

Sectoral Recovery Capacity Assessment Report for Antigua and Barbuda's Agriculture Sector



© 2023 International Bank for Reconstruction and Development / The World Bank
1818 H Street NW, Washington, DC 20433
Telephone: +1-202-473-1000; Internet: www.worldbank.org
Some rights reserved.

This work is a product of the staff of The World Bank and the Global Facility for Disaster Reduction and Recovery (GFDRR). The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of The World Bank, its Board of Executive Directors, or the governments they represent. The World Bank does not guarantee the accuracy, completeness, or currency of the data included in this work and does not assume responsibility for any errors, omissions, or discrepancies in the information, or liability with respect to the use of or failure to use the information, methods, processes, or conclusions set forth. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Nothing herein shall constitute or be construed or considered to be a limitation upon or waiver of the privileges and immunities of The World Bank, all of which are specifically reserved.

Rights and Permissions. This work is subject to copyright. Because The World Bank encourages dissemination of its knowledge, this work may be reproduced, in whole or in part, for noncommercial purposes as long as full attribution to this work is given.

Attribution. Please cite this work as follows: World Bank. 2023. *Sectoral Recovery Capacity Assessment Report for Antigua and Barbuda's Agriculture Sector*. Washington, D.C.: The World Bank Group.

Translations. If you create a translation of this work, please add the following disclaimer along with the attribution: *This translation was not created by The World Bank and should not be considered an official World Bank translation. The World Bank shall not be liable for any content or error in this translation.*

Adaptations. If you create an adaptation of this work, please add the following disclaimer along with the attribution: *This is an adaptation of an original work by The World Bank. Views and opinions expressed in the adaptation are the sole responsibility of the author or authors of the adaptation and are not endorsed by The World Bank.*

Third-party content. The World Bank does not necessarily own each component of the content contained within the work. The World Bank therefore does not warrant that the use of any third-party-owned individual component or part contained in the work will not infringe on the rights of those third parties. The risk of claims resulting from such infringements rests solely with you. If you wish to reuse a component of the work, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright owner. Examples of components can include, but are not limited to, tables, figures, or images.

All queries on rights and licenses, including subsidiary rights, should be addressed to World Bank Publications, The World Bank Group, 1818 H Street NW, Washington, DC 20433, USA; e-mail: pubrights@worldbank.org.

Cover: View of St Johns farmers market in Antigua and Barbuda. © Ed-Ni-Photo | istock.com
Cover design & layout: ULTRAdesigns



Sectoral Recovery Capacity
Assessment Report for
Antigua and Barbuda's
Agriculture Sector



Table of Contents

Acknowledgements	iv
Executive Summary	v
Acronyms	ix
Glossary of key terminology	xi
01 Introduction	1
1.1 Need for Timely, Inclusive and Resilient Recovery in the Caribbean	2
1.2 Assessing Sectoral Recovery Capacity in the Caribbean.....	2
1.3 Specific objectives of the SRCA for the agriculture sector in Antigua and Barbuda	4
1.4 Assessment methodology	4
02 The agriculture sector in Antigua and Barbuda	7
2.1 Disaster impacts in Antigua and Barbuda	8
2.2 Climate change impacts on agriculture.....	9
2.3 COVID-19 impacts on agriculture	10
2.4 Infrastructure	11
2.5 Gender, agriculture, climate change, and disasters	13
2.6 Disability and agriculture	14
03 The Sectoral Recovery Capacity Assessment implementation process in Antigua and Barbuda	16
04 Results Overview	18
4.1 General Findings	19
4.2 Findings for Governance	20
4.3 Findings for Competencies.....	25
4.4 Findings for Resources and Tools	28
4.5 Findings for the Inclusion of Gender and Disability in Recovery Processes	31
05 Recommendations	34
06 Conclusion	37
References	40
Annex 1. Specific recommendations to strengthen the capacity of Antigua and Barbuda’s agriculture sector for resilient and inclusive recovery	43
Annex 2. Coastal inundation scenario maps for Antigua and Barbuda	47
Annex 3. Sectoral Recovery Capacity Assessment Questionnaire	49

Figures

Figure 1. Sectoral Recovery Capacity Assessment results overview.	vi
Figure 2. Disaster Risk Management cycle.	3

Figure 3. The SRCA framework structure.	5
Figure 4. Inland flooding for a 100-year return period in Antigua and Barbuda.....	11
Figure 5. Diagrammatic representation of the assessment process.....	17
Figure 6. Recovery Capacity Index for the components assessed in the sector: Governance, Competencies (operational capacity) and skills, and Resources and tools.	19
Figure 7. Recovery Capacity Index for the key elements assessed: Policies and legal framework; Strategies and plans; Institutions and coordination; Workforce; Capacity (knowledge and skills); Human resources, Profile suitability; Natural-hazard data and risk information; Post-Disaster Needs Assessment (PDNA) and Project portfolio planning; Resilient recovery project design; Financing; and Project implementation.	20
Figure 8. Recovery Capacity Index for the key elements of Component 1: Policies and Legal Framework, Strategies and Plans, and Institutions and Coordination.	21
Figure 9. Recovery Capacity Index for the sub elements of Component 1: Policies, Legal Framework, Foundations for recovery, Mainstreaming DRM & Climate Change Adaptation (CCA), Gender and disability inclusion in policy, Building codes and regulation mechanisms, Strategies and Plans, Build Back Better, Gender and disability inclusion in planning, Institutions, Coordination, Building codes and regulation compliance, and Gender and disability coordination mechanisms.	22
Figure 10. Recovery Capacity Index for the key elements of Component 2: Workforce, Capacity (knowledge and skills) and Human Resources, Profile suitability.	25
Figure 11. Recovery Capacity Index for the sub elements of Component 2: Workforce; Gender; Private sector; Skills; Training activities; Proven capacities; and Human Resources, profile suitability.	26
Figure 12. Recovery Capacity Index for the key elements of Component 3: Natural hazard data and risk information, PDNA and Project portfolio planning, Resilient recovery project design, Financing, and Project implementation.	28
Figure 13. Recovery Capacity Index for the sub elements of the key elements of Component 3: Data collection and management, Use of risk information in the sector, PDNA mechanisms, Planning of recovery priorities, Gender and disability inclusion in PDNA, Availability of BBB tools, Use of risk information for recovery, Building codes and regulations in project design, Gender and disability inclusion in project design, Availability of sources of funding, Accessibility to recovery funds, Budget for recovery, Resources, Project management, Building code implementation resources and M&E at project level.	29
Figure 14. Recovery Capacity Indexes for a. Gender and b. Disability inclusion at the level of the components assessed: Governance, Competencies (operational capacity) and Skills, and Resources and Tools	31
Figure 15. Recovery Capacity Index for Gender and Disability inclusion in recovery processes at the level of the key elements assessed: Policies and legal framework; Strategies and plans; Institutions and coordination; Workforce; Capacity (Knowledge and skills); Human resources, profile suitability; Natural hazard data and risk information; PDNA and project portfolio planning; Resilient recovery project design; Financing; and Project implementation.	32

Tables

Table 1. Scoring system for the quantitative evaluation of qualitative responses to questions in the SRCA questionnaire.....	5
Table 2. Traffic light system used to categorize Recovery Capacity Index (RCI) values.	6

Acknowledgements

This Sectoral Recovery Capacity Assessment (SRCA) was prepared by a World Bank team composed of Clara Ariza (Senior Disaster Risk Management and Climate Adaptation Specialist, Consultant), Roberto Mendez (Senior Disaster Risk Management Specialist, Consultant) and Francesco Varotto (Disaster Risk Management Specialist, Consultant), with inputs from Linda Anderson Berry (Senior Disability Specialist, Consultant) and Marcela Natalicchio (Senior Gender Specialist, Consultant), and overall guidance from Naraya Carrasco (Senior Disaster Risk Management Specialist) and Suranga Kahandawa (Senior Disaster Risk Management Specialist). The team is grateful to the Caribbean Disaster Emergency Management

Agency (CDEMA) for its active involvement in government engagement and stakeholder consultations. The assessment was financed by the Canada-Caribbean Resilience Facility, a single-donor World Bank-executed trust fund managed by the Global Facility for Disaster Reduction and Recovery.

This report has benefited from discussions with government officials, development partners, and members of the community, and the team would like to thank key informants and participants in the focus-group discussions and semi-structured interviews. The team collected data with assistance from CDEMA, GFDRR and governmental staff.

Executive Summary

Antigua and Barbuda is highly exposed to the impacts of natural hazards, including earthquakes and hurricanes, has suffered major disasters in the past decades, and is currently coping with the impacts of the COVID-19 pandemic. With more frequent and intense extreme weather events expected in the coming decades due to climate change, there is an urgent need to prepare for timely, effective, and efficient disaster recovery, while building resilience at all levels and sectors of government and society. This involves strengthening the capacity of key national sectors to develop and execute climate resilient recovery project portfolios that are gender responsive and disability inclusive.

This report presents the results of the Sectoral Recovery Capacity Assessment (SRCA) undertaken in Antigua and Barbuda to assess the capacity of the country's agriculture sector to plan, design, implement, monitor, and evaluate resilient and inclusive recovery projects. Agriculture was selected as the priority sector for the SRCA by the Government of Antigua and Barbuda due to its economic importance and high exposure to natural hazard impacts. The assessment followed a consultative process facilitated by the Ministry of Agriculture, Fisheries and Barbuda Affairs (MoAFBA) and the National Office of Disaster Services (NODS). It was supported by the Canada-Caribbean Resilience Facility (CRF), hosted by the Global Facility for Disaster Reduction and Recovery (GFDRR) at the World Bank Group, and the Caribbean Disaster Emergency Management Agency (CDEMA).

The SRCA assessed in detail the existing capacity for resilient recovery in the agriculture sector in terms of enabling policies and legal frameworks, institutional

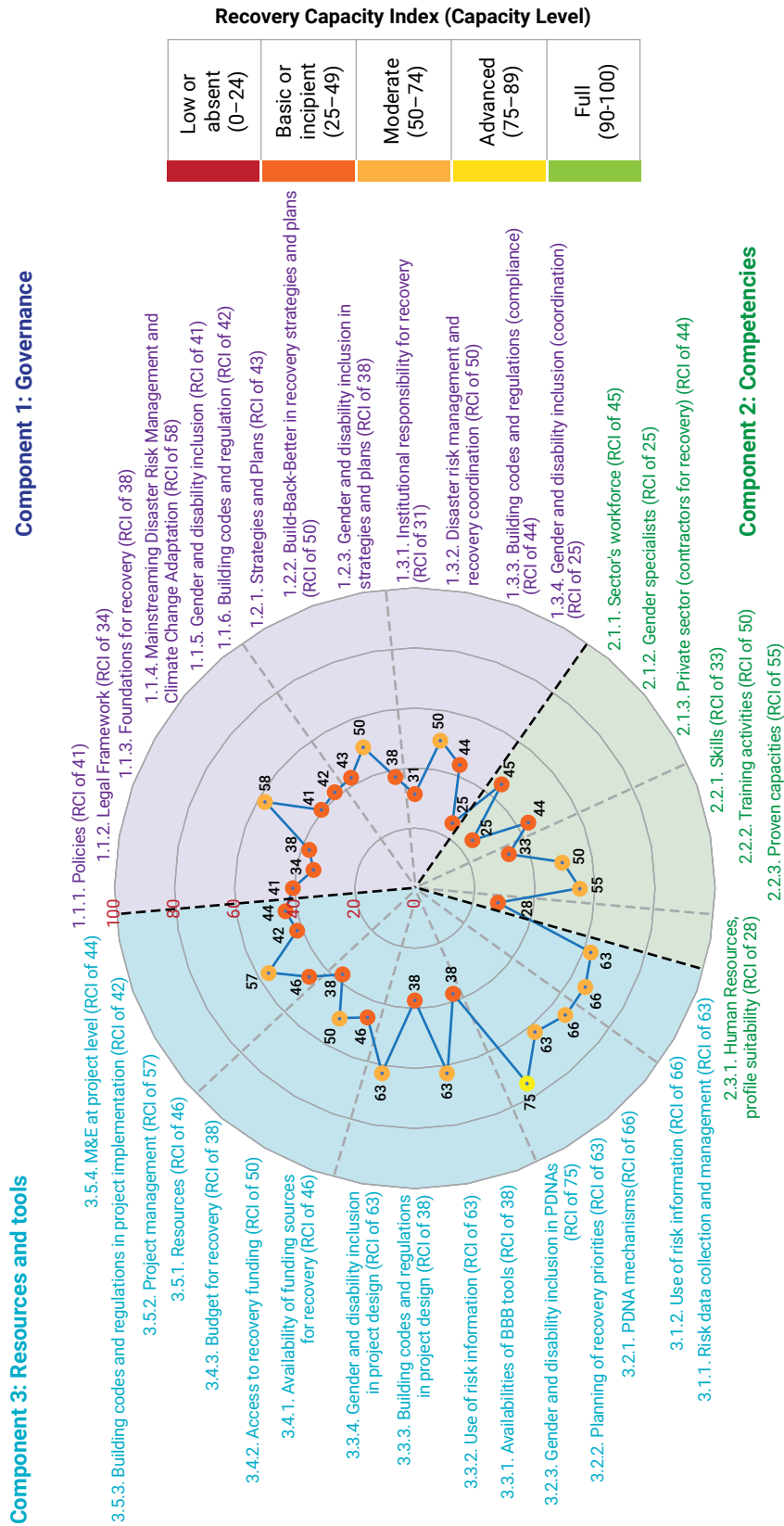
arrangements, and available resources and tools. The assessment allowed the identification of gaps, bottlenecks, deficits, blockages, and other factors that limit the planning, design, implementation, and monitoring and evaluation of resilient and inclusive recovery projects, as well as of capacity-building interventions, investments, and opportunities to solve pressing issues. The report includes practical recommendations, including proposed interventions to facilitate the prioritization and decision making on investments by national and international agencies supporting disaster risk management (DRM) and development efforts in Antigua and Barbuda. Figure 1 presents the results of the SRCA for each of the assessed issues.

At a high and strategic level, the assessment determined that the capacity of Antigua and Barbuda's agriculture sector to implement resilient and inclusive recovery projects in a timely, efficient, and effective manner is incipient. However, key results of a more detailed analysis indicate that although progress has been made in national policy to enable, to a certain extent, the development of recovery projects, policy operationalization is limited by an outdated legislative and strategic framework for CDM. Another limiting factor is the absence of an agriculture development policy and an updated Medium Term Development Strategy. The level of knowledge and skills of national sectoral actors is also insufficient to plan and implement rapid and effective recovery interventions. Major recovery projects in the country are defined and led by central ministries with international support. Recovery projects in agriculture are not managed by the Ministry of Agriculture, Fisheries and Barbuda Affairs (MoAFBA) – which lacks financial and technical capacity – but are mainly designed and implemented by regional or

FIGURE 1

Sectoral Recovery Capacity Assessment results overview.

The issues addressed in the assessment were classified under three main components: Governance, Competencies and Resources, and Tools. For each issue, the level of existing capacity within the sector was determined using the Recovery Capacity Index.



international organizations. The SRCA identified a critical need to create, strengthen and sustain resilient and inclusive recovery capacity within the MoAFBA, including the capacity to mainstream gender and disability considerations and systematically use hazard and risk data and information into sectoral operations. Building the capacity of the Ministry on Project Cycle Management was also assessed as necessary for inclusive recovery but also for development and growth of the sector.

The SRCA identified the following as crucial for building recovery capacity in Antigua and Barbuda's Agriculture sector:

- » Ensure resilient and inclusive recovery considerations are integrated into ongoing and upcoming policy, strategic, and planning processes at the national and sectoral level. Particularly important is to review and update the National Comprehensive Disaster Management (CDM) Policy and Strategy, to finalize the national CDM legislation and to develop a development policy and complete a CDM plan for the agriculture sector. It is critical that these processes are highly participatory and widely communicated, and incorporate lessons learned during the Hurricane Irma recovery and the COVID-19 pandemic and concrete prioritized actions for recovery and resilience building.
- » Create a pipeline of targeted investments in both gray and green defense infrastructure on coastal and riverine areas, to protect Antigua and Barbuda against impacts of climate change such as sea level rise and extreme weather events. These measures would help lower the risk and impact of disruptions that may affect the country in general, and the agriculture sector in particular.
- » Develop an investment plan that prioritizes infrastructure projects of high relevance for the agriculture sector, particularly those promoting climate-resilient infrastructure systems, including water supply systems. It would support the continuity and operability of crop production after major adverse events.
- » Create a technical assistance plan with a range of risk reduction interventions to help farm and agriculture facility owners climate-proof and protect key assets, including machinery and equipment, from extreme weather events.
- » Assess Antigua and Barbuda's hydro-meteorological infrastructure and elaborate an investment plan for its update. The plan should also include the acquisition of modern forecasting and climate services delivery technologies and measures to strengthen early warning communication systems to ensure they reach the exposed and most vulnerable communities.
- » Strengthen the use, management and generation of risk and recovery-relevant data and information across the agriculture sector, particularly within MoAFBA, and ensure hazard and risk maps created or updated by partner organizations are available, and easily accessible to all.
- » Ensure that risk information is communicated in appropriate formats to end users including farmers and fishers.
- » Strengthen sectoral budgets for disaster risk management (DRM) and recovery by estimating and including a contingent annual recovery allocation in the MoAFBA's budget.
- » Ensure legislation and procedures enable the rapid reallocation of annual budgets to support recovery efforts in the aftermath of major disasters and chronic small events, which add burden to small-holder farmers overtime.
- » Enhance resilience and recovery funding instruments for farmers, small and medium-sized enterprises (SMEs), and informal actors linked to agriculture value chains by creating new and enhancing access to existing financial mechanisms for resilience and recovery, including insurance and microinsurance.
- » Create a plan to finance software updating and maintenance at the MoAFBA to facilitate project management operations.
- » Raise awareness, at the strategic and operational levels, of the added value of acquiring and sustaining DRM and inclusive recovery capacity for the sector's development. This can be achieved through well-designed awareness-raising campaigns and events for public officers.

- » Build and sustain the required knowledge and skills for the implementation of resilient and inclusive recovery projects in the sector through the recruitment of specialized staff in areas specific to DRM, the institutionalization of training in DRM, gender and disability inclusion for public and private sectoral stakeholders, and the improvement of public recruitment protocols, among other measures.

It is expected that the findings of this report and its recommendations will be taken into consideration

and integrated in the design and implementation of development, CDM and recovery policy, and strategic and planning documents of national and sectoral relevance.

Acronyms

AMS	Antigua and Barbuda Meteorological Services
BBB	Build Back Better
CAFF	Climate Adaptation Financing Facility
CARDI	Caribbean Agricultural Research and Development Institute
CARICOM	Caribbean Community
CAT-DDO	Catastrophe Deferred Drawdown Option
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
CDEMA	Caribbean Disaster Emergency Management Agency
CDC	Civil Defence Commission
CDM	Comprehensive Disaster Management
CRPD	United Nations Convention on the Rights of Persons with Disabilities
CRF	Canada-Caribbean Resilience Facility
DANA	Damage Assessment and Needs Analysis
DIMS	Disaster Information Management System
DRM	Disaster Risk Management
EnGenDER	Enabling Gender-Responsive Disaster Recovery, Climate and Environmental Resilience in the Caribbean
ESL	Extreme Sea Level
ENSO	El Niño Southern Oscillation
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GIS	Geographic Information Systems
GoA&B	Government of Antigua and Barbuda
IICA	Inter-American Institute for Cooperation on Agriculture
ILO	International Labour Organization
LFS	Labour Force Survey
M&E	Monitoring and Evaluation
MTDS	Medium Term Development Strategy

NODS	National Office of Disaster Services
OECD	Organisation of Eastern Caribbean States
PCM	Project Cycle Management
PDNA	Post-Disaster Needs Assessment
RCI	Recovery Capacity Index
RCP	Representative Concentration Pathway
SIDS	Small Island Developing States
SLR	Sea Level Rise
SMEs	Small and Medium-sized Enterprises
SRCA	Sectoral Recovery Capacity Assessment
TORs	Terms of Reference
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund

Glossary of key terminology

Building code: A set of ordinances or regulations and associated standards intended to regulate aspects of the design, construction, materials, alteration and occupancy of structures which are necessary to ensure human safety and welfare, including resistance to collapse and damage.

Build back better: The use of the recovery, rehabilitation and reconstruction phases after a disaster to increase the resilience of nations and communities through integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems, and into the revitalization of livelihoods, economies and the environment.

Coping capacity: The ability of people, organizations and systems, using available skills and resources, to manage adverse conditions, risk or disasters. The capacity to cope requires continuing awareness, resources and good management, both in normal times as well as during disasters or adverse conditions. Coping capacities contribute to the reduction of disaster risks.

Critical infrastructure: The physical structures, facilities, networks and other assets which provide services that are essential to the social and economic functioning of a community or society.

Disaster risk management: Disaster risk management is the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to

the strengthening of resilience and reduction of disaster losses.

Disaster risk reduction: Disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development.

Disaster risk assessment: A qualitative or quantitative approach to determine the nature and extent of disaster risk by analyzing potential hazards and evaluating existing conditions of exposure and vulnerability that together could harm people, property, services, livelihoods and the environment on which they depend.

Exposure: The situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas.

Hazard: A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation.

Preparedness: The knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters.

Prevention: Activities and measures to avoid existing and new disaster risks.

¹ The following key terminology is provided by the United Nations Office for Disaster Risk Reduction. Online resource available at: <https://www.undrr.org/terminology>

Recovery: The restoring or improving of livelihoods and health, as well as economic, physical, social, cultural and environmental assets, systems and activities, of a disaster-affected community or society, aligning with the principles of sustainable development and “build back better”, to avoid or reduce future disaster risk.

Response: Actions taken directly before, during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Resilience: The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management.

Retrofitting: Reinforcement or upgrading of existing structures to become more resistant and resilient to the damaging effects of hazards.

Reconstruction: The medium- and long-term rebuilding and sustainable restoration of resilient critical infrastructures, services, housing, facilities and livelihoods required for the full functioning of a community or a society affected by a disaster, aligning with the principles of sustainable development and “build back better”, to avoid or reduce future disaster risk.

Vulnerability: The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards.

01

Introduction



1.1 Need for Timely, Inclusive and Resilient Recovery in the Caribbean

The Caribbean region is highly prone to disasters, including hurricanes, earthquakes, droughts, flooding, and landslides. Higher temperatures, changing precipitation patterns, more frequent, intense, and extreme weather events, and sea level rise (SLR) resulting from climate change, further exacerbate disaster risk in the region. Major hazard impacts destroy infrastructure and property, result in losses from foregone output and incomes, and escalate costs as individuals and businesses are forced to work around disruptions. Disasters jeopardize hard-won national development gains and growth prospects, erode fiscal cushions, and disproportionately impact the wellbeing of the poor. Caribbean countries lost an average of 3.6 percent of aggregate Gross Domestic Product (GDP) per year Between 2000 and 2019 to damages related to natural hazards, compared to 0.3 percent in all emerging markets and developing economies (World Bank, 2021). Indeed, the economic cost of disasters in the Caribbean region is so high that it often exceeds the size of the economy of the countries affected (Ötoker and Srinivasan, 2018).

However, more timely and inclusive recovery efforts and consequently, faster and better reconstruction can lower social and economic burdens and allow a more rapid recovery of pre-disaster development levels. This critically depends on strong public systems that can rapidly coordinate and cost-effectively mobilize resources, reconstruct infrastructure, deliver services, and enable the rebuilding of local economies in the aftermath of disasters. Confronted with recurrent extreme weather conditions and the prospect of more frequent and intense hydrometeorological events with climate change, resilient recovery planning and investments have become a priority for the Caribbean region.

Preparing for recovery entails enhancing ex-ante the capacity of national governments to recover from losses and damages, define and strengthen institutional and financial systems that support the recovery process, and obtain the necessary political commitment

for the development of recovery policies and programs (GFDRR, 2020) more rapidly. This is particularly important in the Caribbean Small Island Development States (SIDS), where long-standing and pervasive human-resource constraints and country-specific technical capacity gaps, both at the national government level and in all sectors, represent major obstacles for planning and implementing timely and efficient disaster recovery operations. Consequently, a better understanding of capacity gaps and a focus on strengthening existing recovery capacity of the development sectors most affected by disasters in these countries can increase the efficiency and effectiveness of recovery investments. The Canada-Caribbean Resilience Facility (CRF) has engaged in the standardized assessment of recovery capacity needs in key development sectors of six Caribbean nations as a first step to assist countries to bridge recovery capacity gaps and build resilience to climate impacts and disasters. The countries are Antigua and Barbuda, Dominica, Grenada, Guyana, Saint Lucia, and Saint Vincent and the Grenadines and the assessment could be undertaken in other countries, depending on demand.

1.2 Assessing Sectoral Recovery Capacity in the Caribbean

In order to assist Caribbean governments prepare for timely, efficient, and effective implementation of inclusive, climate-resilient recovery projects, the CRF developed the Sectoral Recovery Capacity Assessment (SRCA) in partnership with the Caribbean Disaster Emergency Management Agency (CDEMA) and has coordinated activities with the Enabling Gender-Responsive Disaster Recovery, Climate and Environmental Resilience in the Caribbean (EnGenDER) project for its implementation. The SRCA has been included in CDEMA's Comprehensive Disaster Management (CDM) Audit Tool, which covers the different phases of the Disaster Risk Management (DRM) cycle (figure 2), to complement the national recovery component of the tool, and to facilitate the identification of solutions to sectoral capacity issues that could delay the implementation of recovery projects.

FIGURE 2

Disaster Risk Management cycle.

Asterisks indicate the phases of the DRM cycle that are most relevant for the SRCA. These are the recovery phase and the preparedness phase, where the necessary actions for recovery need to be implemented.



Source: Adapted from FOCP (2020).

Results of the SRCA are expected to serve as planning instruments and benefit national governments, sectoral stakeholders, national DRM agencies, and CDEMA in their efforts to enable a rapid and effective recovery in the aftermath of disasters. Recommendations emerging from the assessment will also inform the prioritization, design, and implementation of recovery-related capacity-building activities under the CRF, and inform potential investments to prepare for recovery as well as additional activities to be led by national

governments and other stakeholders. Based on their own criteria, priorities, and needs, each government selects the sector to be assessed. The Government of Antigua and Barbuda selected agriculture in view of its economic and social importance, the consequences of previous disasters and the vulnerability of the sector, its infrastructure and investments vis-a-vis projected climate change impacts, including more frequent tropical storms and SLR.

1.3 Specific objectives of the SRCA for the agriculture sector in Antigua and Barbuda

The objectives of the SRCA are to:

- » Improve the understanding of the existing capacity of the Government of Antigua and Barbuda, its Ministry of Agriculture, Fisheries and Barbuda Affairs, and other key stakeholders in the agriculture sector to take the necessary actions to prepare for and undertake timely and efficient climate-resilient, gender-responsive and disability-inclusive disaster recovery projects.
- » Identify capacity gaps, weaknesses, and challenges that limit the timely and efficient implementation of recovery projects in Antigua and Barbuda's agriculture sector.
- » Identify opportunities for investments to support Antigua and Barbuda's agriculture sector and institutions in overcoming recovery capacity gaps, weaknesses, and limitations – for example, policy reforms, institutional restructuring, training, and investments –, and prioritize interventions to be financed by the government as well as by bilateral and multilateral donors to improve the sector's capacity to prepare for recovery.

1.4 Assessment methodology

The SRCA methodology was designed to evaluate the conditions and extent to which existing national and sectoral capacity enable timely, effective, and coordinated gender-informed and disability-inclusive climate-resilient disaster recovery in the framework of national DRM policy. Specifically, the SRCA assesses the conditions under which recovery considerations have been integrated into sectoral policies, plans, institutions, and administrative, financial, and operative processes, as well as the extent of the integration.

Assessment Framework: The SRCA framework consists of three main and interrelated components, namely, (i) Governance, (ii) Competencies, and (iii) Resources and Tools. Each of these components

includes a series of complementary areas covered under the component, referred to as key elements. In turn, each key element covers a series of topics, referred to as sub elements. Gender and disability inclusion are crosscutting issues. The assessment structure establishes a relational cascade between the components at policy-making level, their key elements at strategic and programmatic level, and the sub elements at operational level of each key element. This structure therefore allows addressing key enabling factors for recovery at each level of the framework (figure 3).

Data collection and analysis: The assessment is based on data and information retrieved from a desk review and a consultation process with key public and private stakeholders, who – over the course of multiple sessions carried out online – completed the SRCA questionnaire, which was designed following the SRCA framework structure (see Annex 3). When stakeholders disagreed on the response to specific questions, the team in charge of the assessment moderated discussions, based on evidence whenever possible, until an agreement was reached. Additionally, where the responses differed from the results of the desk review, the team posed additional questions to identify the reasons for the mismatch.

For the analysis of the collected information, the SRCA methodology uses semi-quantitative approaches that enable the translation of qualitative and value judgments into numerical values within established ranges. These approaches include a scoring system that assigns quantitative values to the qualitative information collected for each of the questions in the SRCA questionnaire, including the narrative responses that stakeholders provide during consultations (Table 1), and the Recovery Capacity Index (RCI) calculated from the scores assigned to the responses. Resulting RCI values describe the extent to which the considerations necessary for effective recovery are taken into account and integrated by the sector as part of standard sectoral processes and operationalization of the country's DRM policies.

FIGURE 3

The SRCA framework structure.

C1, C2, and C3 are the main and inter-related components of the assessment, each consisting of a set of key elements (KE) and their respective sub elements (SE). The information required for the analysis of components, key elements, and sub elements is provided by answers to a set of questions per sub element (Q) included in the SRCA assessment questionnaire. The yellow and purple circles represent crosscutting issues. The triangles indicate the relational cascade among the different levels of the structure and the dotted circle denotes the interconnectedness of the three main capacity components.

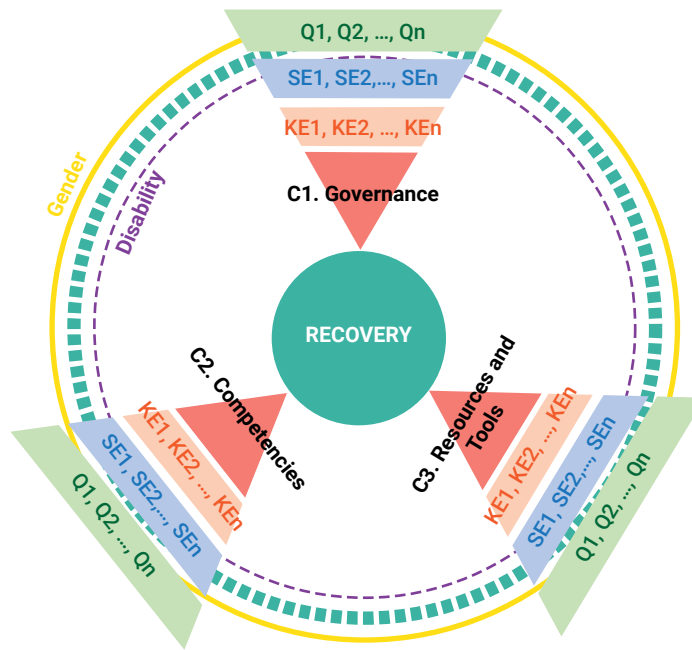


TABLE 1

Scoring system for the quantitative evaluation of qualitative responses to questions in the SRCA questionnaire.

Score	Type of response to the question				Evidence
4	A qualified YES	Minor problem / no problem	No need for action or measure	Yes	Adequate
3	In progress (> 75 percent completed)	Moderate problem	Need for action and measure	Partially	Acceptable
2	In progress (> 50 percent completed)	Major problem	Need for action and measure	Partially	Scarce
1	Planned or started with minimum actions	Severe problem	Immediate action and acute measure	No	Minimum
0	A definitive NO	Catastrophic problem	Immediate action and acute measure	No	None

The RCI values obtained for each level of the assessment are presented in spider charts and a traffic light system categorizes RCI values. This provides a rapid overview of the areas where recovery capacity is strong – high level of integration of factors enabling a

timely, inclusive, and resilient recovery – and of those in need for urgent capacity building or other interventions – areas with absent or low level of integration of factors enabling a timely, inclusive, and resilient recovery. Table 2 presents the traffic light system.

TABLE 2

Traffic light system used to categorize Recovery Capacity Index (RCI) values.

RCI value range	Appreciation of the extent to which recovery considerations are integrated in the sector
Low or absent integration 0–24	Absent integration of recovery considerations across the sector due to specific limiting elements. Low level of awareness and knowledge about the importance and added value of recovery integration for sectoral development.
Basic or incipient integration 25–49	Incipient integration of recovery considerations takes place at different levels of the sector. Some elements are under development, with a certain level of incidence to generate an institutional culture. There is a certain level of awareness and knowledge about the importance and added value of recovery integration for sectoral development.
Moderated integration 50–74	Evident integration of recovery considerations takes place at the majority of levels in the sector. An institutional culture that supports and updates recovery factors and includes them in sectoral planning processes is identified. A good level of awareness and knowledge about the importance and added value of recovery integration for sectoral development exists.
Advanced integration 75– 89	Evident integration of recovery considerations takes place at most levels in the sector, as it is part of sectoral strategic planning processes. Adaptation tools are available to enable the continuity of operations during contingencies, in a coordinated, practical, and documented way. There is also a high capacity to value the impact and contribution of recovery integration to the sector development , and to programmatic efficiency and efficacy.
Full integration 90–100	Integrating recovery considerations at all levels is a working principle , managed as part of the sector’s organizational culture. Tools and protocols for the continuous improvement of the sector’s performance and impact are available.

HIGH



CAPACITY BUILDING NEEDS

LOW

02

The agriculture sector in Antigua and Barbuda



Historically, agriculture has been the dominant sector of the economy in Antigua and Barbuda. In the 1960s, owing to the economic weight of the sugar industry, agriculture represented 40 percent of the country's Gross Domestic Product (GDP) (FAO 2015). The sector only contributes two percent to GDP (WBDI 2020) and it accounts for 1.8 percent of employment (GoA&B 2021). Of the 440 square kilometers of total land surface, 90 are devoted to agriculture, or approximately 20 percent of the land (FAO 2018), and three quarters of the population live in rural areas (FAO 2018).

The industry largely comprises subsistence or small-scale commercial farming primarily for the domestic market (GoA&B 2021). Sugar continues to be cultivated, but the main crops are now vegetables and fruits grown on small farms, such as banana, coconut, cucumber, mango, sugarcane, and pineapple. Fishing contributes about half of the value added from the sector. An active trade in livestock contributes to the production of cattle, pork, chicken, and goat meat. More than 75 percent of the livestock production of Antigua, especially goats, takes place in the Central Plains and the north-eastern limestone formation; Barbuda is almost entirely devoted to livestock production, save for a few agricultural stations and fenced farming areas (FAO 2015).

The development of the agriculture sector is guided by the National Food and Nutrition Policy of 2012 and the related National Food and Nutrition Security Action Plan, which are closely aligned to the the related National Food and Nutrition Security Action Plan, which are closely aligned to the Organisation of Eastern Caribbean States (OECS) Action Plan on Agriculture for 2012-2022, the Caribbean Community's (CARICOM) Regional Food Security Plan 2011-2025 and the CARICOM Agriculture Policy (GoA&B 2021). The long term goal is to achieve sustainable food and nutrition security and to eliminate all forms of malnutrition to have a well-nourished and healthy population, which is presently affected by the double burden of obesity at 18.9 percent of the adult population and hunger at 20.5 percent of the total population (UNOCHA 2020).

Over the years, the agricultural sector has gone through a steep decline in productivity and competitiveness, and 79 percent of food is imported (GoA&B 2021). Several factors constrain the sector including the removal of preferential access to the European Union market, high labor costs, the small size of the domestic market, the absence of marketing structures and infrastructure, competition from imported produces, limited land tenure rights, and inadequate water supplies for irrigation as well as a regular succession of severe droughts and destructive hurricanes (FAO 2015).

Antigua and Barbuda registers the lowest amount of rainfall among Caribbean islands. The country is also low lying and relatively flat. As a result, it lacks a significant stream network and large surface water system, limiting its water resources for agriculture. While total average rainfall is approximately 453 million cubic meters per year, renewable water resources are about 52 million cubic meters per year. Without perennial rivers, the country depends on only a few intermittent rivers flowing seasonally, whose water can be stored in ponds and reservoirs. Agricultural water demands are being met through five desalination plants, two surface water treatment plants, numerous small ponds and five well fields. In Barbuda, where about three percent of the population lives, most of the water comes from shallow wells. Agriculture accounts for nearly 20 percent of annual water withdrawal (FAO 2015).

2.1 Disaster impacts in Antigua and Barbuda

Antigua and Barbuda is located in a highly seismic area within the Atlantic hurricane belt. It is extremely exposed to droughts, tropical storms, and floods, among other natural hazards of varying degrees of intensity and severity. It is estimated that 100 percent of the land area and 100 percent of the population are exposed to two or more hazards. Antigua and Barbuda comes among the top 20 countries in risk to GDP, with approximately 80 percent of economic activities at risk from the impacts of two or more hazards (Dilley et al. 2005).

Both El Niño Southern Oscillation (ENSO) and La Niña exert a high influence on Antigua and Barbuda's climate. La Niña tends to cause wetter and colder conditions. On the contrary, El Niño episodes bring warmer- and drier-than-average conditions during the June to November hurricane season. Climate patterns defined by these two phenomena are especially relevant for the agricultural sector, as the country relies on rainfall during the wet season to recharge water catchments also used for agriculture.

The Antigua and Barbuda Meteorological Services (AMS) recorded a total of 24 drought episodes between 1928 and 2007, (GoA&B 2017a). A severe drought affected the country in 2014-2015, and a state of emergency had to be declared as most surface reservoirs were depleted and the main one, Pot Works Dam, was given merely six weeks of national supply (GoA&B 2017a). Other years of depleted water catchments include 2009-2010, 2000-2003, 1991 and 1983, when water had to be brought from Dominica to offset the lack of supply (Destin 2015).

Multiple hurricanes hit Antigua and Barbuda Between 1980 and 2017, causing significant physical and financial damages. The Meteorological Services Department estimates that, on average, Antigua and Barbuda stands a 33 percent chance of at least one hurricane passing within 120 miles of the country in any given year (Antigua and Barbuda Meteorological Services 2019). Notably, intense storms that passed directly over the islands include Luis a category 4 hurricane in 1995; Georges category 3 in 1998, and Irma and Maria, both category 5 hurricanes in 2017. The impact of storms can be crippling for the economy. Hurricanes Irma and Maria had both catastrophic effects, with USD 136 million in total damages, USD 19 million in losses, and USD 222 million in recovery needs, representing 12 percent, 2 percent, and 21 percent of 2017 GDP, respectively (GFDRR 2017). Hurricane Irma was especially ruinous for the agriculture sector, destroying or significantly damaging crops, livestock, apiculture, the fishing industry, as well as agriculture infrastructure, machinery, and equipment (GoA&B 2021). Damages estimated in the aftermath of Hurricane Luis were also placed

at approximately two-thirds of the country's GDP (GFDRR 2010).

Most of the destruction experienced over the last few decades from passing storms has come from floods and their impact on property and infrastructure. The country is vulnerable to all types of flooding, namely land-based floods, riverine and coastal floods, and ponding. Barbuda is a coral limestone island and is especially subject to coastal flooding and ponding events due to its extremely flat profile. Antigua is characterized by an unusually quick run-off, and in the north east and central regions of the island – which also support a relatively extensive agricultural belt – ponding and flash floods are prevalent. In both islands, the greatest risk is posed by storm surge and wave action, and low elevations coupled with deeply intrusive bays provide ample opportunity for flood events to occur (FAO 2015).

While tsunamis are not considered major recurrent risk for Antigua and Barbuda, the low lying nature of the islands make them particularly vulnerable to this hazard. Tsunami risk is largely associated with the potential effects of an eruption of Kick'em-Jenny, located north of the island of Grenada, and tsunamis could result from a major earthquake in the region, which is one of the most seismically active globally (GFDRR 2010).

2.2 Climate change impacts on agriculture

Climate change will worsen extreme events and bring additional threats to agriculture production. The agriculture sector in the Caribbean region is vulnerable to a range of climate change impacts, from lower wet season rainfall to higher temperatures, SLR, and an increase in hurricane intensity and frequency (Knutson et al. 2019).

It is anticipated that the Caribbean region, mostly consisting of SIDS, will be among the most severely impacted by changes in climate conditions. The Intergovernmental Panel on Climate Change (IPCC)

Climate change projections for Antigua and Barbuda*

- » Higher mean annual temperatures (0.91° to 1.3°C) by 2050.
- » Lower annual precipitation (136.17mm to 880.51mm) in 2040-2059.
- » Higher annual maximum 5-day rainfall (25-year return level) (32.05mm to 212.40mm) in 2040-2059, with frequency of Category 4 and 5 hurricanes increasing by 25-30 percent.

*Representative concentration pathway (RCP) 8.5 ensemble.
Source: World Bank 2020.

estimates that the consequences of climate change for the Caribbean region will be an intensification of the impacts from natural hazards, with extreme weather events becoming both more frequent and more intense (IPCC 2022).

The majority of Caribbean nations are small in size, feature high concentrations of human presence and productive activities along the coast, and are located in areas highly prone to extreme weather events. Antigua and Barbuda is no exception. Coupled with the growth of the country's population and economy, climate change has the potential to result in serious human, financial, and environmental losses.

Climate change will have a particularly significant impact on agriculture, as traditional agricultural practices are climate dependent. Climate change threatens Antigua and Barbuda's agricultural sector through its direct effects on crop production and livestock viability, and the impact of climate-related changes in temperature and rain patterns may seriously affect agricultural production and threaten food security. The agricultural sector already suffers regularly from severe hurricane and drought damage and, as temperatures continue to rise, several crops will experience heat stress and lack the ideal climate conditions for maximizing yields.

Increasingly higher temperatures will affect crop growth and nutritional value, as well as the number and type of pests, diseases, and weeds. Changing rainfall intensity, duration, and occurrence will alter the growing season and affect water availability, with increasing storm intensities leading to higher flood risk during heavy rains as well as increased soil erosion. Changing rainfall patterns and rising temperatures will also lead to more severe drought episodes causing water stress. Water quality may also be reduced due to seasonal lack of water availability and saltwater intrusion due to excessive groundwater extraction, especially along the coast.

Figure 4 shows the areas affected by inland flooding for a 100-year return period. Coastal inundation scenario maps are presented in Annex 2.

2.3 COVID-19 impacts on agriculture

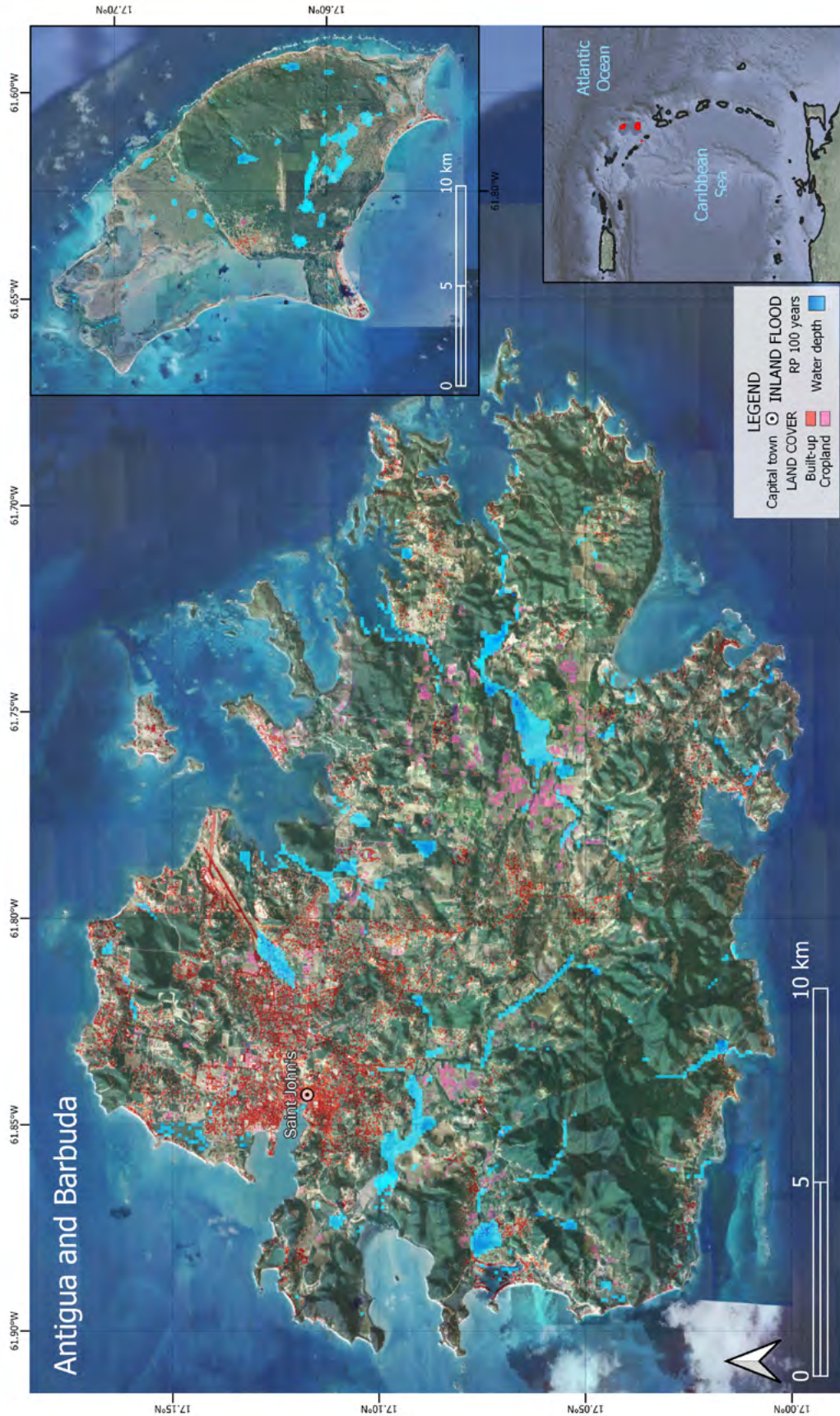
The COVID-19 global pandemic affected the activities of the food system (food production, processing, distribution, marketing and consumption) and its outcomes, particularly food security and social well-being. In Latin America and the Caribbean (LAC), agriculture is a labor-intensive sector, and workers throughout the chain have been exposed both physically and economically to the COVID-19 global pandemic.

According to the index of the occupational information network (O*NET), workers in the agriculture sector are among those requiring the least physical proximity in the entire economy – 45 on a scale of 1 to 100 – to perform their work (ECLAC 2020b). Over the course of the pandemic, the risks arose because agricultural workers' jobs were classified as essential, and the tasks involved could not be performed remotely. Workers therefore continued to move around and interact with each other, even during quarantine periods. In addition, agricultural workers in the LAC region show higher rates of informality and their wages are below the global average (ECLAC 2020b).

COVID-19 impacted the LAC region in multiple ways, and the agricultural sector in particular because of the decline in the economic activity of the region's main

FIGURE 4

Inland flooding for a 100-year return period in Antigua and Barbuda



trading partners and the subsequent effects, the drop in global commodity prices, and the interruption of global value chains (ECLAC 2020a). According to a survey jointly developed by four development institutions on COVID-19 impacts on food security and livelihoods, 69 percent of agricultural workers in the LAC region reported a loss of jobs or reduced salaries, and 12 percent were forced to resort to alternative sources of income (World Food Programme 2021). In Antigua and Barbuda, the most affected group was that of rain-fed farmers. Thirty seven percent of respondents indicated lower levels of sales compared with the same period of the previous year, and 66 percent reported unusual difficulties with selling their crop, livestock or fish production, including 21 percent lower demand than usual, 19 percent constrained access to market, and 14 percent of the usual traders not coming to buy their produce. Sixty nine percent of the farmer and fisher respondents also had to give away or destroy a part of their production owing to lack of marketing and storage capacity (World Food Programme 2021).

2.4 Infrastructure

Antigua and Barbuda's agricultural sector is particularly exposed to SLR and storm surges given its low lying and flat terrain. Strong winds and heavy rain during storms pose risks to the built and natural environment, populations, and economy located along the coast, and underscore the importance of coastal flood defense systems. Additionally, the country is drought prone, which makes it difficult to depend entirely on surface water and groundwater to address agricultural and other needs, and creates the necessity for supplementary water production processes.

Investing in adequate storm and flood adaptation has been complicated by the small size of the economy and population, as well as by a very high public debt to GDP ratio, which was 97 percent in 2020 (ECB 2020). Nonetheless, the government has been implementing a US\$18 million project – Building climate resilience through innovative financing mechanisms for climate change adaptation. The project is funded by a grant of

US\$5 million from the Special Climate Change Fund (SCCF) and co-financed by the Government of Antigua and Barbuda itself. The project's primary objectives have been to develop innovative financing mechanisms to fund adaptation interventions through the Sustainable Island Resource Framework Fund (SIRF Fund) and to strengthen national policies and plans to promote adaptation to climate change (GEF 2014).

Two additional projects aimed at strengthening the climate resilience of the country's infrastructure have been a US\$9.9 million project funded by the Adaptation Fund – an integrated approach to physical adaptation and community resilience in Antigua and Barbuda's northwest McKinnon's watershed (AF 2017), and a US\$20 million multi-country project supported by the Green Climate Fund – Integrated physical adaptation and community resilience through an enhanced direct access pilot in the public, private, and civil society sectors of three eastern Caribbean SIDS (GCF 2018). Both projects address resilience through a multi-stakeholder approach and promote flood reduction using an ecosystems-based approaches. The focus of these projects is on drainage infrastructure to prevent flooding and water-borne disease vector management combined with the establishment of community shelters using non-governmental organization (NGO) and community buildings rather than schools.

Drought-resilient infrastructure in Antigua consists of five reverse osmosis desalination plants: (i) the Crabs Plant with a capacity of 5.1 million cubic meters per year, (ii) the Ivan Rodrigues Plant of 2.6 million cubic meters per year, (iii) the Camp Blizzard Plant and the (iv) Fryes Beach Plant of 980.000 cubic meters per year each, and (v) the Pigeon Point Plant of 550.000 cubic meters per year. Total desalination capacity is approximately 10 million cubic meters per year (APUA 2022). Two water treatment plants ensure an additional total volume of 3.7 million cubic meters per year, of which the Delapps plant accounts for 2.5 million cubic meters per year and the Bendals plant for 1.2 million cubic meters per year (APUA 2022). Approximately 43 active wells have a capacity of 650.000 cubic meters per year in the country, with major well fields situated

in the Bendals Valley, and in the areas of Bolands and Collins (APUA 2022).

In Barbuda, with a population of less than 2000 people, most of the water supply comes from shallow wells. The water obtained from wells in the Palmetto Point area is potable, however other wells around the island have been found to be saline in content. To ensure the provision of water in times of drought. The Antigua Public Utilities Authority (APUA) has installed a reverse osmosis plant in Barbuda producing approximately 113.6 cubic meters per day or 0.041 million cubic meters per year to meet the needs of the residents there (FAO 2015).

It is estimated that there are about 18 small to medium reservoirs, and more than 550 ponds and earth dams, with a total combined capacity of approximately 6 million cubic meters per year in 2013. Reservoirs for agricultural purposes have a total capacity of 1 million cubic meters per year. The main ones are at Bethesda with 537 000 cubic meters per year, ASF Dams with 116 000 cubic meters per year, Langfords with 110 000 cubic meters per year, Gunthorpes with 93 000 cubic meters per year, Red Hill with 46 000 cubic meters per year and Bendals with 23 000 cubic meters per year (FAO 2015).

Surface water supplies represent the main source of irrigation water for agriculture, with occasional use of groundwater when municipal demand allows. Most of the ponds and dams are privately owned and are not under the control of the MoAFBA or APUA. During drought periods, irrigation is restricted to specific areas due to the shortfall in surface water and groundwater yields, and most surface water storage is diverted to municipal supply. In 2014, 3.8 square kilometers were irrigated, with localized irrigation being the only technology used. Government-owned irrigation schemes are located in Sanderson, Bethesda, and Potworks, with Sanderson and Bethesda serving 10 households each, and Potworks serving 15 households (FAO 2015).

2.5 Gender, agriculture, climate change, and disasters

Single and female-headed households tend to be more vulnerable to and at risk from falling into poverty as well as disaster risk, with female-headed households often larger than male-headed households (GoA&B 2021). In most family units, women tend to carry the main burden of childcare as well as domestic responsibilities (Caribbean Development Bank 2014). Data indicate that the household size averages 2.7 members (Caribbean Development Bank 2014), and that households headed by women remain in the two poorest quintiles (UNICEF 2017).

Women's educational attainment and labor force participation are high overall, yet women register less participation in the labor market compared to men, with the disparity increasing with age. Regarding their education, 82.1 percent of females are enrolled in secondary school, as opposed to 78.9 percent of males (Caribbean Development Bank 2014), and the share of young females between 15 and 24 years of age with upper secondary attainment is 51.5 percent, compared to 43.2 percent of males (GoA&B 2015).

Women are employed in full time work at higher rates than men, although with persistent earnings differentials. Indeed, in the 2018 Labour Force Survey, it emerged that women tend to occupy lower income bands relative to men (GoA&B 2018a). Earlier reports on gender and employment in the country underscored both wage discrimination in the private sector and that women were pursuing occupations that paid less than those sought after by men (ILO 2018). According to the most recent census, conducted in 2011, women are overwhelmingly represented among those who are economically inactive due to household duties, at 90.4 percent (GoA&B 2014).

Antigua and Barbuda scores 66.3 on the Women, Business, and the Law 2022 Index, suggesting that women have slightly less than two thirds of the legal protections and equality of men (World Bank 2022). The main gender gaps relate to parenthood, where limited protections are in place. Certain

categories of workers, such as domestic workers, have inadequate provisions for paid maternity leave or protections. Moreover, civil or criminal penalties do not exist for cases of sexual harassment in the workplace (World Bank 2021), although legislation on workplace harassment is pending (Marshall 2019).

Agriculture and food production have traditionally been male-dominated sectors. Women account for nearly 38 percent of agricultural workers, about half of whom work part-time (GoA&B 2018a), and of the 100 crop farmers identified in 2020, 84 percent were male (Ministry of Agriculture, Fisheries and Barbuda Affairs 2020). Women are believed to be more active in informal activities and for those with limited registration. They are involved in agro-processing as well as in marketing and distribution, including the sale of produce in the market (Adams-Matthew 2020).

Land ownership is also significantly skewed towards men. Across the five agricultural districts of Antigua and Barbuda, between two and ten times more land is registered to men in acreage, affecting women's ability to access finance, insurance, and renewable energy investments (UNDP 2020). Lack of access to information, as well as legal and financial illiteracy, constrain women's activities and make it hard to scale up businesses in the sector (UNDP 2020). Onerous bureaucratic requirements, opaque rules and procedures, and poor communication and public awareness represent further limitations. Many farmers, including women farmers, lack a business plan, as well as the prerequisites for loans and for access to land for rent or lease (UNDP 2020).

The threats of climate change to women's livelihoods are temperature increases, a scarcer availability of and more limited access to water, and water quality itself. These three factors were cited by key informants via focus group discussions carried out between June and September 2021². Rising temperatures were mentioned as a significant threat for livestock and poultry farmers, and to crops, including vegetables and herbs. These trends also have implications for the raw

materials used by agroprocessors. Access to water and water quality were mentioned as challenges for agroprocessing operations such as juice making, and the high initial investment for water storage was identified as a barrier. Likewise, access and insurance of greenhouses are out of reach for many small-scale and new farmers.

While gender equality and the empowerment of women in all spheres of life are stated priorities of the Government of Antigua and Barbuda (GoA&B 2021), these priorities have not been formalized in the agriculture and food production sectors. In practice, the 2018 Gender Policy of the Department of Environment partly fills this role (GoA&B 2018b). Preliminary discussions were initiated regarding the development of a gender policy between the MoAFBA and the Directorate of Gender Affairs (DoGA). A couple of new programs, not yet fully operational, such as the Resilient Caribbean joint initiative of the Food and Agriculture Organization of the United Nations (FAO) and the CARICOM, will directly engage women farmers in sustainable and climate resilient practices. The programs will include the enhanced use of renewable energy and expanded irrigation systems, investment in school feeding programs, and food and nutritional security for those falling behind (CARICOM 2017).

2.6 Disability and agriculture

It is estimated that about 5.3 percent of Antigua and Barbuda's population live with some kind of disability or impediment, of which 2.25 percent or 834 persons are males and 3.06 percent or 1,250 persons are females. Possibly these figures may be even higher, as it is believed that some 1,215 males and 1,172 females failed to provide sufficient information to establish whether they were disabled or not (GoA&B 2014).

The two main disabilities in the country are impaired mobility and visual disability. People indicating difficulties or the impossibility to walk account for 1.15 percent of the total population, while the visually impaired are 0.98 percent. Except for communication

² Personal communication with key informants, September 2021.

impairments, women have higher reported levels of disability compared to men (GoA&B 2014).

Antigua and Barbuda signed the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) as well as the Optional Protocol, in March 2007 (UNCRPD 2007). However, the UNCRPD was not ratified until January 2016, and the Optional Protocol is yet to be ratified. National legislation in support of the UNCRPD commitments and obligations was enacted in 2017 with the Disabilities and Equal Opportunities Act 2017. It set up a national framework to support people living with disabilities and established the National Council of and for Persons with Disabilities (GoA&B 2017b). This legislation makes provision for the rights of people with disabilities, prohibiting any form of discrimination based on disability and stipulating substantial legal penalties in case of violations. Still, while this law includes provisions for the right to reasonable accommodation and equal standards of health care – which would have indirect relevance to DRM and longer-term resilience – the rights of people with disabilities or the responsibilities of government towards people with disabilities in the event of catastrophic disasters find no direct mention (GoA&B 2017b).

It is expected that this might be forthcoming, as the Government of Antigua and Barbuda reaffirmed its commitment to implement strategies that ensure that vulnerable persons and their families are able to, in the

event of a natural disaster, identify and access shelters. These shelters are equipped to handle the needs of women, single parent families, people with disabilities, young men and women, and other individuals with special circumstances. The government equally reiterated its intentions to expand the existing social protection mechanisms to comprise unemployment benefits, access to insurance mechanisms for the vulnerable, and financial inclusion (GoA&B 2021).

The country has a range of disability support organizations representing people with disabilities across the spectrum of physical, sensory, and mental disabilities, which provide them with a level of day-to-day support. However, they have little influence on the allocation of resources for people with disabilities or national policy. The Antigua and Barbuda Association of Persons with Disabilities (ABAPD) is the cross-disability national umbrella organization likely to provide representation in national DRM policy and planning forums, and a member of the Disabled Peoples' International network of national organizations or assemblies of disabled people. The organization has been highlighting how people with disabilities are disproportionately vulnerable in time of emergencies, and that they face numerous challenges accessing resources for response and recovery. It has also been vocal in its demands that special considerations be offered to people with disabilities in information sharing and evacuation procedures (ABAPD 2022).

03

The Sectoral Recovery Capacity Assessment implementation process in Antigua and Barbuda

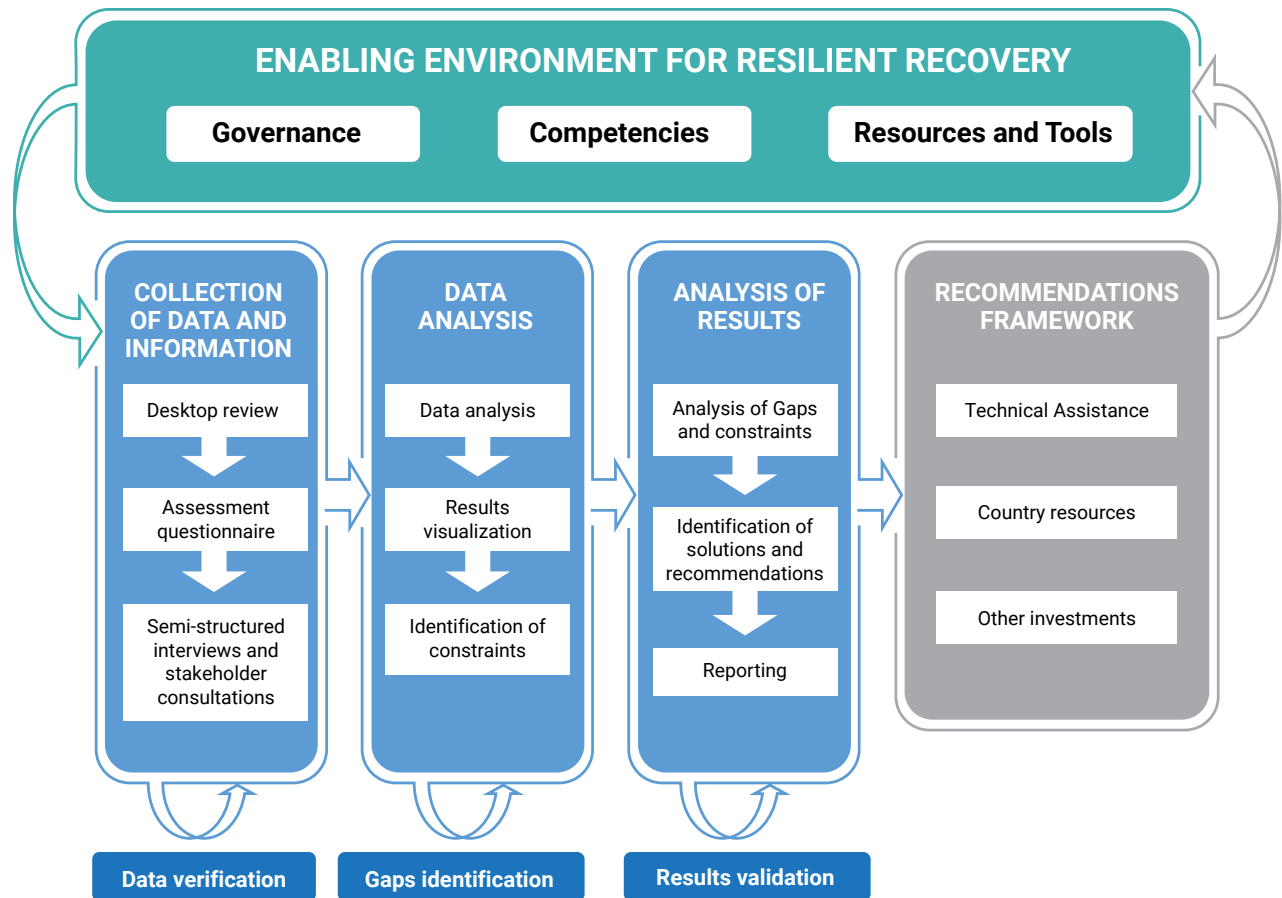


In Antigua and Barbuda, the Civil Defence Commission (CDC) bears the institutional responsibility for disaster management. The CDC works closely with and supports the work of ministries, line agencies, and other actors in risk management at the national and sectoral level. This SRCA has been implemented under the leadership of the MoAFBA and the CDC. The

implementation followed the process presented in figure 5. It started with a briefing to the CDC on the methodology and a desktop review. The MoAFBA completed the assessment questionnaire and coordinated a consultation – involving private sector stakeholders –, to confirm, complement, and discuss the responses provided to the questionnaire.

FIGURE 5

Diagrammatic representation of the assessment process



04

Results Overview



4.1 General Findings

The analyses conducted assessed the capacity of Antigua and Barbuda’s agriculture sector to plan, design and execute resilient and inclusive recovery projects in a timely, efficient, and effective manner as basic or incipient, with a sector level RCI of 47 (figure 6). The capacity to undertake inclusive recovery in the sector is enabled, to a certain extent, by the resources and tools available (RCI of 54) but constrained by limitations in the governance and operational competencies required for recovery (RCI of 42 and 43 respectively).

The above findings are supported by the analysis of results at the key element level (Figure 7). However, it should be noted that while this more in-depth analysis suggests moderate strengths in the capacity to design resilient recovery projects (RCI of 54), undertake PDNA and project portfolio planning (RCI of 66) and design resilient recovery projects (RCI of 64), these capacities exist in the country and support the agriculture sector but are found beyond the MoAFBA, within the central ministries that lead the planning and implementation of post-disaster needs assessments (PDNAs) and recovery projects and within international organizations, such as the Caribbean Agricultural Research

and Development Institute (CARDI), which work in agriculture in Antigua and Barbuda. Without a major role in CDM or recovery processes, the MoAFBA has not acquired, developed or sustained the capacities required to design and implement the full management cycle of recovery projects. The ministry neither has the capacity to fully integrate gender, disability and risk considerations in its daily operations, thus missing the opportunity to directly strengthen the resilience of farmers and other stakeholders to shocks and to lead the risk-informed and sustainable economic transformation that is expected for the sector.

In general, capacity building interventions are required to:

- » Increase DRM and recovery knowledge and basic DRM implementation capacity, with a focus on gender and disability inclusive recovery frameworks, across the MoAFBA and farming communities. This can enable the MoAFBA to take a more important role in recovery planning and coordination before a catastrophic event and enable better communication on the topic within the sector and across government agencies.

FIGURE 6

Recovery Capacity Index for the components assessed in the sector: Governance, Competencies (operational capacity) and skills, and Resources and tools.
Capacity levels are indicated by colored dots.

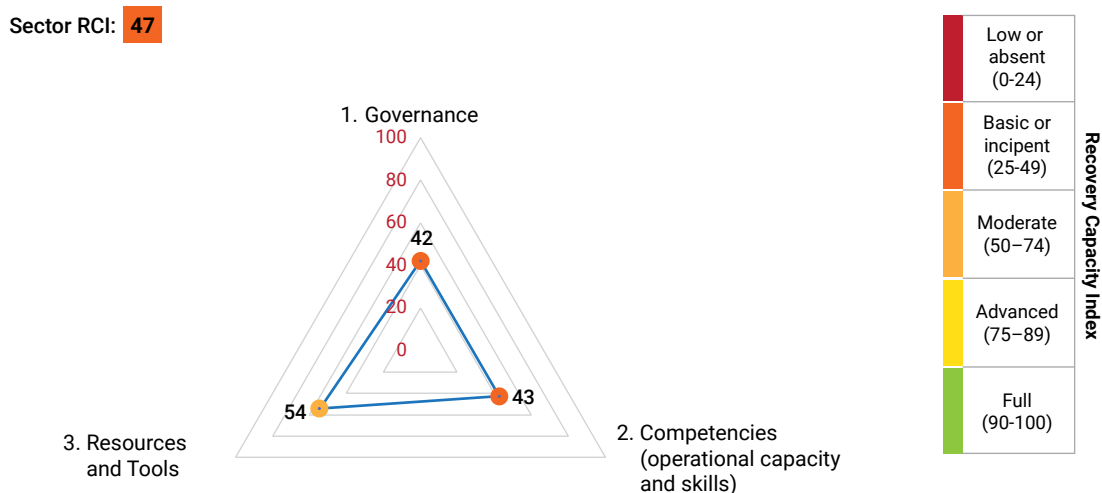
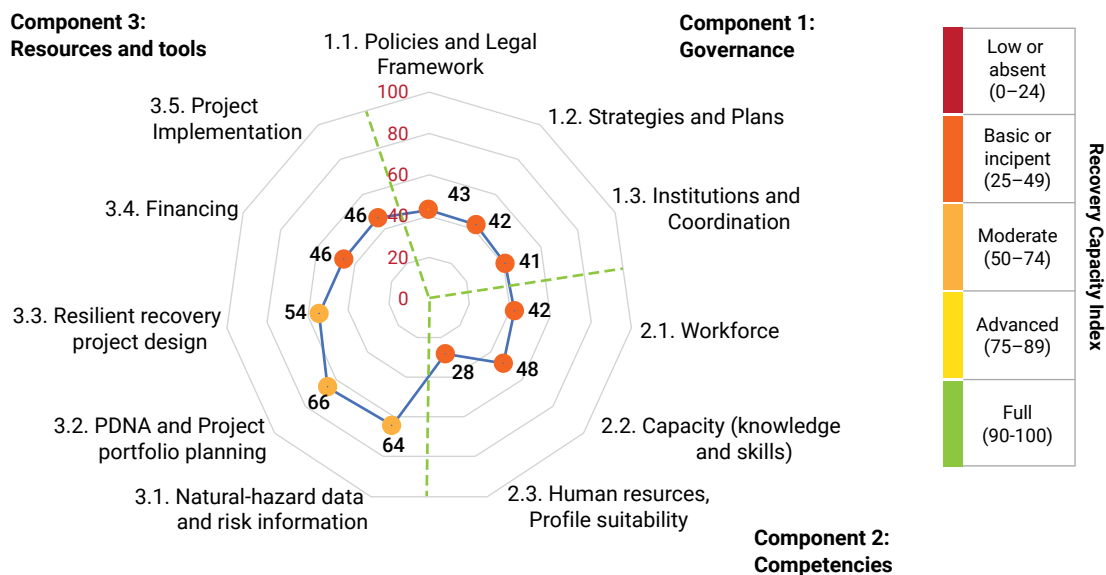


FIGURE 7

Recovery Capacity Index for the key elements assessed: Policies and legal framework; Strategies and plans; Institutions and coordination; Workforce; Capacity (knowledge and skills); Human resources, Profile suitability; Natural-hazard data and risk information; Post-Disaster Needs Assessment (PDNA) and Project portfolio planning; Resilient recovery project design; Financing; and Project implementation.

Capacity levels are indicated by colored dots.



- » Strengthen and streamline strategic planning processes for recovery in agriculture, including ex-ante definition of institutional arrangements for the development, coordination, and implementation of inclusive recovery strategies and plans.
- » Strengthen the use, generation, recording, and management of hazard data and risk information relevant to agriculture within the MoAFBA and with farming communities, to ensure sectoral decisions and activities are risk informed.
- » Improve and more widely disseminate information on funding sources, opportunities, and access mechanisms for recovery in the sector. Information should be shared using a range of communication platforms and networks utilizing accessible communications technologies, and with a deliberate focus on reaching women, people with disabilities, and other excluded groups.
- » Strengthen gender and disability inclusive DRM and climate change integration in project design, implementation, monitoring, and evaluation through early engagement and working in partnership with

gender specialists, people with disabilities, or their agents.

The following sections offer a more detailed analysis of the results obtained for each of the components assessed. Key recommendations are provided in Section 5 and more detailed recommendations, including capacity building interventions, can be found in Annex 1.

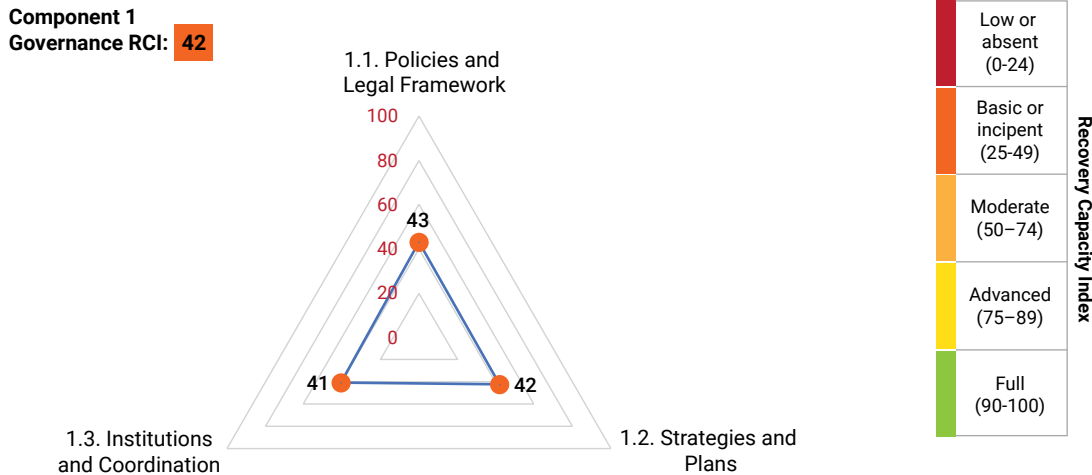
4.2 Findings for Governance

At the level of governance, the capacity and enabling factors for recovery in agriculture were assessed as basic or incipient, with an RCI of 42 (Figure 8). Between 2014 and 2015 the country established a DRM governance structure, a guiding National CDM Policy and Strategy (2014-2016) and CDM regulations establishing a clear disaster management structure and roles. However, insufficient implementation of the CDM policy and regulatory framework had occurred by 2017,

FIGURE 8

Recovery Capacity Index for the key elements of Component 1: Policies and Legal Framework, Strategies and Plans, and Institutions and Coordination.

Capacity levels are indicated by colored dots.



when the country was struck by Hurricane Irma, and affected by Hurricane Maria, which highlighted immediate needs for, among other things, improved disaster risk information and communication, enhanced disaster management capacities and better access to risk financing options (NODS, 2016) In the aftermath of Hurricane Irma, housing, tourism and transport were identified as the sectors with the largest financial needs for recovery. With international support, build back better efforts were made in the housing sector and the Government of China contributed to the recovery process of ANTIGUA AND BARBUDA's agriculture and tourism sectors in 2017. However, the country continues to face structural challenges related to the high costs of reconstruction from Irma (IMF 2022), and its economy has been further affected by the impacts of the COVID-19 pandemic.

While progress has been made towards adopting a CDM approach, the national disaster management policy framework is primarily focused on emergency preparedness and response and needs to be revised, to integrate recovery more explicitly, taking into account the lessons learned from recent disasters for priority setting. In addition, a DRM legislative framework is urgently needed, a need which could

be bridged with the completion and approval of the National CDM Legislation that has been drafted (RCI of 43). A National CDM Strategy, which complements the National CDM Policy exists but its implementation lags behind. At the sectoral level, enhancing readiness for inclusive recovery in agriculture requires formulating a sectoral development policy that integrates DRM – including recovery –, gender and disability considerations, along with a strategy for its operationalization (RCI of 42). This policy and strategy should be aligned with current efforts to develop a National Adaptation Plan and to elaborate a CDM plan for the sector.

The CDM approach followed in Antigua and Barbuda includes “multilevel, multidimensional (cross-sectoral) and multidisciplinary coordination and collaboration among all stakeholders in addressing gaps in the disaster management cycle” but progress on this front, has been slow (RCI of 41), despite the inclusion of various elements to facilitate it in the National CDM Policy and Strategy. These elements encompass the preparation of annual organizational disaster plans by each government department and the appointment of a recovery and mitigation coordinator to support the national DRM system in recovery planning and coordination of CDM actions with communities. Advancing

in the planning and implementation of inclusive recovery projects in the agriculture sector could also benefit from a more participatory and systematic process of sectoral DRM planning. It would also benefit from wider communication on the processes, as farming communities do not feel their needs have been well represented and wide awareness of CDM policy and implementation outputs is lacking.

The results obtained at the sub-element level support these findings (figure 9). They highlight the country's moderate capacity to: (i) integrate disaster risk management and climate change adaptation into the national and sectoral policy framework (RCI of 58), (ii) to apply the build back better (BBB) approach in recovery operations (RCI of 50), although this has taken place primarily in the housing sector, and (iii) to coordinate disaster management – including recovery – operations (RCI of 50). However, all other governance sub-elements ranked as basic or incipient.

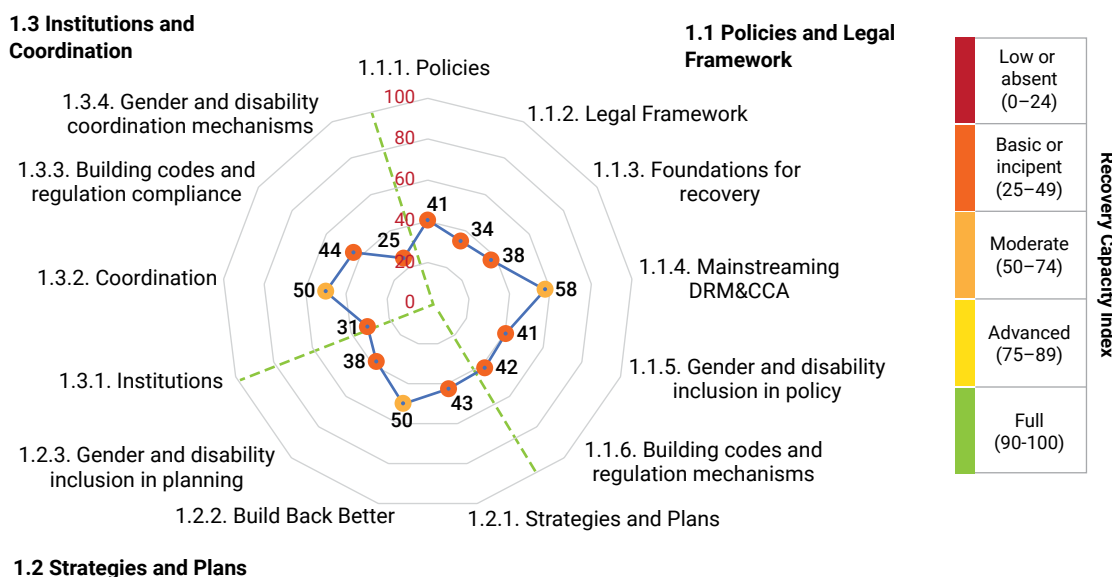
Important findings from the Policy and Legal Framework and other key elements for recovery governance include:

- » The National Comprehensive Disaster Management (CDM) Policy and Strategy for Antigua and Barbuda (2014-2016) is the main document that governs disaster management in the country. It expresses the government's commitment to strengthen national capacity to implement CDM through a series of strategic actions pertaining to: (i) the elaboration of additional and interconnected policies, (ii) updating the DRM legislation, (iii) ensuring adequate human and financial resources for the establishment of an effective knowledge management mechanism and program, (iv) strengthening DRM planning and implementation capacity of sectoral lead agencies and communities, and (v) integrating hazard information and DRM into sectoral policies, laws, development planning and operations,

FIGURE 9

Recovery Capacity Index for the sub elements of Component 1: Policies, Legal Framework, Foundations for recovery, Mainstreaming DRM & Climate Change Adaptation (CCA), Gender and disability inclusion in policy, Building codes and regulation mechanisms, Strategies and Plans, Build Back Better, Gender and disability inclusion in planning, Institutions, Coordination, Building codes and regulation compliance, and Gender and disability coordination mechanisms.

Capacity levels are indicated by colored dots.



and decision-making in tourism, health, agriculture and nutrition, education, planning and infrastructural development. The National Comprehensive Disaster Management Policy includes resilience as a cross-cutting issue. It also recognizes the specific and unique requirements for the development and maintenance of a disaster management framework in Barbuda and commits to allocate human and financial resources to improve efforts of disaster prevention and mitigation, recovery and rehabilitation in the island and deepen coordination with the identified national agencies. This policy is mostly focused on disaster preparedness and response, although it mentions recovery. In its associated strategy, the creation of a recovery and mitigation coordinator position is proposed to support the National Office of Disaster Services (NODS) director in recovery planning and community coordination and engagement in CDM – including recovery – among other functions.

- » Roles and responsibilities for DRM in Antigua and Barbuda are established in the Comprehensive Disaster Management Regulations of 2014. The National Disaster Council is the principal policy and advisory body to the Prime Minister on matters of DRM and CDM, including advisory on the reallocation of funds for emergency response and recovery. NODS is the Government agency responsible for the reduction of national vulnerability to natural and technological hazards and the secretariat of the national disaster management mechanism, which managed through the NODS-Coordinating Unit (NODS-CU). A national disaster coordinator oversees the daily operations of the NODS-CU. A district disaster committee has been established in each of the country's 17 political constituencies for the coordination, integration, supervision, monitoring, and evaluation of CDM activities with district authorities and communities. In addition, each government department must appoint a liaison officer for communication with the Director of NODS in relation to CDM procedures. These officers are also responsible for the preparation of annual organizational disaster plans to be submitted to NODS. However, this mandate has not been properly addressed and the preparation of these

plans has been weak (NODS, 2016). Nonetheless, NODS strives to coordinate DRM actions with other government agencies, including those related to projects such as assessment.

- » CDM legislation has been drafted but it is still to be completed with sectoral inputs and approved. Therefore, at present the country lacks a legal framework for the implementation of DRM actions.
- » Although recovery is mentioned in the National CDM Policy, the Medium-Term Development Strategy 2016-2020 (MTDS) and in other documents, evidence of the active integration of recovery considerations into national and sectoral plans, programs and strategies is practically missing and the agriculture sector lacks a sectoral development policy.
- » The MTDS identifies agriculture as a primary sector to broaden national economic input and proposes studying the feasibility of developing crop and livestock insurance and the development of programs that enable climate change adaptation as measures to reinvigorate the sector. It is expected the National Adaptation Plan that is under completion sets priorities and specific guidance for adaptation in agriculture.
- » In its 2021 Voluntary National Review (VNR) the Government of Antigua and Barbuda indicated that a new MTDS will be prepared, more closely aligned with the SDGs and designed to be more adaptive and responsive to exogenous shocks. The government acknowledges the country is at high risk of natural hazard and climate change impacts, as well as the damage caused by Hurricane Irma and the COVID-19 pandemic and stresses the need to strengthen adaptation and resilience-building measures, stating "*We cannot continue to lose our development gains to shocks!*" (GoA&B, 2021). The process of elaboration of the new MTDS represents an opportunity to advance in the integration of CDM – and inclusive recovery – considerations at the national and sectoral level.
- » Although the preparation of the National CDM Policy has followed a participatory approach, sectoral stakeholders consulted during the elaboration of this assessment called for the farming community to be better represented in DRM policy

and strategic processes to ensure their needs are included. They also called for better communication of these processes and their outputs.

- » The elaboration of a draft sectoral DRM plan was initiated prior to Hurricane Irma but the process was halted. However, in 2021, FAO initiated discussions on recovery planning in agriculture, which could reignite interest in the completion of the DRM plan inclusive of recovery considerations.
- » The government is proud of its management of the COVID-19 pandemic, which included the development and adaptation of protocols in various sectors to contain the spread and address the challenges brought by the virus. This included changes and new procedures in the health, tourism and education sectors. However, no specific procedures were established or adapted in the agriculture sector.
- » Gender and disability inclusion are integrated as cross-cutting themes in the national CDM policy framework, however they must be more explicitly addressed, with provisions that can be operationalized both at the national and sectoral levels.
- » Antigua and Barbuda adopted the 2015 OECD building code (OECS 2015), which was amended in 2016 and revised in 2018. Among other risks it considers those related to fire, high winds and seismic hazards and includes accessibility guidelines for persons with disabilities. The Development Control Authority established under the Land Development and Control Act (1977) is the agency in charge of the code's enforcement. However, budgetary challenges limit the enforcement of the code, and no evidence is available on the use or enforcement of the building code in the agriculture sector.

Opportunities identified for strengthening recovery capacity at the governance level include:

- » Integrate explicit national and sectoral considerations for inclusive recovery readiness in the new MTDS and in the NAP that are under preparation.
- » Review the National CDM Policy, updating the National CDM Strategy (2014-2016) and finalize and approve the National CDM legislation. Ensure these documents integrate explicit provisions on gender and disability inclusive recovery, and apply a series of measures to facilitate the rapid implementation of effective recovery projects in the aftermath of disasters.
- » Complete the elaboration of the recovery plan that was initiated for the agriculture sector before Hurricane Irma. This endeavour should follow a highly participatory process, taking into account the lessons learned from the recovery processes that followed Hurricane Irma and the COVID-19 pandemic. The plan should integrate climate risks, pandemics, and multi-hazard impact handling provisions, clarify roles and responsibilities for its implementation, monitoring and evaluation and include clear prioritized measures. This document should give prominence to the MoAFBA as a coordinator of recovery projects in the sector, to help measure progress and the development and implementation of resilient recovery investments.
- » In direct engagement and partnership with gender specialists and people with disabilities or their representatives, develop and establish an effective process or mechanism to update sectoral policies, to integrate both gender- and disability-inclusive recovery considerations and elements for their operationalization and coordination at the sectoral level. This mechanism is lacking.
- » Raise awareness among government institutions, regional partners, and other sectoral actors on:
 - > the need to prioritize and strengthen the preparation of recovery plans and strategies at all levels of the sector – from the MoAFBA to farmers and SMEs linked to agriculture,
 - > the need to strengthen participation of the MoAFBA and the farming community in CDM, including recovery processes and for wider communication of the processes' outputs,
 - > the need for a MoAFBA to play a stronger role in the coordination of CDM and recovery interventions across the sector,
 - > the critical role each of them plays on the recovery process of the agriculture sector in the aftermath of disasters.
- » Accelerate the implementation of CDM activities in the agriculture sector, and create financial mechanism for recovery, including agriculture insurance

and a contingency recovery allocation for the MoAFBA.

4.3 Findings for Competencies

The capacity and skills that exist in the country’s agriculture sector are basic and insufficient to design and implement resilient and inclusive recovery projects. This is indicated by the RCI of 43 obtained for the Competencies component (figure 10). It reflects that institutional limitations affect the effective consideration and integration of DRM and recovery in relevant sectoral processes. Major limitations were identified at all three subcomponents, namely human resources (RCI of 28), workforce (RCI of 28) and in the level of knowledge and skills (RCI of 48).

The results at the level of sub-elements support these findings (figure 11). All sub elements assessed reflect a basic or incipient competence for recovery planning and implementation in the agriculture sector, except for the moderate proven capacity to undertake resilient recovery projects – mainly driven by international organizations working in adaptation and development projects in the country (RCI of 55) - and the moderate

availability of training in general CDM issues (RCI of 50). In general, the level of DRM knowledge in the agriculture sector is low, because of insufficient permanent staff at the MoAFBA trained in CDM and recovery (Workforce RCI of 45), gender mainstreaming (Gender RCI of 25), and in inclusion of people with disabilities. The ministry also faces a shortage of staff with the required knowledge of DRM methods and tools and with the expertise to implement resilient recovery projects (Skills RCI of 33) and of private contractors with the knowledge, experience and equipment required for large recovery and BBB interventions (Private sector RCI of 44). Both training and recruitment in these areas are urgently needed, along with mechanisms to ensure long-term DRM and recovery knowledge creation and transfer within the sector.

The assessment of competencies indicates the following:

- » The number of public servants working in the agriculture sector is just sufficient to manage the volume of existing projects. However, the knowledge and skills required to identify, plan, design, implement, and oversee recovery projects is missing within the MoAFBA.

FIGURE 10

Recovery Capacity Index for the key elements of Component 2: Workforce, Capacity (knowledge and skills) and Human Resources, Profile suitability.
Capacity levels are indicated by colored dots.

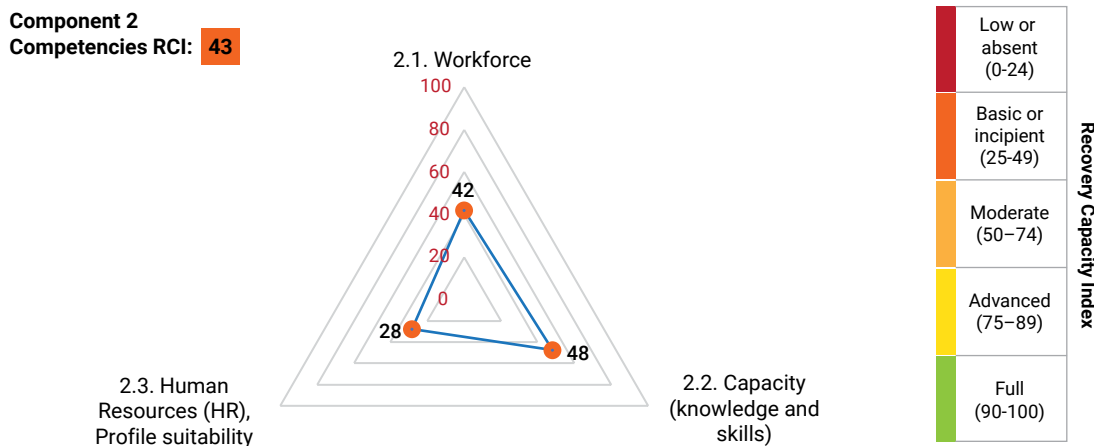
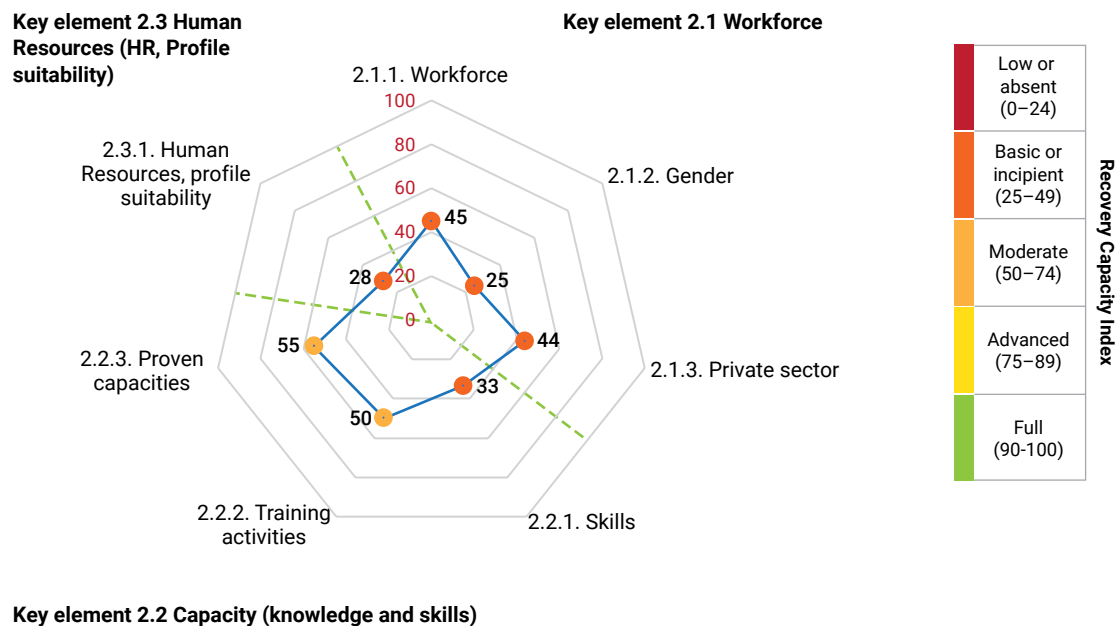


FIGURE 11

Recovery Capacity Index for the sub elements of Component 2: Workforce; Gender; Private sector; Skills; Training activities; Proven capacities; and Human Resources, profile suitability.

Capacity levels are indicated by colored dots.



- » The number of government officers associated to the MoAFBA with the necessary expertise and knowledge of DRM methods and tools, such as disaster risk assessments and the use of geo-referenced information systems is limited. Although there are technical staff at the MoAFBA who understand the basics of DRM and ensure that risk considerations are integrated into sectoral projects, only the Liaison Officer to NODS has been trained and has experience in the elaboration of PDNAs. In consequence, the ministry's capacity to elaborate PDNAs and translate their results into actionable sectoral projects that include risk mitigation and other resilience measures is low.
- » Until now, PDNAs has been developed under the leadership of the Ministry of Works and NODS, with donor support. The role of the MoAFBA in the PDNA process has related mostly to the assessment of sectoral damages and losses. However, the results of previous PDNAs have not been communicated to the sector, nor have recovery projects emerging from sectoral PDNA needs or priorities

been implemented by or in collaboration with the MoAFBA. An example of this is that actions for the recovery of agriculture in Barbuda following the destruction caused by Hurricane Irma were undertaken by external agencies such as the Inter-American Institute for Cooperation on Agriculture (IICA) but progress has not been reported to the MoAFBA. Nonetheless, the MoAFBA is aware of non-governmental efforts to enhance recovery readiness in the sector, including CARDI's activities on the storage of seeds and planting materials to accelerate agricultural recovery following a disaster and the elaboration of business continuity plans by agriculture-dependent firms.

- » Provisions for the delivery of training on emergency response and preparedness to public officers are included in the National CDM Regulations of 2014. NODS offers training on request to sectoral agencies and district committees and, the Training Division in collaboration with NODS, provides annual disaster awareness workshops to government departments. However, the CDM-related

training available provides general notions of DRM topics but is insufficient to build the necessary capacity of the sector's stakeholders to undertake disaster response and recovery activities. Further, as the MoAFBA does not invest in recovery projects, nor design or implement them, its demand for specialized training is low, and has not been systematically included in the ministry's agenda. Available work opportunities abroad, which attract qualified national individuals, and public recruitment protocols, such as terms of reference (ToRs), which do not include knowledge on DRM, gender or disability inclusion, further limit the likelihood of improving the competencies required for inclusive recovery in a sustained manner. At present, to fill technical capacity limitations, the sector relies on the support provided by other government agencies – for example, the Ministry of Works and NODS – and external technical assistance from CARDI, IICA, and FAO.

- » General and specialized knowledge and skills in DRM and, particularly in recovery, are needed in the country's agriculture sector. Specific areas where capacity building interventions are required:
 - > Damage assessment and need analysis. At present, the count is only one government officer in the sector trained in this area.
 - > Build back better approaches and their application in agriculture, including operational information and guidelines.
 - > Geographic information systems (GIS), modeling, and scenario planning.
 - > PDNA and recovery planning.
 - > Recovery project formulation based on PDNA results.
 - > Gender mainstreaming. No gender specialists work on a permanent basis at the MoAFBA. Training on gender mainstreaming for the ministry's staff is needed as gender is considered mainly as the focus of external projects that target women in the sector, including several IICA projects with agroprocessor women in Antigua, although other projects are designed to be nondiscriminatory.
 - > Disability inclusion. Staff at the Ministry of Agriculture are not trained in disability inclusion.

However, a working relationship exists between the ministry and the Antigua and Barbuda Association of Persons with Disabilities, for specialized inputs and collaboration in extension projects for people with disabilities, which are less common such as the establishment of backyard gardens.

- > Communication skills for raising awareness about hazards, impacts, and risks to the sector stakeholders as part of a continuous process of knowledge building for CDM action.
- > The low level of training and skills on project management cycle-related issues across the sector is also a constraint to the design and implementation of resilient recovery projects.

The need to build and strengthen competencies for resilient and inclusive recovery within the sector is recognized. Opportunities to build the necessary knowledge and skills include:

- » The restructuring process that is taking place at the MoAFBA, which includes the establishment of a planning unit. The process, still at an early stage, and the recent constitution of a project oversight committee will receive, review and provide guidance to the implementation of the ministry's projects. This committee will offer advice on strategies and approaches to ensure project continuity and report to the Office of the Permanent Secretary. Building the capacity of the project oversight committee in CDM, recovery, gender and disability mainstreaming, as well as in project planning, monitoring and evaluation, represents a major opportunity to ensure existing projects become more resilient to shocks and future projects support inclusive recovery.
- » Assess the DRM and project management training needs of public servants, farmers and other agriculture stakeholders and explore possibilities for continuous and tailored training delivered by national academic and vocational institutions in collaboration with NODS.
- » Develop key training materials and offerings on gender and disability inclusion, offer them on a regular basis, or make them available online.

- » Establish credentials for gender and disability inclusive skills and offer or mandate training of all public sector officials, and of all private sector contractors and staff working on contract.
- » Create and tailor building standards that are specific to the agriculture sector needs, including provisions on building materials.
- » Support the design and implementation of awareness raising campaigns on hazards, impacts, and risks targeting agriculture sector stakeholders to strengthen their capacity to effectively manage disaster risks.
- » Encourage international partners to contribute to closing major capacity gaps in countries with constraint workforce, including Antigua and Barbuda by providing technical experts to work hand-in-hand with national and sectoral public institutions and by creating more frequent opportunities for training, knowledge sharing and technology transfer, including through the institutionalization of a capacity building component within each support intervention. The private sector can also be encouraged to strengthen its DRM capacity, for example in BBB approaches. The private sector can enable resilient and inclusive recovery through actions such as

imports of improved crop varieties and developing insurance and microinsurance programs suitable to the country's agricultural context.

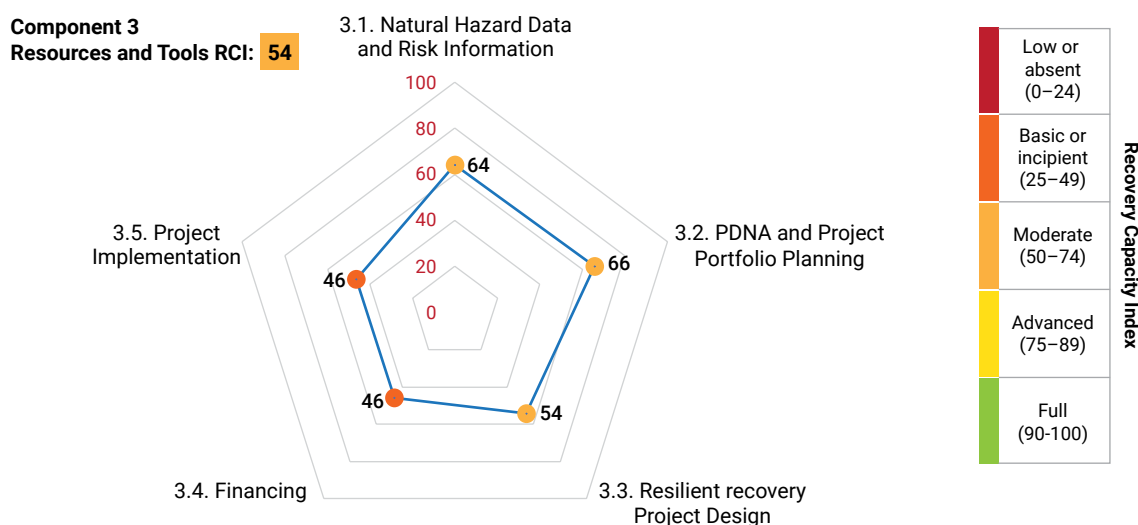
4.4 Findings for Resources and Tools

The resources and tools available for resilient recovery in the country's agriculture sector are assessed as moderate, with an RCI of 54 (figure 12). Although recovery project planning and implementation are supported by moderate natural hazard and risk information, PDNA, and project portfolio planning and resilient recovery project design (RCI of 64, 66 and 54 respectively), such capacity is not concentrated in the MoAFBA or sectoral stakeholders, but rather in central ministries, such as the Ministry of Works and regional organizations working in agriculture, which use the data and implement recovery projects in the sector.

The capacity to access and the availability of recovery finance for the MoAFBA and sectoral stakeholders is incipient (RCI of 46). Also incipient is the capacity of the MoAFBA and sectoral stakeholders to implement

FIGURE 12

Recovery Capacity Index for the key elements of Component 3: Natural hazard data and risk information, PDNA and Project portfolio planning, Resilient recovery project design, Financing, and Project implementation.
Capacity levels are indicated by colored dots.



recovery projects (RCI of 46). The analysis of RCI values at the sub-element level support these results (Figure 13) and highlight the weak integration of building codes at the level of project design in the sector (RCI of 38) and at the level of implementation (RCI of 42) and the need for the development of building standards applicable to agriculture and other BBB tools for the sector (RCI of 38). Basic project cycle management (PCM) tools available to the staff of the MoAFBA (RCI of 44), an incipient use of monitoring and evaluation approaches in projects (RCI of 44) and the absence of an allocation for recovery in the annual budget of the ministry (RCI of 38) are also important constraints to the effective implementation of resilient recovery projects.

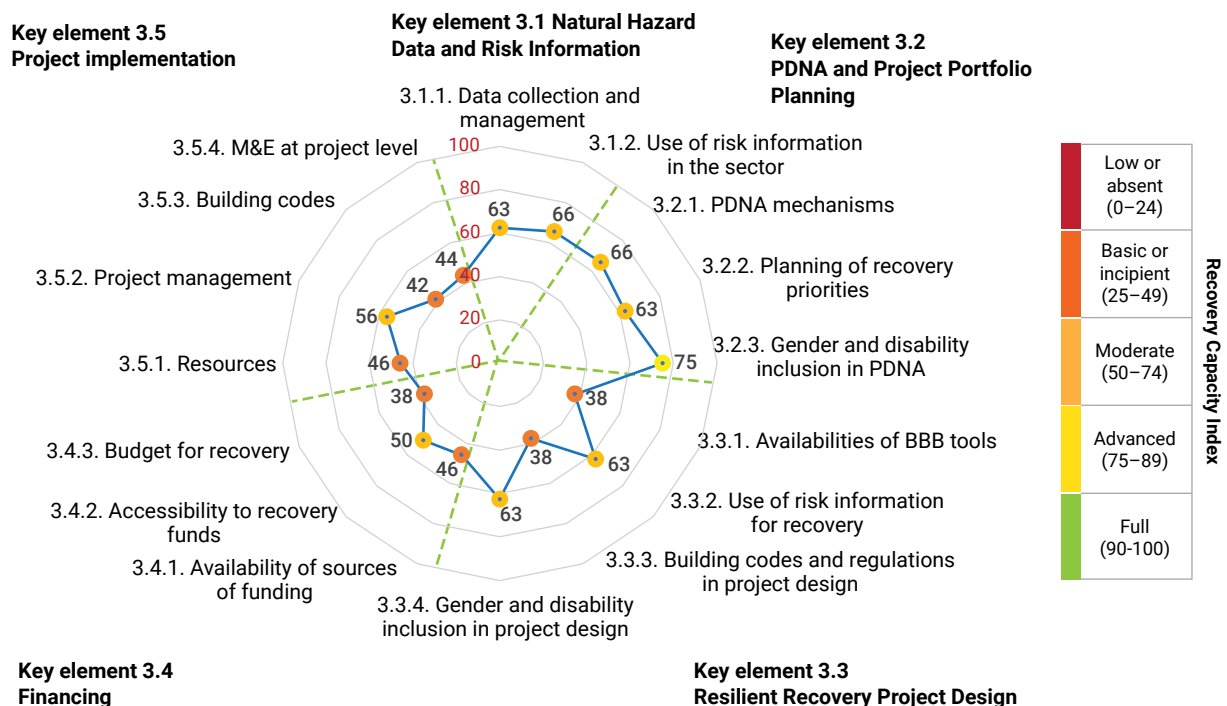
- » Existing natural hazard data and risk information were developed with international assistance. Most information rests in the Environmental Information Management and Advisory System (EIMAS 2015), envisioned to be a functional comprehensive environmental data repository. However, hazard and risk maps are partly outdated and, for agricultural purposes, generated or updated and primarily used by CARDI for the provision of technical support to farmers on the reduction of soil erosion and salt-water intrusion and other risks. The capacity of the MoAFBA to develop and use this information, including the hazard and risk maps is limited.
- » The PDNA elaborated after Irma struck the country included, as a priority, the improvement of the national disaster risk information framework and the emergency communications network to ensure

Detailed findings of the assessment include:

FIGURE 13

Recovery Capacity Index for the sub elements of the key elements of Component 3: Data collection and management, Use of risk information in the sector, PDNA mechanisms, Planning of recovery priorities, Gender and disability inclusion in PDNA, Availability of BBB tools, Use of risk information for recovery, Building codes and regulations in project design, Gender and disability inclusion in project design, Availability of sources of funding, Accessibility to recovery funds, Budget for recovery, Resources, Project management, Building code implementation resources and M&E at project level.

Capacity levels are indicated by colored dots.



communications services prior to, during and after national disasters. To achieve this, the PDNA called for “the improvement of Antigua and Barbuda Meteorological Service (ABMS) capacities, with an up-to-date hydro-meteorological infrastructure and access to modern forecasting and services delivery technologies, and strengthened early warning systems including the “last-mile” communication with the exposed and most vulnerable communities.”

- » The Department of Environment and NODS are responsible for natural hazard and risk data collection and management protocols and systems. However, the agriculture sector lags in the elaboration or adoption of such protocols. It is expected that as part of the NAP implementation, routine data collection procedures for EIMAS to support risk modelling – including climate change risk modelling – will be established and that the outputs of modelling efforts will be shared with national agencies and stakeholders.
- » Multi-hazard maps – including geospatial information on hazardous events – are lacking and necessary to inform national and sectoral actors about the risks associated with their investments.
- » It is common practice in the agriculture sector to collect gender-disaggregated data. However, focus is less on the collection of data and information related to people with disabilities. The MoAFBA has a database of active farmers – crops and poultry farmers – from whom production data are collected monthly. This database records farmers’ age and gender as key variables. The Fisheries Division also keeps similar detailed records of the fisherfolks.
- » Building codes exist and their application in public and private buildings needs to be enforced. However, the agriculture sector requires the development of codes and standards – including for building materials – that are tailored to its needs, as well as of the development of finance programs for actors that provide access actors with access to the resources needed to meet the codes and standards requirements.
- » The PDNA conducted after Hurricane Irma prioritized the need to assess, explore and promote the establishment of risk financing or risk transfer mechanisms for Antigua and Barbuda to

better address and recover from future disasters. It included public assistance – national insurance –, private insurance, an emergency fund, project contingent components, contingent lines of credit such as the World Bank’s Catastrophe Deferred Drawdown Option (CAT-DDO), in addition to the existing Caribbean Catastrophe Risk Insurance Facility (CCRIF-SPC) parametric insurance. However, this recommendation has not yet materialized while the need remains. At the sectoral level, recovery depends on projects implemented by external agencies, reconstruction projects conducted by the Ministry of Works and the resources of farmers and fisherfolks themselves, beyond some assistance programs, such as those consisting of in-kind transfers during the COVID-19 pandemic, as the MoAFBA does not have a budget line earmarked for recovery and, in a general sense, does not implement recovery projects or programs. Sectoral public stakeholders are aware that international funding sources for recovery interventions are available when required. However, they have not yet identified these sources and it is unclear to them how to access these funds directly.

- » The MoAFBA is in need of resources to access and update the software and hardware that will enable better project cycle management – for example through the use of monitoring and evaluation tools – and a better integration of risk and BBB approaches into its operations.
- » Strengthened coordination and recording of CDM and recovery-related data by all actors in the sector is needed to understand progress and to build capacity at all levels, as no single entity oversees the entire cycle of recovery project portfolio management.

The assessment identified the following opportunities to strengthen the resources and tools available for recovery in the country’s agriculture sector:

- » Use the opportunities presented by new development projects, funded by international donors, to build through technical assistance, national and sectoral capacity to generate, manage, and use hazard and risk information.

- » Embed elements of the socially inclusive DRM approach based on CDEMA’s CDM framework – hazards, risk assessments, and measures – in all project management cycle protocols used in the sector.
- » Include sectoral DRM allocations in the budget construction and planning processes of the country and donors.
- » Improve communication about and access to recovery finance options for agriculture and build requisite capacity on access protocols and criteria at the MoAFBA to enable the Ministry to rapidly and more effectively support recovery efforts by farmers, fisherfolk, and other sectoral stakeholders.

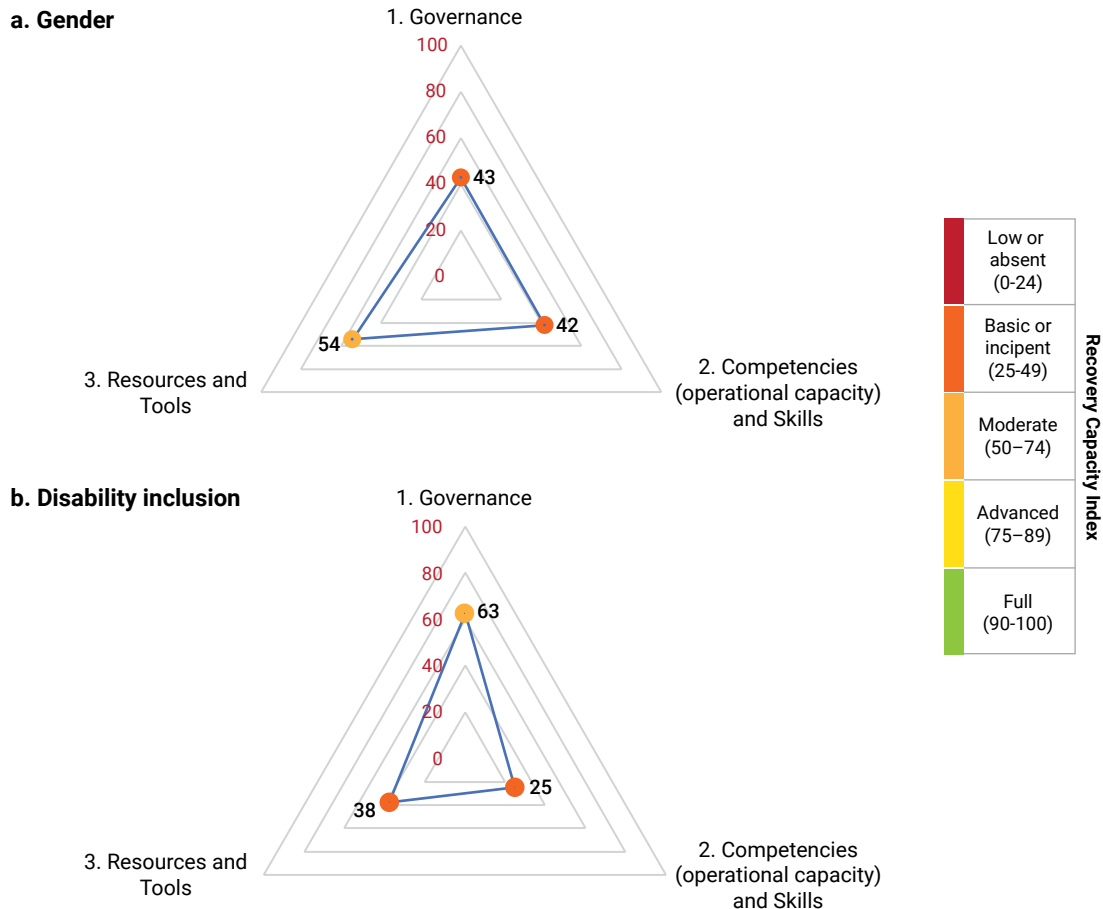
- » Increase the engagement and visibility of the MoAFBA and the agriculture sector in general in PDNA, CDM and national development budgeting processes, to strengthen its capacity to manage risks, adapt to climate change and grow as a resilient economic sector.

4.5 Findings for the Inclusion of Gender and Disability in Recovery Processes

In general, the capacity of government agencies to integrate gender and disability considerations into the design and implementation of recovery projects is

FIGURE 14

Recovery Capacity Indexes for a. Gender and b. Disability inclusion at the level of the components assessed: Governance, Competencies (operational capacity) and Skills, and Resources and Tools.
Capacity levels are indicated by colored dots.



incipient. The needs of women, girls, men, boys, and people with disabilities have been included directly and indirectly in an incipient manner in the DRM policy and legal framework, as shown by the RCI of 43 and 63, respectively (figure 14). However, the MoAFBA lacks the expertise required on a permanent basis for mainstreaming gender and disability inclusion into their operations, including into strategic planning and project implementation processes (RCI of 42 and 25 respectively). The level of resources and tools available for integrating gender considerations into recovery processes was assessed as moderate (RCI of 54) while existing resources and tools for disability inclusion in recovery are only basic (RCI of 38).

Gender agencies, youth groups and the National Council of and for Persons with Disabilities are involved in DRM activities led and coordinated by NODS. However, this engagement is weak and is usually based on ad hoc awareness training opportunities, and on participation in committees that are

making CDM decisions around policy and operations – often late in the process and not well facilitated. Some report that this type of engagement has begun to strengthen during the response to the COVID-19 pandemic, although no evidence of this directly supports the agriculture sector.

Gender needs and disability inclusion are not consistently integrated in the design of agriculture projects. Integration of gender- and disability -inclusive requirements takes place mainly as a response to funding opportunities and donor requirements.

Recommendations

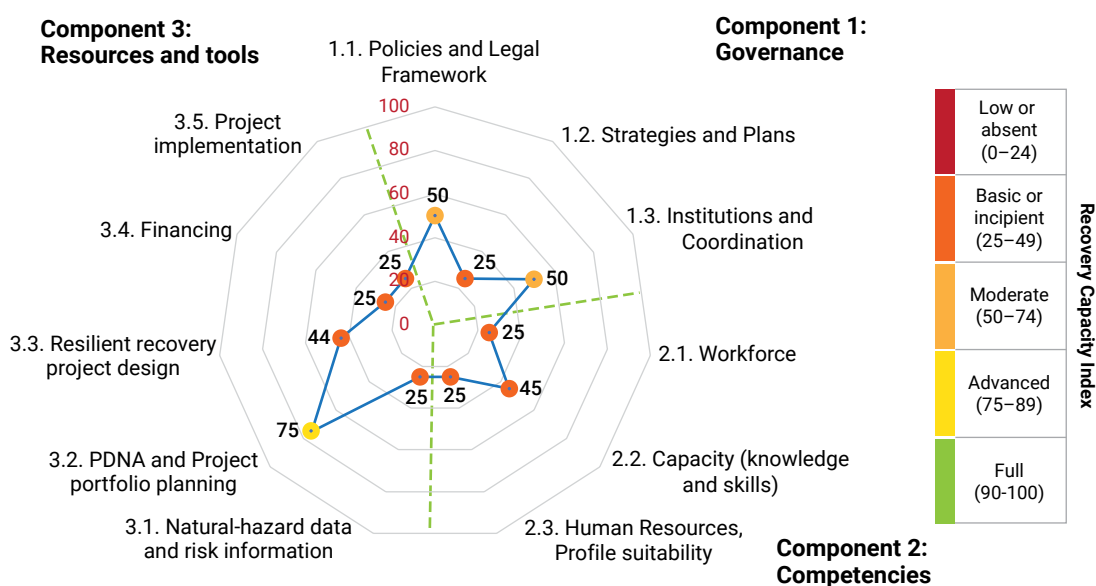
A series of steps are needed to ensure that recovery efforts are likely to be gender and disability inclusive.

- » Develop explicit operational guidance in policy and legal frameworks to ensure gender and disability inclusion are systematically considered.

FIGURE 15

Recovery Capacity Index for Gender and Disability inclusion in recovery processes at the level of the key elements assessed: Policies and legal framework; Strategies and plans; Institutions and coordination; Workforce; Capacity (Knowledge and skills); Human resources, profile suitability; Natural hazard data and risk information; PDNA and project portfolio planning; Resilient recovery project design; Financing; and Project implementation.

Capacity levels are indicated by colored dots.



- » Recruit dedicated staff with the requisite skills on gender and disability inclusion, and integrate these issues in HR protocols and processes to build and retain in-house capacity. At present, minimum knowledge of these issues is not included as requisite in public recruitment processes.
- » Elaborate guidance for staff, and training in gender and disability inclusion with a focus on CDM.
- » Continue collecting robust disaggregated gender and disability data and storing it in managed and accessible databases.
- » Enable a more direct engagement of people with disabilities or their representatives with the

agriculture sector in planning for recovery projects and BBB. This could include facilitating greater participation of the Disability Association in the planning and design of recovery projects as well as in policy and strategic processes.

- » Support the inclusion of people with disabilities in agricultural recovery efforts through increasing access to employment opportunities and support for establishing SMEs.
- » Create a disability policy for the agriculture sector and an integrated disability-inclusion action plan.

05

Recommendations



The following points summarize the recommendations of this assessment, which are detailed in Annex 1. Recommendations are made with the objective of building and strengthening the capacity of the country's agriculture sector to prepare to implement resilient and inclusive recovery projects well before disasters strike. The recommendations respond to the capacity needs for recovery identified in the SRCA, existing opportunities, and recommendations made by the consulted stakeholders as well as by sectoral experts, and gender and disability inclusion specialists. These recommendations principally target central government ministries, the MoAFBA, NODS, CDEMA, and donor agencies involved in DRM and resilience building processes in the country.

Policy and strategic recommendations:

Integrate climate-resilient and inclusive recovery considerations into the national and sectoral policy framework through the review and updating of the National CDM Policy and Strategy, the completion and approval of the National CDM Legislation, the elaboration of a development policy and a CDM plan for the agriculture sector, as well as of a new Medium Term Development Strategy and the completion of Antigua and Barbuda's National Adaptation Plan.

Physical investments:

a) Infrastructure

- » Reduce the vulnerability of the agriculture sector and of the overall national economy to climate change and weather extremes by:
 - > Creating a pipeline of targeted investments in both grey and green defense infrastructure on coastal and riverine areas, to protect Antigua and Barbuda against impacts of climate change (including SLR) and extreme weather events and lower the risk and impact of disruptions that may affect the country in general, and the agriculture sector in particular.
 - > Developing an investment plan that prioritizes infrastructure projects of high relevance for the

agriculture sector, particularly those promoting climate-resilient infrastructure systems, including water supply systems, to support the continuity and operability of crop production after major adverse events.

- > Creating a technical assistance plan with a range of risk reduction interventions to help farm and agriculture facility owners climate-proof and protect key assets, including machinery and equipment, from extreme weather events.
- > Assessing Antigua and Barbuda's hydro-meteorological infrastructure and elaborating an investment plan for its update, acquisition of modern forecasting and climate services delivery technologies, and strengthening of early warning communication systems to ensure they reach the exposed and most vulnerable communities.

b) Equipment, systems and financial resources:

- » Invest in key data collection efforts, including agricultural censuses and periodic household surveys to develop a baseline that enables rapid damage assessment in the event of hazard impacts and that supports the design and targeting of recovery operations.
- » Strengthen the use, management and generation of risk and recovery-relevant data and information across the agriculture sector, particularly within MoAFBA. Ensure that hazard and risk maps created or updated by partner organizations are available and easily accessible to all.
- » Ensure that risk information is communicated in appropriate formats to end users – farmers and fishers.
- » Strengthen sectoral budgets for DRM and recovery by estimating and including a contingent annual recovery allocation in the MoAFBA's budget.
- » Ensure legislation and procedures enable the rapid reallocation of annual budgets to support recovery efforts in the aftermath of major disasters and chronic small events, which add burden to small-holder farmers overtime.
- » Enhance resilience and recovery funding instruments for farmers and small and medium-sized enterprises (SMEs) linked to agriculture value

chains by creating new and enhancing access to existing financial mechanisms for resilience and recovery, including insurance.

- » Create a plan to finance software updating and maintenance at the MoAFBA to facilitate project management operations.

Capacity strengthening

- » Raise awareness, at the strategic and operational levels, of the added value of acquiring and

sustaining DRM and inclusive recovery capacity for the sector's development. This can be achieved through well-designed awareness-raising campaigns and events for public officers.

- » Build and sustain the required knowledge and skills for the implementation of resilient and inclusive recovery projects in the sector through the recruitment of specialized staff in areas specific to DRM, the institutionalization of training in DRM, gender and disability inclusion for public and private sectoral stakeholders, and the improvement of public recruitment protocols, among other measures.

06 Conclusion



The analyses conducted in this assessment determined that the capacity of Antigua and Barbuda's agriculture sector to plan, design and execute resilient and inclusive recovery projects in a timely, efficient, and effective manner is basic or incipient, with a sector-level RCI of 47. The capacity to undertake inclusive recovery in the sector is enabled, to a certain extent, by the resources and tools available (RCI of 54). However, it is also constrained by limitations in the governance and operational competencies required for recovery (RCI of 42 and 43, respectively).

Governance

The findings underscored the need for concrete actions to build and sustain national and sectoral knowledge and skills to ensure the country and sector can systematically integrate resilient recovery considerations into their plans, programs, and projects in an effective and coordinated manner. The agriculture sector in Antigua and Barbuda lacks the necessary knowledge and skills to undertake effective DRM and recovery activities. While the number of public servants working in the agriculture sector is sufficient to manage existing projects, the sector is practically missing the expertise required to identify, plan, design, implement, and oversee recovery projects. The Ministry of Agriculture, Fisheries, and Barbuda Affairs (MoAFBA) has limited capacity to develop PDNAs and translate their results into actionable sectoral projects that include risk mitigation and other resilience measures. Provisions for delivering training on emergency response and preparedness to public officers are included in the National CDM Regulations, but the available training is insufficient to build the necessary capacity of the sector's stakeholders to undertake disaster response and recovery activities. The MoAFBA needs to improve its technical capacity to address gaps in areas such as damage assessment and need analysis, build-back-better approaches, geographic information systems, recovery project formulation, gender mainstreaming, disability inclusion, and communication skills. The sector must additionally prioritize capacity building interventions to ensure that it can effectively manage disasters and mitigate risks to the agriculture sector.

Competencies

Findings equally emphasized how critical it is: (i) to enhance the use of natural hazard data and risk information across government institutions and other actors in the agriculture sector; (ii) to review the national CDM policy and strategic framework to ensure it explicitly provides provisions for recovery, gender and disability inclusion; (iii) to finalize and approve the CDM legislation; (iv) to elaborate a national policy for agriculture and (v) to complete and operationalize a CDM plan for the agriculture sector. The country currently lacks a legal framework for DRM implementation. Recovery considerations are missing in national and sectoral plans and strategies, particularly in the agriculture sector, which lacks a sectoral development policy. A new Medium-Term Development Strategy (MTDS) is being prepared and represents an opportunity to integrate CDM and inclusive recovery considerations at the national and sectoral levels, however, stakeholders call for better representation of the farming community in DRM policy and strategic processes, better communication, and more explicit provisions for gender and disability inclusion.

Resources and tools

A third key takeaway evidenced by the findings is that it is necessary to grant a more prominent role to the MoAFBA in the planning and coordination of CDM and recovery interventions in agriculture and to ensure, through training and recruitment, that the MoAFBA builds and sustains the required knowledge and skills to oversee risk-informed, inclusive, and resilient projects. The capacity of the MoAFBA to develop and use hazard and risk information is limited and compounded by a lack of multi-hazard maps and geospatial information on hazardous events. In addition, there is a need to collect and analyze data related to people with disabilities and to develop building codes and standards tailored to the agriculture sector's needs. The PDNA conducted after Hurricane Irma identified several priorities, including (i) the improvement of the national disaster risk information framework and the emergency communications network, and (ii) the

establishment of risk financing or risk transfer mechanisms. However, these recommendations have yet to be fully implemented, and recovery efforts still rely heavily on external agencies and the resources of farmers and fisherfolks themselves. The MoAFBA also requires resources to update its project cycle management and integrate risk and BBB approaches into its operations. Overall, strengthened coordination and data recording by all actors are clearly required in the larger agriculture sector to better understand progress and build capacity. International assistance and funding sources are available, but it is crucial to identify and

access them directly to address the country's natural hazard and risk management challenges effectively.

This assessment calls for investments in resilient infrastructure to reduce disaster risks in agriculture in the face of increasingly frequent extreme events and the impacts of climate change, including rising sea levels. It is expected that the results and recommendations made in this report will be taken into consideration and implemented by national and international agencies supporting Antigua and Barbuda's efforts to build resilience.

References

- Adams-Matthew, R. (2020). Baseline Report of the Department of Environment's Climate Change Programme in Agriculture on Farmers in Antigua and Barbuda. Version 1. Department of the Environment, Antigua and Barbuda.
- Adaptation Fund. (2017). An integrated approach to physical adaptation and community resilience in Antigua and Barbuda's northwest McKinnon's watershed. Online resource available at:
- Antigua and Barbuda Association of Persons with Disabilities. (2022). ABAPD. Online resource available at: <http://www.abapd.org/>
- Antigua and Barbuda Meteorological Services. (2019). *Antigua Tropical Cyclones 1851–2018*. Online resource available at: http://www.antiguamet.com/Climate/HURRICANE_SEASONS/AntiguanStorms.txt
- Antigua Public Utilities Authority. (2022). Water production in Antigua. Online resource available at: <http://www.apua.ag/business-units/water-business-unit/water-provision-in-antigua/>
- Budlender, D. and Iyehen, I. (2019). Status of Women and Men Report: Productive Employment and Decent Work for All. UN Women. Online resource available at: <https://caribbean.unwomen.org/en/materials/publications/2019/10/status-of-women-and-men-report-productive-employment-and-decent-work-for-all>
- Caribbean Community. (2017). Resilient Caribbean Initiative. Online resource available at: <https://resilientcaribbean.caricom.org/>
- Caribbean Development Bank. (2014). Country Gender Assessment Antigua and Barbuda (Volumes 1 and 2). Online resource available at: <https://www.caribank.org/publications-and-resources/resource-library/gender-assessments/country-gender-assessment-antigua-and-barbuda-2014-volumes-1-and-2>
- Destin, Dale C. S.; Antigua is Out of Surface Water Again (2015). Online resource available at: <https://268weather.wordpress.com/2015/08/17/antigua-is-out-of-surface-water-again/>
- Dilley, Maxx; Chen, Robert S.; Deichmann, Uwe; Lerner-Lam, Arthur L.; Arnold, Margaret (2005). Natural Disaster Hotspots: A Global Risk Analysis. Online resource available at: <https://openknowledge.worldbank.org/handle/10986/7376>
- Eastern Caribbean Bank. (2020). Selected Debt to GDP Ratios (in percent of GDP). Online resource available at: <https://www.eccb-centralbank.org/statistics/debt-datas/comparative-report/2>
- Economic Commission for Latin America and the Caribbean. (2020a). Latin America and the Caribbean and the COVID-19 pandemic: economic and social effects. Online resource available at: <https://www.cepal.org/en/publications/45351-latin-america-and-caribbean-and-COVID-19-pandemic-economic-and-social-effects>
- Economic Commission for Latin America and the Caribbean. (2020b). Preventing the COVID-19 crisis from becoming a food crisis. Online resource available at: <https://www.cepal.org/en/publications/45726-preventing-COVID-19-crisis-becoming-food-crisis-urgent-measures-against-hunger>
- Environment Information Management and Advisory System. (2015). EIMAS. Online resource available at: <https://environment.gov.ag/programs#Data-Management/EIMAS>
- Federal Office for Civil Protection (FOCP) (2020) National risk analysis report. Disasters and Emergencies in Switzerland 2020. FOCP, Bern.
- Food and Agriculture Organization of the United Nations. (2018). FAOSTAT Antigua and Barbuda. Online resource available at: <https://www.fao.org/faostat/en/#country/8>
- Food and Agriculture Organization of the United Nations. (2015). FAO Country Profile - Antigua

- and Barbuda. Online resource available at: <https://www.fao.org/publications/card/en/c/CA0429EN/>
- Green Environment Facility. (2014). Building climate Resilience through Innovative Financing Mechanisms for Climate Change Adaptation. Online resource available at: <https://www.thegef.org/project/building-climate-resilience-through-innovative-financing-mechanisms-climate-change>
- Global Facility for Disaster Reduction and Recovery. (2020). *Disaster Recovery Framework Guide*. Revised Version March 2020. Online resource available at: <https://www.gfdr.org/sites/default/files/publication/DRF%20Guide.pdf>
- Global Facility for Disaster Reduction and Recovery. (2017). Hurricane Irma and Maria Recovery Needs Assessment for Antigua and Barbuda. Online resource available at: <https://www.gfdr.org/en/publication/hurricane-irma-and-maria-recovery-needs-assessment-antigua-and-barbuda>
- Global Facility for Disaster Reduction and Recovery. (2010). GFDRR Country Notes: Antigua and Barbuda. Online resource available at: <https://www.gfdr.org/sites/default/files/publication/drm-country-note-2010-antigua-barbuda.pdf>
- Government of Antigua and Barbuda. (2021). 2021 Voluntary National Review of Antigua and Barbuda. Online resource available at: https://sustainabledevelopment.un.org/content/documents/279502021_VNR_Report_Antigua_and_Barbuda.pdf
- Government of Antigua and Barbuda. (2018a). Antigua and Barbuda 2018 Labour Force Survey Report. Online resource available at: <https://statistics.gov.ag/wp-content/uploads/2020/10/2018-Antigua-and-Barbuda-LFS-Report.pdf>
- Government of Antigua and Barbuda. (2018b). Antigua and Barbuda Gender Policy. Online resource available at: <https://www.adaptation-fund.org/projects-document-view/?URL=en/547901621370808968/6674-Approved-DOE-Gender-Policy-1.pdf>
- Government of Antigua and Barbuda. (2017a). Country Document for Disaster Risk Reduction: Antigua and Barbuda, 2016. Online resource available at: https://www.preventionweb.net/files/54920_annex04drrcdantiguaandbarbuda.pdf
- Government of Antigua and Barbuda. (2017b). Disability and Equal Opportunities Act, 2017. Online resource available at: <http://laws.gov.ag/wp-content/uploads/2019/04/No.-32-of-2017-Disabilities-and-Equal-Opportunities-Act-2017.pdf>
- Government of Antigua and Barbuda. (2015). Antigua and Barbuda Education Statistical Digest. Online resource available at: <https://statistics.gov.ag/wp-content/uploads/2017/11/Education-Statistical-Digest-2012-2015.pdf>
- Government of Antigua and Barbuda. (2014). Antigua and Barbuda: 2011 Population and Housing Census. Online resource available at: <https://www.unep.org/resources/report/antigua-and-barbuda-2011-population-and-housing-census>
- International Monetary Fund. (2022). Press Release no. 22/42. IMF Staff Concludes Virtual Visit to Antigua and Barbuda. Online resource available at: <https://www.imf.org/en/News/Articles/2022/02/16/pr2242-imf-staff-concludes-virtual-visit-to-antigua-and-barbuda>
- Intergovernmental Panel on Climate Change. (2022). Climate Change 2022: Impacts, Adaptation, and Vulnerability. Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.
- Intergovernmental Panel on Climate Change. (2014). Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.
- International Labour Organization. (2020). ILOSTAT database. Online resource available at: <https://ilostat.ilo.org/data/>
- International Labour Organization. (2018). Gender at work in the Caribbean: Antigua and Barbuda Country Report. Online resource available at: https://www.academia.edu/38112227/Gender_at_work_in_the_Caribbean_Antigua_and_Barbuda_country_report
- Knutson T., Camargo Suzana J., et al. (2019). Tropical Cyclones and Climate Change Assessment: Part I: Detection and Attribution. Bulletin of the American Meteorological Society. Online resource available

- at: <https://journals.ametsoc.org/view/journals/bams/100/10/bams-d-18-0189.1.xml>
- Marshall, S. (2019). CEDAW 72nd Session: Antigua and Barbuda's Opening Statement. Online resource available at: https://tbinternet.ohchr.org/Treaties/CEDAW/Shared%20Documents/ATG/INT_CEDAW_STA_ATG_34054_E.docx
- Ministry of Agriculture, Fisheries and Barbuda Affairs. (2020). Statistics, Research and IT Division. Production Data Disaggregated by Sex.
- Organization of Eastern Caribbean States. (2015). OECS Building Code Grenada St Vincent & the Grenadines St Lucia Montserrat. Online resource available at: <https://discovermni.com/wp-content/uploads/2017/11/OECS-Building-Code-June-2015-1-5.pdf>
- Ötker, I. and Srinivasan, K. (2018). Bracing for the Storm: For the Caribbean, Building Resilience is a Matter of Survival. *Finance and Development* 55 (1): 49-51. Online resource available at: <https://www.imf.org/external/pubs/ft/fandd/2018/03/pdf/otker.pdf>
- United Nations (2006). United Nations Convention on the Rights of Persons with Disabilities. Online resources available at: https://treaties.un.org/doc/source/docs/A_RES_61_106-E.pdf and https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-15&chapter=4&-clang=_en
- United Nations Children's Fund. (2017). Situation Analysis of Children in Antigua and Barbuda. Online resource available at: <https://www.unicef.org/easterncaribbean/media/1326/file/ECA-A-and-B-SitAn-2017.pdf>
- United Nations Development Programme. (2020). Building Effective Resilience for Human Security in the Caribbean | UNDP in Barbados & the Eastern Caribbean. Online resource available at: <https://www.bb.undp.org/content/barbados/en/home/projects/effective-resilience-for-human-security-in-caribbean.html>
- United Nations Development Programme. (2019). Human Development Reports, Gender Inequality Index (2019). Online resource available at: http://hdr.undp.org/sites/default/files/2020_statistical_annex_table_5.xlsx
- United Nations Office for the Coordination of Humanitarian Affairs. (2020). Antigua and Barbuda Country Profile. Online resource available at: https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/corrected_july_2020_antigua_and_barbuda_country_profile_power_point_infographic_pdf.pdf
- World Bank. (2022). Women, Business and the Law 2022. Online resource available at: <https://openknowledge.worldbank.org/handle/10986/36945>
- World Bank. (2021). Antigua and Barbuda Economy Data. Online resource available at: <https://wbl.worldbank.org/en/data/exploreeconomies/antigua-and-barbuda/2021>
- World Bank. (2020). Climate Change Knowledge Portal for Development Practitioners and Policy Makers. Antigua and Barbuda Country Summary. Online resource available at: <https://climateknowledgeportal.worldbank.org/country/antigua-and-barbuda>
- World Bank Development Indicators. (2020). Antigua and Barbuda. Online resource available at: <https://data.worldbank.org/country/AG>
- World Food Programme. (2021). Caribbean COVID-19 Food Security & Livelihoods Impact Survey. Regional Summary Report | February 2021. Online resource available at: <https://www.wfp.org/publications/caribbean-COVID-19-food-security-and-livelihoods-impact-survey-round-3-february-2021>

Annex 1.

Specific recommendations to strengthen the capacity of Antigua and Barbuda's agriculture sector for resilient and inclusive recovery

GOVERNANCE: Recommendations and potential actions to strengthen the policy and regulatory framework for resilient and inclusive recovery.

Recommendations	Actions
Strengthen the enabling national and sectoral policy and regulatory environment for recovery	<ul style="list-style-type: none"> » Facilitate the integration of climate resilience and gender- and disability-inclusive recovery considerations into the national and sectoral policy framework. Specifically: » Complete and approve the draft National CDM Legislation. » Review the National CDM Policy (2014-2016) and the National CDM Strategy (2014-2016) ensuring these documents integrate explicit provisions for recovery planning and implementation as well as for gender and disability inclusion, while building on the lessons learned during and in the aftermath of the Irma Hurricane and COVID-19 pandemic. The review and elaboration of these documents should be based on highly participatory processes and aligned with other ongoing development and climate change processes, including the NAP and the new MTDS. » Develop a national policy and strategy for the agriculture sector, inclusive of DRM, recovery, gender and disability inclusion provisions and prioritized actions. » Complete and implement the DRM plan for the agriculture sector. » Establish building standards (including for materials) tailored to the needs of the agriculture sector.

COMPETENCIES: Recommendations and potential actions to build the required competencies (knowledge and skills) required for resilient and inclusive recovery.

Recommendations	Actions
<p>Raise awareness, at the strategic and operational levels, of the added value of acquiring and sustaining DRM and recovery capacity for the sector's development</p>	<ul style="list-style-type: none"> » Increase the participation of the MoAFBA officers in the annual disaster awareness workshops that the Training Division, in collaboration with NODS, deliver yearly to government departments. » Utilize the training-on demand opportunities provided by NODS for requesting specialized training on DRM and recovery for the MoAFBA, particularly in topics related to DRM project planning, coordination and management, gender and disability inclusion in DRM and recovery; and on DRM communication and awareness raising. » Develop awareness-raising campaigns that are gender- and disability-informed, including events and materials to highlight the risks associated with climate change for farmers and other agriculture stakeholders and provide recommendations for impact reduction. To ensure inclusion, the campaigns should be developed by the MoAFBA in collaboration with partner agencies (including CARDI) and in consultation or partnership with people with disabilities and facilitated to support their active participation. » Organize events for public officers on the importance of gender- and disability inclusive recovery as a mechanism to strengthen resilient development efforts, placing specific focus on the need to integrate recovery considerations in policies, strategies, plans, programs, and projects to reduce losses and damages from disaster events. Actively involve people with disabilities or their representatives in these events.
<p>Build and sustain the required knowledge and skills for the implementation of resilient and inclusive recovery projects in the sector</p>	<ul style="list-style-type: none"> » Institutionalize and implement training of sectoral staff in DRM, disaster cycle management and recovery and gender analysis and integration, to ensure requisite knowledge and skills are developed and sustained. » Recruit skilled staff specialized in areas specific to DRM, specifically, disaster cycle management and recovery and gender analysis and integration, to cover urgent gaps. » Include in public recruitment protocols specific requirements to ensure new staff can systematically and sustainably cover the limitations in knowledge and skills that affect the planning and execution of recovery projects by the MoAFBA. These should include basic experience on the use of DRM tools and methodologies and gender and disability analysis. » Create alliances with donor agencies and programs, such as CRF, to cover urgent capacity gaps through direct technical assistance to the MoAFBA and NODS, as well as to fund training programs for sectoral staff in the areas required and to support the institutionalization of DRM capacity building in the public sector. Donor funding could largely contribute to strengthening the capacity of the MoAFBA to effectively facilitate the building of DRM capacity across the sector's stakeholders. » Establish a formal and regular capacity building training program on disability inclusion, including information on opportunities for people with disabilities in the various sectors, with the participation of agriculture stakeholders. » Train MoAFBA staff in requisite tasks for the design and implementation and monitoring of resilient recovery projects. This includes training in: <ul style="list-style-type: none"> > PDNA, data collection, and design of recovery projects based on PDNA recommendations. > GIS and remote sensing. > Hazard mapping. > Hazard and risk data and information use > Disaster prevention, preparedness, and response.

Recommendations	Actions
Build and sustain the required knowledge and skills for the implementation of resilient and inclusive recovery projects in the sector (cont.)	<ul style="list-style-type: none"> > BBB approaches, building codes, and other resilience norms. > Disability inclusion. > Gender analysis and integration. > Project cycle management (including M&E). > DRM and recovery communication and awareness raising skills. <p>» Articulate existing capacity building opportunities with sectoral needs by creating or tailoring academic and vocational programs and other training opportunities to the sector. This may include:</p> <ul style="list-style-type: none"> > Creating and tailoring resilient infrastructure and BBB trainings for local contractors working in agriculture and fisheries.

RESOURCES AND TOOLS: Recommendations and potential actions to ensure the sector has the resources and tools required to undertake resilient and inclusive recovery projects.

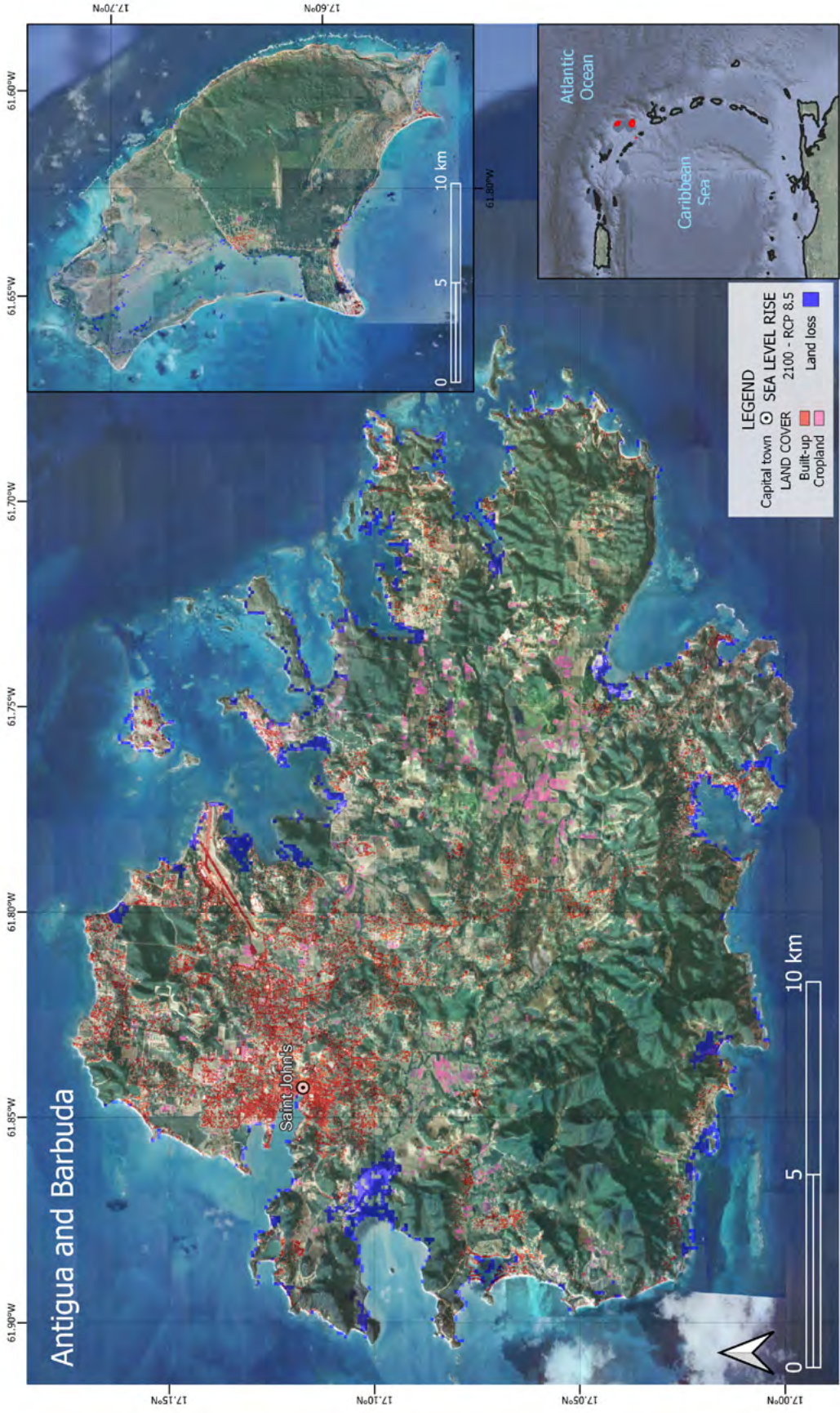
Recommendations	Actions
Strengthen the generation, management and use of risk and recovery-relevant data	<ul style="list-style-type: none"> » Invest in key data collection efforts, including agricultural censuses and periodic household surveys to develop a baseline that enables rapid damage assessment in the event of hazard impacts and supports the design and targeting of recovery operations. » Make the use of updated natural hazard and risk information a requirement for the approval of projects in agriculture. » Ensure hazard and risk maps created or updated by partner organizations are available and easily accessible to all. » Ensure that risk information is communicated in appropriate formats to end users – farmers and fishers. » Assess the country's hydro-meteorological infrastructure and elaborate an investment plan for its update, acquisition of modern forecasting and climate services delivery technologies, and strengthening of early warning communication systems to ensure they reach the exposed and most vulnerable communities.
Invest in protecting infrastructure from shocks	<ul style="list-style-type: none"> » Develop an investment plan that prioritizes infrastructure projects of high relevance for the agriculture sector, particularly those promoting climate-resilient infrastructure systems, including water supply systems, to support the continuity and operability of crop production after major adverse events. » Create a technical assistance plan with a range of risk reduction interventions to help farm and agriculture facility owners climate proof and protecting key assets, including machinery and equipment, from extreme weather events. » Create a pipeline of targeted investments in both gray and green defense infrastructure on coastal and riverine areas, to protect Antigua and Barbuda against impacts of climate change – including SLR – and extreme weather events and lower the risk and impact of disruptions that may affect the country in general, and the agriculture sector in particular.
Ensure the necessary equipment and tools are available for recovery project management	<ul style="list-style-type: none"> » Create and finance a plan for software updating and maintenance at the MoAFBA.

Recommendations	Actions
Strengthen sectoral budgets for DRM and recovery	<ul style="list-style-type: none"> » Evaluate disaster impacts on the agriculture sector in the past years, estimate the required annual recovery budget and include in the MoAFBA's budget an annual contingent recovery allocation and an allocation to support and incentivize disaster prevention measures. » Ensure legislation and procedures enable the rapid reallocation of annual budgets to support recovery efforts in the aftermath of both, major disasters and chronic small events which add burden to smallholder farmers overtime.
Enhance resilience and recovery funding instruments for farmers and SMEs in agriculture	<ul style="list-style-type: none"> » Create new and enhance access to existing financial mechanisms for resilience and recovery, including insurance and microinsurance to cover farmers, fishers and other actors associated to agriculture, including those operating in the informal sector. » Create a database of international recovery funding opportunities for the agriculture sector.

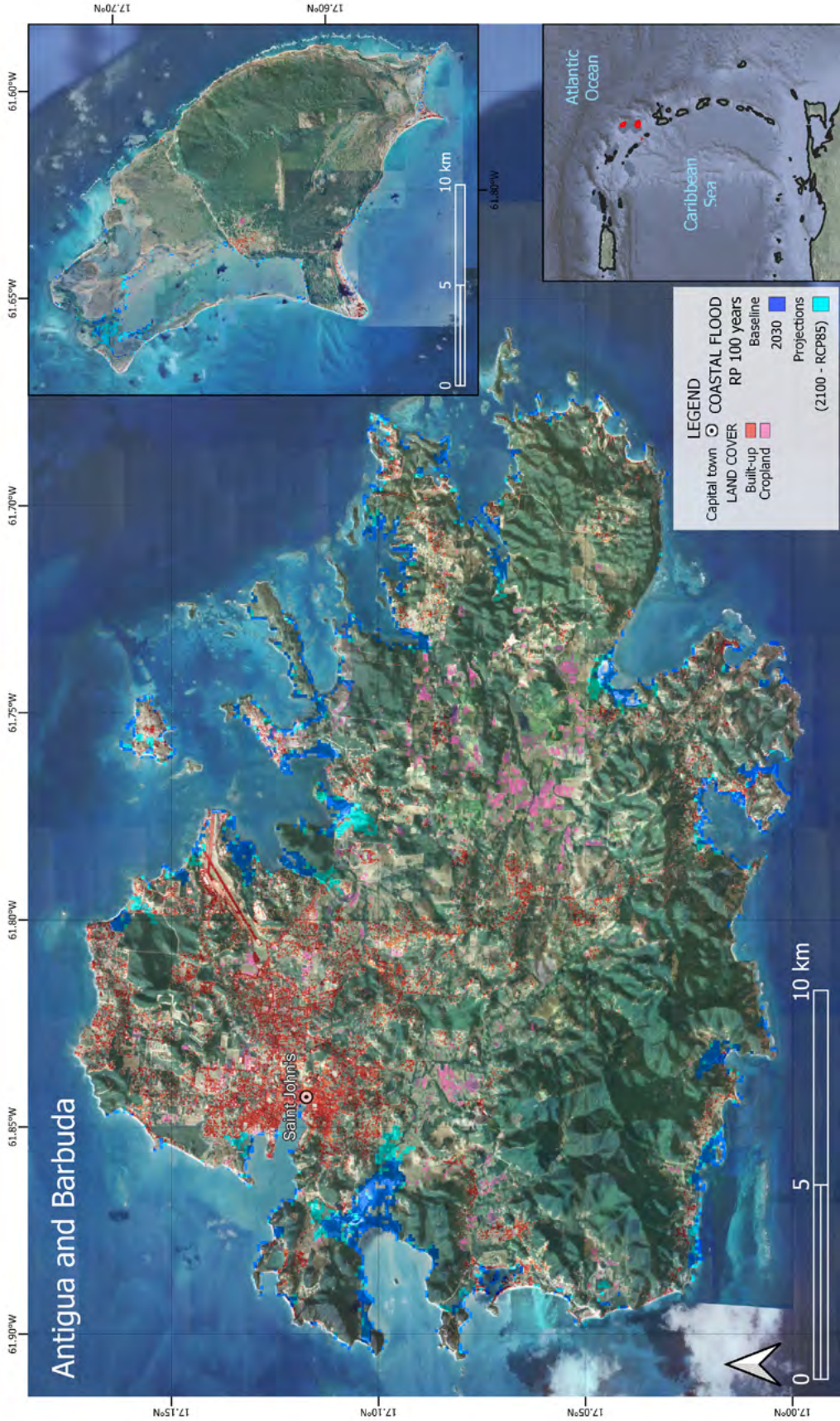
Annex 2.

Coastal inundation scenario maps for Antigua and Barbuda

a. Areas affected by sea level rise by 2100 under a high climate change scenario (RCP 8.5)



b. Coastal flooding scenarios for a 100-year return period and for a high-level climate change scenario (RCP 8.5) by 2100



Annex 3.

Sectoral Recovery Capacity Assessment Questionnaire

COMPONENT 1: GOVERNANCE			
Key elements	Sub elements	Questions	
1.1 Policies and Legal Framework	1.1.1 Policies	1	Is there a National Disaster Risk Management (DRM) policy?
		2	Are institutional mandates clearly defined in the existing DRM policy?
		3	Does the main sectoral development policy integrate recovery considerations when addressing DRM and CCA?
		4	Is there an effective process to update recovery considerations into national/sectoral policies?
	1.1.2 Legal framework	5	Is there a national disaster risk management (DRM) legal framework?
		6	Is there an effective institutionalized process to deliver timely updated legal frameworks?
		7	Are institutional mandates clearly defined in the existing DRM legal framework?
		8	Are recovery considerations integrated in the main sectoral laws and regulations that address DRM and CCA?
	1.1.3 Foundations for recovery	9	Do the national DRM policies and legal framework include preparedness (risk management ex ante) and Recovery (disaster management ex post) considerations?
		10	Does the government have a clear vision for recovery? (for example, national/centralized; sectoral/decentralized, focused on a specific sector, focused on building back better)?
		11	Does any policy, law, regulation, program or project at the national or sectoral level addresses the possibility of dealing with the impacts of more than one hazard at a time (e.g., COVID-19 and hurricane season)
	1.1.4 Mainstreaming DRM&CCA	12	Is climate resilience considered in the National disaster risk management policies and legal framework?
		13	Does the sector participate in the elaboration of DRM or recovery policies and legal framework?
		14	Do all, the private sector, academia, NGOs, local communities, and parastatal organizations, participate in the elaboration of DRM policies or legal frameworks?

COMPONENT 1: GOVERNANCE			
Key elements	Sub elements	Questions	
1.1 Policies and Legal Framework	1.1.4 Mainstreaming DRM&CCA (cont.)	15	Do the DRM policies and legal frameworks require sectoral ministries to formulate and implement sectoral resilient recovery plans?
		16	Have DRM protocols been adapted to integrate pandemic-related (e.g., COVID-19) considerations in recovery operations?
	1.1.5 Gender and disability inclusion	17	Do the recovery policies take into account gender (men and women, and boys and girls) capacities and their different recovery needs?
		18	Do the recovery laws and regulations take into account gender (men and women, and boys and girls) capacities and their different recovery needs?
		19	Do the recovery laws and regulations take into account the needs of persons with disabilities?
		20	Are there laws mandating that recovery efforts benefit men and women, and boys and girls equitably?
	1.1.6 Building codes and regulations	21	Do most of the sector's constructions conform with building codes regulations?
		22	Does the government have a review and evaluation process for its building codes regulations which includes climate change considerations?
		23	Are mechanisms for regulating compliance with building codes in place?
	Recommendations: What would you recommend to improve the integration of recovery factors into sectoral policies and legal frameworks.		

COMPONENT 1: GOVERNANCE			
Key elements	Sub elements	Questions	
1.2 Strategies and Plans	1.2.1 Strategies and plans	24	Does the sector have a recovery strategy?
		25	Has the sector developed recovery plans?
		26	Are the sectoral recovery strategies and plans aligned with national development objectives?
		27	Is there an effective institutionalized process to deliver timely updated recovery strategies and/or plans at the sector level?
		28	Are there financing mechanisms for recovery in place (e.g., recovery funds)?
	1.2.2 Building back better (BBB)	29	Do the recovery strategies and plans include provisions for integrating measures that build resilience?
	1.2.3 Gender and disability inclusion	30	Are the outputs of the recovery strategies and plans affordable and inclusive for the sector beneficiaries?
		31	Do the recovery plans take into account gender (men and women, and boys and girls) capacities and gender-differentiated recovery needs?
Recommendations: What would you recommend to improve issues related to recovery strategies and plans?			

COMPONENT 1: GOVERNANCE

Key elements	Sub elements	Questions	
1.3 Institutions and Coordination	1.3.1 Institutions	32	Is the development of recovery plans at the sector level led by one or more institutions with authority and autonomy?
		33	Are the roles and responsibilities to implement the recovery plans clearly defined within the sector?
	1.3.2 Coordination	34	Is there a coordination mechanism (formal or informal) between sectors to implement the national recovery plan?
		35	Does the sector coordinate recovery activities with the National Disaster Management Office?
		36	Are concrete activities being coordinated between the sector and the National Disaster Management agency?
		37	Is there any coordination between the sector and CDEMA during the recovery process?
	1.3.3 Building codes and regulations	38	Are there, within the legal framework of the country, stakeholders who are responsible, accountable, and liable for assuring compliance with building-related legislation?
		39	Is there a sufficient budget approved for enforcing building codes?
	1.3.4 Gender and disability inclusion	40	Are there mechanisms in place for the coordination of recovery between the DRM agencies, gender agencies and women's networks?

Recommendations: What would you recommend to improve institutional coordination issues?

COMPONENT 2: COMPETENCIES

Key elements	Sub elements	Questions	
2.1 Workforce	2.1.1 Workforce	41	Are there sufficient technical persons working in the sector?
		42	Are there sufficient DRM specialists for the needs of the sector?
		43	Are all projects being implemented in the sector overseen by at least one DRM specialist?
		44	Is there sufficient staff to implement the sector's current portfolio?
		45	Do technical teams have the necessary working conditions to fulfil their tasks (e.g., connectivity, equipment, software)?

COMPONENT 2: COMPETENCIES			
Key elements	Sub elements	Questions	
2.1 Workforce (cont.)	2.1.2 Gender	46	Is there a sufficient number of gender specialists to fill the needs of the sector?
	2.1.3 Private sector	47	Does the sector have an adequate number of qualified implementing contractors based in the country?
		48	Are international contractors in charge of implementing only a minimum proportion of the recovery projects in the sector each year?
Recommendations: What would you recommend to improve institutions and coordination issues?			
2.2 Capacity (knowledge and skills)	2.2.1 Skills	49	Are there sufficient national professionals to fill all the sector's demands?
		50	Are there sufficient professionals in the sector with expertise to implement resilient recovery projects?
		51	Are there sufficient national experts in the sector with knowledge of DRM methods and tools such as integrating hazard risks, geo-referenced information management systems (GIS, remote sensing)?
	2.2.2 Training activities	52	Are there frequent opportunities to enhance the technical skills that ensure resilient reconstruction of infrastructure/buildings?
		53	Do all genders have the same opportunities for DRM training?
		54	Are technical persons trained on gender responsiveness and disability inclusion?
		55	Is there a mentoring and advising program/process for building back better?
		56	Are there sufficient people with the technical capacity to implement PCM activities, with a climate resilience focus, in the sector? NOTE: PCM includes, at least the following activities: management of sector portfolio; execution of PFM procedures; project management; M&E; mainstreaming climate and disaster resilience into projects; coordinating recovery activities with other relevant sectors; performing quality control projects and inspections of building codes compliance during and after design and construction of buildings and infrastructure.

COMPONENT 2: COMPETENCIES

Key elements	Sub elements	Questions	
2.2 Capacity (knowledge and skills) (cont.)	2.2.3 Proven capacity	57	Do technical persons in the sector have the capacity to translate PDNA results into actionable projects?
		58	Do technical persons in the sector understand the basics of DRM and are able to use hazard maps?
		59	Can technical persons in the sector produce recovery plans that are aligned with the existing legislation, policies, and strategies?
		60	Do the technical persons have the knowledge and necessary training to formulate quality ToRs for projects implementation?
Recommendations: What would you recommend to improve capacity (skills, training opportunities)?			
2.3 Human Resources (HR), Profile Suitability	2.3.1 Human resources (HR), profile suitability	61	Is there an HR recruitment plan that includes recovery activities?
		62	Does the sectoral hiring process follow the recruitment plan?
		63	Are there ToRs for recovery-related positions?
		64	Is there an employee induction process?
Recommendations: What would you recommend to improve human resources, profile suitability?			

COMPONENT 3: RESOURCES AND TOOLS

Key elements	Sub elements	Questions	
3.1 Natural hazard Data and Risk Information	3.1.1 Data collection and management	65	Are there mechanisms in place for the collection and management of natural hazard data and risk information?
		66	Is there a national and sectoral online repository for risk data and information?
		67	Is the existing risk data and information accessible to technical people in the sector?
	3.1.2 Use of risk information	68	Does the sector use multihazard risk maps?
		69	Are hazard maps regularly updated?
		70	Does the sector share multihazard risk maps?
		71	Is a participatory approach used in the development and preparation of hazard maps?

COMPONENT 3: RESOURCES AND TOOLS			
Key elements	Sub elements	Questions	
3.2 PDNA and Project Portfolio Planning	3.2.1 PDNA mechanisms	72	Is there a PDNA including specific methodologies and plans for recovery in the sector?
		73	Is there an efficient and effective PDNA coordination mechanism?
		74	Are there focal points with clear roles and responsibilities assigned within the sector to carry out a PDNA?
		75	Have “lessons learned” from postdisaster assessments and DANAs been integrated into PDNA planning or used to adjust the methodology after previous disasters?
	3.2.2 Planning of recovery priorities	76	Have the results of the PDNA been used for recovery purposes and development across institutions and sectors?
		77	Does the government have criteria to define the priority sectors for recovery support?
		78	Has the government used the results of PDNA to prioritize recovery projects?
	3.2.3 Gender and disability inclusion	79	Does the PDNA methodology require the collection of gender, age, and disability disaggregated data?
	Recommendations: What would you recommend to improve PDNA and Project portfolio planning?		
3.3 Resilient Recovery Project Design	3.3.1 Availability of BBB tools	80	Does the sector have the necessary tools (e.g., best practice, software, check lists, cost benefit analysis for resilience measures available to ensure project designs incorporate the Build Back Better approach?
	3.3.2 Use of risk information	81	Do the sectors use risk information to design resilient recovery projects?
		82	Is risk information available and accessible, at the required resolution and geographic coverage for sectoral project planning and implementation?
	3.3.3 Building codes and regulations	83	Are building codes and land use planning guidelines integrated into project design?
	3.3.4 Gender and disability inclusion	84	Do project designs take into account gender-based needs?
		85	Do project designs take into account the basic needs for the conditions of persons with disabilities?
Recommendations: What would you recommend to improve Resilient design of project?			

COMPONENT 3: RESOURCES AND TOOLS

Key elements	Sub elements	Questions	
3.4 Financing	3.4.1 Availability of funding sources	86	Are there identified and accessible funding sources for recovery interventions in the sector (e.g., National MDB, bilateral, others)?
		87	Are the mechanisms for accessing funding for recovery actions clear and widely known to people working in the sector?
		88	Has the government used international funding for recovery in the past?
	3.4.2 Access to recovery funding	89	Is it easy to access to recovery funding?
		90	Do the eligibility criteria for recovery funding reflect the PDNA results for the most affected sectors?
		91	Is the disbursement of international funding for recovery rapid?
		92	Is the recovery funding process fast (from application by the government to disbursement)?
	3.4.3 Budget for recovery	93	Does the sector's budget have a line item earmarked for recovery?
		94	Does the sector have a sufficient actual or estimated annual budget for recovery?
	Recommendations: What would you recommend to improve access to financial mechanisms for recovery?		
3.5 Project Implementation	3.5.1 Resources	95	Does the sector have an inventory of qualified implementing contractors relevant for the sector's operations?
		96	Is there sufficient material for construction available to implement recovery projects?
		97	Does the sector or the government have the necessary equipment to implement large recovery projects?
	3.5.2 Project management	98	Does the sector (or reconstruction projects) have access to and use project management tools?
		99	In general, does the expenditures of project activities in the sector follow the original planning?
	3.5.3 Building codes	100	Do the construction materials used in recovery projects meet accreditation standards (e.g., strength, testing, quality)?
		101	Does the sector have the resources and tools to comply with building codes?
		102	Does the regulatory body have the resources and tools to enforce compliance with building codes?

COMPONENT 3: RESOURCES AND TOOLS			
Key elements	Sub elements	Questions	
3.5 Project Implementation (cont.)	3.5.4 M&E at project level	103	Does the sector have in place and actively use a monitoring and evaluation (M&E) system for projects?
		104	Have the most common M&E recommendations been used to improve project planning and implementation across the sector?
Recommendations: What would you recommend to improve project implementation?			



CRF | Canada Caribbean
Resilience Facility

