

A BACKGROUND PAPER >> BUILDING REGULATIONS

360° Resilience

A Guide to Prepare the Caribbean
for a New Generation of Shocks



European Union



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Global Facility for Disaster Reduction and Recovery



WORLD BANK GROUP

The Building Regulation for Resilience Program

Resilient Building Regulation in the Caribbean

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Diagnostic/Situation Analysis:

Background

The Caribbean region's exposure to natural disaster and climate events combined with population growth and urban development concentrated in highly risk prone Low Elevation Coastal Zones¹, leaves homes, people, and significant infrastructure assets highly vulnerable to disaster and climate impacts. Compounding this vulnerability is the prevalence of informal building and construction practices in the region. While many countries in the Caribbean have building codes in place, there remains a pervasive gap in the effective application of risk informed land use and adequate implementation and enforcement of building regulations (including building codes), all of which contributes to rising rates of informal, especially among poorer populations. Some of key contributing factors are under resourced regulators, lack of regulatory cooperation among relevant agencies, a lack of public awareness on the significance of compliance with building regulation, inadequate quality infrastructure services (e.g. testing and product certification) and insufficient political support for advancing this agenda. This confluence of factors often results in devastating disaster losses, as have been seen in countries like Dominica and the Bahamas in recent years. In Dominica, the low uptake of improved construction practices, weak enforcement of building codes, and the use of poor-quality construction materials left 90% of the country's housing stock either partially damaged or destroyed² in the aftermath of Hurricanes Irma and Maria in 2017. The damage amounted to US\$353 million to the housing sector alone³ with Hurricane Maria estimated to have cost Dominica 225% of its GDP.⁴ The economic and human toll of disasters for the Caribbean is substantial. For some countries the damage exceeds the size of the economy, leaving huge reconstruction needs that can take years to be fully met. Effective building regulations ensure that builders and governments apply safe standards for the siting and construction of buildings so that they can withstand these events, protecting assets, their inhabitants and ultimately economic development. Recent disaster events in the Caribbean serve as a reminder of the urgent need to strengthen building regulation in the Caribbean as a means to reduce the vulnerability of the housing and building stock while increasing human and economic resilience. This note will broadly describe the current status of building regulation in the Caribbean, highlighting the biggest challenges to the implementation and enforcement of building codes, as well as proposing some solutions to overcome them.

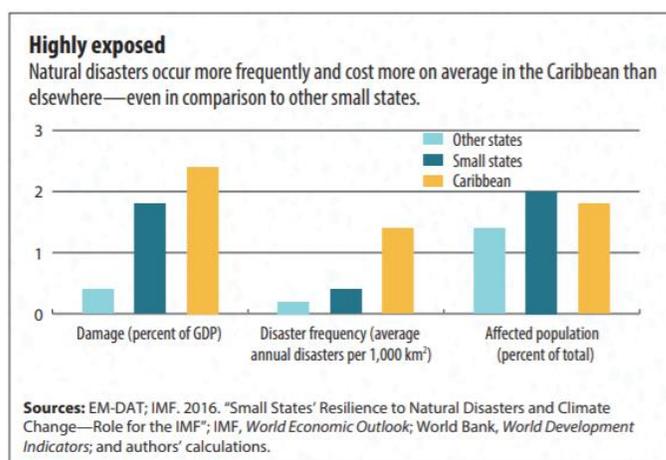
¹ <https://www.ipcc.ch/srocc/chapter/chapter-4-sea-level-rise-and-implications-for-low-lying-islands-coasts-and-communities/>

² Guide to Dominica Housing Standards 2018. Physical Planning Division, Government of Dominica. 2018. <http://physicalplanning.gov.dm/land-use-and-development/documents/142-guide-to-dominica-housing-standards-2018>

³ Post-Disaster Needs Assessment: Hurricane Maria. Commonwealth of Dominica. 2017. <https://www.gfdrr.org/sites/default/files/publication/dominica-pdna-maria.pdf>

⁴ Bracing for the Storm: For the Caribbean, Building Resilience is a Matter of Survival. Finance & Development, World Bank. 2018. <https://www.imf.org/external/pubs/ft/fandd/2018/03/pdf/otker.pdf>

Figure 1: Caribbean countries are highly vulnerable to frequent and costly impacts⁵



The Status of Building Codes and Standards in the Caribbean

Due to the region's high exposure to climate events and historic disaster losses, many countries in the region already do have a building codes in place. In fact, the Caribbean region is already quite advanced in developing and promoting resilient building codes and standards. In the 1980s, the Caribbean Uniform Building Code (CUBiC) was developed to provide appropriate building standards for the Caribbean region.⁶ Although these standards were not adopted in a widespread manner across the region, they have provided a technical basis for building codes in the Eastern Caribbean region. In the 1990s, the Organisation for Eastern Caribbean States (OECS) Secretariat developed a model building code based upon CUBiC to facilitate the introduction and adoption of building codes in Eastern Caribbean countries.⁷⁸ Various editions of the OECS codes have been developed and iterated upon, taking into account new information on evolving climate risks, especially wind and earthquake load information, and best practices for construction. The 7th edition, published in 2016, is the most recent, which has now been adopted by each OECS member country and tailored to their specific administrative and enforcement requirements. Other building codes adopted in the region include the International Code Council's (ICC) International Building Code (IBC) and International Residential Code (IRC). In 2017, Jamaica entered a memorandum of understanding (MoU) with ICC to adopt these codes with local amendments and requirements for the design and construction of buildings.⁹ Regionally, the Caribbean Disaster Emergency Management Agency (CDEMA) and the Caribbean Regional Organisation for Standards and Quality (CROSQ), developed a

⁵ Bracing for the Storm: For the Caribbean, Building Resilience is a Matter of Survival. Finance & Development, World Bank. 2018. <https://www.imf.org/external/pubs/ft/fandd/2018/03/pdf/otker.pdf>

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<http://www.oas.org/pgdm/document/codemtrx.htm#:~:text=The%20Caribbean%20Uniform%20Building%20Code,the%20introduction%20of%20national%20codes.>

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<http://www.oas.org/pgdm/document/codemtrx.htm#:~:text=The%20Caribbean%20Uniform%20Building%20Code,the%20introduction%20of%20national%20codes.>

⁸ Antigua & Barbuda, Commonwealth of Dominica, Grenada, Montserrat, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines, the British Virgin Islands, Anguilla, Martinique, and Guadeloupe

⁹ <https://www.iccsafe.org/about/periodicals-and-newsroom/international-code-council-and-bureau-of-standards-jamaica-sign-a-milestone-agreement-to-advance-building-safety-in-jamaica/>

regional code or practice to inform the resilient construction of houses in 2005 and these agencies continue to promote resilient building regulation across the region. Most recently, in 2019, the CARICOM Regional Organization for Standards and Quality (CROSQ) released a set of new standards for energy efficient buildings for CARICOM Member States, building off of the 2018 CARICOM Regional Energy Efficiency Building Code (CREEBC), which covers commercial and residential construction.¹⁰

Key Challenges: Risk Informed Land Use, Implementation & Enforcement of Building Regulation, and Informal Construction

No matter how strong and rigorous the requirements of the building code are, if they are not properly implemented in the siting, design, and construction of buildings through adequate zoning and permitting processes they will not be effective. Climate risks are constantly evolving in the region, therefore design and construction requirements specified by codes also need to be systematically updated to capture changes to wind hazards, rainfall intensity, duration, and frequency, among other risks. Yet, as is often the case in the Caribbean, hazard data and maps are often outdated, disparately developed according to different project needs, and not widely available, let alone systematically incorporated into building practices. The result can be seen in many Caribbean countries where builders and developers often rely on local knowledge of risk-prone areas, which may not capture the full spectrum of potential risks, changes in risks, or suitability factors of a given site.¹¹ In the Bahamas in 2019, Hurricane Dorian's high winds and storm surge compounded existing risks from poor construction practices and communities and infrastructure located in vulnerable areas, resulting in 93% of the total damage to the housing sector.¹² Small islands like St. Lucia, with limited land availability, much of which is susceptible to natural hazards, face an extra set of hurdles to safely siting a building. In such cases, resilient construction is the strongest line of defense against natural hazards.

Risk informed land use and the implementation and enforcement of building codes are typically the weakest part of the building regulatory system due to a lack of human and financial resources allocated to this function.¹³ Physical Planning Units (PPUs), or their equivalents in the region, are often inadequately staffed to monitor, inspect and enforce construction activities given the rate of development. Further, training and continuing education opportunities for building regulators are often not readily available on up-to-date hazard risks or the latest building and engineering science innovations. PPUs in countries like St. Vincent & the Grenadines, with a chain of smaller islands to monitor, face further financial and logistical challenges to access remote locations to regulate construction practices.

Across the Caribbean, informal construction in the Caribbean is widespread. It is estimated that more than 60% of the urban population in the Caribbean lives in substandard, informally built houses that are highly

¹⁰ CROSQ Releases New Energy Efficiency Standards Developed in Collaboration with the International Code Council and ASHRAE. CROSQ. 2019. <https://dev-gfdr-drupal8.pantheonsite.io/sites/default/files/publication/building-regulatory-capacity-assessment-level-2-2017.pdf>

¹¹ SVG BRCA

¹² Executive Summary: Assessment of the Effects and Impacts of Hurricane Dorian in the Bahamas. ECLAC, IDB, PAHO and WHO. 2019. <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=EZSHARE-1256154360-486>

¹³

<http://www.oas.org/pgdm/document/codemtrx.htm#:~:text=The%20Caribbean%20Uniform%20Building%20Code,the%20introduction%20of%20national%20codes.>

vulnerable to the effects of earthquakes and hurricanes¹⁴. An Informal Building Sector Study in Jamaica found that though many building practitioners are skilled in masonry, carpentry and steel work, many are not formally qualified. While many informal practitioners have significant skill and should be commended for successfully working in environments where many others would fail, the lack of accountability coupled with piecemeal construction processes often leads to houses that are vulnerable to collapse in hurricane or earthquake events. The study found that while hurricanes are perceived as the most likely hazard, with 56% of the 240 respondents surveyed claiming to have lived in houses affected by hurricane winds, few take mitigation measures.¹⁵ Therefore, supporting resilient construction is not only about enhancing the capacity of government institutions to implement building regulation, but also ensuring informal builders are equipped with the tools and knowledge they need to build resiliently.

Ongoing Efforts to Strengthen Building Regulation

In an effort to strengthen the administration and implementation of building regulation in the Eastern Caribbean, the OECS Secretariat initiated the iLand Resilience project in 2015 to provide best practice recommendations for implementing the Revised OECS Building Code. The project concluded in 2018, resulting in the development of guidance for administering the building code, country-specific recommendations for improving the laws to mandate the code as well as an assessment on the key gaps towards effective implementation of the code, and a communications and awareness raising strategy, which would enhance public awareness on the significance of adherence to building codes for public good. This represents a significant effort towards improving building code compliance in the region and serves as a model for other countries to build upon in the Caribbean. Yet, as is common, a lack of funding to carry forward the implementation of these activities at the country level has stalled progress.

Solutions:

A comprehensive and effective building regulatory framework

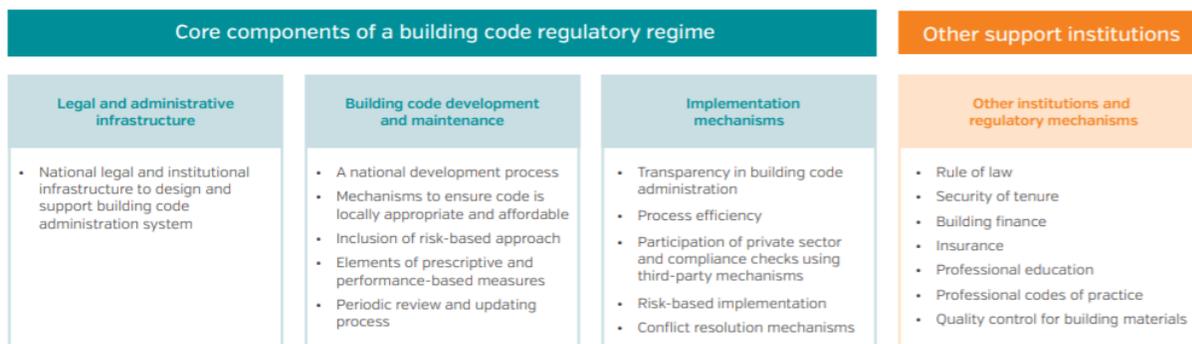
Caribbean States face unique challenges to advancing the building regulatory agenda including, limited land availability, access to suitable building materials, technical expertise and capacity to implement and enforce building regulations, and pervasive informal construction. Further, these challenges are not equal across islands of varying sizes. Larger countries, like Belize and Jamaica, have more land to safely build on whereas smaller countries, like St. Kitts & Nevis, have limited land availability of which much is prone to natural hazards like coast flooding and erosion due to sea level rise, storm surge, landslides and other hazards. When these challenges are not adequately addressed, low levels of resilient buildings result, leaving structures and their inhabitants vulnerable to the next storm. Building and land use regulation are remarkably powerful tools for increasing people's safety and resilience to climate change and disasters risks. To achieve this requires a comprehensive and effective building regulatory framework – a system of interrelated legislation, codes, compliance mechanisms, education and training requirements, product testing and certification, professional qualifications and licensing schemes that support a safe, sustainable and resilient built environment. A comprehensive building regulatory framework helps the market

¹⁴ Understanding and Engaging the Informal Sector for Resilient Housing Across the Caribbean. Understanding Risk Forum. 2019. <https://understandrisk.org/understanding-and-engaging-the-informal-sector-for-resilient-housing-across-the-caribbean/>

¹⁵ Jamaica Informal Building Sector Study. BRR and Build Change. 2018. <https://dev-gfdrr-drupal8.pantheonsite.io/sites/default/files/publication/Jamaica%20Informal%20Building%20Sector%20Study%20%28May%202019%29.pdf>

understand what is expected, provides the tools the market can use to deliver well-performing buildings, and establishes the necessary oversight to help assure building design and construction meets societal expectations. While each country in the Caribbean will have its own unique physical landform and built environment considerations as well as governmental structure and authorities responsible for building control, the process for strengthening the building regulatory framework will be similar. When this apparatus is functioning well, it enhances the legitimacy of the building code process and creates an enabling environment for greater compliance with these standards. Beyond resiliency objectives and guiding urban development, an effective building regulatory framework can support the advancement societal objectives in the Caribbean, including accessibility for all, affordability and resource efficiency.¹⁶

Figure 1: Components of the Building Regulatory Framework



The Building Regulation for Resilience Program recommends the following solutions to Caribbean countries pursuing greater levels of resilient construction across five domains:

1. Address the informal sector construction

An important part of this building regulatory framework conversation is addressing the high levels of informal building that occurs in the Caribbean. National regulatory frameworks should not stay silent on this matter. It is advisable for national building legislation to provide guidance or provisions for how the national and local governments should manage informal sector builders. Jamaica is already doing this through its Building Act 2017, which establishes provisions for the regulation of a new category of previously unregistered and unregulated (informal) builders. The Act gives building practitioners the opportunity to be registered formally and receive a license to construct residential and small commercial buildings. The majority of such buildings have not previously been subject to regulatory review or inspection; meaning, this provision provides an important extension of the benefits of building standards to the informal building sector. Further, the Act mandates the creation of a Building Practitioners Board to develop and oversee training and licensing of building practitioners as well as determine the necessary qualifications for registration and licensing.¹⁷ This is a relatively new initiative of which the results have not yet been proven but it is a concept that may be applied elsewhere in the region.

¹⁶ Building Regulatory Capacity Assessment: Level 2 – Detailed Exploration. GFDRR. 2017. <https://dev-gfdr-drupal8.pantheonsite.io/sites/default/files/publication/building-regulatory-capacity-assessment-level-2-2017.pdf>

¹⁷ Kenya BRCA <https://www.gfdr.org/en/kenya-brca>

2. Strengthen Legal and Administrative Foundations

Most countries in the Caribbean will have some form of legislative and legal foundation for building regulation established. However, legislation which establishes the principles of regulatory implementation to create a complete system of compliance and responsibility is often missing. For example, in Jamaica, when the country began developing a new building code in 2002, the Jamaican National Building Code Steering Committee initially focused on the strictly technical aspects of building standards and adaptation. However, it soon became clear to the Committee that a parallel legislative effort was equally necessary to establish a complete system of compliance and responsibility that would ensure the new code could be practically enforced through appropriate legislation and educational programs. Understanding the legal support mechanisms for successful building code compliance, as well as the timely passage of enabling laws, is particularly critical in driving the success of regulatory reforms in the Caribbean.¹⁸ A robust legal and administrative foundation should mandate:

- Hazard-risk informed building codes for engineered structures and appropriate guidance on non-engineered construction for builders and owners.
- Initiatives to continuously inform, educate, and collaborate with local governments and municipal authorities to implement building and land use regulations.
- Which agency is responsible for the regular updating of hazard maps and how regularly hazard mapping and risk assessment exercises are carried out
- Sectoral regulators to support monitoring and enforcement of building regulation (e.g. Fire Brigade, Water & Sanitation, etc.)
- The participation of relevant financial institutions (e.g. banks, insurance sector, etc.) in the building regulatory process so that they provide adequate market incentives
- Initiatives to encourage innovation in the evaluation of building performance, support education and training for building professionals and construction trades, and support public understanding of the health and safety benefits of regulatory compliance.
- Minimum qualifications for building professionals, including engineers, architects, planners, contractors, and building officials. Such requirements for professional competency are key to improving the quality and safety of construction.¹⁹

Countries of different sizes will have different resources and capacity limitations, which should be taken into consideration.

3. Ensure Building Code Development and Maintenance Processes are Feasible and Relevant to the Local Context

Building codes are at the heart of the building regulatory regime. They translate societal values related to public health, safety, accessibility and energy efficiency, into technical requirements which serve as minimum physical standards for design, construction, maintenance and renovation of buildings. They communicate the acceptable level of risk and provide a common understanding for building professionals, owners, and regulators in a particular place. This latter point is critical. Building codes must be locally

¹⁸ Building Regulation for Resilience: Managing Risks for Safer Cities. 2015. <https://dev-gfdrr-drupal8.pantheonsite.io/sites/default/files/publication/BRR%20report.pdf>

¹⁹ Building Regulation for Resilience: Managing Risks for Safer Cities. 2015. <https://dev-gfdrr-drupal8.pantheonsite.io/sites/default/files/publication/BRR%20report.pdf>

appropriate and match locally available materials and production capacities. Building codes transposed from higher-income settings frequently reference technical standards for a limited range of construction materials and methods and often do not address locally prevalent non-engineered construction. Without offering an adequate range or “stratification” of technical standards to respond to different levels of sophistication and realities in construction, building codes will relegate indigenous or vernacular construction practices to the vulnerabilities of the informal sector. The same applies to the requirements for professional qualifications and licenses. If the curricula don’t entail knowledge of locally relevant vernacular construction, they may cause professionals to be unfairly wary of non-engineered structures because it has not been the subject of their training. Thus, widening the gap between the formal and informal building sectors.

Another important dimension of locally relevant building codes in the Caribbean is the extent to which they include up-to-date hazard information in terms of the frequency and severity of expected events. In the Caribbean, hazard maps on a range of common hazard types typically exist and provide helpful information on areas prone to flooding or storm surge. However, these maps are often outdated, with low resolution, which limits the application of GIS analysis and ultimately the translation of this information into risk management measures. To overcome this challenge, building requirements should reference specific hazard maps, and those requirements must become the basis for design, construction, inspection and compliance with the building code.

Effective building codes share the following characteristics:

- Formed through an open and participatory development process that includes building professionals, developers, materials manufacturers, representatives from the finance, commercial and social services sectors;
- Inclusive of all aspects of the range of relevant building practices, including non-engineered construction of the informal sector in addition to sophisticated engineered structures;
- Address the basic issues of structural integrity; fire safety; electrical; plumbing; and mechanical systems; and resource efficiency in an integrated manner;
- Aspire to provide the highest level of amenity and safety that can be achieved with available resources all while recognizing the tradeoff of safety, affordability and feasibility (unrealistic standards often have the effect of pushing builders into the informal sector);
- Are risk-based: i) seeking to reduce hazard exposure, usually through hazard maps with differentiated zones of expected hazard impact; ii) indicating building requirements according to estimated expected hazard loads to prevent structural failure, and iii) assigning importance factors to specific building function and occupancy requirements for homes, hospitals, schools, fire stations, etc. thereby conveying the social consequences of structural failure
- Are clear, unambiguous and provide adequate guidance to designers and builders to facilitate compliance;

- Are subject to periodic review and updating (usually on a three- to five-year cycle) to incorporate new knowledge related to experience of building performance and innovation in construction materials and practice.²⁰

4. Strengthen Mechanisms for Implementation and Building Control

In the Caribbean, local implementation and enforcement of building regulation is commonly cited as one of the most prevalent challenges. Implementation and enforcement are the point at which compliance should be determined and assured, a process often referred to as building control. Building control is one of the most important aspects of the building regulatory framework. If aspects of building control are weak, it can negate the benefits of strong legal foundations and technical regulations. Greater investment in regulatory implementation capacity for new construction will provide a foundation for extending regulatory practice to the inspection and improvement of existing buildings that may be vulnerable. To strengthen the capacity and mechanisms for enhanced building control, Caribbean countries should invest in:

Education, Training and Skills Development

- Public awareness and education campaigns that raise public consciousness on the significance of compliance with building regulation;
- Building professionals trained on the regulations and supporting infrastructure (e.g. building standards);
- Educational curricula regarding the structure, content and use of land use planning, building, and fire regulation that can be used as a basis for formal education and continuing professional development for architects, engineers, planners, and building trades;
- A sound set of university educational programs for professionals, such as architecture and engineering, but also appropriate vocational & technical training institutions for skilled tradespersons and artisans who are involved in areas such as construction, installation and maintenance of buildings and systems;
- Training for building department staff and inspectors to enhance both their advisory and enforcement capacity;
- The provision of certification programs from accredited institutions and professionals;

The Capacity of Qualified Professionals

- Enhancing the supporting role of regulatory function rather than police enforcement;
- Use regulatory capacity to coordinate training for building trades, architects, engineers, and owner-builders on improved construction techniques and code compliance;
- Improved technical outreach services to designers and builders to support code-compliant design and construction;
- Extended regulatory practice to the inspection and improvement of existing vulnerable buildings
- Providing funding and support to building departments and ensure building officials are technically qualified and adequately paid;

Implementation Processes that Promote Efficiency, Effectiveness and Accountability

²⁰ Building Regulation for Resilience: Managing Risks for Safer Cities. 2015. <https://dev-gfdrr-drupal8.pantheonsite.io/sites/default/files/publication/BRR%20report.pdf>

- Simplify and reengineer building permitting and inspection processes;
- Apply ICT to support increased efficiency and transparency of building control procedures;
- Apply fee levels consistent with the cost of regulatory services;
- Make public comprehensive information on hazard map exposure and the rationale for land use management.

A Building Regulatory Capacity Assessment (BRCA)²¹ can support countries to evaluate their status quo in relation to the three fields presented above: (1) assess the quality of their existing legal and administrative foundation, identify the critical gaps and propose reforms to address and how to overcome them, (2) assess the adequacy of their building code development and maintenance processes, and (3) assess the adequacy of their implementation and building control processes to identify the key areas for improvement and recommend reforms to address them.

5. Pool Regional Resources

Many countries in the Caribbean are quite small and lack an abundance of financial and human resources. Pooling regional resources through enhanced collaboration can offer economies of scale that cannot be achieved otherwise. We have seen this in the Caribbean already with the OECS Model Building Code, which has now been adapted to each OECS member state and their specific hazard contexts. The development and updating of building codes are time and resource intensive processes. Centralizing these processes at the regional level can allow countries to focus their very limited human resource capacity towards ensuring adequate implementation and enforcement of these codes. A regional CARICOM platform for collaboration could offer greater opportunities for industry practitioners to network, share relevant experiences, lessons learned and best practices as well as obtain training.²² This could look function as a Regional Centre for Excellence that is jointly operated by regional agencies with a stake in enhancing resilient construction through building regulation. Regional organizations like CDEMA, the CARICOM Regional Organization for Standards and Quality (CROSQ), the Caribbean Development Bank (CDB), and the Organisation for Eastern Caribbean States (OECS) are already prioritizing this agenda. An ongoing regional initiative, supported by the World Bank and the EU, coalesces all of these critical partners around the agenda of strengthening building regulation in CARICOM member states. Here are several ways a regional platform could function to centralize processes and maximize talent across the region:

- Centrally developing and updating a model building code for the region on a regular basis
- Providing capacity building and training for locally calibrating model code provisions to specific hazard maps
- Providing training, educational and certification opportunities for builders and other building sector practitioners to maintain and improve their knowledge base to support greater building code compliance
- Ensuring adequate guidance exists to support building code implementation (e.g. building code companions, guides, checklists, etc.) is possible when there is a common regional code in place
- Serving as a knowledge and advisory hub where local implementers can learn about best practices in the region and globally as well as obtain advisory support for resolving building regulation challenges

²¹ <https://www.gfdrr.org/sites/default/files/publication/building-regulatory-capacity-assessment-level-2-2017.pdf>

²² OECS GCCA Project on CCA and SLM in the Eastern Caribbean: Development of Best Practice Recommendations for Implementing the Revised OECS Building Code 2015. Volume 1: Executive Summary.

- Serving as a hub for research and development on all matters relating to the enhancement of building code compliance in the region (e.g. data generation, collection, analysis & synthesis, and dissemination)
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Indicators:

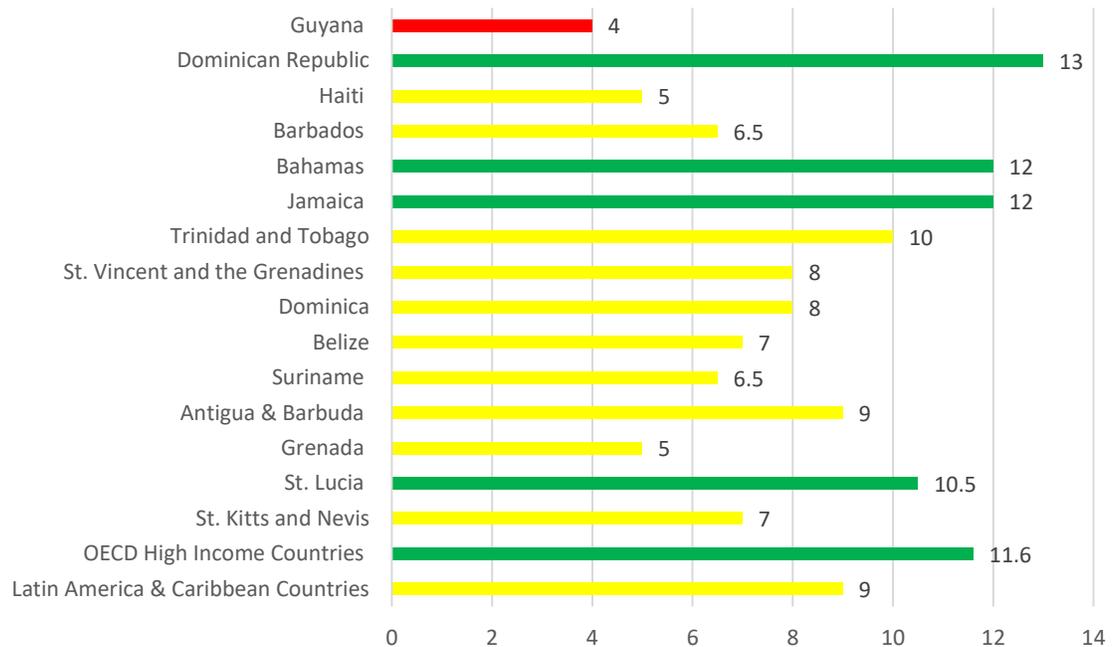
To monitor progress towards more resilient building regulation, this sector note draws upon the Doing Business Building Quality Control Index, which measures the quality of building regulation and its implementation. The Building Quality Control Index is based on six indices - the quality of building regulations, quality control before, during, and after construction, liability and insurance regimes, and professional certifications indices. The higher values indicate better quality control and safety mechanisms in the construction regulatory system are in place.²³ In the Caribbean, most countries have building regulations and processes to implement them in place; however, there is a need to strengthen them to enable greater compliance with building regulation.

Building Quality Control & Safety Mechanisms in the Construction Regulatory System (Scoring from 0-15)		
Need Priority Attention	Are in Place but Need Attention	Are Satisfactory
(0-4)	(5-10)	(11-15)

Source: Doing Business 2020 – World Bank

²³ <https://www.doingbusiness.org/en/methodology/dealing-with-construction-permits>

Country Scoring Building quality control index for the Caribbean



Source: Doing Business 2020 – World Bank

Building Quality Control Index (0-15)

Country	Score	Heat Map
Latin America & Caribbean Countries	9	Yellow
OECD High Income Countries	11.6	Green
St. Kitts and Nevis	7	Yellow
St. Lucia	10.5	Green
Grenada	5	Yellow
Antigua & Barbuda	9	Yellow
Suriname	6.5	Yellow
Belize	7	Yellow
Dominica	8	Yellow
St. Vincent and the Grenadines	8	Yellow
Trinidad and Tobago	10	Yellow
Jamaica	12	Green
Bahamas	12	Green
Barbados	6.5	Yellow
Haiti	5	Yellow
Dominican Republic	13	Green
Guyana	4	Red
Sint Maarten	n/a	Grey
Turks and Caicos	n/a	Grey