

COUNTRY ANALYSIS REPORT FOR SAINT LUCIA

Assessment of DRM and CCA considerations in the Agriculture Sector



Consultancy for Strengthening the Integration of Disaster Risk
Management and Climate Change Considerations in the
Agricultural Sector

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Table of Contents

Acknowledgements	I
Acronyms	II
Executive Summary	IV
1.0 INTRODUCTION	1
1.1 The Importance of the Agriculture Sector to the Saint Lucia Economy	1
1.2 Vulnerability of the Agriculture Sector to Natural Hazards and Climate Risks	5
1.3 <i>Justification of the Need to Accelerate the Mainstreaming of DRM and CCA in the Agriculture sector</i>	7
2.0 DEVELOPMENT OF ASSESSMENT METHODOLOGY FOR INTEGRATION OF DRM AND CCA CONSIDERATIONS INTO AGRICULTURE SECTOR	10
2.1 <i>Context of the Study</i>	10
2.2 <i>Purpose</i>	11
2.3 <i>Methodological Framework</i>	12
2.4 <i>Limitations of the Study</i>	17
3.0 THE FINDINGS: Integration of DRM and CCA in Agricultural Development Planning at the National Level	18
3.1 Overview.....	18
3.2 <i>GOVERNANCE: Institutional and technical capacities CCA and DRM in Planning and Policy Frameworks and Coordination Mechanisms at all levels</i>	20
3.3 Risk and Vulnerability Assessment and Monitoring	23
3.4 Assessment of the Financial Capacity for the Development and Implementation of DRM and CCA activities	24
3.5 Reduction of Hazards, including Climate Related Risks and Underlying Vulnerabilities in Crop, Livestock, Fishery, and Forestry Sub-sectors	25
3.6 Identification, Monitoring and Protection of Critical Ecosystem Services.....	28
3.7 Enhancement of Societal and Cultural Capacities for DRM and CCA Activities in the Agriculture Sector	28
3.8 Assessment of the Agriculture Sector and Sector Dependent Infrastructure Capacity to Cope with Disasters	29
3.9 Capacities and Procedures for Effective Disaster Preparedness, Response and Rehabilitation	30
3.10 Discussion of Main Findings and Gaps in the Integration of DRM and CCA Measures within Agriculture	31
4.0 CONCLUSIONS AND RECOMMENDATIONS	32
REFERENCES	38
ANNEXES	40

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This Report must be seen as part of a capacity development process. Ownership is important if this is to be realized. That is why we are strongly encouraging national consultations on this Country Analysis Report as the first step in framing discussion and prioritized actions to address the gaps identified, issues and opportunities highlighted.

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ACRONYMS

CARDI	Caribbean Agricultural Research and Development Institute
CCA	Climate Change Adaptation
CCCCC	Caribbean Community Climate Change Centre
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster and Emergency Management Agency
CDERA	Caribbean Disaster Emergency Response Agency
CDM	Comprehensive Disaster Management
CDMP	Caribbean Disaster Mitigation Project
CDRMP	Caribbean Disaster Risk Management Program
CIDA	Canadian International Development Agency
CIMH	Caribbean Institute of Meteorology and Hydrology
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EOC	Emergency Operations Centre
EWS	Early Warning Systems
EU	European Union
FAO	Food and Agricultural Organization
GDP	Gross Domestic Product
IDB	Inter-American Development Bank
MAFPFCRD	Ministry of Agriculture, Food Production, Fisheries Cooperatives and Rural Development
MOA	Ministry of Agriculture
NDC	National Disaster Coordinator
NES	National Environmental Summary
NODS	National Office of Disaster Services
NGO	Non-Governmental Organization

NOAA	National Oceanic and Atmospheric Administration
OAS	Organization of American States
OECS	Organization of Eastern Caribbean States
OFDA	United States Office of Foreign Disaster Assistance
PAHO	Pan American Health Organization
RRM	Regional Response Mechanism
SAI	Standardized Audit Instrument
SALT	Slope Agriculture land Technologies
SIDS	Small Island Developing States
SLM	Sustainable Land Management
TC	Tropical Cyclone
UNDAC	United Nations Disaster Assessment and Coordination
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UN/ISDR	United Nations secretariat of the International Strategy for Disaster Risk Reduction
UN/OCHA	United Nations Office for Coordination of Humanitarian Affairs
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WB	World Bank



EXECUTIVE SUMMARY

Over the years, weather-related hazards such as strong winds, floods, landslides and droughts have increasingly impacted livelihoods, damaged infrastructure and disrupted provision of essential services in Saint Lucia. The frequency of these events is largely a function of geographic location and. The resulting socio-economic losses have necessitated the commitment of an increasing share of national budget to recovery and reconstruction thereby exerting a growing burden on the national economy and jeopardizing hard-won development gains.

The agriculture sector is particularly susceptible to the impact of these weather-related hazards and the increasing frequency and magnitude of these events have had devastating and dislocating impacts on the sector. For instance, the passage of Hurricane Tomas in October 2010 resulted in damage to the agricultural sector to the tune of EC\$151 million (ECLAC, 2011). Likewise, passage of a low-level frontal trough in December 2013 generated flood-rains and subsequent landslides that incurred damages and losses of nearly EC\$32 million, to the agricultural sector.

This is common experience in CARICOM member countries. Building environmental resilience is therefore a strategic priority of the Caribbean Community Operational Plan. It recognizes the vulnerability of CARICOM States such as Saint Lucia, to hazard impacts, including those of climate change, and effects of these phenomena on the agricultural sector, especially the need to strengthen the understanding of the status of the consideration of these phenomena within planning in the sector.

One such regional intervention is the “Caribbean Action under the Programme entitled: *Agriculture Policy Programme (APP) with a focus on the Caribbean and Pacific.*” This programme, funded under the 10th European Development Fund (EDF) and executed through a Contribution Agreement signed between the European Union (EU) and the Inter-American Institute for Cooperation on Agriculture (IICA). The APP is being implemented in collaboration with the Caribbean Agricultural Research and Development Institute (CARDI) and the CARICOM Secretariat (CCS).

The Standardized Assessment Instrument (SAI) is seen as a contribution to efforts to reduce the current and future exposure to and loss and damage from natural hazards impacts on the agricultural sector. The results can also contribute to the institutional capacity building efforts for the management of hazard risks in the agricultural sector in Saint Lucia.

Standardized Audit Instrument (SAI)

Development process

The design of a SAI for the integration of DRM and CCA into the agricultural planning process took place against a backdrop of ongoing efforts to develop Agricultural Disaster Risk Management Plans in the Caribbean in general and Saint Lucia in particular. Even as the country seeks to enhance the DRM integration in agriculture products, services and practices, there is already emerging a recognized need for the inclusion of CCA considerations in this interface. Couched within the resilience dialogue the challenge now is how to frame this CCA/DRM intersection in the agricultural planning process. This is the background against which the Joint Venture designed a regional Standardized Audit Instrument that seeks to provide a framework for managing the integration of CCA and DRM within the agricultural sector.

Specifically, the Audit Instrument was designed to facilitate the:

1. Baselineing the status of DRM and CCA integration into the agricultural sector
2. Promotion of an integrated DRM and CCA platform in the MOA that is strong, well-coordinated and systematic
3. Enhancement of MOA's DRM/CCA capabilities, knowledge and resources
4. Mobilization of resources and strengthen partnerships that integrate DRR and CCA considerations

Step 1 involved the identification of critical CCA and DRM thematic issues considered necessary and sufficient for integration into the agriculture sector in order for the sector to become more resilient. This was done mainly through the review of the literature, including FAO Resource materials, guidelines from the Sendai Framework for Action and country level experiences.

Step 2 involved the review and evaluation of existing tools for mainstreaming DRR and CCA and the extent to which they also included the key thematic issues, identified in Step 1, for integration into the agricultural planning. Four tools were shortlisted for detailed consideration. These were the Tear-fund, CDEMA Performance Monitoring Framework for the CDM Strategy 2014-2024, OECS Vulnerability Benchmarking Tool and the UNISDR Disaster Resilience Scorecard.

The result of the analysis indicated some limitations in the four frameworks evaluated but highlighted a strong preference for the UNISDR Disaster Resilience Scorecard. While the Disaster Resilient Scorecard was developed to provide cities with a set of assessments that would allow them to understand how resilient they are to natural hazards it was considered to be highly adaptable to the Agriculture sector. The Joint Venture utilized this tool as the platform for the development of the Standardized Audit Instrument (SAI) for assessing the extent to which planning within the Agricultural sector integrates considerations of DRM and CCA.

The ensuing standardized audit instrument is disaggregated into eight thematic areas/pillars which examine how the following are addressed by the agricultural sector in the 15 CARICOM countries.

- Section 1: Governance
- Section 2: Risk Assessment and Monitoring
- Section 3: Financial Capacity
- Section 4: Risk Reduction
- Section 5: Monitoring and Protection
- Section 6: Societal and Cultural Capacities
- Section 7: Infrastructure Capacity
- Section 8: DRM and CCA Measures

Whilst the instrument was designed to provide answers at a national/sectoral level it also contains questions that could inspire discussions at community and extension district levels.

Design, Review and Revision

A draft instrument was submitted to the CARICOM Climate Change, Disaster Risk Management and Natural Resources Management (CCDRM) Thematic Group and revised based on feedback.

Administration

The Standardized Audit Instrument was disseminated to Member States, including Saint Lucia on 14 June 2016. In an effort to reduce the completion burden of national stakeholders, an electronic version of the SAI was developed using Survey Monkey. (<https://www.surveymonkey.com/r/AI-DRMCCAinAgri>). This provided each country with the options of completing a manual version or electronic version using Survey Monkey.

The results derived from the application of the instrument to the Agriculture Sector of Saint Lucia were compiled into draft Country Analysis Report and subsequently shared with the Ministry focal point. This draft Country Analysis Report presents the findings and review of issues generated from assessment of the agriculture sector in Saint Lucia which was submitted to the country for review and comments. In addition a draft Regional Analysis Report (RAR) which summarized the findings and issues from the Country Analysis Reports of eleven of the 15 CARICOM Member States was discussed among key stakeholders at a Regional Validation Workshop where an opportunity was provided for feedback on the instrument design, the completion experience and recommendations for enhancement.

VI

Summary Results

With an assessed Overall Score of 2.04, the integration of DRM and CCA considerations into the agriculture sector of Saint Lucia is at Level 2, suggesting that the country is in the early stage of the mainstreaming process. Indications are that there is a growing level of awareness and understanding of the value and requirements of integration, and recognition of the need for action which the country has already been addressing. In spite of this increasing recognition, the Level 2 Status of integration indicates observed weaknesses all Pillars on which the assessment is based.

Saint Lucia has an established platform for advancing DRM and CCA integration in agriculture sector development planning but capitalization on this platform will require a retooling of the knowledge assessment and development processes, better harvesting and use of existing hazard and other data, better interfacing with the generators of risk profiling data and more application of their outputs.

Even though Saint Lucia has laid the foundations for effective integration of DRM and CCA in the agriculture sector as reflected in the distribution of relative strength across these four Pillars, the relative low scores on over 50% of the Pillars underscores the need for urgency in their prioritization.

The analysis conducted, results obtained and the gaps identified suggest the need for Saint Lucia to establish agreed priority actions in relation to all Pillars in order to enhance and fast-track integration of DRM and CCA considerations into a sustainable agriculture development strategy. While it is recognized that the requisite initiatives should ideally be spearheaded at the national level, given the disparities in capacity and capability among CARICOM States, regional initiatives, interventions and approaches must augment national initiatives. The recommendations outlined below are couched in this direction and reflect the belief that programmatic elements alone will not generate the systematic changes that are necessary to alter the trajectory of repeated loss and disruption in agricultural production systems, livelihood resources, community capacity and national economies. While organization of the recommendations by Pillar might appear desirable, given the cross-cutting nature of the Pillars this approach would undermine the scope of recommended actions.

These recommendations speak to more and deeper national collaboration and consensus on the broad goals for resilient agriculture, agreed frameworks, standards and knowledge products. The roles of educational institutions, research institutions and operation centres and the private sector and civil society in delivering these products and services will need to be defined and agreed. It will require a revisit of the strategic plan for the Climate Change, National and Agriculture Disaster Risk Management and Natural Resources Management among CARICOM States in general and Saint Lucia in particular.

The anticipation is that DRM and CCA integration will be elevated to the highest levels of agriculture development priorities in Saint Lucia. Given the current levels of hazard vulnerability as well as the prospects for increase intensity and frequency DRM and CCA integration into agriculture development planning should be of utmost priority for governments, civil society and national, regional and international organizations operating within and outside the country.

The recommendations for priority action are presented under the pillars of the instrument. It is hoped that these help to start the national dialogue on the action agenda to move DRM and CCA forward in the sector. A national stakeholder consultation may see these differently and that is not to be discouraged.

We understand that some issues, such as capacity building and knowledge management, are cross-cutting and that presenting the recommendations around the pillars may not capture the this dynamic. However, it is our feeling that this detailing is important in framing the integration picture. Once the dialogue on the dialogue takes place, the country can define its prioritized actions and the connections across them.

Priority Areas for Action by Pillar:

Pillar 1: Institutional and Technical Capacity for DRM and CCA in Agriculture

The objective is to ensure efficient institutional mechanisms within the Sector, that include all aspects of climate change and disaster risk management activities related to the agricultural sector and enhancing coordination with other agencies.

The approach is to support the strengthening of the institutional and technical capacities for and the mainstreaming climate change adaptation and disaster risk management within agriculture and food security policies, strategies and plans in Saint Lucia.

In this context, the new challenge to the country is, therefore, to re-define DRM and CCA tasks and responsibilities in the MOAs and Departments at the national level and relevant regional institutions, including establishment/strengthening of partnerships and networks with other stakeholders. Some recommended priority actions for institutional and technical capacity strengthening are:

- a. Strengthening institutional and technical capacity for climate change adaptation and disaster risk management in agriculture
- b. Assessing and monitoring climate risks (current and future) and vulnerabilities and enhance early warning systems and packaging of results for end-users
- c. Improving knowledge management, awareness raising and education on climate change impacts, adaptation and disaster risk management
- d. Reducing climate related risks and the underlying vulnerabilities by implementing technical options in agriculture, livestock, fisheries and forestry sectors

- e. Strengthening capacities and procedures for effective disaster preparedness, response and rehabilitation at all levels and integration of climate change adaptation initiatives
- f. Strengthening the framework for institutional collaboration between the various stakeholders involved in agriculture DRM CCA measures in the country.
- g. Consolidating efforts to harmonize the work of the sector partners in DRM and the interface with the national and CDEMA CDM monitoring framework reviewed to accommodate the generation of the data from this exercise.
- h. Encouraging the development of knowledge products and guidance tools to advance some of the tools required at the thematic pillar levels. Partnerships with universities, other research institutions such as CARDI and private sector entities will be required to support this.
- i. Reviewing how and where the agriculture sector is reflected in National Strategic Frameworks for Comprehensive Risk Management, Resilient Development and Sustainable Development will be an important first step in building the infrastructure for risk management
- j. Improving climate impact, risk and vulnerability assessment methodologies and transfer to MOA and relevant stakeholders
- k. Strengthening technical capacity to apply needs based climate and weather information products and early warning systems in agriculture sector
- l. Identifying information needs of farmers in the various agro-ecological zones relevant to DRM and CCA;
- m. Empowering farmers' organizations and other relevant NGOs and to access and use risk and vulnerability information for community-based DRM, integrated natural resource management and CCA programmes;
- n. Developing a 'good practice' database at the national Coordinating Unit and link with CDEMA/CARICOM Secretariat with linkages to MOAs and other sector stakeholders;
- o. Integrating DRM and CCA and sustainable land management into farmer field school approach and empower agricultural extension services to demonstrate and disseminate good practices;
- p. Including DRM and CCA issues in curricula of MOAs, agricultural colleges and vocational schools; and
- q. Ensuring strategic dissemination and sharing of key reports and information material related DRM and CCA.

Pillar 3: Financial capacity to support identified DRM and CCA priorities

The research suggests four major areas of concern with respect to the financing DRM and CCA in the agriculture sector. These are:

- a. Inadequacy of financial planning for all actions necessary for disaster resilience. In addition, priorities for disaster resilience investment in the sector are not clear or elaborated in the planning cycle that integrates spending by all key MOA departments/units as well as relevant organizations.
- b. While contingency funds exist in some countries, they are inadequate and are most times routinely diverted for other purposes.
- c. Incentives and financing for DRM and CCA are limited and where exist seem to be limited in scope.
- d. Risk transfer mechanisms in the agriculture are limited in type and coverage.

The following priority actions are proposed:

- i. Support national capacity building in incorporating risk financing in the budget planning cycle of the ministry of agriculture and other key sector stakeholders
- ii. Promote a model suite of incentives for encouraging DRM and CCA integration in the agriculture
- iii. Undertake a review of risk transfer programmes at the national level and share in a good practices guide.

Pillar 4: Reduction of Hazards, including climate-related risk

The Level 2 status of integration on this Pillar has two primary contributing factors:

- a. Limited effectiveness of land use zoning in reducing exposure of the crop, livestock, fisheries and forestry sub-sectors to the impact of hazards; and
- b. Inadequacy of building codes, standards and use in design solutions.

In that regard, it is recommended that Saint Lucia:

- a. Revisits agriculture land use zoning, some of which have been established in the 1950s under initiatives by the Imperial College of Tropical Agriculture and in light of changing hazard dynamics in the hazards landscape of the agriculture sector.
- b. Assess the emergent building codes and standards requirements of agriculture infrastructure and design strategies to enhance standards and facilitative adherence.

Overarching areas of prioritization include enhancement of:

- i. Institutional and Technical Capacity for DRM and CCA in Agriculture;
- ii. Capacity for Comprehensive Risk Management;
- iii. Establishing a Platform for Sustaining the Initiative

Pillar 6: Enhancement of Societal and Cultural Capacities for DRM and CCA Activities in the Agriculture Sector

Six areas of concern were identified on this Pillar. These are:

- a. Inadequacy of government support for DRM and CCA at the community level;
- b. Insufficient presence of grass root organizations, initiatives and participation for promoting DRM and CCA at the community level;
- c. Emergency communication/information links between decision-makers and agricultural producer/fisher folks does not permit timely provision of information, assessment of needs etc.;
- d. Inadequate engagement and partnership for resilience planning at the community level;
- e. Paucity of resilience training and promotion among public and private sector agency engaged in agriculture;
- f. Insufficient promotion of business continuity planning throughout the agriculture sector

The following priority actions are proposed:

- i. Enhance community engagement and partnership for DRM and CCA in the agriculture sector;
- ii. Facilitate and enhance capacity for providing emergency information and needs assessment at the community level;
- iii. Facilitate promotion of resilience training and business continuity planning among agricultural stakeholders

Pillar 7: Assessment of Capacity of Agriculture Sector and Sector-dependent Infrastructure to Cope with Disasters

The objective of this Pillar is to evaluate the resilience capacity of the agriculture sector and related infrastructure to absorb the shocks generated by the impact of hazards, including climate change and thereby informs protective infrastructure planning and interventions for food security and livelihood continuity. Recommendations in this regard include:

- a. Strengthening of capacities for design and implementation of protective infrastructure to mitigate hazard impacts and adapt to climate change.
- b. Evaluate the capacity for sustainability and continuity of the food supply chain during and after hazard impacts and its ability to adapt to a changing climate
- c. Assessment of the administrative capacity for design and execution of resilience-enhancing initiatives in relation to hazard risk including climate change.

Establishing a Platform for Sustaining the Initiative

This SAI represents the initiation of an embryonic process which needs to be deepened and sustained. It must be seen as more than an output but rather as an opportunity to impact the process of capacity development engineering to include the issues of tools standardization, evidence and needs driven program development, resource mobilization and the articulation of criteria for centers of excellence. The following are proposed:

- a. Convening of National Consultations, involving key sector stakeholders to discuss the Country Analysis Report, revisit the assessment inputs and draft prioritized actions for advancing DRM and CCA integration in agriculture. Development partners can support the facilitation of this process where required.
- b. Development of a guidance note to facilitate the country capacity to administer the tool and analyze the data and its application to multi-year program development. This must include a Trainer-the-Trainers component as part of a process for building community and national capacity. The guidance should be packaged as module for use in agriculture training and education institutions.
- c. Agreement on a period for the undertaking of the SAI
- d. Agreement of the process for the formal adoption of the tool as a standardized audit instrument at the national level.
- e. Establishment, or identification, of a single point for the generated data, analyzing and publishing the results over time.
- f. Establishment an Agriculture Resilience Status Report drawing on data for the SAI and other related data.
- g. Establishment of a framework for the development of a prioritized national resource mobilization initiative to support the country in moving up the scale of integration

COUNTRY ANALYSIS REPORT FOR SAINT LUCIA: Assessment of DRM and CCA considerations in Agriculture Sector

1.0 INTRODUCTION

This document presents the background, context, purpose and methodological approach, results and discussions, and the conclusions and recommendations for the Saint Lucia component of the consultancy entitled: “Strengthening the Integration of Disaster Risk Management (DRM) and Climate Change Adaptation (CCA) considerations in the Agriculture Sector”. It highlights the devastating impacts of natural hazards and climate related events on the socioeconomic and environmental landscape of the country in general, and the agriculture sector in particular where food and nutrition security and livelihoods are severely affected.

The document also presents the justification to have DRM and CCA considerations mainstreamed into the agriculture sector which is aimed at reducing current and future exposure and damage and loss caused by natural hazards and disasters. It is part of a project aimed at the building of capacity to strengthen the integration of DRM and CCA considerations into the agriculture sector. Within this context, a standard instrument for assessing the extent to which the planning within the sector integrates the consideration of DRM and CCA was developed and tested.

The results obtained for Saint Lucia are presented and discussed, the conclusions highlighted and recommendations made. The recommendations provide the platform to guide the development of actionable proposals to ensure the mainstreaming of DRM and CCA considerations into the agriculture sector.

1.1 *The Importance of the Agriculture Sector to Saint Lucia Economy*

In the past, Saint Lucia relied almost exclusively on agriculture, but within recent times, tourism and related services, construction and other sectors have become increasingly important as contributors to the national economy.

The agricultural sector, although fluctuating in growth over the last five years (2011 - 2015) with a downward tendency, continues to play an important part in the economic life of the country through its contribution to the Gross Domestic Product (GDP), employment, foreign exchange earnings and more recently and also through its linkages and impacts on the health and tourism sectors and contribution to food and nutrition security. In 2015 the contribution of the agricultural sector (excluding forestry) to GDP was estimated at 2.50% (**Table 1**), compared to a contribution of 3.22% in 2012.

Table 1: National and Agriculture Sector Growth Rates and Agriculture Contribution to GDP% - (2011 – 2015)

Description	2011	2012	2013	2014	2015
National GDP Growth Rate	0.70	(1.06)	0.14	0.46	1.76
Agriculture GDP Growth Rate	(11.86)	11.38	5.23	(11.46)	7.10
Agriculture contribution to GDP	2.28	2.57	2.70	2.38	2.50

Source: World Bank Database

Available disaggregated data shows that the banana industry represents 1.36% of GDP and is an important source of livelihoods for about 20% of the population. Banana exports in 2013 are estimated at 9,058 tonnes, valued at EC\$ 16.17million, representing almost 88% of total Windward Island banana exports and making Saint Lucia the largest exporting country in the OECS¹.

The contribution of different primary agricultural sector activities to GDP from 2008-2012 is presented in **Table 2**.

Table 2: Agricultural Activity and Contribution to the GDP

Agricultural Activity and % Contribution	2008	2009	2010	2011	2012
Banana - GDP	58.13	51.90	37.55	9.96	34.88
% Contribution to Total GDP	2.44	2.20	1.53	0.40	1.36
Rate of Growth	48.39	(10.72)	(27.65)	(73.46)	250.00
Other Crops - GDP	21.48	2.16	19.48	17.03	18.74
% Contribution to Total GDP	0.90	0.90	0.79	0.69	0.73
Rate of Growth	23.58	(1.49)	(7.95)	(12.58)	10.00
Livestock -GDP	8.67	8.98	9.53	9.72	9.96
% Contribution to Total GDP	0.36	0.38	0.39	0.39	0.39
Rate of Growth	7.28	3.51	6.19	2.00	2.50
Fishing - GDP	18.08	18.68	18.25	18.51	18.97
% Contribution to Total GDP	0.76	0.79	0.74	0.75	0.74
Rate of Growth	12.31	3.22	(2.75)	2.00	2.50

¹ Organization of Eastern Caribbean States

Based on the 2007 agricultural census, the total number of agricultural holdings is 9 972 and the total extent of holdings is 30 204 acres (**Table 3**). Farms are generally small, with 90% of the total number of parcels being less than five acres. The average size of agricultural holdings is 3.2 acres. The composition of farm holders is provided in **Table 4**.

**Table 3: Distribution of land holdings in Saint Lucia
(Based on 2007 St. Lucia Agricultural Census)**

Description	Acres	%
Total Land of holdings	30 204	100%
Agricultural land	24 530	81%
Permanent crops (bananas, plantain, fruit trees)	17 005	56%
Cropland and permanent meadows and pastures	7 525	25%
Forest and woodland	3 713	12%
Other land	1 961	6%

3

Table 4: Composition of Farm Holders in Saint Lucia

Description	Number	%
Individual Female Holders	2 906	30%
Individual Male Holders	6 894	70%
Median Age of Individual Female Holders	51 years old	
Median Age of Individual Male Holders	50 years old	

Saint Lucia continues to struggle with five major challenges to agricultural sector growth and development: (i) low general economic growth rates and high debt to GDP ratios, (ii) loss of export markets for the main agricultural sector products (sugar and bananas), (iii) loss of domestic markets to rising food imports, rising rural unemployment and the decline of rural agricultural industry, (iv) rising health care costs due to changing consumption habits and demographics, and (v) increased vulnerability to climate change and external shocks that require more Government resources to be devoted to social programmes for protecting food security.

The development challenges to the food, agriculture and natural resources system in Saint Lucia are no different from other Caribbean Community (CARICOM) states². A major policy challenge to the Government is how to transform risk-averse and resource-deficient farmers into efficient and competitive entrepreneurs, if agriculture, forestry and fisheries are to operate as the true engines of economic growth and social stability.

Another challenge remains attracting young and appropriately skilled technical and professional labour in the production and marketing of goods and services from these sectors.

The steady decline in competitiveness of the Saint Lucia's agricultural products in traditional preferential markets and within domestic/regional markets has been a major concern. This has been attributed, in part, to the process of trade liberalization, which has progressively eliminated import restrictions and reduced external tariffs. Domestic limitations, including, institutional, structural, economic and technological factors have also played a major role in the lack of productivity and competitiveness of national agriculture. The fundamental question arising relates to the country's capacity to effect the necessary adjustments in time.

The high food import bill of the country is another major concern in Saint Lucia that must be addressed.

In response to these challenges, the national development policy for agriculture emphasizes the need to increase the efficiency and competitiveness of agriculture, promote the adoption of improved/appropriate technological packages, expand and diversify agricultural, forestry, and fisheries base and increase value-added by promoting agro-industrial development. In fact, a Five-year Strategic Plan (2009-2014) was developed by Ministry of Agriculture, Food Production, Fisheries Cooperatives and Rural Development (MAFPFCRD) with the following strategic objectives:

- a. Increase efficiency and competitiveness in Agriculture;
- b. Promote appropriate technology;
- c. Expand and diversify production of value added goods and services;
- d. Rationalize land use through planning;
- e. Enhance food security;
- f. Generate economic opportunities to ensure sustainable livelihoods;
- g. Promote environmental conservation.

²Extracted from the National Medium-Term Priority Framework for FAO Assistance - Saint Lucia Draft document, 2006.

1.2 Vulnerability of the Agriculture Sector to Natural Hazards and Climate Risks

As indicated above, the impacts of natural hazards are recognized in Saint Lucia as one of the major challenges to the development of the agriculture sector in the country as well as for the promotion of food and livelihood security of the small farming communities. The country is surrounded by the Caribbean Sea and the Atlantic Ocean, and therefore it is exposed to hurricanes and tropical storms. Wet and dry seasons characterize the climatic conditions of the island with the driest months of the year being January to April and the wettest months between May and August. It has a tropical maritime climate and is cooled by the North East Trade Winds. Daily temperatures of the island range between lows of 22 degrees Celsius and highs of 32 degrees Celsius. Annual rainfall varies from approximately 160 centimeters in the north and southern extremities of the island to 350 centimeters in the mountainous region of the country at the peak of the rainy season.

The high level of vulnerability of the agriculture and fisheries sectors was evident in the devastation caused by the impacts of Hurricanes Dean (2008) and Tomas (2010), and more recently the 24th December 2013 Low Level Trough System. **Table 5** provides a summary of the total damage, damage, and loss, respectively caused by the Low-Level Trough to the banana, 'other crops', livestock, fisheries and forestry sub-sectors, as well as to farm infrastructure (irrigation, drainage, farm buildings and office equipment), farm roads and land loss.

Table 5: Summary of Total Impact of the Low-Level Trough

Description	Estimated value (EC\$)
TOTAL EFFECT	31,938.545
TOTAL DAMAGE	22 504,145
Banana/Plantains	3 852 800
Other Crops	2 953 190
Livestock	516 500
Fisheries	449 255
Farm Infrastructure	14 175 600
Farm Roads	556 800
Land Loss	-
LOSSES	9,434,400
Banana/Plantains	1 733 760
Other Crops	590 635
Livestock	122 415
Fisheries	152 260
Farm Infrastructure	6 379 020
Farm Roads	189 310
Land Loss	267 000

The vulnerability of the agricultural sectors in Saint Lucia is not only a function of its geo-physical location and hydro-meteorological hazards but it is also due to the shortcomings of the current disaster risk reduction & response mechanisms to effectively mitigate the impacts. In addition, to its already existing high exposure to natural hazards, the country is one of the Small Island Development States (SIDS) classified as most vulnerable to climate change. The impacts of global climate change are likely to be felt through greater climate variability (changes in dry and rainy seasons), even more extreme events (hurricanes, floods, droughts) and damage to water resources, agricultural systems, ecosystems, human settlements and coastal resources. **Table 6** shows a scenario of the impact of disasters and climate change on agricultural sectors.

Table 6: Sectoral Impact of Disaster and Climate Change

Sector	Natural Hazards	Climate Change
Agriculture	<ul style="list-style-type: none"> ▪ Fruits and vegetables are exposed to flood damage in low lying areas. ▪ Plantain and banana crops are especially vulnerable to wind and flood damage. 	<ul style="list-style-type: none"> ▪ Expected increases of 1–2 degrees Celsius and rainfall changes of ± 10 percent are predicted to lower productivity of beans, corn and rice by 10 percent. ▪ Banana, plantain and tree crops and emerging vegetable crops face same threats as above.
Fisheries	<ul style="list-style-type: none"> ▪ Marine products are at risk to be affected by tropical storms and storm surges. ▪ Habitats such as sea grass beds, mangroves, and coral reefs are vulnerable to storms and siltation. 	<ul style="list-style-type: none"> ▪ Traditional catches are expected to migrate as St. Lucia water warms up. ▪ Sea level rise and coral bleaching also threaten habitats for fish nurseries, such as mangroves and coral reefs.
Water Resources	<ul style="list-style-type: none"> ▪ Saline intrusions during storms affect Castries, as well as other coastal communities. ▪ There is inadequate drainage and sanitation around Castries during heavy rain. 	<ul style="list-style-type: none"> ▪ Sea level rise has intensified the saltwater intrusion problem, particularly on offshore islands and coastal plains. ▪ Changes in evaporation rates and rainfall are affecting water resources in the country's interior.

Source: Adapted from Martin and Manzano, 2010

1.3 *Justification of the Need to Accelerate the Mainstreaming of DRM and CCA in the Agriculture sector*

The most recent probabilistic risk assessment of Saint Lucia³, which uses mathematical models to combine any possible future hazard scenarios, information about the exposed assets and the vulnerability, to provide results of an estimate of probable loss levels is presented in **Table 7** below. Unlike historical estimates, probabilistic risk assessment takes into account all disasters that can occur in the future, including very intensive losses with long return periods, and does overcome the limitations associated with estimated derived from historical disaster loss data. The Table shows a high expected average annual loss associated with the occurrence of future perils in the country. This information suggests that Saint Lucia must urgently plan and prioritize investments and strategies for managing disaster risk.

**Table 7: Probabilistic Risk Assessment Results– St. Lucia
Average Annual Loss (AAL) by Hazard**

Hazard	Absolute [Million US\$]	Capital Stock [%]	GFCF[%]	Social exp [%]	Total Reserves [%]	GrossSa vings [%]
Earthquake	5.06	0.151	1.452	9.265	2.632	2.855
Wind	20.42	0.607	5.858	37.390	10.623	11.520
Storm Surge	21.25	0.632	6.096	38.910	11.055	11.988
Tsunami	0.01	0.000	0.003	0.018	0.005	0.006
Multi-Hazard	46.74	1.390	13.409	85.584	24.316	26.369

UNISDR (GAR) -

<http://www.preventionweb.net/english/hyogo/gar/2015/en/home/>

Saint Lucia, as other Caribbean Island States, and their populations are in a position of increased vulnerability to the effects of climate change. Caribbean Scientists and their global counterparts predict higher temperatures, rises in sea level, and increased hurricane intensity which will threaten lives, property and livelihoods throughout the region. If no action is taken, increased damage from tropical storms or hurricane could result in loss of life, loss of tourism revenue, loss of livelihoods for the country's people and damage to capital assets and infrastructure.

³UNISDR (GAR) - <http://www.preventionweb.net/english/hyogo/gar/2015/en/home/>

Effects of climate change are an emerging issue for St. Lucia, but little institutional experience is available to tackle such impacts. Strategic planning for disaster risk management (DRM) and climate change adaptation (CCA) is essential in order to diminish future impacts of natural hazards and improve the sustainability of development processes. This includes the promotion of more resilient farming systems and practices, as well as sound coordination, exchange of information, methodologies and tools between experts and institutions working on DRM, climate change and development.

Climate variability, as manifested by changing and unpredictable weather patterns, already represents a major challenge for planners in the Country. Hazards such as storms, hurricanes, floods and droughts have very devastating effects on people's livelihoods, particularly those dependent on agriculture and tourism. The scope of response required to adapt and to mitigate the effects of climate change and variability requires far more integrated processes and specifically the integration of adaptation and mitigation policies into development planning processes.

Therefore, in order to create effective policy frameworks for adaptation to climate change, there is the need to implement in an integrated manner, the practical methodologies and recent scientific advances in the areas of DRM, climate change and development.

A Plan of Action for DRM and CCA derived from the identification of the critical gaps in the mainstreaming effort will catalyze a process that is expected to:

- a. Contribute more systematically to the existing national strategic framework for DRM and CCA, with a view on agriculture and fisheries; and
- b. Enhance the coordination and collaboration among the key actors from the national level as well.

The hazard impacts referenced above have resulted in destruction to livestock, physical and livelihood assets, market infrastructure, outputs and productive inputs. Their negative and cumulative impacts have resulted in the erosion of livelihoods and coping capacities of the population of Saint Lucia, over time.

Large shocks and consecutive disasters can cause serious long-term damage to livelihoods and food security, and they can contribute to reversing gains in poverty reduction, agricultural development and the reduction of hunger. Food and nutrition security and livelihoods of St. Lucia have been impacted by the most recent disasters.

The clear link between shocks and hunger reveal the fragility of food production systems and their vulnerability to natural hazards. Climate change will add more risks and is expected to have a profound impact on agriculture. Broadly and with everything else being equal, climate change may lead to a decrease in crop and livestock productivity in St. Lucia.

Given this scenario, as well as other complex global trends and constraints, the agriculture sector in Saint Lucia is challenged to transition towards farming systems that are more productive yet preserve the natural resource base and vital ecosystem services, use inputs more efficiently, have less variability and greater stability in their outputs, and more resilient to risks, shocks and long-term climate variability. More productive and more resilient agriculture requires a major shift towards robust risk reduction measures, including sector specific DRM/CCA technologies and practices, and in the more efficient use and management of vital resources such as land, water, soil nutrients and genetic resources. Making this shift requires considerable changes in national and local governance, legislation, policies and financial mechanisms.

To reduce current and future exposure and damage and losses by natural hazards and climate related threats it is important to have DRM and CCA measures systematically mainstreamed into the agriculture sector. The methodological framework, analysis and findings of this study focus on the process and current stage of mainstreaming of DRM and CCA considerations into the formal planning processes of the agriculture sector of Saint Lucia.

This document presents the background, context, purpose and methodological approach, results and discussions, and the conclusions and recommendations for the Saint Lucia component of the consultancy entitled: “Strengthening the Integration of Disaster Risk Management (DRM) and Climate Change Adaptation (CCA) considerations in the Agriculture Sector”. It highlights the devastating impacts of natural hazards and climate related events on the socioeconomic and environmental landscape of the country in general, and the agriculture sector in particular where food and nutrition security and livelihoods are severely affected.

The document also examines the justification to have DRM and CCA considerations mainstreamed into the agriculture sector which is aimed at reducing current and future exposure to and damage and loss from natural hazards impacts. It is part of a project which seeks to support the building of capacity to strengthen the integration of DRM and CCA considerations into the agriculture sector. Within this context, a standard instrument for assessing the extent to which the planning within the sector integrates the consideration of DRM and CCA was developed and tested.

The results obtained for Saint Lucia are presented and discussed, the conclusions highlighted and recommendations made. The recommendations provide the platform to guide the development of actionable proposals to ensure the mainstreaming of DRM and CCA considerations into the agriculture sector.

2 DEVELOPMENT OF ASSESSMENT METHODOLOGY FOR INTEGRATION OF DRM AND CCA CONSIDERATIONS INTO AGRICULTURE SECTOR

2.3 Context of the Study

Building environmental resilience is a strategic priority of the Caribbean Community Operational Plan. It is born of the recognition of the vulnerability of CARICOM States to hazard impacts, including those of climate change, and the effects of these phenomena on the agricultural sector. The need to strengthen the understanding of the status of the consideration of these phenomena within planning in the agricultural sector is also widely recognized and politically endorsed. One such political endorsement came at the Fifty-first Special COTED Meeting on Agriculture, October 2014 in its deliberations on the area of Agriculture and Climate Change Related Matters where the Ministers *inter alia*:

Agreed that Member States ought to identify the interventions which were most relevant to their respective country and develop comprehensive national programmes to address the drought issue in the country by the end of 2014, seeking technical assistance from the agencies such as FAO, CDEMA and IICA and support from the 10th European Development Fund (EDF) *Agriculture Policy Programme (APP)* project.

Also Agreed that those member States which had not yet developed their Agriculture Disaster Risk Management (ADRM) and National Drought Management plans would do so and seek assistance from the FAO and CDEMA where local expertise was not available.

The agriculture sector in particular, has been severely affected, not only by weather-related and seismic events, but also by outbreaks of trans-boundary pests and diseases and invasive species such as Black Sigatoka, the Pink Mealy Bug, the coconut Mite Rust and the Giant African Snail. Praedial larceny⁴ has also been identified as a serious threat to agriculture in the Region. Consequently, the region's food and nutrition security has been impacted.

⁴Extracted from FAO Issues Brief in 'Disaster Risk Management in the Agricultural Sector in the Caribbean'.

These impacts include, *inter alia*, loss of crops and livestock, reduced agricultural productivity, malnutrition, forest fires, destruction of housing for animals, increased migration of fish from the region, high food prices and loss of livelihoods of affected farmers and fisher folks.

Further challenges include:

- a. Inadequate institutional support, such as, appropriate governance mechanisms with legal and regulatory frameworks and fiscal incentives;
- b. Non-existent ADRM strategies with evidence-based decision support processes and tools at the community, national and regional levels;
- c. A general lack of familiarity with or use of modern information communication technologies (ICTS) and open data for agricultural and natural resources sectors;
- d. Insufficient sharing and dissemination of best practices and successful ADRM, including Sustainable Drought Management (SDM) experiences both at the community and national levels;
- e. A lack of a harmonized ADRM, including SDM knowledge management and support platform to serve multi-sectoral, multi-stakeholders and multi-institutional actors at all stages of the Disaster Cycle; and
- f. Limited participatory ADRM and SDM planning capacity and tools as the basis for stakeholder agreement and ownership to ensure goals can be attained by the use of forums/platforms.

These situations have propelled the region to put measures in place to more effectively understand, prepare for and mitigate the consequences of these hazard impacts with bold, decisive, yet well-ordered strategic planning.

One such regional intervention is the “Caribbean Action under the Programme entitled: *Agriculture Policy Programme (APP) with a focus on the Caribbean and Pacific.*” This programme is funded under the 10th European Development Fund (EDF) and executed through a Contribution Agreement signed between the European Union (EU) and the Inter-American Institute for Cooperation on Agriculture (IICA). The APP is being implemented in collaboration with the Caribbean Agricultural Research and Development Institute (CARDI) and the CARICOM Secretariat (CCS). It builds on the results of prior initiatives in the region including by the FAO 2013; The CARICOM Brazil Cooperation Initiative 2013 and aligned to the Comprehensive Disaster Management (CDM) Strategic Framework 2014-2024; and the CARICOM Regional Framework for Achieving Development Resilience to Climate Change 2011to 2012.

To reduce the current and future exposure and loss and damage caused by natural hazards and disasters it is crucial to have DRM and Climate Change Adaptation (CCA) considerations systematically mainstreamed into the agricultural sector. The project intervention is therefore seen as a key component of the Regional institutional capacity building for the management of hazard risks in the agricultural sector in CARICOM States. This Saint Lucia Country Report of the Joint Venture of Collymore, Little and Spence suggest priority actions for realizing this capacity building.

2.2 Purpose

The overall purpose of this project intervention is to build capacity to strengthen the integration of disaster risk management (DRM) and climate change in the agricultural sector through the development and/or modification of existing instruments tools and/or templates and their application/testing in agricultural planning and monitoring in selected CARICOM Member States, including Saint Lucia.

The expected results of the assignment are:

- a. A regional standard instrument for assessing the extent to which the planning within the Agricultural Sector integrates considerations of DRM and CCA developed;
- b. Standard instrument applied/tested in fifteen CARICOM Member States, including Barbados, to assess the extent to which the planning within the Agricultural Sector integrates considerations of DRM and CCA; and
- c. Results and recommendations from the application (testing) of the instrument at the national level presented in a country report, inclusive of distillation of SWOT/TOWS analysis of the result that will determine priorities for action.

2.3 Methodological Framework

2.3.1 Approach to the Development of the Draft Standardized Audit Instrument

The strategy for execution of the project consultancy was premised on the logic that sustainability of intervention outcomes that are aimed at integrating DRM/CCA considerations into agricultural development are hinged on participation and partnerships at the national and local levels. This necessitates the engagement of national and local level organizations not as mere participants, but as partners in the execution of the consultancy. This belief underpinned the strategic approach to the undertaking of the intervention. Where appropriate the Team worked with existing DRM/CCA platforms and other relevant coordination mechanisms in the agricultural sector.

In the execution of the Consultancy due consideration was given to methodological approaches of previous and current initiatives in addressing mainstreaming of DRM/CCA in general and in agricultural development planning in particular. The Team utilized a diversity of methods to undertake this consultancy inclusive of a) literature review, b) stakeholder dialogues and c) consultative feedback fora.

The Team also worked closely with the CARICOM Secretariat, the of Caribbean Disaster Emergency Management Agency (CDEMA) and the FAO who had joint responsibility for oversight of implementation, technical review as well as the project awareness is promoted in all CARICOM States.

2.3.2 Contextual Framework for Draft Standardized Audit Instrument

The design of a SAI for the integration of DRM and CCA into the agricultural planning process took place against a backdrop of ongoing efforts to develop Agricultural Disaster Risk Management Plans in the Caribbean. Even as countries seek to enhance the DRM integration in agriculture products and practices, there is already emerging a recognized need for the inclusion of CCA considerations in this interface. Couched within the resilience dialogue the challenge now is how to frame this CCA/DRM intersection in agricultural planning process. This is the background against which a pilot regional Standardized Audit Instrument, that sought to provide a framework for managing the integration of CCA and DRM within the agricultural sector, was designed.

Specifically, the Audit Instrument was designed to facilitate the:

- a. Base-lining the status of DRM and CCA integration into the agricultural sector
- b. Promotion of an integrated DRM and CCA platform in the MOAs that is strong, well-coordinated and systematic
- c. Enhancement of MOAs DRM/CCA capabilities, knowledge and resources
- d. Mobilization of resources and strengthen partnerships that integrate DRR and CCA considerations

The development of the draft Standardized Audit was based on a two-step process.

Step 1 involved the identification of critical CCA and DRM thematic issues considered necessary and sufficient for integration into the agriculture sector in order for the sector to

become more disaster resilient. This was done mainly through the review of the literature, including FAO resource materials, guidelines from the Sendai Framework for Action and country level experiences.

Step 2 involved the review and evaluation of existing tools for mainstreaming DRR and CCA and the extent to which they also included the key thematic issues, identified in Step 1, for integration into the agricultural planning. Four tools were shortlisted for detailed consideration. These were the Tear-fund, CDEMA Performance Monitoring Framework for the CDM Strategy 2014-2024, OECS Vulnerability Benchmarking Tool and the UNISDR Disaster Resilience Scorecard.

The result of the analysis indicated some limitations in the four frameworks evaluated but highlighted a strong preference for the UNISDR Disaster Resilience Scorecard. While the Disaster Resilient Scorecard was developed to provide cities with a set of assessments that would allow them to understand how resilient they are to natural hazards it was considered to be highly adaptable to the Agriculture sector. The Joint Venture utilized this tool as the basis for the development of the Standardized Audit Instrument for assessing the extent to which planning within the Agricultural sector integrates considerations of DRM and CCA.

The ensuing standardized audit instrument is disaggregated into eight thematic areas/pillars which examine how the following are addressed by the agricultural sector in the 15 CARICOM countries.

- Section 1: Governance
- Section 2: Risk Assessment and Monitoring
- Section 3: Financial Capacity
- Section 4: Risk Reduction
- Section 5: Monitoring and Protection
- Section 6: Societal and Cultural Capacities
- Section 7: Infrastructure Capacity
- Section 8: DRM and CCA Measures

Whilst the instrument was designed to provide answers at a national/sectoral level it also contains questions that could inspire discussions at community and extension district levels.

The result of the analysis clearly indicates none of the four (4) selected instruments could meet the design goals of the standardized instrument for:

- a. Assessing the extent to which planning in the agricultural sector integrates considerations of DRM and CCA; and
- b. Guiding on the performance drivers with regards to knowledge management of ADRM and CDM integration.

The team therefore utilized the “Disaster Resilience Scorecard Instrument, based on the UNISDR’s Ten Essentials”, as the basis for the development of the **Draft Audit Instrument** for assessing the extent to which planning within the Agricultural sector integrates considerations of DRM and CCA. The integration essentials draw heavily on the FAO guidelines and proposals for addressing the Sendai Framework and seek to address issues raised in the FAO 2013 Study.

The framework has been improved through the inclusion of additional relevant resilience evaluation criteria that are necessary for the integration of DRM and CCA considerations into the Agriculture Sector, especially in areas related to technologies and tools that both facilitate integrate CCA and DRM into the planning process and the reduction of climate related risks.

The Draft Audit Instrument is built around eight (8) thematic areas/pillars. Under the eight pillars a total of twenty-seven (27) critical agriculture sector DRM and CCA issues were identified, with a total of seventy-one (71) items determined as necessary to assess the extent to which DRM and CCA considerations are integrated into the planning process of the agriculture sector.

Table 8 below presents a summary of the agriculture DRM and CCA issues and items selected for assessment.

Table 8: Summary of Agriculture DRM and CCA Issues Presented in Audit Instrument

Thematic Areas/Pillars	Agriculture DRM and CCA Integration Issues for Measure	No. Items Measured
1.0: Governance – Institutional and technical capacities for climate change adaptation (CCA) and disaster risk management (DRM) in Planning and Policy Frameworks and Coordination Mechanisms at all levels of the Agriculture Sector.	1.1 National Integrated Framework for DRM and CCA	3
	1.2 Alignment of Agricultural Development Planning to National DRM and CCA Frameworks	1
	1.3 Internal mechanism for information exchange, collaboration and cooperation with national focal points for CCA and DRM	1
	1.4 Institutional Capacity for DRM and CCA for the Integration and Management of DRM and CCA issues in Agriculture.	9
2.0: Assessing and monitoring risks and vulnerabilities, and enhance early warning systems	2.1 Risk Assessment	6
3.0: Assessing the Financial Capacity for the Development and Implementation of Disaster Risk Management and Climate Change Adaptation activities in the Agriculture Sector	3.1 Financial Plan and Budget for Resilience	1
	3.2 Contingency Fund and Credit	1
	3.3 Incentives and Financing for Agribusinesses, Farmers, and Farmers Organizations	1
	3.4 Existence of agricultural insurance and other risk transfer mechanisms/instruments	1
	3.5 Financing of Agriculture CCA and DRM expenditures	1
4.0: Reducing hazards, including climate related risks and underlying vulnerabilities in crop, livestock, fishery, and forestry sub-sectors	4.1 Land use – effectiveness of land zoning in preventing exposure and losses in the crops, livestock, fisheries and forestry sub-sectors	4
	4.2 Building codes, standards and designs for farm buildings to enhance the resilience of farm structures	4
	4.3 Development and transfer of technologies that integrate CCA and DRM considerations to reduce climate related risks and underlying vulnerabilities	8
5.0: Identifying, monitoring and protecting critical ecosystem services that confer a disaster resilience benefit to the agriculture sector	5.1 Ecosystem services	3
6.0: Enhancing Societal and cultural capacities for Disaster Risk Management and Climate Change Adaptation activities in the Agriculture Sector	6.1 Grassroots organizations (Farmers Organizations, NGOs and CBOs)	4
	6.2 Sector employers	2
	6.3 “Systems of Engagement”	1
7.0: Assessing Agriculture Sector and Sector Dependent Infrastructure Capacity to Cope with Disasters the Sector might Experience	7.1 Protective infrastructures	2
	7.2 Food supply chain	1
	7.3 Administrative operations	1
8.0: Capacities and Procedures for Effective Disaster Preparedness, Response and Rehabilitation	8.1 Early Warning System	2
	8.2 Event Management	1
	8.3 Equipment and supply needs	1
	8.4 Food, staple goods and fuel supply	3
	8.5 Interoperability and inter-agency compatibility	2
	8.6 Drills	2
	8.7 Post event recovery planning – pre-event	5

2.4 *Limitations of the Study*

At the national level a diversity of approaches was used to complete the SAI. These ranged from a single individual to small internal ministry of agriculture teams. This may result in some knowledge gaps on the nature and scope of DRM and CCA integration in sector and a heavy focus on government efforts.

The instrument completion progress may not adequately capture the views and initiatives of the non-government stakeholders though this may not significantly affect the direction of the results.

The Report therefore reflects the data as presented by Saint Lucia at the time of instrument submission.

The Joint Venture has encouraged national stakeholder consultations on the draft Country Analysis Report to frame discussion on the gaps and issues raised and the framing of prioritized action plans

3.0 THE FINDINGS: Integration of DRM and CCA in Agricultural Development Planning at the National Level

3.1 Overview

This section presents an analysis of the data and information submitted by Saint Lucia through the online Standardized Audit Instrument (SAI). The analysis and interpretation of the data recognizes four (4) levels of attainment of mainstreaming of DRM and CCA measures within the agriculture sector as defined and presented in **Table 9**.

Table 9: Definition of Levels of Attainment of Integration⁵

Level	SAI Score Range	Definition of Level
1	0.00 – 1.49	‘Little or No Progress’ . Level 1 represents little or no progress with mainstreaming. The country undertakes DRM and CCA integration in an ad hoc manner and has little or no awareness of the relevance and importance of adopting a systematic approach to building disaster resilience within its agriculture sector rehabilitation/reconstruction and development processes.
2	1.50 – 2.99	‘Awareness of Needs’ . Level 2 refers to an early stage of mainstreaming. The country has a growing level of awareness and understanding of the value and requirements of integration, and recognizes the need for action. It may also have decided to take action
3	3.00 – 4.49	‘Development of Solutions’ . Level 3 refers to an intermediate stage of integration, where there are identifiable actions to consolidate the gains made in Level 2. The country is developing plans and tools to address the requirements of mainstreaming DRM and CCA considerations into the agriculture sector rehabilitation/reconstruction and development processes.
4	>4.50	‘Full Integration’ . Level 4 refers to a situation where DRM and CCA measures are fully mainstreamed within the agriculture sector rehabilitation/reconstruction and development processes. The country places high importance on building resilience in a sustainable programme of action at multiple levels and within multiple sub-sectors, and there is a comprehensive demonstration of practice. Level 4 refers to a situation where DRM and CCA considerations are ‘institutionalized’. However, this is not to suggest that an optimum level has occurred: there is still a need for further progress. In this context, the process of integration should be viewed as open-ended: while the country should aim to achieve level 4, it should also aim to make continuous improvement to its approach.

⁵Partial adaptation of the TEARFUND Mainstreaming DRR

The data represents a pilot baseline of the extent of DRM and CCA integration within the agriculture sector of Saint Lucia. Whilst the ranking is undertaken for the eight (8) pillars as well as indicative measures within each pillar, the intent is to highlight the nature and extent of diversity of integration across the agriculture sector within the country.

The SAI data is interpreted and presented within the framework of the eight pillars and the agriculture DRM and CCA integrated issues measured. Particular attention is given to the set of indicators (71) organized against eight (8) pillars and 27 issues. With the aid of graphs, pie charts and scatter charts the results are interpreted and presented within the framework of the forma below.

Overall, the results indicate **Level 2** of integration of DRM and CCA considerations in the Agriculture Sector of Saint Lucia, with an assessed **Overall Score of 2.51**. This score suggests the country is in an early stage of mainstreaming characterized by a growing level of awareness and understanding of the value and requirements of integration needs, and the recognition of the need for action.

The three strongest areas of integration are in *Governance (Pillar 1)*, *Assessment and Monitoring of Risk and Vulnerability (Pillar 2)*, and *Capacities and Procedures for Effective Disaster Preparedness, Response and Rehabilitation (Pillar 8)*. The main factors influencing the realized **Level 2** score can be gleaned from **Figure 1** and **Annex II**. These are discussed further below.

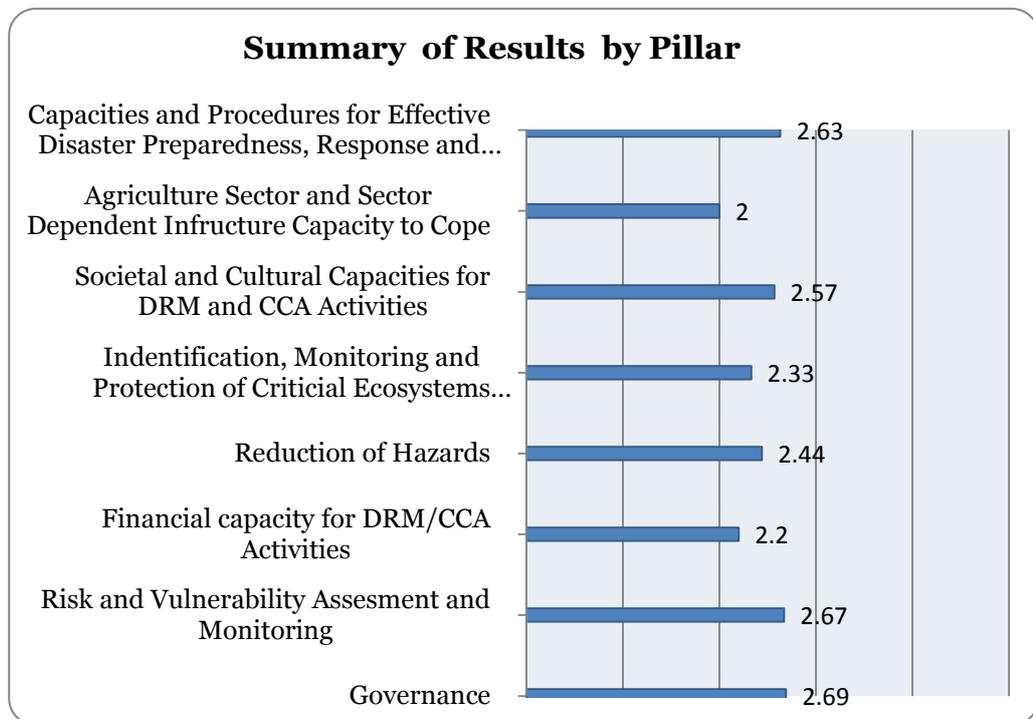


Figure 1: Summary Results (by Pillar)

3.2 GOVERNANCE: Institutional and technical capacities CCA and DRM in Planning and Policy Frameworks and Coordination Mechanisms at all Levels

3.2.1 Overview

The results obtained from the analysis of the data on Governance show that the institutional and technical capacities for climate change adaptation (CCA) and disaster risk management (DRM) in Planning and Policy Frameworks and Coordination Mechanisms at all levels of the Agriculture Sector of Saint Lucia are at the early stage of integration (**Level 2**), with a realized overall **score of 2.69 (Figure 2)**. This is heavily influenced by deficiencies in the institutional capacity for DRM and CCA integration and management of DRM and CCA issues in Agriculture.

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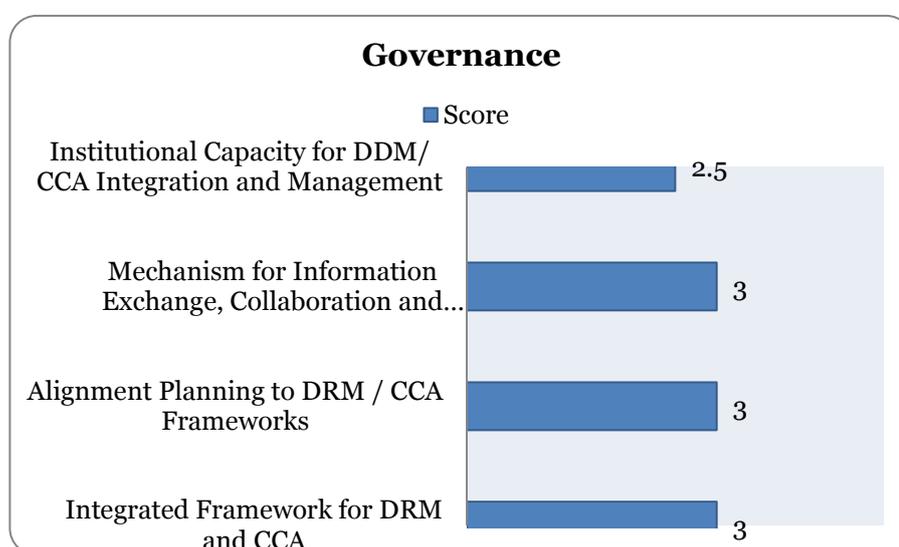


Figure 2: Results for Pillar 1

3.2.2 National Integrated Framework for DRM and CCA

The national integrated framework for DRM and CCA in Saint Lucia is assessed at Level 3, determined by the outcome **score of 3.00 (Figure 3)**. This intermediate stage of mainstreaming as characterized by:

- A single point of coordination with agreed roles and responsibilities, albeit with some limitations;
- Some participation and collaboration among the relevant agencies, although not universal. This subject is receiving significant attention, however; and
- Some physical contributions of the relevant agencies are formally defined. However, the full leverage of private sector is yet to be achieved.

This suggests that there are identifiable actions to consolidate the gains to promote integration including the development of plans and tools to address the requirements of mainstreaming DRM and CCA considerations into the agriculture sector.

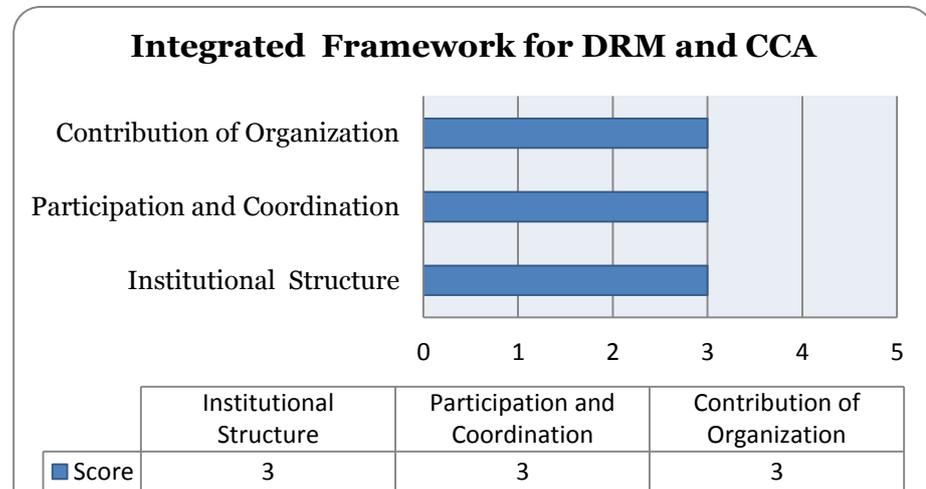


Figure 3: Results for Integrated Framework for DRM and CCA Thematic Area

3.2.3 Alignment of Agricultural Development Planning to National DRM and CCA Frameworks

The alignment of agricultural development planning to national DRM and CCA frameworks is assessed at Level 3 with a **score of 3.00**. While there are no formal policy and budget approval process for DRM and CCA issues, disaster resilience benefits are generally understood to be helpful to an intervention in most functional areas.

3.2.4 Internal Mechanism for Information Exchange, Collaboration and Cooperation with National Focal Points for CCA and DRM

The internal mechanism for information exchange, collaboration and cooperation with national focal points for CCA and DRM is also assessed at **Level 3**, with a realized **score of 3.00**. However, there is no single integrated set of resilience data for stakeholders, including collaborators, farmers, fisher-folks, community organizations and the general public. Some significant gaps exist. As a result some organizations may have to search around to create a complete data base for themselves.

3.2.5 Institutional Capacity for the Integration and Management of DRM and CCA issues in Agriculture

The institutional capacity for the integration and management of DRM and CCA issues in Agriculture is at **(Level 2)** with a **score of 2.50 (Figure 4)**.

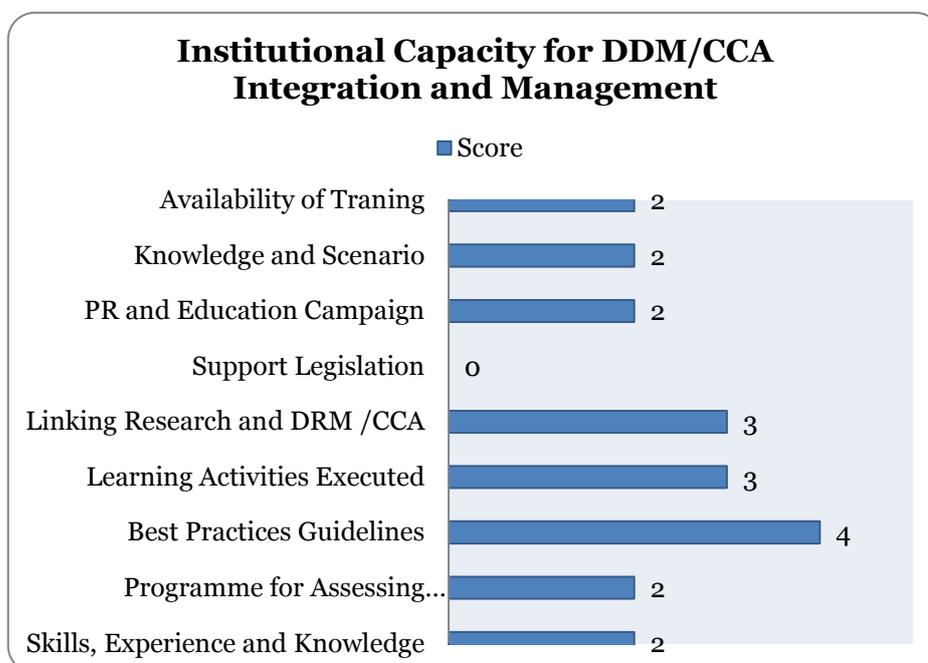


Figure 4: Results for Institutional Capacity for DDM/CCA Integration and Management Thematic Area

Whilst the overall score for this element suggests an early stage of integration a third of the indicators point to identifiable actions being taken to consolidate the gains made at the earlier awareness level. The sector is developing plans and tools to address the requirements of mainstreaming DRM and CCA considerations into the agriculture sector.

- a. Going forward the following will need to be addressed: Completion of the inventory of available skills and experience related to DRM and CCA in agriculture. Development, implementation and maintenance of a Programme for assessing the knowledge and skill sets for the MOA to pursue a DRM and CCA mandates and addressing gaps.
- b. Limited diversity in media used in education and awareness campaigns.
- c. The percentage of farming and fishing communities knowledgeable about the 'most probable' scenario for hazard impacts and applicable response and preparation appears.
- d. The need for the streamlining of training offered and increased access to the agriculture sector community.

3.3 Risk and Vulnerability Assessment and Monitoring

The framework for assessing and monitoring risks (current and future) and vulnerabilities, and enhancing early warning systems for proactive climate risk management and adaptation to climate change is at **(Level 2)** based on derived **score of 2.67** as can be gleaned from **Figure 5**.

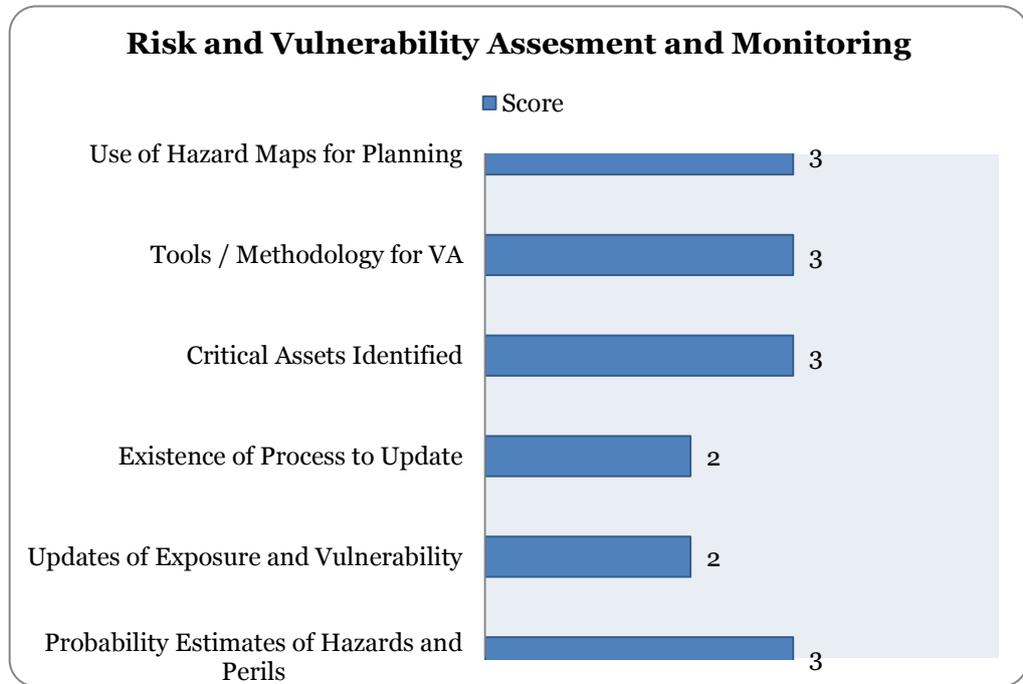


Figure 5: Results for Pillar 2

Already there are identifiable plans and tools to address the requirements of mainstreaming DRM and CCA considerations into the agriculture sector, especially as these relate to the use of hazard maps for planning, vulnerability assessment and generating the probability of hazards. The following will have to be addressed to advance the level of integration in this element: Completing and updating scenarios setting of sector-wide exposure and vulnerability for priority h hazards. Establishing and agreeing among stakeholders on processes to update data inventories needed to inform risk management.

3.4 Assessment of the Financial Capacity for the Development and Implementation of DRM and CCA activities

Figure 6 presents the score for the financial capacity for the development and implementation of DRM and CCA activities which suggest a (**Level 2**) stage of integration based on the realized **score of 2.20**.

Saint Lucia has initiated actions to provide or facilitate incentives While incentives for financing risk management in the sector. This work will need to be consolidated and expanded. Additionally, the following will need to be addressed to ensure overall enhancement of the sector’s risk financing capacity: The absence of coordinating framework for risk financing planning among stakeholders including and process for agreeing priorities. The adequacy of Contingency funding to address the financing needs associated with the estimated hazard impacts from “most severe” scenario in the sector.

There is limited access to agricultural insurance and other risk transfer mechanisms/ instruments as well as limited use of existing funding sources and options and the inefficient use of available resources.

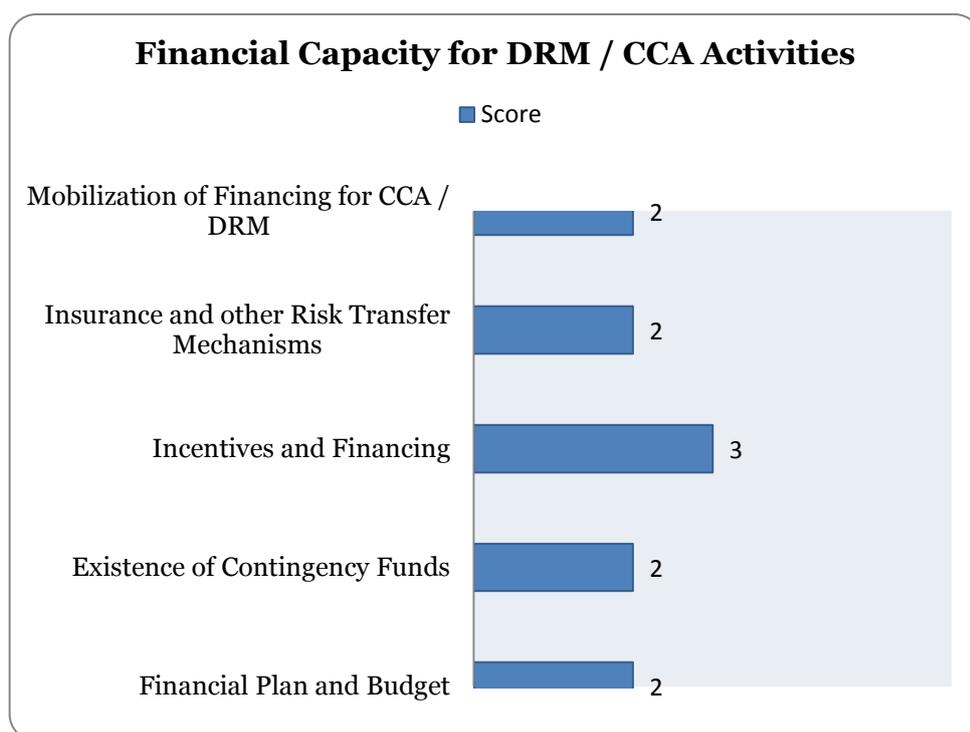


Figure 6: Results for Pillar 3

3.5 Reduction of Hazards, including Climate Related Risks and Underlying Vulnerabilities in Crop, Livestock, Fishery, and Forestry Sub-sectors

The result obtained with respect to reducing hazards, including climate related risks and underlying vulnerabilities in crop, livestock, fishery, and forestry sub-sectors is a **score of 2.44 (Figure7)**. This **Level 2** score suggests an early stage of mainstreaming resulting from a growing level of awareness and understanding of the value and requirements of integration and the associated the need for action. This appears to be especially evident in the development and/or use technology evident in the use of technology. However, more attention needs to be paid to the limited effectiveness of land zoning in preventing exposure and losses in the crops, livestock, fisheries and forestry sub-sectors and inadequate use of codes and standards in the farm building in design and building solutions.

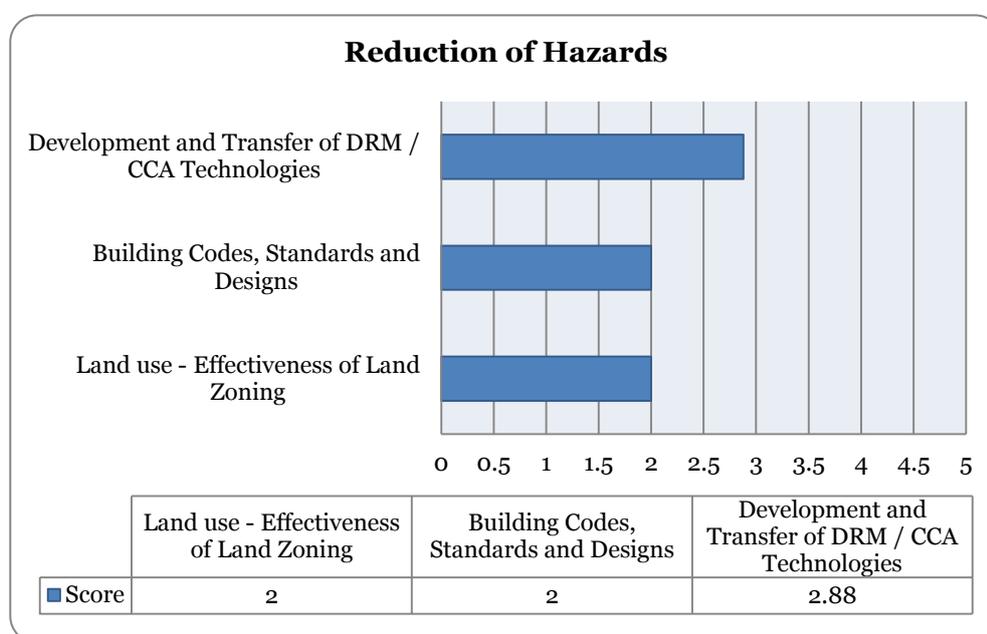


Figure 7: Results for Pillar 4

3.5.1 Land use – Effectiveness of Land Zoning in Preventing Exposure and Losses.

The effectiveness of land zoning in preventing exposure and losses returned a **score of 2.00** due mainly to the high levels of risks associated with land, employment, population and to a lesser extent output.

3.5.2 Building Codes, Standards and Designs for Farm Buildings to Enhance the Resilience of Farm Structures

The use of building codes, standards and designs for farm buildings to enhance the resilience of farm structures was assessed at a low **score of 2.00**, with deficiencies related to the:

- a. Limited existence of applicable codes for all physical assets the potential damage of between 5-10% of all physical structures and assets expected for the ‘most probable’ impact scenarios.
- b. Limited conformity of statutory codes with the latest standards in farm building practice.
- c. Scattered use of green building standards in farm structures. However, interest is expanding among developers.

3.5.3 Development and Transfer of Technologies that Integrate CCA and DRM Considerations to Reduce Climate Related Risks and Underlying Vulnerabilities

Figure 8 presents details on the **score (2.88)** obtained with respect to the development and transfer of technologies that integrate DRM and CCA considerations to reduce climate related risks and underlying vulnerabilities. The outcome represents a **Level 2** stage of integration.



Figure 8: Results for Development and Transfer of DRM/CCA Technologies Thematic Area

The indicators for DRM and CCA in this pillar are at an intermediate stage of integration. The sector is developing plans and tools to address the requirements of mainstreaming. Nevertheless, the observations below point required areas for more action.

- a. There is some adoption and use of new models of integrated production systems in the agro-ecological zones, perhaps concentrating on one or two solutions. Their use is not assured, but the argument for using them can be made depending on each case. Between 30-40% of farmers and fisher-folks in vulnerable communities have improved access to agricultural services.
- b. There is some use of new models of post-harvest practices, perhaps concentrating on one or two solutions. Their use is not assured, but the argument for using them can be made depending on each case.
- c. There is some use of innovative, indigenous and improved land management practices, perhaps in one or two areas or perhaps concentrating on one or two solutions. Their use is not assured, but the argument for using them can be made depending on each case.
- d. There is scattered use of the guidelines on settlements in hazard prone areas and promotion of investments in river training, but interest is expanding.
- e. There is some use of improved models of Slope Agriculture land Technologies (SALT), perhaps in one or two areas or perhaps concentrating on one or two solutions. Their use is not assured, but the argument for using them can be made depending on each case.
- f. There is some use of sustainable bio-diversity, land and soil management practices, perhaps in one or two areas or perhaps concentrating on one or two solutions. Their use is not assured, but the argument for using them can be made depending on each case.
- g. There is some introduction and use of improved animal/livestock sustainable management systems, perhaps in one or two areas or perhaps concentrating on one or two solutions. Their use is not assured, but the argument for using them can be made depending on each case.

3.6 Identification, Monitoring and Protection of Critical Ecosystem Services

The overall **score of 2.33** obtained for the identification, monitoring and protection of critical ecosystem services in Saint Lucia - a **Level 2** stage of integration. The scores for the indicators within this pillar are:

- a. Critical ecosystem services are identified, but monitoring is ad hoc , with no real attempt to track health over time – **3.00**;
- b. Generalized decline in ecosystem service status - **2.00**; and
- c. The use of land policies in support of ecosystem services – **2.00**.

3.7 Enhancement of Societal and Cultural Capacities for DRM and CCA Activities in the Agriculture Sector

Figure 9 presents the outcome of the analysis with respect to enhancement of societal and cultural capacities for DRM and CCA activities in the agriculture sector. The overall **score of 2.57** was obtained (**Level 2**) and is the 4th ranking pillar based on the extent of integration.

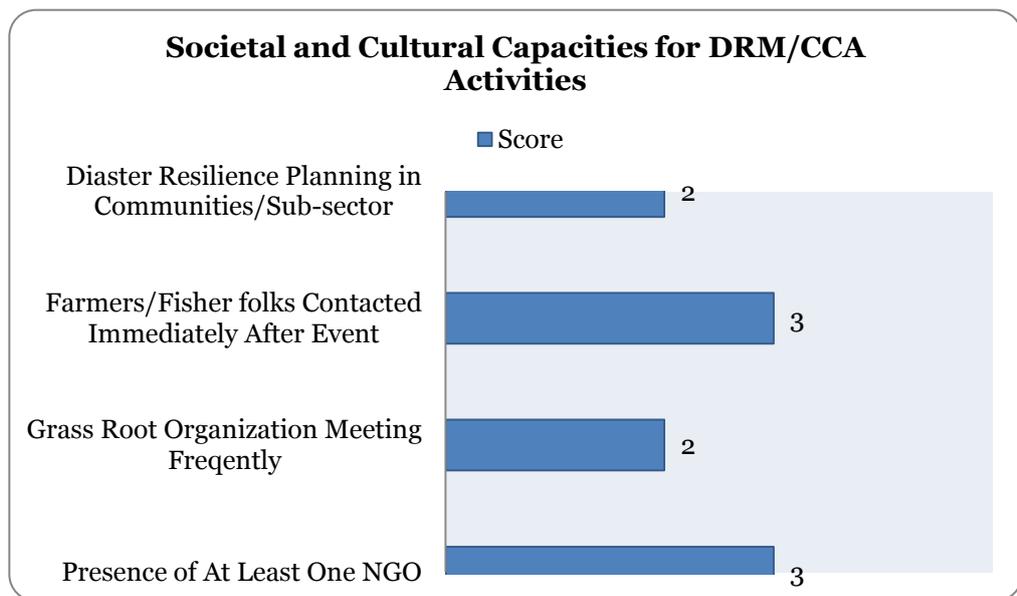


Figure 9: Results for Pillar 6

Specially noted is the relative strength establishing a platform for tapping into social capital in the infrastructure for contacting and engaging them. The following will need attention if the integration here is to be advanced to the next level:

- a. Increasing the % percentage farming/fishing communities being engaging with non-government entities for pre and post event response planning and support;

- b. Increasing the extent and coverage of efforts of meetings among grass roots organization and the clarification of roles in the relationships. Improving the process for generating contact information on farmers/fisher-folks and for communicating with them, especially in times of crisis.
- c. The absence of tools with the ministry and other stakeholders for communicating resilience information and practices.

3.8 Assessment of the Agriculture Sector and Sector Dependent Infrastructure Capacity to Cope with Disasters

The overall **score of 2.00** obtained with respect to the analysis of the agriculture sector and sector dependent infrastructure capacity to cope with disasters is at Level 2 of integration (**Figure 10**).

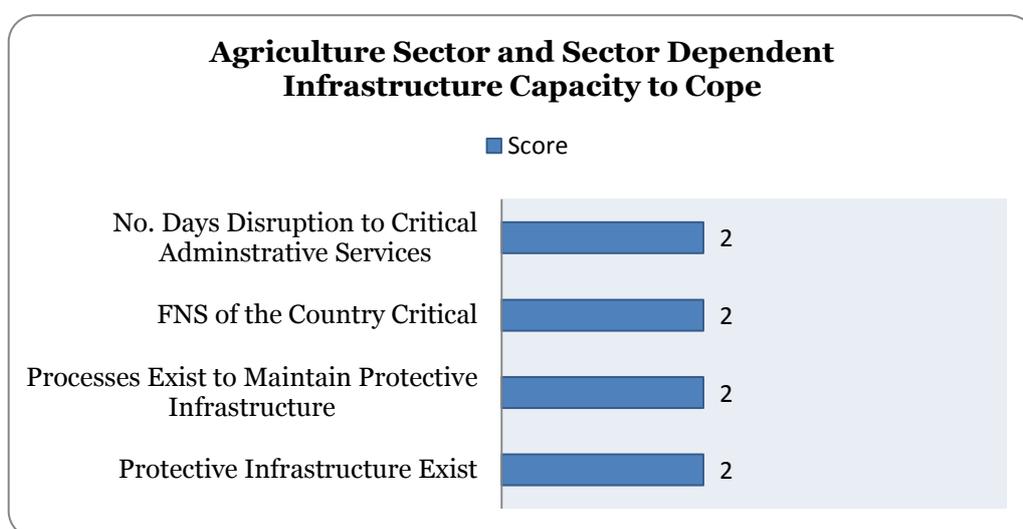


Figure 10: Results for Pillar 7

As indicated in **Figure 10**, this **Level 2** score is heavily influenced by the following factors:

- a. The inadequacy of protective infrastructure such as levees and flood barriers, flood basins, storm drains to mitigate the potential losses from the ‘most severe’ scenarios. The inadequate maintenance of protective infrastructure and the irregularity of audited inspections.
- b. damage,
- c. The potential extended significant disruptions in critical administrative functions and services associated with the impacts under “most probable” event scenario.

3.9 Capacities and Procedures for Effective Disaster Preparedness, Response and Rehabilitation

Figure 11 presents the analysis with respect to the capacities and procedures for effective disaster preparedness, response and rehabilitation, which shows a fair outcome with a **score of 2.63 (Level 2)**.

Three of the measurement scales for this element indicate an intermediate stage of integration with identifiable actions to build the awareness of decision to act reduce loss to life and property. These relate to interoperability, event management and contingency supplies arrangements.

The sector is already developing plans and tools to address these in the considerations for mainstreaming these into DRM and CCA considerations into the agriculture sector.

However, attention will need to be paid to the following gaps:

- The length of time taken to issue warnings and reliability of the early warning system. The partial reach of the early warning system to the farming/fishing population.
- Limitations in projecting critical equipment and supply needs for both the “most probable” and “most severe” scenarios;
- The absence of an exercise program or its execution.
- The missed opportunities in the application of the principle of building back better in response, recovery and rehabilitation projects as an entry point to initiate better disaster reduction (short-term) and climate change (long-term).

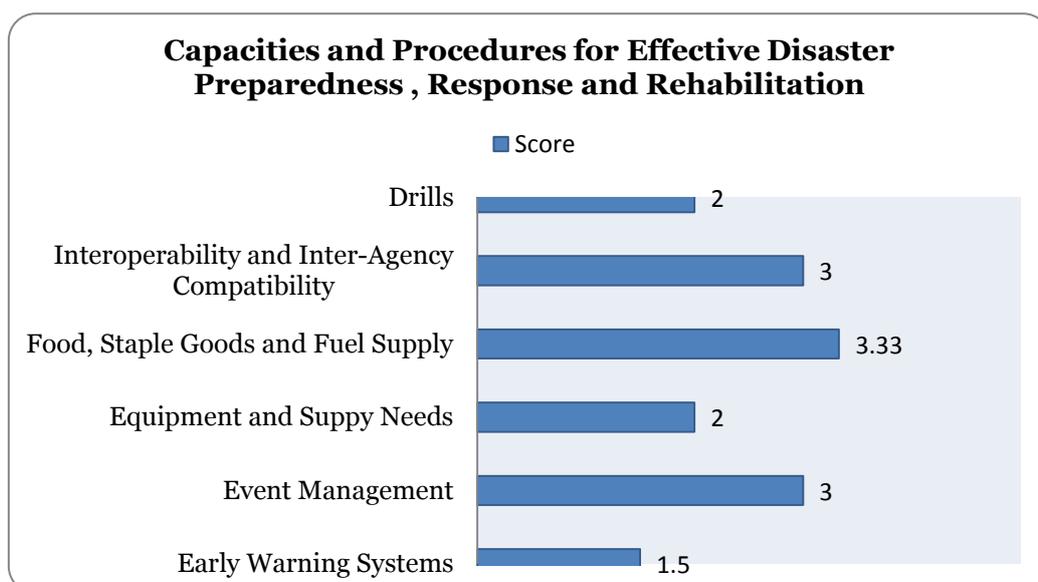


Figure 11: Results for Pillar 8

3.10 Discussion of Main Findings and Gaps in the Integration of DRM and CCA Measures within Agriculture

The summary analysis of the results is presented in **Annex II**. The results obtained from the assessment of the integration of DRM and CCA considerations within the Agriculture Sector Saint Lucia with an assessed Overall Score of 2.04, suggest that the country is in the early stage of the mainstreaming process and that there are notable areas of weakness in all pillars.

The summary analysis of the results by pillar is presented in **Annex II**, while the major gaps identified are presented by pillar in Annex III. The frequency distribution of integration score for seventy-one items measured by indicative score category is presented in **Table 6** below.

31

Table 6: Percentage Distribution of 71 Items Measured by Indicative Category

Category	Distribution by:	
	Item Measured	Percentage
0.00-0.99	0	0.0
1.00-1.99	3	4.3
2.00- 2.99	31	45.0
3.00-3.99	33	46.4
4.00-4.99	3	4.3
5	0	0.0

With about 50 percent of the items measured obtaining scores between 3.00 and 5.00, Saint Lucia has made significant progress in its mainstreaming process but prioritization and advancement of key Pillars require urgent attention.

4.0 CONCLUSIONS AND RECOMMENDATIONS

With an assessed Overall Score of 2.04, the integration of DRM and CCA considerations into the agriculture sector of Saint Lucia is at Level 2, suggesting that the country is in the early stage of the mainstreaming process. Indications are that there is a growing level of awareness and understanding of the value and requirements of integration, and recognition of the need for action which the country has already been addressing. In spite of this increasing recognition, the Level 2 Status of integration indicates observed weaknesses all Pillars on which the assessment is based.

Saint Lucia has an established platform for advancing DRM and CCA integration in agriculture sector development planning but capitalization on this platform will require a retooling of the knowledge assessment and development processes, better harvesting and use of existing hazard and other data, better interfacing with the generators of risk profiling data and more application of their outputs.

Even though Saint Lucia has laid the foundations for effective integration of DRM and CCA in the agriculture sector as reflected in the distribution of relative strength across these four Pillars, the relative low scores on over 50% of the Pillars underscores the need for urgency in their prioritization.

The analysis conducted, results obtained and the gaps identified suggest the need for Saint Lucia to establish agreed priority actions in relation to all Pillars in order to enhance and fast-track integration of DRM and CCA considerations into a sustainable agriculture development strategy. While it is recognized that the requisite initiatives should ideally be spearheaded at the national level, given the disparities in capacity and capability among CARICOM States, regional initiatives, interventions and approaches must augment national initiatives. The recommendations outlined below are couched in this direction and reflect the belief that programmatic elements alone will not generate the systematic changes that are necessary to alter the trajectory of repeated loss and disruption in agricultural production systems, livelihood resources, community capacity and national economies. While organization of the recommendations by Pillar might appear desirable, given the cross-cutting nature of the Pillars this approach would undermine the scope of recommended actions.

These recommendations speak to more and deeper national collaboration and consensus on the broad goals for resilient agriculture, agreed frameworks, standards and knowledge products. The roles of educational institutions, research institutions and operation centres and the private sector and civil society in delivering these products and services will need to be defined and agreed. It will require a revisit of the strategic plan for the Climate Change, National and Agriculture Disaster Risk Management and Natural Resources Management among CARICOM States in general and Saint Lucia in particular.

The anticipation is that DRM and CCA integration will be elevated to the highest levels of agriculture development priorities in Saint Lucia. Given the current levels of hazard vulnerability as well as the prospects for increase intensity and frequency DRM and CCA integration into agriculture development planning should be of utmost priority for governments, civil society and national, regional and international organizations operating within and outside the country.

The recommendations for priority action are presented under the pillars of the instrument. It is hoped that these help to start the national dialogue on the action agenda to move DRM and CCA forward in the sector. A national stakeholder consultation may see these differently and that is not to be discouraged.

We understand that some issues, such as capacity building and knowledge management, are cross-cutting and that presenting the recommendations around the pillars may not capture the this dynamic. However, it is our feeling that this detailing is important in framing the integration picture. Once the dialogue on the dialogue takes place, the country can define its prioritized actions and the connections across them.

Priority Areas for Action by Pillar:

4.1 Pillar 1: Institutional and Technical Capacity for DRM and CCA in Agriculture

The objective is to ensure efficient institutional mechanisms within the Sector, that include all aspects of climate change and disaster risk management activities related to the agricultural sector and enhancing coordination with other agencies.

The approach is to support the strengthening of the institutional and technical capacities for and the mainstreaming climate change adaptation and disaster risk management within agriculture and food security policies, strategies and plans in Saint Lucia.

In this context, the new challenge to the country is, therefore, to re-define DRM and CCA tasks and responsibilities in the MOAs and Departments at the national level and relevant regional institutions, including establishment/strengthening of partnerships and networks with other stakeholders. Some recommended priority actions for institutional and technical capacity strengthening are:

- a. Strengthening institutional and technical capacity for climate change adaptation and disaster risk management in agriculture
- b. Assessing and monitoring climate risks (current and future) and vulnerabilities and enhance early warning systems and packaging of results for end-users

- c. Improving knowledge management, awareness raising and education on climate change impacts, adaptation and disaster risk management
- d. Reducing climate related risks and the underlying vulnerabilities by implementing technical options in agriculture, livestock, fisheries and forestry sectors
- e. Strengthening capacities and procedures for effective disaster preparedness, response and rehabilitation at all levels and integration of climate change adaptation initiatives
- f. Strengthening the framework for institutional collaboration between the various stakeholders involved in agriculture DRM CCA measures in the country.
- g. Consolidating efforts to harmonize the work of the sector partners in DRM and the interface with the national and CDEMA CDM monitoring framework reviewed to accommodate the generation of the data from this exercise.
- h. Encouraging the development of knowledge products and guidance tools to advance some of the tools required at the thematic pillar levels. Partnerships with universities, other research institutions such as CARDI and private sector entities will be required to support this.
- i. Reviewing how and where the agriculture sector is reflected in National Strategic Frameworks for Comprehensive Risk Management, Resilient Development and Sustainable Development will be an important first step in building the infrastructure for risk management
- j. Improving climate impact, risk and vulnerability assessment methodologies and transfer to MOA and relevant stakeholders
- k. Strengthening technical capacity to apply needs based climate and weather information products and early warning systems in agriculture sector
- l. Identifying information needs of farmers in the various agro-ecological zones relevant to DRM and CCA;
- m. Empowering farmers' organizations and other relevant NGOs and to access and use risk and vulnerability information for community-based DRM, integrated natural resource management and CCA programmes;
- n. Developing a 'good practice' database at the national Coordinating Unit and link with CDEMA/CARICOM Secretariat with linkages to MOAs and other sector stakeholders;
- o. Integrating DRM and CCA and sustainable land management into farmer field school approach and empower agricultural extension services to demonstrate and disseminate good practices;
- p. Including DRM and CCA issues in curricula of MOAs, agricultural colleges and vocational schools; and

- q. Ensuring strategic dissemination and sharing of key reports and information material related DRM and CCA.

4.2 *Pillar 3: Financial capacity to support identified DRM and CCA priorities*

The research suggests four major areas of concern with respect to the financing DRM and CCA in the agriculture sector. These are:

- a. Inadequacy of financial planning for all actions necessary for disaster resilience. In addition, priorities for disaster resilience investment in the sector are not clear or elaborated in the planning cycle that integrates spending by all key MOA departments/units as well as relevant organizations.
- b. While contingency funds exist in some countries, they are inadequate and are most times routinely diverted for other purposes.
- c. Incentives and financing for DRM and CCA are limited and where exist seem to be limited in scope.
- d. Risk transfer mechanisms in the agriculture are limited in type and coverage.

The following priority actions are proposed:

- i. Support national capacity building in incorporating risk financing in the budget planning cycle of the ministry of agriculture and other key sector stakeholders
- ii. Promote a model suite of incentives for encouraging DRM and CCA integration in the agriculture
- iii. Undertake a review of risk transfer programmes at the national level and share in a good practices guide.

4.3 *Pillar 4: Reduction of Hazards, including climate-related risk*

The Level 2 status of integration on this Pillar has two primary contributing factors:

- a. Limited effectiveness of land use zoning in reducing exposure of the crop, livestock, fisheries and forestry sub-sectors to the impact of hazards; and
- b. Inadequacy of building codes, standards and use in design solutions.

In that regard, it is recommended that Saint Lucia:

- a. Revisits agriculture land use zoning, some of which have been established in the 1950s under initiatives by the Imperial College of Tropical Agriculture and in light of changing hazard dynamics in the hazards landscape of the agriculture sector.

- b. Assess the emergent building codes and standards requirements of agriculture infrastructure and design strategies to enhance standards and facilitative adherence.

Overarching areas of prioritization include enhancement of:

- i. Institutional and Technical Capacity for DRM and CCA in Agriculture;
- ii. Capacity for Comprehensive Risk Management;
- iii. Establishing a Platform for Sustaining the Initiative

4.4 *Pillar 6: Enhancement of Societal and Cultural Capacities for DRM and CCA Activities in the Agriculture Sector*

Six areas of concern were identified on this Pillar. These are:

- a. Inadequacy of government support for DRM and CCA at the community level;
- b. Insufficient presence of grass root organizations, initiatives and participation for promoting DRM and CCA at the community level;
- c. Emergency communication/information links between decision-makers and agricultural producer/fisher folks does not permit timely provision of information, assessment of needs etc.;
- d. Inadequate engagement and partnership for resilience planning at the community level;
- e. Paucity of resilience training and promotion among public and private sector agency engaged in agriculture;
- f. Insufficient promotion of business continuity planning throughout the agriculture sector

The following priority actions are proposed:

- i. Enhance community engagement and partnership for DRM and CCA in the agriculture sector;
- ii. Facilitate and enhance capacity for providing emergency information and needs assessment at the community level;
- iii. Facilitate promotion of resilience training and business continuity planning among agricultural stakeholders

4.5 *Pillar 7: Assessment of Capacity of Agriculture Sector and Sector-dependent Infrastructure to Cope with Disasters*

The objective of this Pillar is to evaluate the resilience capacity of the agriculture sector and related infrastructure to absorb the shocks generated by the impact of hazards, including climate change and thereby informs protective infrastructure planning and interventions for food security and livelihood continuity. Recommendations in this regard include:

- a. Strengthening of capacities for design and implementation of protective infrastructure to mitigate hazard impacts and adapt to climate change.
- b. Evaluate the capacity for sustainability and continuity of the food supply chain during and after hazard impacts and its ability to adapt to a changing climate
- c. Assessment of the administrative capacity for design and execution of resilience-enhancing initiatives in relation to hazard risk including climate change.

4.6 *Establishing a Platform for Sustaining the Initiative*

This SAI represents the initiation of an embryonic process which needs to be deepened and sustained. It must be seen as more than an output but rather as an opportunity to impact the process of capacity development engineering to include the issues of tools standardization, evidence and needs driven program development, resource mobilization and the articulation of criteria for centers of excellence. The following are proposed:

- a. Convening of National Consultations, involving key sector stakeholders to discuss the Country Analysis Report, revisit the assessment inputs and draft prioritized actions for advancing DRM and CCA integration in agriculture. Development partners can support the facilitation of this process where required.
- b. Development of a guidance note to facilitate the country capacity to administer the tool and analyze the data and its application to multi-year program development. This must include a Trainer-the-Trainers component as part of a process for building community and national capacity. The guidance should be packaged as module for use in agriculture training and education institutions.
- c. Agreement on a period for the undertaking of the SAI
- d. Agreement of the process for the formal adoption of the tool as a standardized audit instrument at the national level.
- e. Establishment, or identification, of a single point for the generated data, analyzing and publishing the results over time.
- f. Establishment an Agriculture Resilience Status Report drawing on data for the SAI and other related data.
- g. Establishment of a framework for the development of a prioritized national resource mobilization initiative to support the country in moving up the scale of integration.

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Methodological Framework and Approach to the Development of the Draft Standardized Audit Instrument

The strategy for execution of the project consultancy was premised on the logic that sustainability of intervention outcomes that are aimed at integrating DRM/CCA considerations into agricultural development is hinged on participation and partnerships at the national and local levels. This necessitates the engagement of national and local level organizations not as mere participants, but as partners in the execution of the consultancy. This belief underpins the strategic approach of the project consultancy. Where existing and appropriate the team worked with existing DRM/CCA platforms and other relevant coordination mechanisms in the agricultural sector. This philosophy is based on enhancement and reinforcement.

In the execution of the Consultancy due consideration was given to methodological approaches of previous and current initiatives in addressing mainstreaming of DRM/CCA in general and in agricultural development planning in particular. The team utilized a diversity of methods to undertake this consultancy inclusive of a) literature review, b) stakeholder dialogues and c) consultative feedback fora.

The Team also worked closely with the CARICOM Secretariat, the of Caribbean Disaster Emergency Management Agency (CDEMA) and the FAO with responsibility for oversight of implementation, to ensure that project deliverables were completed in a timely manner, reviewed by the counterparts, updated with any recommended changes and approved by the client and that the project awareness is promoted in all CARICOM States.

A. Contextual Framework for Draft Standardized Audit Instrument

Many guidelines have been developed for incorporating DRM in agriculture and evidence based good practices are being documented or developed. Within the resilience dialogue the challenge was how to frame the CCA/DRM intersection in agricultural planning process. Against this background, the Joint Venture was engaged to design a standardized instrument for assessing the extent to which planning within the agriculture sector integrates CCA and DRM considerations. This represents a major step in the adaptation and contextualization of the guidelines and best practices for the Caribbean Community.

The Joint Venture was of the view that the Audit Instrument, to be designed and tested, whilst baselining the status of DRM and CCA integration into agricultural planning should also provide a facility to:

- Promote an integrated disaster risk management (IDRM) approach in the MOAs and the supporting related products and business processes to strengthen disaster resilience and enhance residual risk management on a strong coordinated platform and systematic approach to DRM;
- Further strengthen MOA DRM capabilities, knowledge, and resources to reduce disaster risk and to respond to disaster events in a timely and cost-efficient manner; and
- Mobilize additional internal and external partnerships and resources for IDRM.

B. Draft Standardized Audit Instrument (SAI)

To a large extent, the SAI was devised to provide a framework for managing the integration of CCA and DRM in Agriculture. It was crafted in a 2-step process:

Step 1 – Identification of key thematic issues

The focus here was the identification of critical CCA and DRM thematic issues that are necessary and sufficient for integration into the agriculture sector in order for the sector to become more disaster resilient. This was done mainly through the review of the findings, conclusions, good practices and recommendations emanating from a suite of integration and mainstream tools and processes.

In the context of the above ten (10) thematic areas or pillars were initially identified. These are presented **Table A1** below along with the associated.

Table A1: Thematic Areas/Pillars Identified for Evaluation with Objectives

Pillar	Objective
Pillar 1: Organize for Resilience in the Sector	Ensure efficient institutional mechanisms within MOA, while covering all aspects of climate change and disaster risk management activities related to the agricultural sector and enhancing coordination with other agencies.
Pillar 2: Identify, Understand and use Current and Future Sector Risk Scenarios	Identify and understand agriculture risk scenarios, and ensure that all stakeholders contribute to, and recognize, these risks.
Pillar 3: Strengthen Financial Capacity for Resilience	Understand the economic impact of disasters and the need for investment in resilience. Identify and develop financial mechanisms that can support resilience activities.
Pillar 4: Pursue Resilient Agriculture Development	Assess the agriculture environment needs and build resilience for disasters.
Pillar 5: Safeguard Natural Buffers to Enhance the Protective Functions Offered by Natural Ecosystems	Identify, monitor and protect the critical ecosystem services that confer disaster resilience benefit.
Pillar 6: Strengthen Institutional Capacity for Resilience	Ensure that all institutions relevant to the agriculture sector resilience have the capabilities they need to discharge their roles.
Pillar 7: Increase Social and Cultural Resilience	Ensure social connectedness and a culture of mutual help that impact the actual outcome of disasters of any given magnitude.
Pillar 8: Increase Infrastructure Resilience	Ensure a better understanding of how critical infrastructure systems will cope with disasters the sector might experience
Pillar 9: Ensure Effective Disaster Response	Ensure effective disaster response.
Pillar 10: Expedite Recovery and Build back Better	Ensure that the needs of the farmers and fisher-folks affected community are placed at the center of recovery and reconstruction process.

Step 2 – Review of instruments/frameworks

An initial review of the ten instruments and tools listed at Step 1 resulted the selection of four instruments/frameworks based on the extent to which they had existing components that addressed guidance for integration themes, measures, indicators and rating scales. This utility context was used to evaluate and rank the four instruments against the ten (10) Pillars.

- a. Tear-fund: Mainstreaming Disaster Risk Reduction
- b. CDEMA: Performance Monitoring Framework for the CDM Strategy 2014-2024
- c. Vulnerability Benchmarking Tool
- d. UNISDR: Disaster Resilience Scorecard for Cities

C. Evaluation and Ranking of the Four Frameworks/ Instruments

A Quantitative Strategic Planning Matrix (**QSPM**) analytical technique was designed to determine the relative ranking of the audit Frameworks. The technique objectively indicates which one of the alternative instrument is the best.

The key components of the **QSPM**: Key Factors, Strategic Alternatives (Frameworks to be evaluated), Weights (assigned to each critical issue within each pillar), Attractiveness Scores, Total Attractiveness Scores and Sum Total Attractiveness Score. These are defined and explained below in the steps required to develop a **QSPM**.

Step 1: Identify and list the key factors. These are the thematic areas/pillars and associated critical agricultural issues to be evaluated

Step 2: Assign weights to each key factor and associated critical mainstreaming agricultural issue within each pillar to be evaluated - The total weight assigned to issues within each pillar must add to 1.00.

Step 3: Identify and List Alternative Strategies (Instruments) that could be implemented. These must be mutually exclusive.

Step 4: Determine the Attractiveness Scores (AS), defined as numerical values that indicate the relative attractiveness of each critical issue within the given set of frameworks. The range of **Attractiveness Score** is:

- 1 = not attractive
- 2 = somewhat attractive
- 3 = reasonably attractive
- 4 = highly attractive

Step 5: Compute the Total Attractiveness Scores (TAS), defined as the product of multiplying the **Weights (Step 2)** by the **Attractiveness Scores (Step 4)** in each row. The **Total Attractiveness Scores** indicate the relative attractiveness of each alternative framework, considering only the impact of the adjacent key factors.

Step 6: Compute the Sum Total Attractiveness Scores. Add Total Attractiveness Scores in each framework column of the QSPM. **Sum Total Attractiveness Scores** reveal which framework that is most attractive. Higher scores indicate more attractive alternative frameworks, considering all the relevant factors that could affect the strategic decisions.

Table A2 presents a summary of the evaluation and ranking of the four audit instrument frameworks.

Table A2: Summary Ranking of Audit Frameworks				
Thematic Area/Pillar	TEAR-Fund Mainstreaming Framework	CDEMA Performance Monitoring Framework	Vulnerability Benchmarking Tool (BT)	UNISDR Resilience Scorecard
Organize for Resilience in the Sector	3	2	4	1
Identify, Understand and Use Current and Future Sector Risk Scenarios	4	2	1	1
Strengthen the Financial Capacity for Resilience	4	2	1	2
Pursue Resilient Agriculture Development	4	2	1	2
Safeguard natural buffers to Enhance the Protective Function Offered by Natural Ecosystems	4	4	2	1
Strengthen Institutional Capacity for Resilience	4	2	2	1
Increase societal and cultural resilience	2	2	4	1
Increase Infrastructure Resilience	4	2	3	1
Ensure Effective Disaster Response	4	3	2	1
Expedite Recovery and Build Back Better	4	1	1	3

Summary Results by Pillar Saint Lucia

PILLAR		Total Score	# ITEMS MEASURED	AVERAGE SCORE
Governance				
Integrated Framework for DRM and CCA	Institutional Structure	3		
	Participation and Coordination	3		
	Contribution of Organization	3		
		9	3	3.00
Alignment Planning to DRM / CCA Frameworks	Stage in policy & budget Approval	3	1	3.00
Mechanism for Information Exchange, Collaboration and Cooperation	Single Integrated Set of Resilience data	3	1	3.00
Institutional Capacity for DRM /CCA Integration and Management	Skills, Experience and Knowledge	2		
	Programme for Assessing Knowledge and Skills Set	2		
	Best Practices Guidelines	4		
	Learning Activities Executed	3		
	Linking Research & DRM /CCA	3		
	Support Legislation	-		
	PR and education Campaign	2		
	Knowledge of Scenario	2		
	Availability of Training	2		
		20	8	2.50
Score - Governance		35	14	2.69
Risk and Vulnerability Assessment and Monitoring	Probability Estimates of Hazards & Perils	3		
	Updates of Exposure & Vulnerability	2		
	Existence of Process to Update	2		
	Critical Assets Identified	3		
	Tools/methodology for VA	3		
	Use of Hazard Maps for Planning	3		
Risk and Vulnerability Score		16	6	2.67
Financial Capacity for DRM /CCA Activities	Financial Plan and Budget	2		
	Existence of Contingency Funds	2		
	Incentives and Financing	3		
	Insurance & other Risk Transfer Mechanisms	2		

PILLAR		Total Score	# ITEMS MEASURED	AVERAGE SCORE
	Mobilization of Financing for CCA /DRM	2		
Financial Capacity Score		11	5	2.20
Reduction of Hazards				
Land use – Effectiveness of Land Zoning	Land at Risks	2		
	Employment at Risk	1		
	Output at Risk	3		
	Population at Risk	2		
		8	4	2.00
Building Codes, Standards and Designs	Applicable Codes for Physical Assets	2		
	Conformity of Codes in Building Practices	3		
	Implementation of Codes	1		
	Sustainable Building Design Standards	2		
		8	4	2.00
Development and Transfer of DRM /CCA Technologies	Integrated Production Systems	3		
	Post-harvest Technologies	3		
	Improved Land Management Practices	3		
	Settlement Guidelines in Hazard Prone Areas	2		
	Improved Models of SALT	3		
	Sustainable Bio-diversity, land & Soil Management	3		
	On-farm Water Conservation	3		
	Improved Livestock Management Systems	3		
		23	8	2.88
Reduction of Hazards Score		39	16	2.44
Identification, Monitoring and Protection of Critical Ecosystem Services	Ecosystem Services Identified and Managed	3		
	System to Monitor Changes in Species Diversity	2		
	Land Policy in Support of Ecosystem Services	2		
Ecosystem Services Score		7	3	2.33
Societal and Cultural Capacities for DRM and CCA Activities				
Grassroots Organizations Coverage, Effectiveness and Connectedness	Presence of At Least One NGO	3		
	Grass Root Organization Meeting Frequently	2		
	Farmers /Fisher folks Contacted Immediately	3		

PILLAR		Total Score	# ITEMS MEASURED	AVERAGE SCORE
	After Event			
	Disaster resilience planning in Communities /Sub-sector	2		
		10	4	2.50
Engagement of Sector Employers	Ministries /Department Pass DRM /CCA information to Employees	3		
	Business Continuity Plan	2		
		5	2	2.50
“Systems of Engagement”	Mobile, Social computer-aided and Non-technology Systems	3	1	3.00
Societal and Cultural Capacities Score		18	7	2.57
Agriculture Sector and Sector Dependent Infrastructure Capacity to Cope				
Adequacy & Effectiveness of Maintenance of Protective Infrastructure	Protective Infrastructure Exist	2		
	Processes Exist to Maintain protective Infrastructure	2		
		4	2	2.00
Adequacy Food Supply Chain Infrastructure and Related Services	FNS of the Country Critical	2	1	2.00
Continuity of all Critical Administrative Functions	# Days Disruption to Critical Administrative services	2	1	2.00
Infrastructure Capacity Score		8	4	2.00
Capacities and Procedures for Effective Disaster Preparedness, Response and Rehabilitation				
Early Warning System	Length & Reliability Of Warning System	2		
	Reach of Warning System	1		
		3	2	1.50
Event Management	Existence of Formulated Plans	3	1	3.00
Equipment and Supply Needs	Equipment and Supply Needs Defined	2	1	2.00

PILLAR		Total Score	# ITEMS MEASURED	AVERAGE SCORE
Food, Staple Goods and Fuel Supply	Food Gap	2		
	Staple Gap	4		
	Fuel Gap	4		
		10	3	3.33
Interoperability and Inter-agency Compatibility	Ability to Cooperate at all Levels	3		
	Existence of Emergency Operation Centre With SOPs	3		
		6	2	3.00
Drills	Testing Of Plans Annually	2		
	Effectiveness of Drills	2		
		4	2	2.00
Post Event Recovery Planning	Comprehensive Post Event Recovery Plans	3		
	Post Event Arrangements for Aid	3		
	Standardized Format for Information collection	3		
	Response, Recovery and Rehabilitation Projects Implemented	2		
	Post-mortem in Event response and Post-event Planning	3		
		14	5	2.80
Disaster Preparedness Score		42	16	2.63
St. Lucia Score		176	70	2.51

Annex III

Summary of Agriculture DRM and CCA Issues and Gaps Identified – Saint Lucia

Thematic Areas/Pillars	Gaps in Agriculture DRM and CCA Integration within the Agriculture Sector	Scored obtained
1. 0: Governance – Institutional and technical capacities for climate change adaptation (CCA) and disaster risk management (DRM) in Planning and Policy Frameworks and Coordination Mechanisms at all levels of the Agriculture Sector.	Widespread lack of multiple skill or experience types in many organization	2
	Programme for assessing the knowledge and skill sets for the MOA to pursue a DRM and CCA mandates exists. However, it has some major flaws to the point where overall value is limited or it has become significantly obsolete	2
	Education and awareness campaign uses a limited number of the media/channels; also weighted to least informative such as radio and poster ads.	2
	Knowledge of “most probable” scenario and knowledge of key response and preparation steps is not widespread throughout the sector – 25-50% known	2
	Training offered and available to the entire agriculture sector population is ad hoc, where training classes address some issues for some area of the agriculture sector	2
2.0: Assessing and monitoring risks and vulnerabilities, and enhance early warning systems	Partial scenarios setting out sector-wide exposure and vulnerability from each hazard level exist, but they are not comprehensive or complete; and /or are outdated ; and/or are not reviewed by a 3 rd party	2
	Processes to update hazard estimates and exposure and vulnerability assessments and asset inventory exist. However, they have some major flaws to the point where overall value is impaired and original risk assessments are becoming significantly obsolete on a timely basis.	2
3.0: Assessing the Financial Capacity for the Development and Implementation of	Multiple financial plans, with a reasoned set of priorities, from different agencies exist. However, the plans are poorly coordinated and it is unclear whether	2

Thematic Areas/Pillars	Gaps in Agriculture DRM and CCA Integration within the Agriculture Sector	Scored obtained
Disaster Risk Management and Climate Change Adaptation activities in the Agriculture Sector	they are consistent or will together deliver the required disaster resilience Multiple	
	Contingency Fund and Credit facility exist, but is only 0-25% adequate, and routinely diverted for other purposes	2
	Between 25-50% of likely losses from “most probable” scenario are covered sector-wide by insurance and other risk transfer mechanisms/instruments	2
	Sector knows of some funding sources and alternative financing strategies, uses these occasionally, but some needed expenditures are not made even if funds are available	2
4.0: Reducing hazards, including climate related risks and underlying vulnerabilities in crop, livestock, fishery, and forestry sub-sectors	High level of land at risk - between 2.5-5% of agricultural land at risk from “most probable” scenario	2
	Very high level of employment at risk – between 5-7.5% of employment at risk from “most probable” scenario	1
	High level of population at risk – between 5-7.5% of the farming and fishing population displacement from “most severe” scenario	2
	Limited existence of applicable codes for all physical assets, with damage of between 5-10% of all physical structures and assets expected in the ‘most probable’ scenario	2
	Building Codes are between 60-70% implemented on applicable structures	1
	Scattered use of green building standards developing on the developer’s interest, but interest is expanding	2
	There is scattered use of the guidelines on settlements in hazard prone areas and promotion of investments in river training, but interest is expanding	2
5.0: Identifying, monitoring and protecting critical ecosystem services that confer a disaster resilience benefit to the agriculture sector	Generalized decline in ecosystem service status	2
	Land use policies (or lack thereof) may lead or have led to damage to one or more critical ecosystem services	2

Thematic Areas/Pillars	Gaps in Agriculture DRM and CCA Integration within the Agriculture Sector	Scored obtained
6.o: Enhancing Societal and cultural capacities for Disaster Risk Management and Climate Change Adaptation activities in the Agriculture Sector	Grass roots organization meetings cover between 25-50% the farming/fishing communities. However, there are significant gaps in roles and less than the required formal roles-holders in attendance. No meetings in the rest of the communities	2
	Lack of disaster resilience planning with or for the relevant farming communities and sub-sectors covering the span of vulnerable populations, with multiple major gaps in coverage or effective engagement	2
	Limited business continuity planning - 30% of agriculture and agriculture related employers have some form of business continuity plan based on planning assumptions validated by the sector	2
7.o: Assessing Agriculture Sector and Sector Dependent Infrastructure Capacity to Cope with Disasters the Sector might Experience	Protective infrastructures deficient	2
	Inadequacy of maintenance protective infrastructure, with non-audited inspections carried out every 2 years or more. There is also a backlog of remediation issues	
	The food supply chain infrastructure would allow significant damage, impact from “most possible”, and potentially catastrophic damage from the “most severe	2
	Some significant disruptions in critical administrative functions are expected (for up to 48 hours or less) under “most probable” scenario	2
8.o: Capacities and Procedures for Effective Disaster Preparedness, Response and Rehabilitation	Early warning time is less than technology permits and there may also be some false positives: reliability of warnings may therefore be perceived as questionable	2
	The reach of the early warning system is limited, with only 50-70% of farming/fishing population reached	1
	Serious shortcomings in the definition of equipment and supply needs for “most probable” and “most severe” scenarios	2
	The negative outcome of the food gap, which is estimated at 48 hours	2

Thematic Areas/Pillars	Gaps in Agriculture DRM and CCA Integration within the Agriculture Sector	Scored obtained
	The limited testing of plans, with less than annual drills	2
	The ineffectiveness of drills, with significant skills or knowledge gaps revealed	2
	general inadequacy in the application of the principle of building back better in the use of response, recovery and rehabilitation projects as an entry point to initiate better disaster reduction (short-term) and climate change (long-term)	2