility* suggests that companies can increase access to tech jobs for women by providing computing learning education

programmes early on women's development, creating a sense of belonging to a "tech community" which includes a network of mentors, building women's confidence abilities, and providing access to technology and computer experiences.[78] This finding is also supported by the World Bank's Research in its *Women Wavemakers* Report, that advocates for women centred alternatives as a way to bridge the gender gap and provide more safe and context-specific training avenues for women in technology.[79]

Making the SSS transformation of Grenada an inclusive process will require the collaboration, inputs, and willingness from the government, civil society, and the private sector. It is an essential step in getting the process right, fostering a new generation of entrepreneurs and innovators, and most importantly making Grenada and all its citizens more resilient to external shocks.

4. FOUNDATIONS OF A SMART SMALL STATE GRENADA

4.1 National Sustainable Development Plan 2020-2035

The development of this project has been framed taking into account the Grenada National Sustainable Development Plan (NSDP) 2020-2035. The NSDP encapsulates Grenada's development agenda for 2020-2035, and provides a series of thematic areas, goals, and a road map to achieve the outlined vision by 2035. The NSDP is strongly grounded in contextual realities of Grenada and was designed by multiple stakeholders in the country, including the Government, civil society, the private sector, youth, amongst many others.

National Sustainable Development Plan 2020-2035

- Goal #1: High Human and Social Development: Putting People at the Center of Sustainable Development and Transformation.
- Goal #2: Vibrant, Dynamic, Competitive Economy with Supporting Climate-and-Disaster-Resilient Infrastructure.
- Goal #3: Environmental Sustainability & Security.

"Grenada, a resilient and prosperous nation, with a conscious and caring citizenry, promoting human dignity, and realizing its full potential through sustainable economic, social, and environmental progress for all"

Source: Grenada National Sustainable Development Plan 2020-2035. Available at: https://www.nationalplan2030.gd/docs/NSDP2020-2035-DraftFinalNov%20202019.pdf

At the Introductory section of this report, we defined a SSS as one that leverages the power of data and digital technologies to strengthen the country's resilience, enhance sustainability, and improve the wellbeing of its people by creating economic opportunity led by an agile and efficient government. This definition of a SSS has been framed with the context of the NSDP in mind and is meant to provide the government and society with a SSS transformation vision that can be adopted and turned into a national strategy. As has been explained in the previous sections, principles and values of resilience, sustainability, innovation, disaster management, and livelihoods are the core components of this SSS vision, strategically aligning with the overall vision that was established by Grenadians in the Grenada NSDP. Given that this report is framed in the context of the NSDP, we consider it to be one of the foundations of a Grenada SSS.

4.2 Climate Smart Cities: Grenada

The Climate Smart Cities Initiative is a joint endeavour between the Government of Grenada and NYU's Marron Institute of Urban Management. The objective of this collaboration is to strengthen the resilience of Grenada to climate change and extreme weather events through nine projects, that incorporate workshops, engagements, and partnerships to address multiple aspects of climate change resilience and adaption.[80] It is worth noting that even though the Climate Smart Cities Initiative focuses mostly on engineering and infrastructure projects, consultations with the project team were essential in crafting the overall SSS vision and pillars. The use of ICTs is an indispensable component in addressing extreme weather and other climate change threats, and while the Climate Smart Cities Initiative does not delve into the application of digital technologies to tackle climate change vulnerabilities in the current phase of the project, the potential exists that these are areas that will be further developed once the project is implemented. At the moment, the project has passed feasibility studies and is looking for funding for implementation.

The focus of this report is to provide a SSS vision for Grenada that leverages digital technologies and considers resilience to be one of the pillars of the vision. While the focus of resilience goes beyond climate change threats, it is still an essential component, which is why this initiative is included as a foundation for what will eventually become a SSS Grenada. For more information on the Climate Smart Cities Grenada Initiative please visit: https://www.climatesmartcitiesgrenada.com/.

Climate Smart Cities Grenada Overview of Projects	
Carenage Protection and Enhancement Project (CPEP)	An adaptable, two-level multipurpose sea wall is proposed along the seaward side of Warf Road. This top elevation will also provide protection from surges. The barrier will also be a promenade promoting waterfront access, recreation, tourism, and other programming.
Grande Anse Protection and Enhancement Plan (GAPEP)	The proposed adaptation strategy is a phased plan to increase the value of the tourism sector by permitting more units along Grand Anse beach, build up the elevation and width of the beach, physically protect coastal properties from surges with an engineered berm and boardwalk
Grenville/Soubise Coastal Adaptation Project	The concept will protect this area from storm surge through ecological restoration of reefs and mangroves, selective coastal protection through seawalls, and strategic watershed management. A long-term plan will be developed with government for retreat from areas impacted by sea level rise
Grenada Wastewater Resource Recovery Facility (GWRRR)	A resource recovery system that will complement the wastewater treatment plant design. The project will also treat biosolids for land application to reduce emissions associated with importation of fertilizer for the island's agricultural sector.
Grenada Urban Expansion and Densification Plan	The proposed mitigation strategy will decarbonize the urbanization process in Grenada by creating a strategic and implementable 30-year urban plan.
The Green Omnibus – Integrated Participatory Watershed Management	Green Omnibus is an ecosystem and community based mechanism that articulates local organisations, government environmental and extension services and private agro-entrepreneurs to foster grass-root processes in three fronts: restoration of riparian ecosystems, sustainable agriculture and sustainable urban drainage systems.
Grenada Comprehensive Capacity Building Initiative	The project is focused on knowledge management, skills development, and institutional arrangements, and will enable quicker and more effective disaster risk reduction and climate change adaptation efforts.
Sustainable Energy Consumption Alternative	The proposed project will increase the overall energy efficiency of the island by providing sustainable energy consumption alternatives in refrigeration, cooling, and lighting
MBIA Sea-level Rise Adaptation Project	The project will provide funding to protect the toe of slope of the seaward side of the airport perimeter. This initiative will halt the present rate of erosion and protect against future erosion.

Source: Adapted from Climate Smart Cities Grenada. Available at: https://www.climatesmartcitiesgrenada.com/

4.3 Overview of Existing Digital Transformation Projects Grenada

In support of the Rapid Analysis for Small Island States: Grenada, conducted by the UNDP Multi-Country Office for Barbados and Eastern Caribbean, a series of consultations were held between October 30th, 2020 and December 2th, 2020. These consultations were designed to achieve the following as part of the Rapid Analysis:

- Review and inventory of ongoing initiatives that can be directly or indirectly related to Smart Small States. This inventory will include basic information on the number of initiatives being implemented at national level by multiple partners.
- Rapid analysis of the synergies and complementarities among the existing initiatives with regards to the Smart Small States.

This section reviews and analyses the data collected during the consultations

Consultations were held during a five-week period with appointments having to be scheduled on short notice owing to the time constraint and

was further compounded by the ongoing planning sessions for the 2021 national budget which was scheduled for presentation on December 2nd. The success of capturing the list of initiatives was achieved by the quick work of the Ministry leads working along with the Ministry of ICT and various sector heads. This was a quick assessment, and while likely not a complete list, provides a baseline sounding board for further discussions across various Ministries. Although the focus of the consultations was to review ongoing initiatives within the public sector, i.e., Government of Grenada, it was determined that it would be useful to obtain insight from national associations and the private sector. These additional meetings provided noteworthy inputs in the initial stages of the project that informed of possible priority areas of Government and provided impetus to the required visioning exercise. While COVID restrictions remained in place, some consultations were possible in-persons while others were conducted via virtual meetings. Both methods were satisfactory to achieving desired results. In all meetings and discussions, the baseline information being sought was the name and title of any ongoing projects, its objective, description, start and end dates and if currently sponsored, i.e., supported by a donor agency. In an attempt not to mistakenly leave out any potential projects, the specificity of the information required was left open to interpretation such that all projects whether active, or in conceptual stages, be provided. A total of 23 active projects were identified, 12 of which directly related to digitisation/digitalisation, while 11 other projects were related to capacity building and changes to infrastructure to support digitalisation. Another 13 projects were in conceptual stages having not yet officially started. A total of 26 persons were interviewed and provided input into the list of initiatives. The data collected is listed in Annex 2. The list of initiatives is summarized in table 3 below:

List of Initiatives				
Theme	**Description**	**Active**	**Concept**	**Total**
Capacity Building	Legal, Policy, Standards, HR, Training Organisational, Institutionalisation	6	3	9
Digitisation	Create, Edit, Search, Store, Process, Digital Documents	12	13	25
Infrastructure	Design, Construct, Build, Maintain	5	7	12
Other	Objective not clearly/directly related to Digital Ecosystem	12	1	13
TOTAL		**35**	**24**	**59**

Table 3.

The world bank project, Digital Governance for Resilience (DG4R), already approved and initial steps currently underway, cultivates a synergy for the UNDP to provide complimentary support to the Government of Grenada. Working along with the DG4R project, UNDP can embed the pillars of the Smart Small State and work with the Government of Grenada create a model that promotes innovation, operationalizes a sustainable model for participation of the private sector and, in addition, promotes local and foreign investment to create a launchpad for entrepreneurial opportunities.

The DG4R project makes references to a Digital Transformation Authority (DTA), as a component of a Whole of Government (WoG) philosophy that will "*define the governance structures and institutional arrangements responsible for streamlining and coordinating all digital interventions across WoG in a sustainable manner.*" *Whereas t*he foundation of the DTA is focused on the internal workings of government, it can be extended and become a "*Whole of Grenada*" concept whereby Government adopts an approach that also looks outwards and specifically towards the private sector.

Government, taking the lead in this regard, with support from the UNDP and partners, can establish the right atmosphere of engagement across the private sector and open further opportunities for data sharing, knowledge enrichment, capacity building and growth in jobs and opportunities.

During consultations held, there prevailed a sense of weariness when referring to Government efforts to modernisation and, therefore, drawing in the private sector may have some resistance. A concern raised was Government projects often call on private firms to make investment in training, technology and time that do not realise the promised return on investment. Often this is because features and services promised as part of the project fall short of delivering, or at times, the technology component of the project is a success however human behavioural changes necessary to sustainably utilize new procedures are underestimated. Changing this apprehension, and lack of confidence, will require more determined effort on the part of Government which can be accelerated through collaborative efforts of the proposed DTA and the UNDP sponsored "Smart Lab" or "Innovation Hub", essentially working towards maintaining the right level of buoyancy between Government and the Private Sector.

Key Performance Indicators (KPI's) on display as a national dashboard offering consistent measuring and monitoring of Governments key digitisation efforts will help inculcate sustainability of Government digitisation efforts, create a sense of openness and transparency as well as give impetus to the cultural mindset shift required with the proposed WoG approach. The data, used to formulate and present the KPI's, must therefore, be accurate, timely and represent a single version of the truth that all stakeholders use as the foundation for discussions and decisions, idea creation and innovation.

The need to measure satisfaction is identified within the DG4R project brief - point 33 - New digital channels for citizen feedback will be a key feature of the change management strategy - which states "As digital services are made available, mechanisms including apps, portals and other methods will be used to gauge and measure citizen satisfaction with these services". However, furthering the need for measurement to include the private sector, with a participatory approach, will garner interest and promote a greater sense inclusiveness for the private sector.

A determination to measure, not only citizens satisfaction, but to also measure the satisfaction of companies and organisations as clients, and partners, of Government will promote private sector inclusiveness, lead to greater awareness and successful project outcomes. The UNDP can become the link that works to bring into effect a "Whole of Grenada" concept that combines the works of the DG4R project with that of a spirited effort towards innovation working closely with the proposed DTA. The UNDP can therefore work to bring into sharp focus the Government working along with the private sector, using its vast network of partners to create a symbiotic relationship that focuses on creating jobs and entrepreneurial opportunities.

5. ACTIONABLE PROJECTS

Key to the success of implementing a Smart Small State initiative is to capture the imagination of what kinds of transformations can be possible. While some transformations are complex and can take years to implement, pilot projects that can be quickly rolled out can help to build excitement and the political will for the overall vision.

As such this section provides a selection of projects currently being implemented by UNDP country offices, that have been chosen for possible replication in Grenada. These projects can be implemented as pilots and test beds for the outlined SSS vision and could be the practical first steps to crafting a SSS strategy after positive demonstrating effects that can result from the successful execution of said projects.

The UNDP Chief Digital Office has recently announced the Digital X programme, a scale accelerator programme that provides grant assistance of up to $150,000 for replication of UNDP digital innovation projects. The initiatives selected below are expected to be a good fit for the programme. The first round of applications is due 12 January 2020.

Blue Bot - AI for Coral Reef and Species Tracking

Project Description: The project uses semi-autonomous robots to monitor and map Caribbean coral reefs using artificial intelligence (AI) and evolving technologies. The robots collect marine data, and use machine learning algorithms to classify, batch, and compress labelled datasets. [81] Through the tools deployed, this project can conduct remote surveying which can increase the asset pool required for conservation purposes including storm damage and anchor damage assessments, faster categorisation of datasets and the increased ability to share locally gathered data on a global scale. The project aims to increase the availability of data on coral reefs in the Caribbean to better equip decision and policy makers to protect and restore this diminishing resource.

Background: Blue Bot is one of the winners of the UNDP Accelerator Lab for Barbados and the Eastern Caribbean's Call for Solutions and "Blue Tank" challenge. With support from UNDP, Blue Bot is mobilizing drone technology for image recognition purposes, which will result in the creation of a public dataset and classification of documented reef species. Machine learning algorithms classify, batch and compress labelled datasets, which are then shared with the global community. See an example public dataset output from Carlisle Bay, Barbados. By using machine learning models, the data can be categorised and captured faster and more accurately. The use of robotics and AI reduces costs and improves delivery times for mapping and monitoring of coral reefs. Bots can remotely survey and monitor coral reef ecosystems down to 200ft.

Opportunity and Next Steps for Grenada: UNDP and the Government of Grenada or conservation organisation partners can explore replication of the pilot with the private sector solution provider, Bajan Digital Creations Inc. (BDCI) for use of the Blue Bot to map and capture data to track the health of coral reefs and marine species. This data can help to advance scientific research and to support government decision-making on natural resources management.

Rationale: The Caribbean is more dependent on the travel and tourism sector than any other region worldwide. Caribbean economies are poised to sustain tremendous economic losses if coral reef degradation continues. Reef-adjacent tourism expenditure is estimated at $5.7 billion annually and drives some 7.4 million visitors to the regions. Total values for all reef-associated tourism (on-reef and reef-adjacent) were estimated at over $7.9 billion of expenditure and over 11 million visitors, with average values of 660 visitors and $473,000 per square kilometre of reef per year.[82] Coral reefs globally are dying at an alarming rate mainly due to human activity and the effects of global warming. There are many gaps in the data available on Caribbean coral reefs. This data is vital for scientific research and decision making. Hence more data is required. This initiative will increase the number of tools pooled in the Caribbean's marine conservation tool kit. The machinery can track and categorize those marine species which threaten coral reef ecosystems.

cultiv@te
Innovation for Sustainable Agriculture

Cultivate: Curated digital solutions to Climate-Resilient Agriculture project

Project: The Climate-Resilient Agriculture for Integrated Landscape Management is a $17M project to enhance integrated agroecosystem management by mainstreaming biodiversity conservation and increasing resilience of agricultural systems in Grenada. The project is currently being inaugurated and presents strong synergies with the Small Smart Grenada vision and opportunities for integrating and piloting innovative solutions. In parallel the UNDP Singapore Centre's Cultiv@te programme offers a globally curated and tested catalogue of 31 tech solutions and providers addressing sustainable agriculture issues in countries across the globe and is set for a piloting and partnerships phase to begin in 2021.

Background: In 2019 UNDP, supported by the Singapore Government launched Cultiv@te – a global innovation initiative to identify creative entrepreneurs, start-ups and R&D teams from around the world to solve challenges in agriculture and explore opportunities in urban agriculture, climate resilience and livestock farming. Working with 11 countries across Asia, Africa and Latin America, the programme publicized 11 challenge statements calling for innovative and technology solutions. After 15 weeks there were over 200 submissions from 114 nationalities. Out of these 31 teams were selected as finalists.

Opportunities and Next steps for Grenada. The possibilities to incorporate digital innovative solutions is to be featured at the inaugural meeting for the Climate Resilient Agriculture

project on December 10. There may be potential to create a micro-granting mechanism for pilots in digital and innovation solutions that can be built into the project structure. As an initial step the project team can host a webinar or conference to invite Cultiv@te solutions providers to connect with Grenada stakeholders and to explore the fit and scoping for solutions and technical advice, and to seek resources for piloting.

Rationale: Grenada's biodiversity is being threatened by unsafe agricultural practices and encroachment from human settlements, resulting in habitat loss and fragmentation, overexploitation of biological resources, and pollution. The presence of invasive alien species and climate change are also drivers of biodiversity loss in the country. Land degradation has affected approximately 50% of land resources in Grenada; deforestation and fragmentation of forests in the form of forest clearance to allow for residential and commercial development, non-sustainable agriculture, forest fires, and coastal tourism development are the main forces behind land degradation in Grenada. The Climate-Resilient Agriculture for Integrated Landscape Management will build capacity, information and knowledge management to address these issues. There is a clear opportunity to integrate innovations in data capture and analysis, market mechanisms, and climate resilience to the project, as technologies are developing and becoming more accessible to tackle these issues, even in the past two years since the project was defined.

The Other Bar – Blockchain Traceability for Sustainable Cocoa

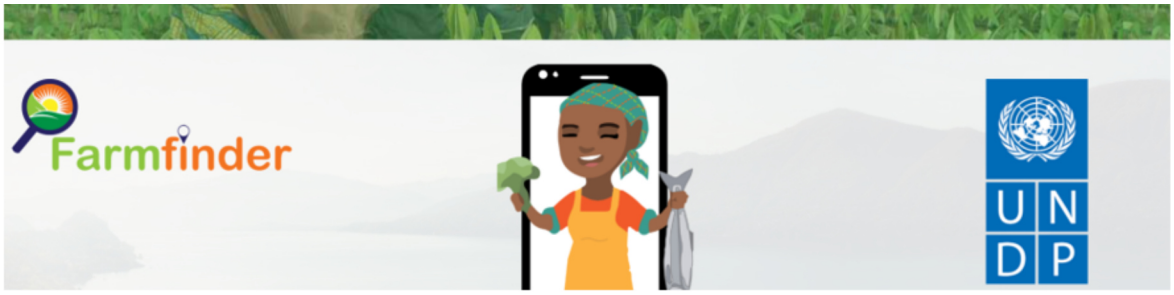
Project Description: The Other Bar project is a blockchain traceability project created by UNDP Ecuador. Smallholder farms do most of the work but earn the least amount of money on the chocolate value chain. The tool seeks to address the imbalance by making sure payments along the chocolate value chain are transparent. The tool provides consumers with accurate information on quality, traceability, and impact. Consumers can scan a QR code on the wrapping and learn everything from the farmers and the production process. The purchases can be reinvested into tree plantations.

Opportunity: Grenada Cocoa Growers can piggyback on the platform and the results of the cocoa blockchain traceability pilot by UNDP Ecuador and join in the co-creation of a new UNDP global supply chain platform to support sustainable commodities. This initiative would enable Grenada producers to be among the frontrunners in a global blockchain-based cocoa traceability movement. The platform will offer Grenada cocoa producers access to a global marketplace with the potential to connect directly with major global chocolate brands.

Next Steps: Explore possible partnerships with Fairchain Foundation and Grenada Cocoa Farming Future Initiative, Organic Cocoa Farmers' cooperative to assess feasibility and scope for a pilot

Background: UNDP Ecuador CO developed the first prototype for a digital platform and conducted an experiment aimed at testing consumer engagement with products that fulfilled a promise of impact for the first mile of the value chain. The project (#TheOtherBar) developed a product (a chocolate bar) as a vehicle to conduct this experiment.1 Nine local farmer's cooperatives with more than 170 cocoa producers were involved in the project. Over 17,000 chocolate bars have been sold online. The technology partner was FairChain Foundation, a Netherlands-based non-profit organisation dedicated to sustainable consumption.

Rationale: Agri-food markets do not sufficiently incentivise producers to become more sustainable, thus creating a series of economic, social and environmental problems, which disproportionately affect developing countries. While many brands pledged to promote sustainable sourcing, in absence of a transparent solution and corresponding accountability, most companies have proven to be unable to achieve their targets for a more sustainable supply chain. In view of the on-going COVID-19 crisis, it is expected that the need for digitisation in the agri-food supply chain will accelerate. Calls for more agile risk management tools are increasing. Providing provable and transparent claims on sustainability and facilitating the exchange of information through a blockchain-powered digital platform, the solution can help global brands to meet their sustainability goals with sustainability proofs whilst enabling producers to realise the value of sustainable commodities.



FarmFinder: E-commerce platform and traceability for farms and fisheries

Project Description: The FarmFinder initiative aims to improve the livelihoods of farmers and fisherfolk by advancing the digital uptake of economic activity across these digitally marginalized sectors, while also reviewing and enhancing the food traceability system, with a view to ensuring quality in the supply chain.

Background: In response to COVID-19, the UNDP Barbados and Eastern Caribbean Economic Transformation pillar included a traceability pilot project from FarmFinder, a not-for-profit agricultural organisation that better links farmers and fisherfolk with consumers through improved e-commerce capabilities. UNDP and the NGO FarmFinder are developing a digital farming and fisheries portal to more effectively connect vendors to consumers, including a traceability system for locally farmed and fished products. The pilot focused on a practical application of tracing agricultural production and sales of products in Barbados for participants with limited

technological and operational capacities. In effect, this trial introduced a batch classification system, which was previously non-existent among most vendors. As those who partook in the pilot did not have the requisite technology required for advanced tracing, FarmFinder applied a bespoke approach in which farmers underwent (i) a preliminary assessment focused on product quality, (ii) the adoption of an inventory record system by vendor and (iii) the creation of an associated merchant profile on the FarmFinder database. In the pilot phase in Barbados 14 farmers were onboarded to the portal, 9 primary producers and 13 vendors are currently using the platform, which handled more than 1000 orders in the first 5 months.[83]

Opportunity and Next Steps for Grenada: The expansion of this e-commerce platform to other Eastern Caribbean countries, including Grenada, is already in progress. The market demand and response to online shopping for agricultural produce in Grenada has been pilot tested and agreements have been established with farmers regarding enhanced quality of dispatch. As a next step FarmFinder and UNDP conduct a joint field assessment on a producer's operations and facilities as a first step in the on-boarding process to have producers' items marketed on the website. This could be followed by a training of trainers with national coordinators. A growing area of opportunity around this project is to make more systematic use of the data captured and analytics for enhanced agricultural output and strengthening of livelihoods. The strengthened partnership with primary producers through the platform enables data accumulation by tracking purchases, prices and demand, which can, in turn be applied to resource planning at both government and farmer-levels. There is also the possibility to replicate an internship initiative to provide small scale inputs (grants) to entrepreneurs in the Fisheries and Farming Sectors, in return training a young person (preferably female) in various areas of their selected discipline.

Rationale: E-Commerce solutions may be easy to use, however there are many small holder farmers and fisherfolk who still do not have these skills. There is a need to build capacity and foster market linkages, including hotels and restaurants, while building key data sources for the sector to better inform producers. During the pandemic new people were entering the market as sellers of local produce however some farmers were not seeing rewards of the rising demand, even during rise of e-commerce.

BlueDIGITAL

BlueDIGITAL is a pilot experiment from the UNDP Accelerator Lab that applies digital tools and solutions to improve segments of the blue economy ecosystem and value chains for fisherfolk, government, tourism industry partners and the general public as consumers. In doing so, this proposed concept aims to reduce digital divides exposed by COVID-19 by introducing innovative, online measures within sectors of the Blue Economy in the Eastern Caribbean.

BlueDIGITAL will provide digitally-enabled solutions that seek to offer specific services through four portals to four key groups of stakeholders in the Blue Economy ecosystem and related value chains:

BlueFISH: IMPROVED SALES FOR FISHERFOLK

BlueSEAL: RESPONSIBLE AND REGENERATIVE BLUE TOURISM SOLUTIONS

BlueDATA: BETTER DATA-DRIVEN DECISION MAKING

BlueTRACE: SUPPORTING TRACEABLE, DIRECT TO CUSTOMER MARKET

Next steps for Grenada are to engage national partner to conduct trainings and stakeholder contributions to iterations and testing of solutions.

E-Future

The UNDP E-future is training programme for small businesses to transition to the digital economy. E-Future is a practical toolkit for local businesses to re-tool and discover new ways to reach customers via digital tools. The toolkit also offers ideas and instructions on managing online orders, secure transactions, alternative payment mechanisms, online marketing, amongst other things. E-future offers a practical first step for businesses to transition into the digital economy.

Background: As part of the response to the COVID-19 pandemic, UNDP Barbados and Eastern Caribbean focused on supporting the economic transformation and recovery of Micro, Small and Medium-sized Enterprises (MSMEs) and vulnerable populations as they transition to the digital economy. The toolkit is an adaptation and translation of a similar capacity building initiative from UNDP Ecuador.

Opportunities and Next Steps for Grenada: The toolkit is ready to be rolled out through training of trainers, followed by targeted trainings at local/municipal level.

6. UNDP DIGITAL READINESS ASSESSMENT

As a complement to the desk reviews and stakeholder interviews conducted for this study and to further define next steps for engagement on Smart Grenada, a Digital Readiness Assessment was conducted with the support of the UNDP Chief Digital Office, Small Islands Developing States team and Barbados Multi-Country Office.

The UNDP Digital Readiness Assessment tool was first piloted in November 2020 to support national governments and the UNDP Multi-Country Office to determine and grow digital opportunities to meet national development goals. The assessment is conducted via a 30-minute survey of a select stakeholder group across government and private sector to assess the country's digital readiness along the 5 pillars of UNDP's Digital Transformation Framework: Government, Infrastructure, Regulation, Business and People. UNDP's approach to digital government transformation is grounded on the concept of the whole-of-society approach. By supporting governments to develop strategies and plans with a whole-of-society approach to digital transformation, everyone benefits from building a better future that leaves no one behind. The assessment delivers a readiness rating and an interactive dashboard, allowing stakeholders to engage with their digital progress, and monitor impact and growth.

The following provides an update to this section, completed after the finalization of the Smart Grenada report. The Grenada Digital Readiness Assessment was implemented in December 2020-February 2021, with an overall readiness score of 3.27 on the 1-5 scale, indicating the country is at a stage of readiness that is systematically advancing in key areas of digital transformation based on identified priority areas. The assessment identified particular strengths under the people pillar, indicating growing levels of digital literacy, high levels of education, and people generally embracing technology within society. The study recommended improved coordination and clearer leadership within government around digitalisation efforts and initiatives and stronger attention to the regulatory frameworks. The full results were presented to the government in March 2021.

7. CONCLUSION

7.1 Setting the Scene

In closing, this report was a rapid assessment that started by having quick discussions within ministries and receiving initial feedback on initiatives. The assessment then expanded to briefly obtain perspectives of a handful of private firms. While short in duration, the assessment did point towards a desire for the Government to become more resilient and use current digital technologies to support a sustainable and resilient future state, hence a good fit with the Smart Small State concept. The desire to leap is tempered by the complexity, capital, and capacity to do so. This is not unique to Grenada. Today's smart cities around the world have similar struggles and have adapted their modus-operandi to include more private sector participation, in recognition that municipal and government structures were not adequately equipped for the demands of the radical transformation required for their future urban development plans. To realize the promise of Smart Cities, governments needed a novel approach for financing projects and formed private sector partnerships which granted greater access to procuring products and services and providing governance structures that embedded sustainability and resilience within projects. Large gains were made by this approach; leapfrogging to a new future with proven technology leaders granting access to technology, creating testbeds, proof of concepts while also training and educating local people to administer, operate and manage companies that spin off from successful implementations. The key to success will be in garnering the interest of private sector, and even global companies that draw on local talent, industry, and government to create the products and services of Grenada's smart state.

7.2 Recommendations

Recommendation 1 – Grenada as a Smart City

Given the population size and territorial extension of Grenada, it should consider smart city approaches. Cities governance institutions are more nimble and agile than central government management institutions and frameworks, allowing municipal bodies and agencies to implement cost friendly solutions in faster and more efficient ways. Using a Smart City approach will allow Grenada to implement new ideas faster and rapidly determine what is working and what is not working. In this report we have cited examples from Estonia, Singapore, New Zealand, Bangladesh and referenced them as good examples of smart states. While Grenada should consult these countries' strategies and visions when it shapes its own SSS strategy, the smart city approach is better suited to meet the needs and contextual realities of Grenada. While countries' strategies usually develop around policy and public service delivery, smart city strategies are focused on designing and implementing innovative approaches to improve the livelihoods of its citizens in shorter timelines, allowing for a faster transformation to a SSS to take place. Under smart city approaches, not only are technology solutions considered, but also nature-based solutions and practical approaches that are relevant to Grenada's vision of the Blue, Circular and Green Economies. Furthermore, smart city approaches focus on using innovation to build citizen's skills, improve citizen engagement, and strengthen overall governance. Furthermore, as Grenada transforms to a SSS, innovation will be one of the engines that drives this transformation, allowing the country to test smart solutions with regards to climate adaptation, environmental sustainability,

resilience to environmental and external shocks, and digital transformation in faster, efficient, and less expensive ways.

Recommendation 2 – Building Support for the Vision: The transformation to a SSS begins with the Government

The transformation of Grenada to a SSS needs a high-level champion or group of champions to communicate and drive the vision. The process should include all of society and be led by the Government. It also needs to develop a strategy to operationalize the vison, which should be embedded throughout government agencies and bodies.

The first step is to get all government ministries and agencies involved in the project and to understand that change is coming. For this reason, all government senior representatives should make a joint statement at the beginning of this transformation process, publicly signaling their commitment and determination to drive the change within their own agencies, and help with the overall transformation of the Grenadian Government

1. A joint statement should be made by all government bodies, signaling their commitment to the new vision, and identifying the different ways in which they will drive the change within their own ministries and agencies.
2. A high-level government champion(s) should be identified to lead the vision
3. A government unit or committee that leverages existing institutional capacities should be set up to determine the roadmap, targets, and timeline of the transformation process in short-term, medium term, and long-term time horizons. The unit should be able to receive and communicate inputs from all government agencies and bodies and keep them accountable on their progress.
    a. The World Bank is contemplating the creation of a Digital Transformation Agency in the DG4R project, and in order to avoid duplication of efforts this agency could be expanded to oversee the implementation of the outlined vision.
4. The Government should implement a change management process focused on communicating to government employees the need for the change, the need for employees to update their skills, and offer training avenues for this purpose.
5. The vision and strategy should be accompanied with a communications and marketing strategy aimed at civil society and private sector actors during all aspects of the transformation process – from ideation to execution (See Annex 3 – Smart Grenada Communications Piece).

Recommendation 3 - Data as a Driver of Sustainable/Resilient Development

The government should create a data governance framework that enables the efficient, transparent, reliable, and secure use of data as a driver of sustainable and resilient economic development. As was revealed in consultations with the Climate Smart Cities Grenada team, there was no identifiable authoritative data source in Grenada to inform the public on sea level rise and other climate change related aspects. Furthermore, the assessment was unable to identify a general authoritative data source. An authoritative source of all government data will be the data custodian to speak a single version of truth around Government's Big Data. Therefore, a data governance framework will allow the government to address the ecosystem of actors and laws related to data use, and in turn create an open data portal that will be available

for public use. The private sector can use this data to create smart business solutions to local challenges. One of the elements that the private sector mentioned could boost their involvement in a transformation process to a SSS is shared platforms. The DG4R project is already working on three shared platforms: an electronic payment system, a digital identification platform, and a spatial data platform. In addition, the DG4R project is also streamlining an open data framework. Grenada is already on sure footing with this project, and moving forward it should expand these platforms to incorporate the private sector.

Recommendation 4 - Regional Cooperation and Joining a Forum of Smart Cities

1) **Digital Infrastructure Management** Grenada should work with regional governments to share digital infrastructure, develop joint platforms that provide common information to all neighbouring states (including weather analysis and early warning systems on hurricanes and rising tides), and coordinate joint policy programming on multiple fronts including development of e-commerce platforms, disaster response, and climate smart cities financing.
2) **Capacity Building:** The Government should work in partnership with regional governments to build the capacities of employees and learn best practices on issues revolving around the Blue Economy, Digital Transformation, Cyber Security, and other necessary areas to become a SSS. Governments could be attached in other regional headquarters to learn best practices and skills that can be applied in the Government's transformation.
3) **Financing:** The Government should work with regional partners to find private sector financing alternatives to fill the finance gap in climate smart cities, with a particular focus on urban planning, integrated transport solutions, data storage, waste management, renewable energy.
4) **Join a forum for smart cities or Smart Small States in order to tap the network of experts and solutions revolving around smart city strategies:** Grenada should join a network or forum for smart cities in order to learn from best practices, successful cases, and a group of experts that have already crafted smart city strategies across the globe. Eventually, Grenada could lead an effort to transform SIDS into SSS in the Eastern Caribbean.
    a) Forum of Small States (FOSS): The FOSS was founded by Singapore's Ministry of Foreign Affairs, recognising the environmental challenges and susceptibility to external shocks faced by small states. The idea behind FOSS is to provide small states with a platform to amplify their voice in the United Nations. Through its leadership of the FOSS, Singapore continues to provide support to small states including members of the Alliance of Small Island States (AOSIS), in advancing their goals and initiatives. Recently, Singapore provided technical advice and funding for the SAMOA Pathway via the Singapore Partnership for the Samoa Pathway.[84] The FOSS could provide a forum for Grenada to tap into networks, experts, and smart city solutions and strategies.[85]
    b) G20 Global Smart Cities Alliance: The alliance was established in partnership with G20 countries, but all countries and stakeholders are welcome to join this initiative. The Alliance works in establishing and advancing policy norms to accelerate best practices and foster cooperation between municipal, regional, national governments, and the private sector around issues and a set of principles for the responsible and ethical use of smart city technologies. At the

moment the Alliance is working with 36 cities across the globe known as Pioneer cities, but Grenada could apply to be a pioneer country in future cohorts. [86]

Recommendation 5 – Private Sector Engagement

As the Government shapes a SSS strategy it should make the private sector a key player of this transformation process and provide the enabling environment for the private sector to operate. Grenada should undertake an alliance approach with the private sector at the national, regional, and international level, in order to create the adequate governance structure, find the right partners, enable agile procurement mechanisms, and to finance the transformation to a SSS. During consultations, participants raised the concern that Government projects often call on private firms to make investment in training, technology and time that do not yield the promised return on investment. Often this is because features and services promised as part of the project fall short of delivering, or at times, the technology component of the project is a success, however, human behavioural changes necessary to sustainably utilize new procedures are underestimated.

1. **An Alliance Approach** should be adopted whereby established technology leaders work in partnership with the Government to develop the Smart Small State concept. As Grenada embarks on its transformation to become a Smart Small State, it needs to consider issues around jobs, business, and livelihoods as central to Grenada's focus. As technologies related to smart cities evolve too fast, and revolve around repurposing legacy infrastructure and systems, new partnerships and ways of thinking are necessary. [87] Some resources that Grenada can consult as it designs a strategy to transform into an SSS include Deloitte's Alliance Approach to Smart Cities, which offers a framework for smart cities revolving around four core areas: Innovative Financing, Nimble Procurement, Collaborative Partnerships, and Dedicated Governance. With regards to financing, another resource that can be consulted by Grenada is the joint UNDP and World Bank report titled Catalysing Private Sector Investment in Climate Smart Cities. The report offers case studies and frameworks that could be adopted to implement innovative climate smart city financing solutions like, creating a trust fund that is supported via a tourism tax paid by business to maintain and restore reefs, or bulk procurement of electronic buses to reduce transactions costs, amongst other examples.[88]
2. **Incentives for SMEs to digitise:** The Government should incentivise brick and mortar, local neighbourhood shops, and other businesses to have an online presence and have online channels of communication with their customers. These incentives can come in the way of tax breaks or financial incentives to fund the transitions, with the aim of getting businesses to go digital.
3. **Incentives for Climate Smart solutions:** The Government should promote a framework and/or policy that removes barriers to climate smart solutions and in turn enables the development of businesses that provide climate smart solutions, or tackle issues related to making cities more resilient, sustainable, and climate smart, including solutions around waste management, energy, sustainable building, integrated transport, and other Blue/Green Economy components (E.g., leverage the economic and protective value of natural

capital such as coral reefs.) The government can do this by developing a framework and policy that removes barriers to climate smart solutions.

4. **Financial Services:** The key to achieving sustained economic growth and resilience is the consumer's capacity to save and spend, and this can only happen if people are included in the financial system. The government should incentivise businesses to devise smart solutions for financial inclusion and creating efficient channels of communication with individuals. A first step should be to increase the use of e-payment services on behalf of citizens and local businesses. Secondly, as established in the National Sustainable Development Plan, it is likely that the Digital Eastern Caribbean Dollar will be adopted in the next ten years. A common digital currency will facilitate the flow of funds between SIDS in the Eastern Caribbean, enabling a thriving regional entrepreneurship ecosystem that is driven by the Blue, Green, Circular, and Digital Economies.
5. **Regulatory Assessment:** The Government should perform an assessment of all the regulations with regards to the creation of new businesses' and integrate new dimensions of doing business into its analysis. The government should look into the value chains that underpin all the business models in the digital economy, including e-commerce, sharing economy, digital freelance, and digital media, and reduce restrictions to the creation of these businesses. Furthermore, the Government should consider doing regulatory assessments on a frequent basis, in order to make sure laws and policies are up to date with current technological advances.

Recommendation 6 – Establish a Grenada Innovation Hub

An innovation centre in Grenada has the potential to develop the tools, competences, and skill-sets of local businesses and people. The centre will be government-run, but it will be a tool for new businesses to launch their projects and business solutions. Consultations with the Government's Chief Information Officer Imi Chitterman revealed that the Government has already taken the first steps to launch an ICT hub via grants for ICT innovations as part of the CARCIP project. The Government has also partnered with the Grenada Industrial Development Corporation (GIDC) to coach and advise the start-ups and teams that won grants. Moving forward, the Government should expand the focus of the Grants Office to also include innovations and projects that leverage technologies to advance business solutions in the Blue, Green, and Circular Economies. At the moment, the Grants Office needs support in introducing a framework to launch and manage a fully functioning Innovation Hub that goes beyond awarding grants. Likewise, it also needs support in finding local private companies and other external partners to work with the Innovation Hub. More potential use cases of an Innovation Hub are outlined below:

1. **Start-up Accelerator:** Provide coaching and funding for the most promising ventures, including educating start-ups on how to launch a business, how to run a business, how to grow a business, with a focus on the Blue, Green, Circular, and Digital economies.
2. **Hackathons:** Launch national competitions for new and existing companies to devise local solutions to local challenges, e.g. using smarts solutions for agriculture, waste reduction, maritime uses, education, fintechs etc. Winners could receive

government funding to pilot their solutions.

3. **Knowledge Exchange:** Bring national and international experts to conduct conferences and workshops on priority areas for Grenada's transformation to a SSS.
4. **Skills Accelerator:** Provide skill-building workshops, courses, and bootcamps with a focus in science, technology, innovation, and sustainable development. A special emphasis should be placed on applied technology solutions that leverage the Blue, Green, and Circular Economies.
5. **Job Matching Platform:** Implement/enable an online freelance platform, allowing individuals to sell their skill sets to companies on a contractual basis. Individuals and companies can complete online profiles, and when the need develops, be matched for employment.

Recommendation 7 – Engaging the Diaspora

When developing the proposed vision, Grenada should tap into the network of Grenadian's living abroad. As of 2015, approximately 30,000 individuals from Grenadian origins lived in the United States.[89] These individuals have skill-sets and experience that can contribute to the transformation of Grenada into a SSS. In 2008, the Government partnered with the International Organisation for Migration (IOM) in the creation of the Grenada Diaspora for Development Project (GD4D), aimed at engaging, enabling, and mapping the Grenadian diaspora abroad and the willingness of Grenadian expatriates to contribute to Grenada's development, particularly in building the human capital of the country.[90] The Government's online portal for the diaspora is currently conducting a mapping exercise to assess the skills and resources that expatriates can provide and match it with skills and labour gaps in Grenada. The Government is also finalizing the Grenada Diaspora Engagement Policy, which will contain an action plan to strengthen the engagement with the diaspora, and developing an online hub for the diaspora to connect online.[91]

Once the proposed Innovation Hub outlined in the previous recommendation is established, the diaspora skill assessment currently being developed by the Government should be connected to the Innovation Hub, allowing Grenadians who have lived and studied abroad to provide their expertise and knowledge via the online portal. For more information on the Government's efforts to engage the diaspora, please visit:
https://www.grenadiandiaspora.gd/ .

7.3 Next Steps

The recommendations provided in the previous section provide a series of actions that Grenada should implement in order to begin a transformation process to become a SSS. However, bearing in mind that this transformation will require a whole-of-Government approach, and include the private sector, and civil society, the proposed next steps should be the first steps that the Government takes in order to lead and manage this change process. As has been highlighted throughout this document, the transformation to a SSS is not a government centric process, but it does begin with the government, and hence the responsibility lies on the Government to begin the journey in a responsible and forward-thinking way.

Step 1: Digital Readiness Assessment Findings: January 2021

As was explained in section 6 of this report, the Digital Readiness Assessments findings for UNDPs Chief Digital Office in New York will be presented in mid-January 2021. The assessment outlines five fields of action for governments to achieve

successful digital transformation, including: Infrastructure, Government, Regulation, Economy, and People. Once the results are in, the Government should work on analysing the assessment findings and see Grenada's gaps and advantages with regards to digital transformation and implement a plan.

Step 2: Regulatory Assessment: February– April 2021

As was highlighted in the recommendations section, a regulatory assessment is essential to understand the current regulatory gaps and advantages in Grenada. The Digital Readiness Assessment will shed some light on how Grenada is doing in terms of forward-thinking regulations and policies that enable a transformation into a SSS, this includes providing the country with scores on its performance in data standards and protection, e-commerce, competitive environment, cybersecurity, social protection, and ethical standards. However, once the results are in, the Government should do a deep dive into the regulatory environment of the country and see if new laws and policies need to be enacted to develop the creation of new business models and value chains based on the Blue, Green, Circular and Digital Economies, and which laws are outdated and hinder new business solutions and innovation. The regulatory assessment should be done quickly in order to identify those areas that might pose bottlenecks to the SSS transformation of the country, and which areas require simple changes. The most important aspect of this regulatory assessment is that it happens fast, with the aim of preventing individuals and businesses ideating business solutions from running into bottle necks in the process. For this reason, we advise that this Regulatory Assessment take place immediately following the dissemination of the Digital Readiness Assessment in January.

Step 3: Actionable Projects Demonstration Effect - February 2021 – December 2021

As was proposed in Section 6 of this report, UNDP has a list of digital innovations that can be contextualized and adapted to the context of Grenada and fit within the proposed vision. The e-future programme provides small businesses with tools and knowledge to digitise their business models and have an online presence, fitting into the Digital Economy component of the Digital Society pillar. The BlueBot project leverages the power of data and emerging technologies to map the marine environment, fitting into the Blue Economy component of the Resilience pillar. UNDP should work with the Government to implement and record the progress of both of these projects, implementing an evaluation framework that measures the progress of both projects with regards to their impacts on livelihoods, the economy, and positive externalities or spill over effects. The communications piece proposed in Annex 2 of this report, can be used to provide news bulletins and generate awareness on the impact of these projects.

Step 4: Leverage existing institutional capacities and designate a government unit to oversee and manage the transformation to a Smart Small State– February– December 2021

As was highlighted in Recommendation 2, the Government should set up a team or unit from an existing government body to oversee this transformation process to a SSS. The World Bank's DG4R project proposes the creation of a Digital Transformation Agency (DTA) to manage the digital transformation of the Grenadian Government. Given that this document outlines a vision of a SSS transformation in Grenada, and digital transformation is just one component of this vision, the DTA -if ever established- could be expanded to oversee all other aspects of the vision, including the aspects related to climate

adaption, disaster management, and the blue, green, and circular economies. The unit tasked with overseeing the transition should determine the roadmap, targets, and timeline of the transformation process in short-term, medium term, and long-term time horizons. The unit should be able to receive and communicate inputs from all government agencies and bodies and keep them accountable on their progress. For this reason, the first task of the designated unit should be to design the overall transformation strategy to a SSS, based on the outlined vision that this document is delivering. Furthermore, this unit should guarantee that initiatives are coordinated, avoid duplication of efforts, guarantee cost efficiency, and socialize the strategy among government stakeholders and civil society at large. The designated unit should be selected as soon as possible, and be fully working on this endeavour by mid 2021, in order to have full management authority to drive a SSS strategy forward. By December 2021, the designated unit should participate in all government meetings.

Step 5: Joint Statement by ministerial and government leads committing to transform their agencies – June 2021

Once the unit tasked with managing the transition to a SSS is in the process of being established and socialised within high-level government officials, a public statement or a series of public statements should be made by all government agencies, signalling their commitment to transform their agencies in order to accommodate the new national SSS strategy. This step will be essential to guarantee accountability, commitment to change, and to legitimize the proposed strategy. Furthermore, when individual citizens and local businesses see this happening, it will also convey the message that change is coming and invite society to partake in this transformation process to a SSS.

Step 6 - Innovation Hub – July 2021

The Innovation Hub should be established at the same time that the unit tasked with managing and overseeing the SSS transformation is designated, sometime before the end of 2021, and should fall under the purview or authority of said unit. Recommendation 6 provided a series of ideas of potential use cases of the Innovation Hub. However, having a well-defined management structure, organisational roles, and possible physical infrastructure will be a great way to guarantee civil society and private sector engagement. The Hub can be used to communicate the strategy and at first serve as a vehicle of dialogue between the Government and civil society, in order to address people's concerns and worries in transparent and efficient ways. This will also help the Government assess society's reaction to the transformation to a SSS and better tailor communication and marketing efforts. Moving forward the Innovation Hub can be the Eastern Caribbean's centre for excellence on science, technology, and sustainable development, where young people seek new skills and partnerships to create smart business solutions leveraging the Blue, Green, Circular, and Digital Economies.

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9. ANNEXES

Annex 1. – List of Consultations

- Mr. Simon Stiell – Minister with responsibility for Environment, Climate, Tourism and Civil Aviation
- Desire Stephen – Permanent Secretary Environment, Climate, Tourism and Civil Aviation
- Hon Pamela Moses Minister with responsibility for Needy Assistance, Uniform Allowance, Special Projects and ICT
- Finley Jeffrey Permanent Secretary, Ministry of ICT
- Hon Emmeline Pierre Minister with responsibility for Education, Information, Religious Affairs and HR
- Hon Kate Skeeter-Lewis Minister for Youth Development
- Fitzroy James, Consultant, Government of Grenada, Department of Trade and Economic Cooperation
- Anna Brizan – Permanent Secretary, Infrastructure Development, Public Utilities, Energy, Transport and Implementation
- Superintendent Randy Connaught – Officer in Charge of Traffic, Royal Grenada Police Force
- ASP Wilson – Royal Grenada Police Force
- Inspector Alan James – Royal Grenada Police Force
- Roydon Beharry – Youth Coordinator, Ministry of Youth
- Kimron Corion – Communications Manager – Grenada Tourism Authority
- Peter English – IT Administrator – Supreme / Magistrates Court
- Dr. Spencer Thomas – Chairman, Grenada Sustainable Development Council
- Hon Norland Cox – Minister of Infrastructure
- Elvis Morain – Permanent Secretary, Agriculture and Lands
- Michael Stephens – Permanent Secretary, Fisheries and Cooperatives
- Tobias Calliste – Fisheries Office – Fisheries
- Dr. Francis Martin – Permanent Secretary - Ministry of Health
- Jocelyn Paul - Implementation
- Delysia Decoteau - Tourism
- Michelle Braithwaite – Education
- Representatives from George F. Huggins
    - Anya Chow – Chung – CEO, George F Huggins
    - Christopher David – Director, Wholesale Division, George F Huggins
    - Don Philip – Director, Information Technology, George F Huggins
- Emanuel Duncan – President Grenada Chamber of Commerce
- Ivor Gill – CEO, Lotek Solutions
- Dr. Thompson Cummings – Professor and former Chair Department of Computer Science St. Georges University

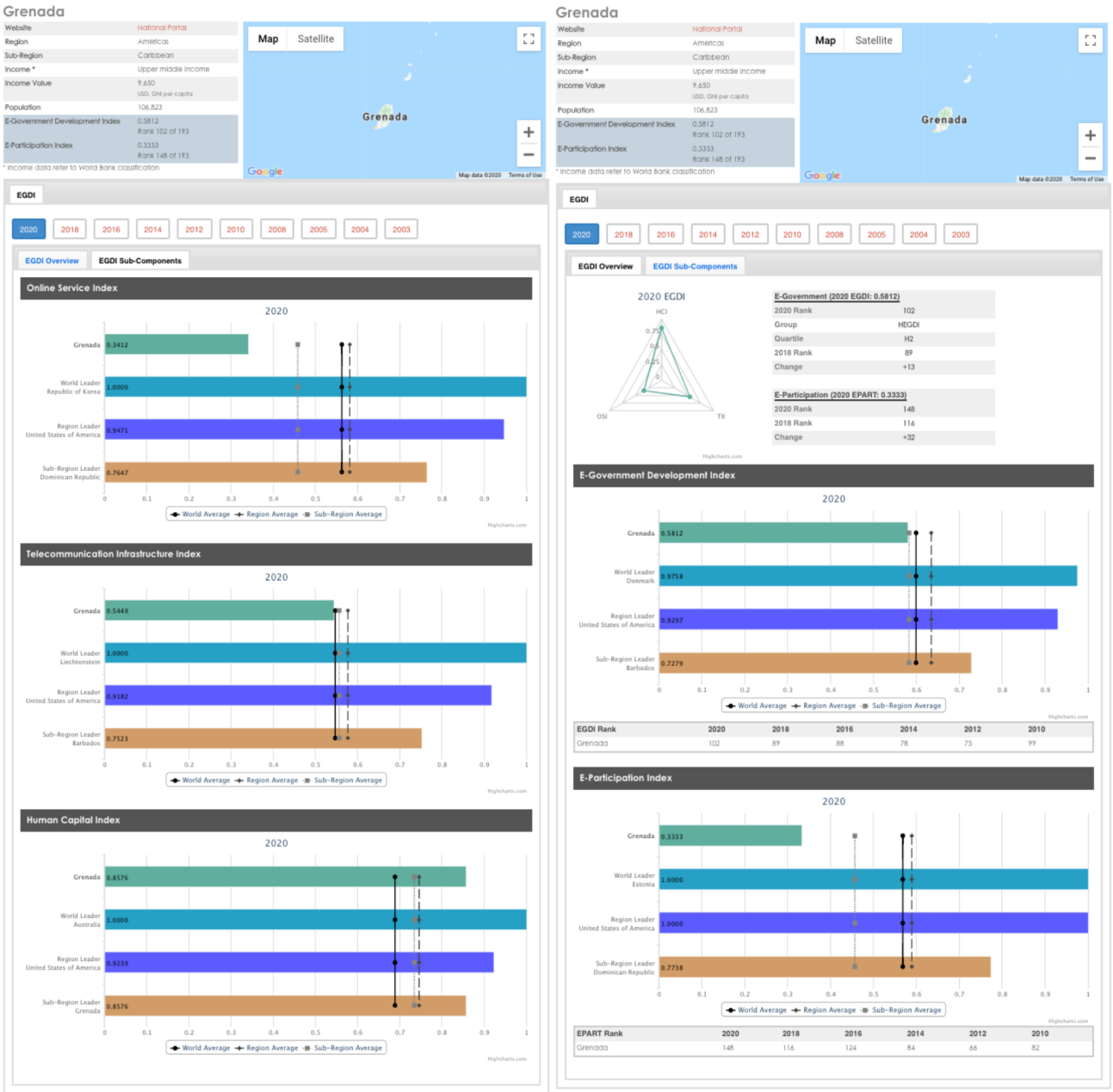
UNDP

-Armen Grigoryan - UNDP Regional Cluster Leader Climate Change/Disaster Resilience and Global Energy - UNDP Global Centre Singapore
-Calum Handforth - Digitalisation and Smart Cities – UNDP Global Centre Singapore
-Janin Civitate - Programme Advisor (Deputy Director, a.i.) – UNDP Global Centre Singapore
-Riad Meddeb - Senior Principal Advisor for Small Island Developing States – UNDP New York
-Mark Belinsky – Digital Innovation and Scaling Specialist – UNDP Chief Digital Office New York

Annex 3. – Smart Grenada - Communicating the vision

An interactive communications tool is under construction. It will be centered around the map of Grenada as the primary image and illustrations to depict each pillar and pop-up windows to explain the transformations. See the prototype under development at: https://undp-v2-grenada.webflow.io/explore-map

Annex 4. – Grenada E-Government Development Index Snapshot



Source: UNITED NATIONS DEPARTMENT FOR ECONOMIC AND SOCIAL AFFAIRS. DESA, UNITED NATIONS E-GOVERNMENT SURVEY 2020

Annex 5. – Grenada Ease of Doing Business Snapshot

Doing Business 2020 | **Grenada**

Ease of Doing Business in Grenada

Region	Latin America & Caribbean
Income Category	Upper middle income
Population	111,454
City Covered	St. George's

DB RANK: 146 | DB SCORE: 53.4

Rankings on Doing Business topics - Grenada

Topic Scores

Starting a Business (rank)	89
Score of starting a business (0-100)	88.0
Procedures (number)	6
Time (days)	12
Cost (number)	14.4
Paid-in min. capital (% of income per capita)	0.0
Dealing with Construction Permits (rank)	130
Score of dealing with construction permits (0-100)	62.5
Procedures (number)	15
Time (days)	146
Cost (% of warehouse value)	1.8
Building quality control index (0-15)	5.0
Getting Electricity (rank)	93
Score of getting electricity (0-100)	73.4
Procedures (number)	5
Time (days)	38
Cost (% of income per capita)	157.4
Reliability of supply and transparency of tariff index (0-8)	3
Registering Property (rank)	147
Score of registering property (0-100)	50.1
Procedures (number)	8
Time (days)	32
Cost (% of property value)	7.4
Quality of the land administration index (0-30)	7.0

Getting Credit (rank)	152
Score of getting credit (0-100)	30.0
Strength of legal rights index (0-12)	6
Depth of credit information index (0-8)	0
Credit registry coverage (% of adults)	0.0
Credit bureau coverage (% of adults)	0.0
Protecting Minority Investors (rank)	105
Score of protecting minority investors (0-100)	50.0
Extent of disclosure index (0-10)	4.0
Extent of director liability index (0-10)	8.0
Ease of shareholder suits index (0-10)	8.0
Extent of shareholder rights index (0-6)	2.0
Extent of ownership and control index (0-7)	2.0
Extent of corporate transparency index (0-7)	1.0
Paying Taxes (rank)	143
Score of paying taxes (0-100)	59.6
Payments (number per year)	42
Time (hours per year)	140
Total tax and contribution rate (% of profit)	47.8
Postfiling index (0-100)	48.9

Trading across Borders (rank)	137
Score of trading across borders (0-100)	61.5
Time to export	
Documentary compliance (hours)	13
Border compliance (hours)	101
Cost to export	
Documentary compliance (USD)	40
Border compliance (USD)	1,034
Time to export	
Documentary compliance (hours)	24
Border compliance (hours)	37
Cost to export	
Documentary compliance (USD)	50
Border compliance (USD)	1,256
Enforcing Contracts (rank)	80
Score of enforcing contracts (0-100)	59.3
Time (days)	688
Cost (% of claim value)	32.6
Quality of judicial processes index (0-18)	11.0
Resolving Insolvency (rank)	168
Score of resolving insolvency (0-100)	0.0
Recovery rate (cents on the dollar)	No Practice
Time (years)	No Practice
Cost (% of estate)	No Practice
Outcome (0 as piecemeal sale and 1 as going concern)	0
Strength of insolvency framework index (0-16)	No Practice

Source: Adapted from World Bank Group Doing Business Rankings 2020. Available at: https://www.doingbusiness.org/en/reports

GRENADA SMART SMALL STATE
Developing the Vision

Barbados and the Eastern Caribbean

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