

COUNTRY REPORT FOR SAINT VINCENT AND THE GRENADINES

Assessment of DRM and CCA considerations in the Agriculture Sector



*Prepared by
Collymore, Little and
Spence Joint Venture*

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

Contract Reference no.: 10thEDF/AAP/SER/02/15-009

October 2016

Table of Contents

| | |
|---|-----|
| Acknowledgements | I |
| Acronyms | II |
| Executive Summary | III |
| 1.0 INTRODUCTION | 1 |
| 1.1 The Importance of the Agriculture Sector to SVG Economy | 1 |
| 1.2 Vulnerability of the Agriculture Sector to Natural Hazards and Climate Risks | 7 |
| 1.3 <i>Justification of the Need to Accelerate the Mainstreaming of DRM and CCA in the Agriculture sector</i> | 9 |
| 2.0 DEVELOPMENT OF ASSESSMENT METHODOLOGY FOR INTEGRATION OF DRM AND CCA CONSIDERATIONS INTO AGRICULTURE SECTOR | 11 |
| 2.1 <i>Context of the Study</i> | 11 |
| 2.2 <i>Purpose</i> | 13 |
| 2.3 <i>Methodological Framework</i> | 13 |
| 2.4 <i>Limitations of the Study</i> | 16 |
| 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 <i>Risk and Vulnerability Assessment and Monitoring</i> | 23 |
| 3.4 <i>Assessment of the Financial Capacity for the Development and Implementation of DRM and CCA activities</i> | 24 |
| 3.5 <i>Reduction of Hazards, including Climate Related Risks and Underlying Vulnerabilities in Crop, Livestock, Fishery, and Forestry Sub-sectors</i> | 25 |
| 3.6 <i>Identification, Monitoring and Protection of Critical Ecosystem Services</i> | 27 |
| 3.7 <i>Enhancement of Societal and Cultural Capacities for DRM and CCA Activities in the Agriculture Sector</i> | 28 |
| 3.8 <i>Assessment of the Agriculture Sector and Sector Dependent Infrastructure Capacity to Cope with Disasters</i> | 29 |
| 3.9 <i>Capacities and Procedures for Effective Disaster Preparedness, Response and Rehabilitation</i> | 29 |
| 3.10 <i>Discussion of Main Findings and Gaps in the Integration of DRM and CCA Measures within Agriculture</i> | 31 |
| 4.0 CONCLUSIONS AND RECOMMENDATIONS | 31 |
| REFERENCES | 40 |
| ANNEXES | 43 |

ACKNOWLEDGMENTS

This Country Analysis Report on the Assessment of DRM and CCA considerations in the Agriculture Sector would not have been possible without the financial support of the European Development Fund (EDF) through the Agriculture Policy Programme (APP) implemented by the Caribbean Agricultural Research and Development Institute (CARDI) and the CARICOM Secretariat (CCS).

The Joint Venture appreciates and acknowledges the invaluable input of the national stakeholders from the public and private sector in the CARICOM Member States who supported the development of the draft Standardized Audit Instrument (SAI) and populated the instrument with information that was analyzed to prepare this report.

We especially thank the participants who attended the Regional Validation Workshop for their engagement, focused and insightful comments and recommendations that have enhanced the refinement of the draft the SAI.

The diligent work of the Review Group of the CARICOM Secretariat, CDEMA Coordinating Unit and FAO who provided the necessary oversight and quality assurance with the assistance of the review team is also acknowledged.

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.

CLS Joint Venture
October 2016



ACRONYMS

ACRONYMS

| | |
|----------|--|
| A&B | Antigua and Barbuda |
| 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 |
| SVG | St. Vincent and the Grenadines |
| 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, St Vincent and the Grenadines (SVG) has been impacted by weather-related hazards such as strong winds, floods and droughts. It is also exposed to geological hazards such as volcanic eruptions, earthquakes and mass wasting. These events have increasingly impacted livelihoods, damaged infrastructure and disrupted the provision of essential services. The frequency of these events is largely a function of geographic location. Managing their impacts has necessitated the commitment of an increasing share of national budget to recovery and reconstruction, thereby exerting a growing burden on the national economy.

The agriculture sector is particularly susceptible to the impact of these hazards, the increasing frequency and magnitude of which have had devastating and dislocating impacts on the sector. For instance, from 2010-2014, weather-related hazard impacts resulted in losses in excess of US\$600 million, equating to approximately 35 percent of GDP over the period. Much of this damage was accounted for by the agriculture sector.

The issue of disruption and devastation to national productive sectors, including agriculture is a common experience across the Caribbean Community (CARICOM) and is a key consideration in making environmental resilience a strategic priority of its Operational Plan. It recognizes the vulnerability of CARICOM States such as Saint Vincent and the Grenadines to hazard impacts, including those of climate change and effects of these phenomena, on the agricultural sector. Understanding how the issues of Disaster Risk Management (DRM) and Climate Change Adaptation (CCA) are integrated within planning in the sector is seen to be an important first step in framing priority action to enhance resilience.

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 in the agricultural sector. It can provide direction for programmes to institutional capacity building for the management of hazard risks in the agricultural sector in Saint Vincent and the Grenadines.

This Report presents the results of the application of a pilot SAI in Saint Vincent and the Grenadines.

Standardized Audit Instrument (SAI)

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 Vincent and the Grenadines in particular.



Even as the country seeks to enhance the DRM integration in agriculture production, 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 is how to frame this CCA/DRM intersection in the agricultural planning process. This is the background against which the regional Standardized Audit Instrument, that seeks 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:

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 for meeting the design criteria but suggested a strong preference for the UNISDR Disaster Resilience Scorecard. Developed to provide cities with a set of assessments that would allow them to understand how resilient they are to natural hazards, the Disaster Resilience Scoreboard 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) to be used to assess 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 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. This was accompanied concept articulation brief to set the context of the design and other considerations.

Administration

The Standardized Audit Instrument was disseminated to Member States, including Saint Vincent and the Grenadines 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-DRMCCCAinAgri>). 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 Vincent and the Grenadines (SVG) were compiled into a draft Country Analysis Report and subsequently shared with the Ministry of Agriculture national focal point with the expectation that there will be discussion and feedback. The data from this and ten (10) other Country Analysis Reports provided the inputs for a Regional Analysis Report (RAR) that summarized the findings and issues relating to the integration of DRM and CCA in the sector. The RAR was discussed among key stakeholders at a Regional Validation Workshop, September 22-23, 2016, where an opportunity was provided for countries and other stakeholders to feedback on the instrument design, the completion experience and recommendations for enhancement.

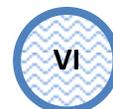
Summary Results

A scale was elaborated to indicate the level of integration. Four levels were identified as follows:

- a. Level 1 (0.00-1.49) - Little or No Progress’.
- b. Level 2 (1.49-2.99) -Awareness of Needs’.
- c. Level 3 (3.00-4.49)- Development of Solutions’.
- d. Level 4 (>-4.49) -‘Full Integration’.

With an assessed Overall Score of 2.63, the integration of DRM and CCA considerations into the agriculture sector of SVG is 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 may have already decided to address. In spite of this increasing recognition, the Level 2 Status of integration indicates observed weaknesses all Pillars on which the assessment is based.

SVG has an established platform for advancing DRM and CCA integration in the 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.



The strongest areas of integration relate to risk and vulnerability assessment, identification, monitoring and protection of ecosystem services, governance and institutional and technical capacities for DRM. This distribution of relative strength across assessed pillars is an indication that SVG has not only laid the foundation for effective integration of DRM and CCA considerations into the agriculture sector but has been advancing with the integration process to the point of attaining a Level 3 status on at least one of the Pillars.

The analysis conducted, results obtained and the gaps identified suggest the need for SVG to establish agreed priority actions 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.

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 SVG in particular.

The anticipation is that DRM and CCA integration will be elevated to the highest levels of agriculture development priorities in SVG. 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 this dynamic. However, it is our feeling that this detailing is important in framing the integration picture. Once the national dialogue takes place the country can define its prioritized actions and the connections across them

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 SVG.

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



Enhanced Capacity for Comprehensive Risk Management

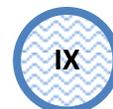
The objective is to improve climate risk and vulnerability assessment tools and methods, climate information products and early warning systems customized to the needs of farmers and other agriculture dependent communities.

The current resources for monitoring and assessing climate risk and vulnerability in SVG are insufficient and need to be better harmonized and harnessed to allow informing of policy, extension practice and behaviour change.

The actions proposed below can contribute to movement in the desired the direction and use of science and technological outputs to inform the DRM/CCA agenda.

- a. Improve climate impact, risk and vulnerability assessment methodologies and transfer to MOA and relevant stakeholders.
- b. Strengthen technical capacity to apply needs based climate and weather information products and early warning systems in agriculture sector.

- c. Identify information needs of farmers in the various agro-ecological zones relevant to DRM and CCA.
- d. Empower 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.
- e. Develop a 'good practice' database at the national Coordinating Unit and link with CDEMA/CARICOM Secretariat with linkages to MOAs and other sector stakeholders.
- f. Integrate DRM and CCA and sustainable land management into farmer field school approach and empower agricultural extension services to demonstrate and disseminate good practices.
- g. Include DRM and CCA issues in curricula of MOAs, agricultural colleges and vocational schools; and
- h. Ensure strategic dissemination and sharing of key reports and information material related DRM and CCA.



Pillar 2: 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
- b. Inadequacy of building codes, standards and use in design solutions.

In that regard, it is recommended that SVG:

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

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 into 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.

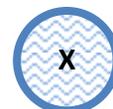
Pillar 6: Enhancement of Societal and Cultural Capacities for DRM and CCA Activities in the Agriculture Sector

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 agencies 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.

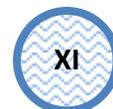


Pillar 7: Assessment of Capacity of Agriculture Sector and Sector-dependent Infrastructure to Cope with Disasters

The objective of this Pillar is to evaluate the resilience capacity of the agriculture sector and related infrastructures to absorb the shocks generated by the impact of hazards, including climate change and thereby, inform 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 sector in moving up the scale of integration.

COUNTRY ANALYSIS REPORT FOR ST VINCENT AND THE GRENADINES: Assessment of DRM and CCA considerations in Agriculture Sector

1.0 BACKGROUND

This document presents the background, context, purpose and methodological approach, results and discussions, and the conclusions and recommendations for the Saint. Vincent and the Grenadines 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 to and damage and loss caused by natural hazards impacts. It highlights the purpose of the project as 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. Vincent and the Grenadines 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 St. Vincent and the Grenadines Economy*

In the past, St. Vincent and the Grenadines 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 country is a Small Island Developing State (SIDS) with all the inherent challenges, such as a narrow economic base and high vulnerability to external shocks and natural disasters.



The agricultural sector, although fluctuating in growth over the last five years (2011 – 2015)¹ with a significant downward tendency, continues to play an important part in the economic life of the country through its contribution to GDP, employment, foreign exchange earnings and more recently and importantly, through its linkages and impacts on the health and tourism sectors and to the achievement of food and nutrition security for the population. In 2015 the agricultural sector's (excluding forestry) contribution to Gross Domestic Product (GDP) was estimated at only 2.77%, compared to its contribution of 6.00% in 2008. **Table 1** presents national and agriculture sector growth rates as well as agriculture sector contribution to GDP over the last five years (2011 – 2015).

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 | (0.42) | 1.38 | 1.67 | 0.65 | 1.45 |
| Agriculture GDP Growth Rate | (0.16) | 1.00 | 5.85 | 2.88 | 4.68 |
| Agriculture contribution to GDP | 2.53 | 2.52 | 2.63 | 2.69 | 2.77 |

Source: World Bank Database

Available disaggregated data for the agriculture sector shows that the banana industry contribution to GDP declined significantly over the period under review, from a contribution of 0.87% of GDP in 2008 to 0.10% of GDP in 2012. Banana exports for 2013 were estimated at low of 472.1 tons, valued at EC\$ 514,800 and represented less than 3% of total Windward Island banana exports making the country the lowest exporting country in the OECS². The declined in the fortunes of the banana industry has been accompanied by significant growth in the other crops sub-sector, represented by plantain, root crops and vegetable industries. The livestock production has seen an increased production of pork, mutton, broilers, table eggs and rabbits.

Table 2 below presents the contribution of different primary agricultural sector activities to GDP and their evolution (2008-2012).

¹World Bank Data

² Organization of Eastern Caribbean States

Table 2: Agricultural Activity and Contribution to the GDP

| Agricultural Activity & Percentage Contribution | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---------|---------|---------|---------|-------|
| Banana - GDP | 12.61 | 10.77 | 6.13 | 1.23 | 1.35 |
| % Contribution to Total GDP | 0.87 | 0.76 | 0.44 | 0.09 | 0.10 |
| Rate of Growth | (9.86) | (14.60) | (43.05) | (80.00) | 10.00 |
| Other Crops - GDP | 54.27 | 56.28 | 56.61 | 50.95 | 51.97 |
| % Contribution to Total GDP | 3.75 | 3.98 | 4.07 | 3.67 | 3.67 |
| Rate of Growth | (2.37) | 3.71 | 0.59 | (10.0) | 2.00 |
| Livestock -GDP | 19.94 | 31.17 | 17.09 | 15.38 | 16.92 |
| % Contribution to Total GDP | 1.38 | 2.20 | 1.23 | 1.11 | 1.20 |
| Rate of Growth | 11.05 | 56.29 | (45.16) | (10.00) | 10.00 |
| Fishing - GDP | 4.78 | 7.45 | 6.06 | 5.88 | 5.97 |
| % Contribution to Total GDP | 0.33 | 0.53 | 0.44 | 0.42 | 0.42 |
| Rate of Growth | (40.16) | 55.80 | (18.67) | (3.00) | 1.50 |



Approximately 14, 725 acres of land is used for agricultural production in Saint Vincent and the Grenadines according to the most recently conducted Agricultural census of 2000 (**Table 3** below).

Table 3: Land Use Distribution

| Land use | Acres | % |
|---------------------------------|---------------|------------|
| Temporary crops | 3 196 | 21.7 |
| Grown Grassland | 1 582 | 10.7 |
| Cultivated Pasture | 284 | 1.9 |
| Fallow | 1 202 | 8.2 |
| Permanent Crops | 3 945 | 26.8 |
| Forest /Woodland | 401 | 2.7 |
| All Other | 4 115 | 28.0 |
| Total Agricultural Lands | 14 725 | 100 |

Source: St. Vincent & the Grenadines Agricultural Census, 2000

Ninety-six per cent of the farming land is privately owned, resulting from deliberate government policy which mandated that several large government owned estates be subdivided and passed on to farmers on a lease to purchase agreement during the land reform period in the late 1980's early 1990's.

Holdings are generally small, with 90 per cent of the total number of parcels being less than 5 acres. Forty-two per cent of the agricultural land is under permanent crops including bananas and plantains and a variety of fruit trees. Temporary crops occupy about 15 per cent of the agricultural land and include a variety of root crops and vegetables. Pasture, forestry (25-30 percent), housing and other infrastructural development occupy the rest of the land.



According to the Ministry of Agriculture the numbers of holdings in the country are:

| Activity | # of holdings |
|------------------|---------------|
| Vegetables | 1 743 |
| Root crops | 2 713 |
| Bananas/Plantain | 994 |
| Tree crops | 415 |
| Livestock | 1 327 |

The agricultural efforts in Saint Vincent and the Grenadines have focused both on crop and livestock production and in the majority of farming operations, mixed farming was the dominant production strategy used. Crops grown included arrowroot, other root and tuber crops and bananas. Livestock included cattle, sheep, goats and pigs. Together these crops and livestock enterprises earned significant foreign exchange and were collectively the main stay of the National economy.

Saint Vincent and the Grenadines, like other countries in the Caribbean, is at a crucial period of development. Having weathered the early challenges of a post-colonial economy, this country has had to address several financial, economic, political and other factors, including natural forces, which have adversely affected its quest to improve the welfare of its citizens.

Indeed, these challenges have significantly impacted on agricultural growth and development, and may be categorized under five broad headings:

1. low general economic growth rates and high debt to GDP ratios;
2. loss of export markets for the main agricultural sector product (bananas) and loss of domestic markets to rising food imports,;
3. rising rural unemployment and the decline of rural agricultural industry;
4. rising health care costs due to changing consumption habits and demographic; and
5. Increasing vulnerability to climate change and external shocks that require more Government resources to be devoted to social programmes to protect food security.



The negative impacts of climate change and the country's increased vulnerability to natural hazards caused the relevant authorities in Saint Vincent and the Grenadines to put measures in place which allows the country to more effectively respond to these challenges.

Notwithstanding, the current dynamic of the international economy presents the country with a momentous opportunity to confront these challenges with bold, decisive, yet well-ordered planning.

The development challenges to the food, agriculture and natural resources system in Saint Vincent and the Grenadines are no different from other CARICOM states. A major policy challenge to the Government is how to transform risk averse, 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 is 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 Saint Vincent and the Grenadine'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 tariffs in the countries. Domestic limitations, including institutional, structural, economic and technological factors have also played a major role in the lack of productivity and competitiveness in agriculture in the country.

The fundamental question arising relates to the country's capacity to effect the necessary adjustments in time. The high national food import bill is another major concern for SVG and which 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 a macro context, the ongoing National Economic and Social Development Plan for Saint Vincent and the Grenadines covers the period 2013-2025, and outlines the country's long-term strategies for national development. The Plan offers a vision for improving the quality of life for all Vincentians and is anchored on the achievement of the following over-arching goals:

- a. High and sustained levels of economic growth
- b. Reduced unemployment and poverty levels
- c. Improved physical infrastructure and environmental sustainability
- d. High levels of human and social development
- e. A peaceful, safe and secure nation
- f. A technologically advanced work-force
- g. A deep sense of national pride and cultural renaissance
- h. Regional integration
- i. Enhanced global solidarity

This Plan envisages the continued development and strengthening of national institutions and the necessary technical and administrative capacity to deal with threats, in order to capitalize on opportunities presented. The vision set for Saint Vincent and the Grenadines, and the proposed development strategies for the country will, if carefully pursued, lead to balanced, comprehensive and sustainable development.



Five strategic goals are advanced to realize the vision that has been articulated. These goals are shown below:

1. Re-engineering Economic Growth
2. Enabling Increased Human and Social Development
3. Promoting Good Governance and Increasing the Effectiveness of Public Administration
4. Improving Physical Infrastructure, Preserving the Environment and Building Resilience to Climate Change
5. Building National Pride, Identity and Culture

Strategic Goal 4 of the Plan is aimed at addressing issues related to improving physical infrastructure, preserving the environment and building resilience to climate change. This goal is extremely critical to the sustainable development of SVG as the geographic location exposes it to both natural and man-made hazards. Given this vulnerability, there is the need to enhance the disaster preparedness and mitigation mechanisms. This is an important consideration in development planning over the medium to long term and will be addressed through several initiatives. These include strengthening the national capacity to respond to and mitigate disasters, enforcement of building codes, participation in regional initiatives regarding catastrophic risks and institutional strengthening.

The Plan proposes several adaptation measures to reduce future restoration costs and to protect the natural environment. Public education and awareness of the potential negative effects of climate change would be at the forefront of this Plan.

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

As indicated above, natural hazard impacts are recognized in Saint Vincent and the Grenadines 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 therefore it is exposed to hurricanes and tropical storms. The high level of vulnerability of the agriculture and fisheries sectors was evident in the devastation caused by the impacts of Hurricane Tomas in 2010, the floods in April 2011 and December 2013, and prolonged droughts in 2010 and 2014.

Overall the five natural disasters resulted in loss and damage to SVG amounting to 600 million Eastern Caribbean dollars (US\$222 million), or almost a third of the country's gross domestic product.



The vulnerability of the agricultural sectors in SVG 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 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 4** shows a scenario of the impact of disasters and climate change on agricultural sectors.

Table 4: Sectoral Impact of Disaster and Climate Change

| Sector | Natural Hazards | Climate Change |
|------------------------|---|---|
| Agriculture | <ul style="list-style-type: none"> i. Fruits and vegetables are exposed to flood damage in low lying areas ii. Plantain and banana crops are especially vulnerable to wind and flood damage | <ul style="list-style-type: none"> a. 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. b. Banana, plantain and tree crops and emerging vegetable crops face same threats as above |
| Fisheries | <ul style="list-style-type: none"> i. Marine products are at risk to be affected by tropical storms and storm surges ii. Habitats such as sea grass beds, mangroves, and coral reefs are vulnerable to storms and siltation | <ul style="list-style-type: none"> a. Traditional catches are expected to migrate as St. Vincent and the Grenadines water warms up b. 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"> i. Saline intrusions during storms affect Kingstown, as well as other islands and coastal plains ii. There is inadequate drainage and sanitation around Kingstown City during heavy rain | <ul style="list-style-type: none"> a. Sea level rise has intensified the saltwater intrusion problem, particularly on offshore islands and coastal plains b. 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 SVG³, 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 5** 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 overcomes the limitations associated with estimates 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 SVG must urgently plan and prioritize investments and strategies for managing disaster risk.



**Table 5: Probabilistic Risk Assessment Results– SVG
Average Annual Loss (AAL) by hazard**

| Hazard | Absolute [Million US\$] | Capital stock[%] | GFCF [%] | Social exp[%] | Total Reserves [%] | Gross Savings [%] |
|--------------------------|--|----------------------------------|---------------------|--------------------------|-----------------------------------|------------------------------|
| Earthquake | 2.79 | 0.105 | 1.587 | 7.490 | 2.065 | -6.042 |
| Wind | 6.58 | 0.249 | 3.742 | 17.665 | 4.871 | -14.250 |
| Storm Surge | 15.11 | 0.571 | 8.594 | 40.564 | 11.185 | -32.722 |
| Tsunami | 0.01 | 0.000 | 0.006 | 0.027 | 0.007 | -0.022 |
| Multi- Hazard | 24.49 | 0.926 | 13.928 | 65.746 | 18.128 | -53.035 |

Effects of climate change are an emerging issue for SVG 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.

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

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.

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

The clear link between shocks and hunger reveals 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 the country. Given this scenario, as well as other complex global trends and constraints, the agriculture sector in SVG is challenged to transition towards farming systems that are more productive while preserving the natural resource base and vital ecosystem services, use inputs more efficiently, have less variability and greater stability in their outputs, and more are 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 disasters 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 SVG.

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

2.3 Context of the Study

Building environmental resilience is a strategic priority of the Caribbean Community Operational Plan. 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. 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.



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

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.

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 Report of the Joint Venture of Collymore, Little and Spence, frames an instrument that facilitates an assessment, with defined areas of prioritization, to guide the enhancing of the sector resilience to CCA and DRM.

2.2 Purpose

The 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 SVG.

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 CARICOM Member States, including SVG, 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 Caribbean Disaster Emergency Management Agency (CDEMA) and the FAO which had responsibility for oversight of implementation. Their roles included ensuring that project deliverables were completed in a timely manner, reviewed by the counterparts, updated based recommended changes and approved by the client. The promotion of the project awareness in all CARICOM States and among stakeholders was also part of the role of the oversight Technical Review Group.

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 background against which the pilot regional Standardized Audit Instrument was designed. It 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:

- 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 and guidelines from the Sendai Framework for Action.

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. Whilst the 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. It was utilized as the basis for the development of the pilot 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

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

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 and country experiences.

This 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 the integration of CCA and DRM into the planning process.

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 6** presents a summary of the agriculture DRM and CCA issues and items selected for assessment.



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 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 Vincent and the Grenadines.

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

Table 6: 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 Exercising | 2 |
| | 8.7 Post event recovery planning – pre-event | 5 |



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 SVG through the online pilot of the 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 7**.

Table 7: 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 SVG. 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.

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 SVG, with an assessed **Overall Score of 2.63**. 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)*, *Capacities and Procedures for Effective Disaster Preparedness (Pillar 8)* and, *Reducing hazards and Underlying Vulnerabilities (Pillar 4)*. The main factors influencing the realized **Level 2** score can be gleaned from **Figure 1** and **Annex II**. These are discussed further below.

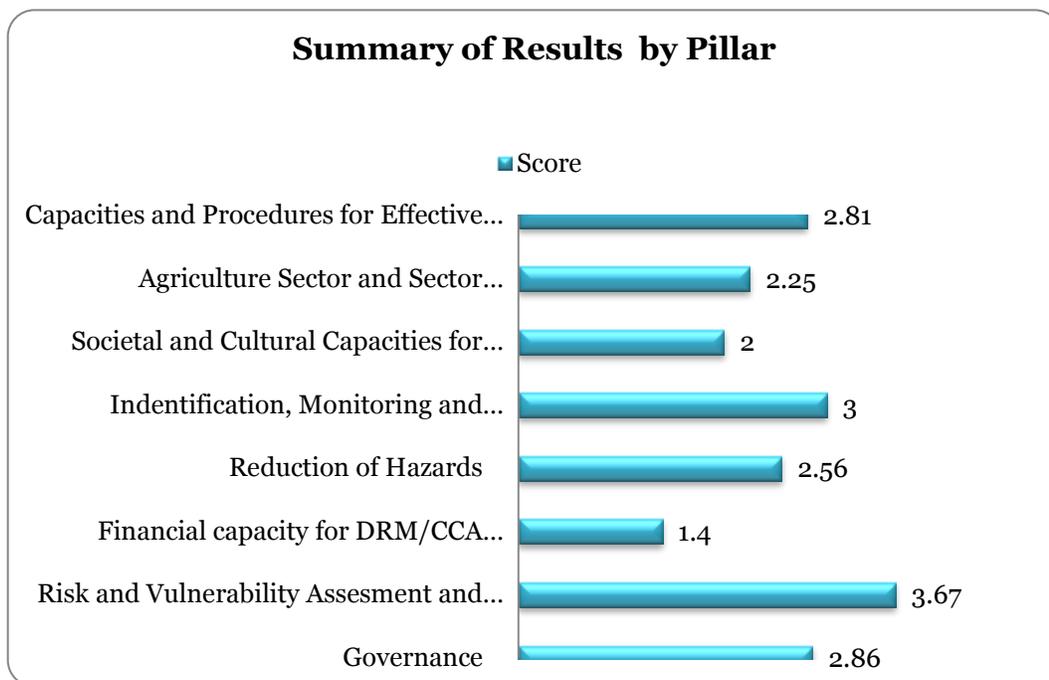


Figure 1: Summary of Results (by Pillar)

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 result obtained from the analysis of the data on Governance shows 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 SVG is at **Level 2**, with a realized overall **score of 2.89** (Figure 2). However the mechanisms for requisite information transfer and the alignment of national planning initiatives to DRM and CCA need attention. This score is heavily influenced by limitations in the institutional capacity for DRM and CCA integration and management of DRM and CCA issues in Agriculture.

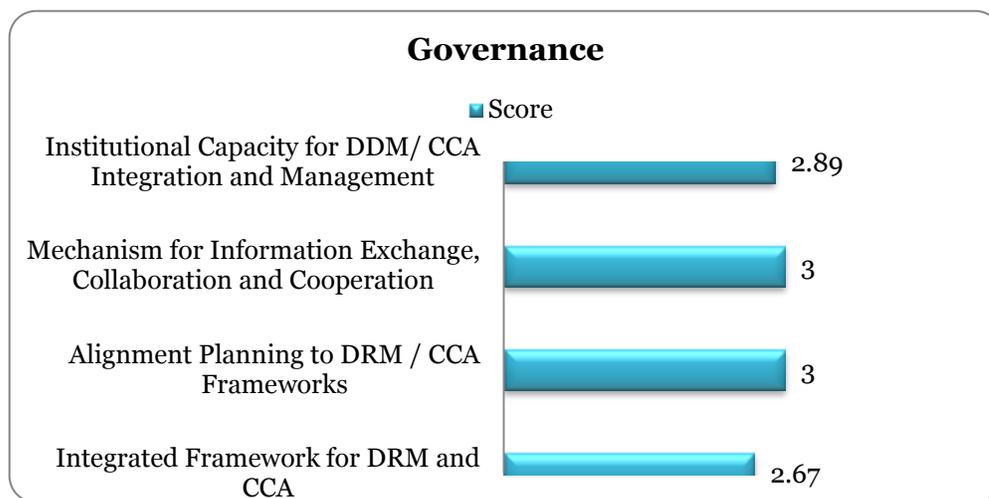


Figure 2: Results for Pillar 1

3.2.2 National Integrated Framework for DRM and CCA

The national integrated framework for DRM and CCA in SVG is assessed at Level 2 determined by the outcome **score of 2.67**. This level of mainstreaming is characterized by:

- a. Limitations in the single point of coordination with agreed roles and responsibilities.
- b. The limited participation and collaboration among the relevant agencies. This subject is receiving significant attention.
- c. The under-leveraging of the private sector's contribution to the coordination process.

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**. There are identifiable actions to consolidate the gains made in Level 2 and 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. 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 at a **Level 3**, with a realized **score of 3.00**. However, what is needed is a single integrated set of resilience data for stakeholders, including collaborators, farmers, fisher-folks, community organizations and the general public. The absence of this common data platform results in organizations having to search around to generate complete data platforms 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 2.89** as can be gleaned from **Figure 3**. The country has a growing level of awareness and understanding of the value and requirements of integration, and recognizes the need for action and may also have decided to take action.

Such action must address the constraints below if it is to advance beyond this level:

- a. The limitations in coverage of the inventory of available skills and experience related to DRM and CCA in agriculture and the acknowledged lack of multiple skills or experience in many organizations;

- b. The updating of the agriculture related legislative framework to support DRM and CCA in Agriculture The broadening of the media channels used for education and awareness which are heavily weighted to the least informative ones such as radio and poster ads; and
- c. The limited knowledge of the ‘most probable’ scenario, and applicable response and preparation by farming and fishing

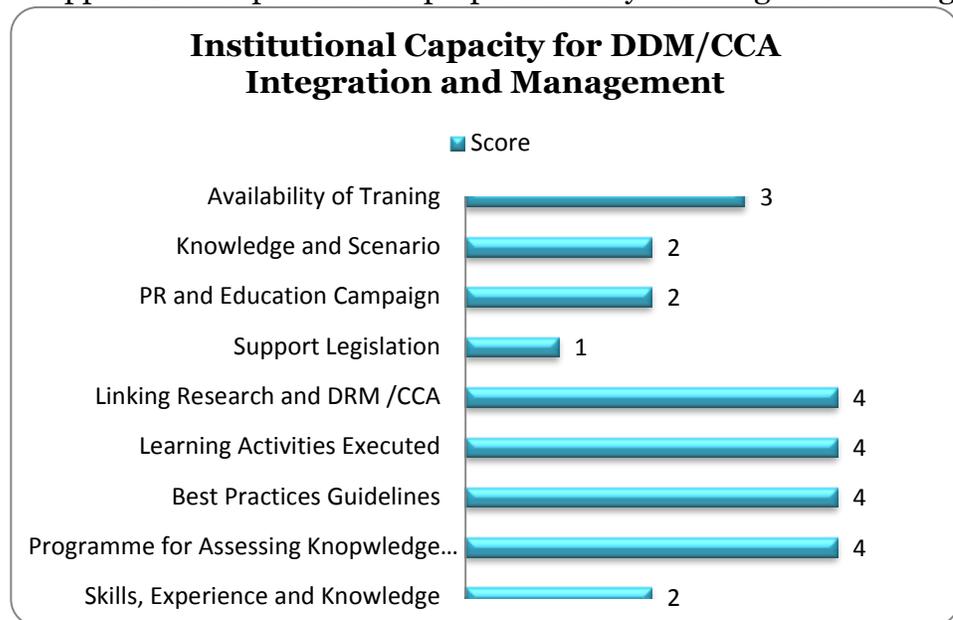


Figure 3: Results for Institutional Capacity for DDM/CCA Integration and Management Thematic Area

To advance integration under this element the following will need to be addressed:

- a. Review and update the programme for assessing the knowledge and skill sets for the MOA to pursue a DRM and CCA mandates to ensure that there is a system for addressing gaps exists.
- b. The education and awareness campaign utilizes only three media/channels, which is heavy weighted to the least informative ones such as radio and poster ads.
- c. Knowledge of the ‘most probable’ scenario, and applicable response and preparation appears to be generally known by a limited farming and fishing communities (between 25 -50%). and
- d. 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.

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 in the intermediate stage (**Level 3**) based on derived **score of 3.67** as can be gleaned from **Figure 5**.

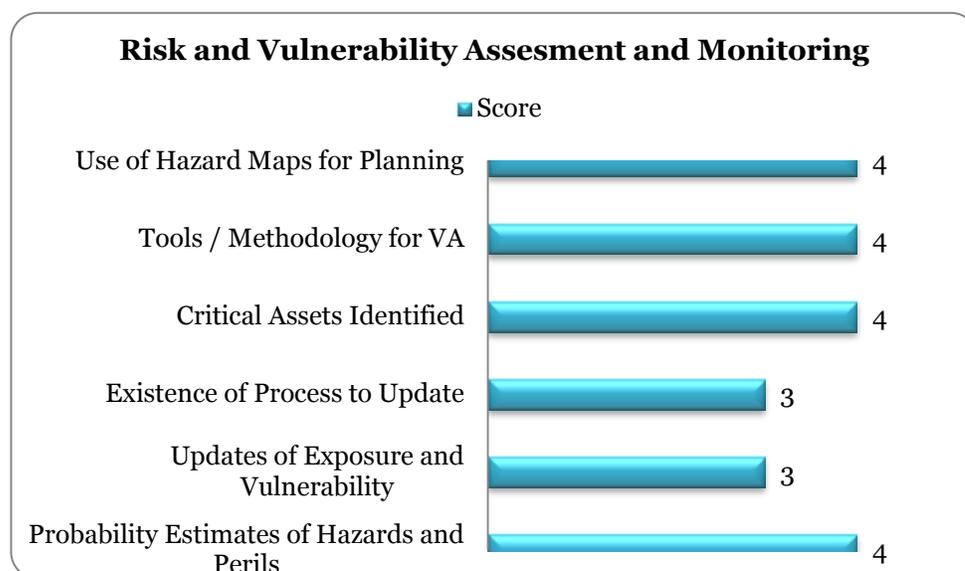


Figure 4: Results for Pillar 2

The main factors contributing to this fairly good score are:

- a. Estimates of probabilities of known hazards or perils and their extent exist, albeit with some shortcomings in terms of when updated, level of review, or level of acceptance.
- b. Critical agricultural assets and failure chains are generally identified with some gaps and omissions. A recovery and rehabilitation strategy exists, but it may also have gaps;
- c. National standards and tool/methodology for structural vulnerability assessment (VA) exist and applied at the sector level, but with some minor omissions of content or detail,
- d. Hazard maps exist for the entire sector, but with some minor omission of content or detail and these are fully used.

Nevertheless, it is important to address the following weaknesses in the framework:

- i. Shortcomings in terms of coverage, timeliness of updates and the thoroughness of the scenarios setting out sector-wide exposure and vulnerability from each hazard level.
- ii. The frequency, thoroughness or buy-in in the processes to update hazard estimates and exposure and vulnerability assessments.

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

The score for the financial capacity for the development and implementation of DRM and CCA (**Figure 5**) in the agriculture planning process suggests little or no progress (**Level 1**) based on the realized **score of 1.40**.

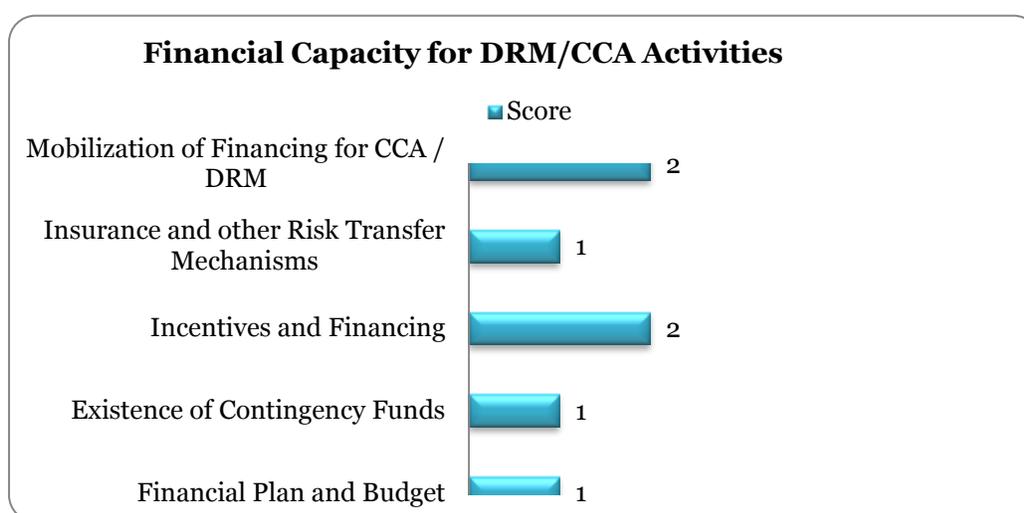


Figure 5: Results for Pillar 3

While financial plans with the accompanying set of priorities exist, they do have substantial gaps. In addition, the sector knows of some funding sources and alternative financial strategies and uses them occasionally. However, some needed expenditures are not made even if funds are available. SVG has just begun to explore alternative financing methods and funding sources. However, more importantly the following are critical areas for action:

The adequacy and accessibility of Fund(s) to deal with estimated costs of impacts from “most severe” scenario in the sector Increased incentives and affordable financing (credit) to help farmers, fisher-folks and agro-processors and related support organizations to deal with preparedness and recovery. Agricultural insurance and other risk transfer mechanisms/instruments are limited, with coverage for only 0-25% of likely sector losses.

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 shows a **score of 2.56 (Figure 6)**. This **Level 2** integration can be improved if the following are addressed:

- a. Limited effectiveness of land zoning in preventing exposure and losses in the crops, livestock, fisheries and forestry sub-sectors.
- b. Inadequacy in the farm building codes, standards and use in design solutions.

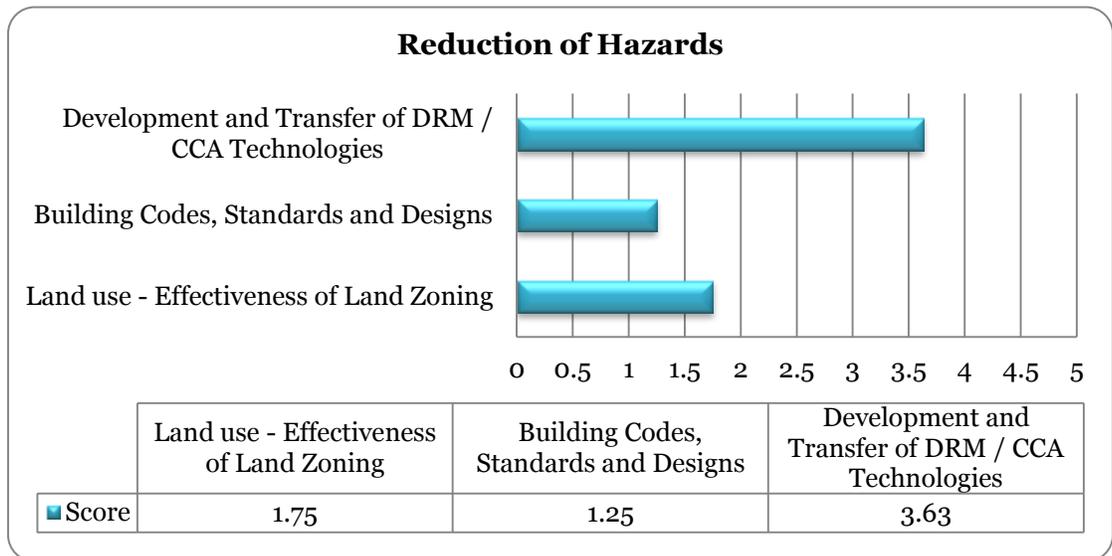


Figure 6: Results for Pillar 4

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 1.75** due mainly to the high levels of risks associated with land, employment, output and population.

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 received suggest little or no progress with a **score of 1.25**: Serious attention is to be given to:

- a. Limited existence of applicable codes for all physical assets, and the potential damage of between 10-20% of all physical structures and assets expected from the ‘most probable’ scenario.
- b. Limited conformity and datedness of statutory codes with the latest standards in farm building practice and with the perils faced
- c. The Scattered use of green building standards in farm structures though 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 7 presents details on the **score (3.63)** obtained with respect to the development and transfer of technologies that integrate DRM and CCA considerations to reduce climate related risks and underlying vulnerabilities.

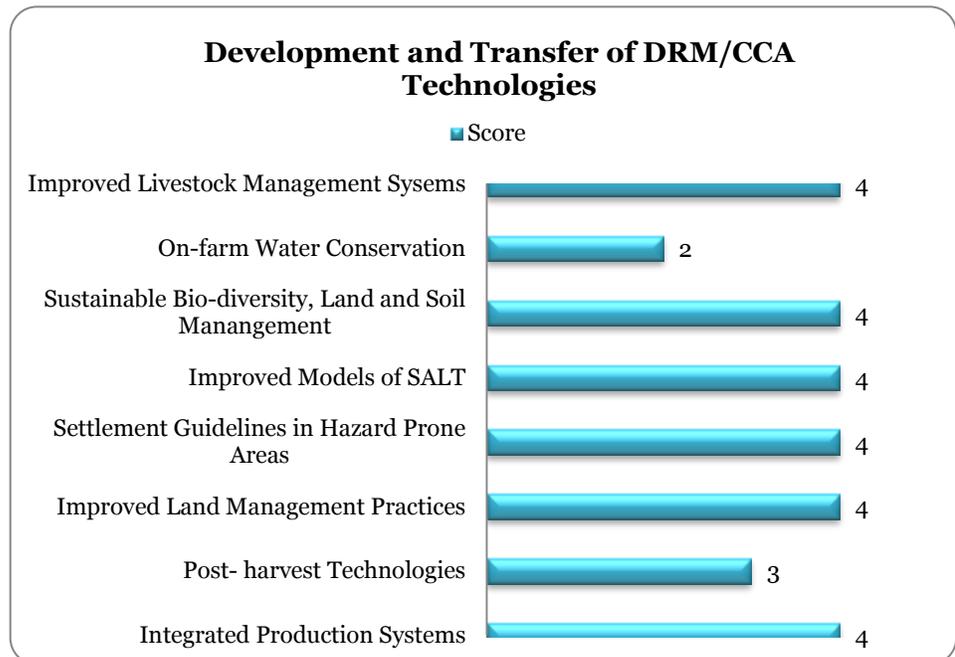


Figure 7: Results for Development and Transfer of DRM/CCA Technologies Thematic Area

The outcome represents a **Level 3** or an intermediate stage of integration. The main factors contributing to the favourable outcome, though with missed opportunities include:

- a. The widespread adoption and use of new models of integrated production systems in the agro-ecological zones. Between 40-50% of farmers and fisher-folks in vulnerable communities have improved access to agricultural services.
- b. The widespread use of innovative, indigenous and improved land management practices in landslide treatment, erosion control and conservation of soil nutrients.
- c. The widespread use of the guidelines on settlements in hazard prone areas and promotion of investments in river training. The widespread use of improved model of Slope Agriculture land Technologies (SALT).
- d. The widespread use of sustainable bio-diversity, land and soil management practices.
- e. The widespread introduction and use of improved animal/livestock sustainable management systems, but with some missed opportunities.

Notwithstanding the strengths within the technology development and transfer system, there are weaknesses, including:

- i. Limited use of use of new models of post-harvest practices, such as seed banks and improved food and seed storage technologies to proactively manage climate related risks.
- ii. Scattered introduction and use of on-farm water conservation and management practices. However, interest is expanding.

3.6 *Identification, Monitoring and Protection of Critical Ecosystem Services*

The overall **score of 3.00** obtained for the identification, monitoring and protection of critical ecosystem services in Saint. Vincent and the Grenadines may be characterized as fairly good (**Level 3**). The scores for the indicators within this pillar are:

- Ecosystem services are specifically identified, and managed as critical assets – **4.00**;
- System in place to monitor change in species diversity, extent or benefit of each ecosystem service in the last 5 years – **3.00**; and
- 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 8 presents the outcome of the analysis with respect to enhancement of societal and cultural capacities for DRM and CCA activities in the agriculture sector.



Figure 8: Results for Pillar 6

The overall **score of 2.00** was obtained (**Level 2**) and shows weaknesses in several areas:

- a. Only between 25-50% of the farming/fishing communities are covered by at least one non-government body for pre and post event response.
- b. Grass roots organization meetings are ad hoc, covering less than 25% of the farming/fishing communities and involving mainly 'enthusiasts'.
- c. The likelihood that farmers/fisher-folks will be contacted immediately after an event, and regularly thereafter to confirm safety, issues, needs, etc. is low (70% or less farmers/fishers).
- d. 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.
- e. Less than 20% of relevant ministries and departments as well as agribusiness employers take part in communicating with their workforce about resilience issues; and
- f. Limited solid business continuity plan following a disaster - only about 30% of sector employers with some form of planning.

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

The overall **score of 2.25** obtained with respect to the analysis of the agriculture sector and sector dependent infrastructure capacity to cope with disasters is considered low (**Figure 9**).

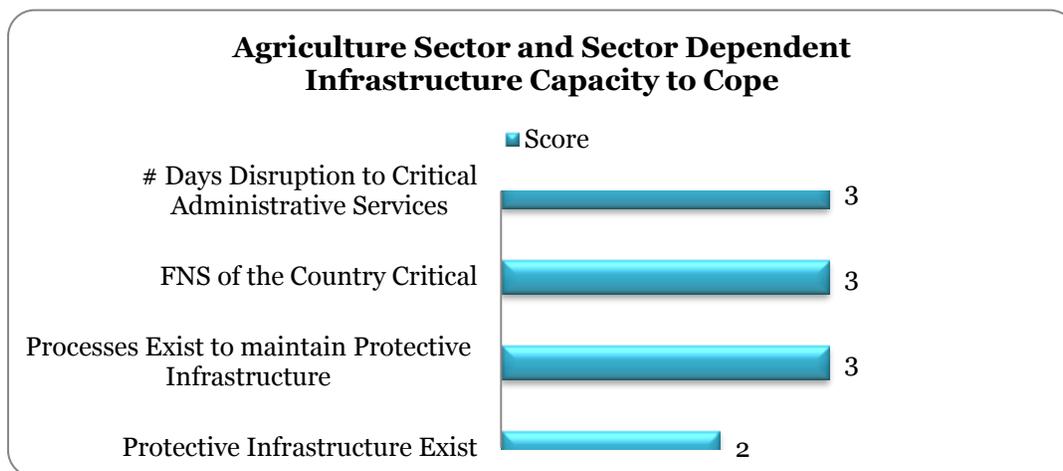


Figure 9: Results for Pillar 7

As indicated in **Figure 9**, 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, etc. to mitigate most of the ‘most severe’ scenario; and
- b. The haphazard nature of inspections of the protective structures in response to incidents or reports from the public. Significant known backlog of maintenance issues such that effectiveness of infrastructure may be impaired.

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

Figure 10 presents the analysis with respect to the capacities and procedures for effective disaster preparedness, response and rehabilitation, which shows a **score of 2.81 (Level 2)**.

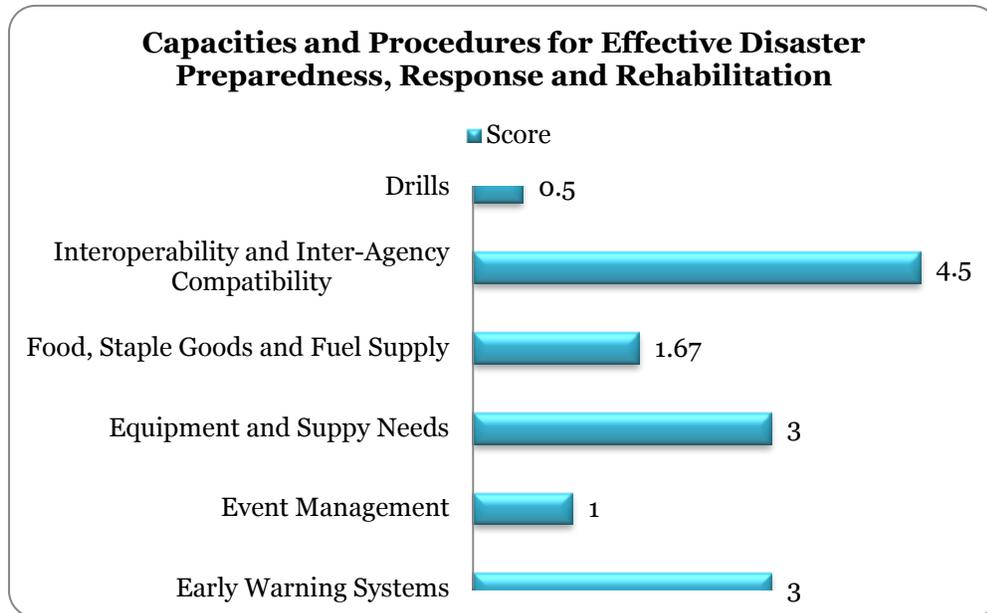


Figure 10: Results for Pillar 8

The main factors impacting negatively on the score are:

- a. The limited reach of the early warning system to only 70-80% of farming and fishing population.
- b. The incompleteness or deficiency in the plans formulated to address “most likely” and “most severe” scenarios, shared and signed off by all relevant actors in the sector.
- c. The negative outcome of the food gap, which is estimated at 72 hours.
- d. The negative outcome of the staple gap, estimated at 10% shortfall in supply within 24 hours relative to demand.
- e. The negative outcome of the fuel gap, which is estimated at 48 hours.
- f. The limited testing of plans annually, by reference to stimulated emergency and actual non-emergency events.
- g. The ineffectiveness of drills, which indicates that the sector is broadly unprepared for disaster in terms of training and skills.
- h. Although post-event experience sharing is planned with some stakeholders, this is to varying degrees, and it is not planned to be shared.

However, more specifically, the post event recovery planning may be characterized as an intermediate level of integration score of 3.80 (Level 3). The country is developing plans and tools to address the requirements of mainstreaming DRM and CCA considerations into recovery planning in the agriculture sector, rehabilitation/reconstruction and development processes. As can be seen from **Figure 12**, the only major deficiency in the recovery planning process relates to the post event experience sharing, which although it is planned with some stakeholders, this is to varying degrees, and the plan is not shared.

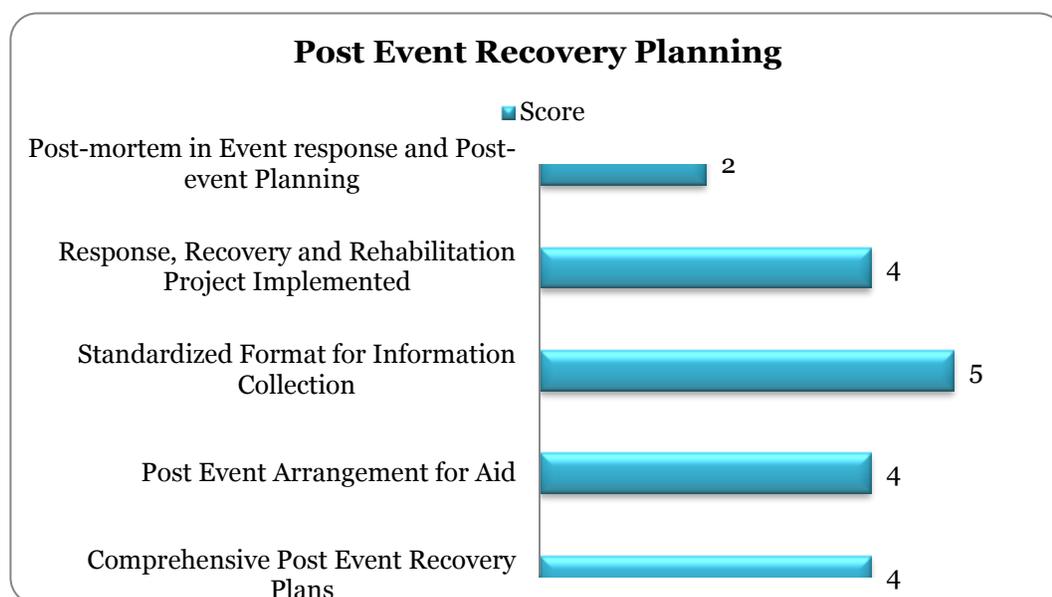


Figure 11: Results for Post Event Recovery Planning Thematic Area

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

The results (an assessed **Overall Score of 2.64**) obtained from the assessment of the integration of DRM and CCA considerations within the Agriculture Sector suggest that Saint Lucia is at an early stage of integration though this varies considerably across and within 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.

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

| Category | Distribution by: | |
|------------|------------------|------------|
| | Item Measured | Percentage |
| 0.00-0.99 | 2 | 2.8 |
| 1.00-1.99 | 10 | 14.1 |
| 2.00- 2.99 | 24 | 33.8 |
| 3.00-3.99 | 14 | 19.7 |
| 4.00-4.99 | 9 | 26.7 |
| 5 | 2 | 2.8 |

With over 50% of the items measured obtaining scores of less than 2.99, it can be concluded that Saint Lucia has for the most part established a solid foundation for integrating DRM and CCA consideration into agriculture development planning but execution of the process is yet in its early stage. This underscores the urgency for establishment and implementation of actions that will effectively anchor the Pillars to the established foundation.

4.0 CONCLUSIONS AND RECOMMENDATIONS

With an assessed Overall Score of 2.63, the integration of DRM and CCA considerations into the agriculture sector of SVG is 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 may have already decided to address. In spite of this increasing recognition, the Level 2 Status of integration indicates observed weaknesses all Pillars on which the assessment is based.

SVG has an established platform for advancing DRM and CCA integration in the 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.

The strongest areas of integration relate to risk and vulnerability assessment, identification, monitoring and protection of ecosystem services, governance and institutional and technical capacities for DRM. This distribution of relative strength across assessed pillars is an indication that SVG has not only laid the foundation for effective integration of DRM and CCA considerations into the agriculture sector but has been advancing with the integration process to the point of attaining a Level 3 status on at least one of the Pillars.

The analysis conducted, results obtained and the gaps identified suggest the need for SVG to establish agreed priority actions 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.

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 SVG in particular.

The anticipation is that DRM and CCA integration will be elevated to the highest levels of agriculture development priorities in SVG. 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 this dynamic. However, it is our feeling that this detailing is important in framing the integration picture. Once the national dialogue takes place the country can define its prioritized actions and the connections across them.

Prioritization by Pillars

4.1 *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 SVG.

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

4.1.1 *Pillar 1: Enhanced Capacity for Comprehensive Risk Management.*

The objective is to improve climate risk and vulnerability assessment tools and methods, climate information products and early warning systems customized to the needs of farmers and other agriculture dependent communities.

The current resources for monitoring and assessing climate risk and vulnerability in SVG are insufficient and need to be better harmonized and harnessed to allow informing of policy, extension practice and behaviour change.

The actions proposed below can contribute to movement in the desired the direction and use of science and technological outputs to inform the DRM/CCA agenda.

- a. Improve climate impact, risk and vulnerability assessment methodologies and transfer to MOA and relevant stakeholders
- b. Strengthen technical capacity to apply needs based climate and weather information products and early warning systems in agriculture sector
- c. Identify information needs of farmers in the various agro-ecological zones relevant to DRM and CCA;
- d. Empower 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;
- e. Develop a 'good practice' database at the national Coordinating Unit and link with CEDMA/CARICOM Secretariat with linkages to MOAs and other sector stakeholders;
- f. Integrate DRM and CCA and sustainable land management into farmer field school approach and empower agricultural



extension services to demonstrate and disseminate good practices;

- g. Include DRM and CCA issues in curricula of MOAs, agricultural colleges and vocational schools; and
- h. Ensure 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 into 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 SVG:

- i. 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.
- ii. Assess the emergent building codes and standards requirements of agriculture infrastructure and design strategies to enhance standards and facilitate adherence.

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.



4.4 *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.

4.5 *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 sector in moving up the scale of integration.



REFERENCES

Association of Caribbean States, 2012: “ACS Project Concept Document: Strengthening Hydro-meteorological Operations and Services in the Caribbean SIDS, Phase II (SHOCS II),” ACS-AEC. www.acs-aec.org/sites

Cavallo, Eduardo A, Andrew Powell and Oscar Becerra. 2010. “Estimating the Direct Economic Damage of the Earthquake in Haiti,” in IDB Working Paper Series. No. IDB - WP-163. Department of Research and Chief Economist: Inter-American Development Bank. <http://idbdocs.iadb.org>

CARDI, 2012: “Policy Brief Climate Change and Water Availability in the Caribbean” www.cardi.org/wp-content/uploads/2012/02/POLICY-BRIEF-DRAFT_CC-and-WaterAvailability.pdf

CARICOM, 2009: Liliendaal Declaration on Agriculture and Food Security. www.caricom.org

CCRIF, 2012: CCRIF Semiannual Report, 1 June – 30 November 2012. www.ccrif.org/publications/ccrif-semiannual-report-1-june-30-november-

CDEMA : Performance Monitoring Framework for the CDM Strategy 2014-2024, 2015.

CIDA, 2013: “Caribbean Program.” www.acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.

Dilley, Maxx, Robert S. Chen, Uwe Deichmann, Arthur L. Lerner-Lam and Margaret Arnold. 2005. Natural Disaster Hotspots: A Global Risk Analysis. Washington, DC: World Bank.

ECLAC (2011) Saint Lucia, Macro-economic and Environmental Assessment of the Damage and Losses caused by Hurricane Tomas: A Geo-environmental towards Resilience

Ferris, Elizabeth and Daniel Petz, 2013: In the Neighborhood: The Growing Role of Regional Organizations in Disaster Risk Management. Brookings: Washington. www.brookings.edu/research/reports/2013/02/regional-organizations-disaster-risk-ferris

Gonzales, Gyasi. 2012. “Two men die in ‘Diego’ mudslides,” Trinidad Express Newspapers. August. www.trinidadexpress.com/news/

Government of Saint Vincent and the Grenadines (2000) Agriculture Census 2000

Martin, D and OsmelManzano (2010) Towards a Sustainable and Efficient State: The Development Agenda of Belize, IDB, Washington D.C

National Oceanic Atmospheric Authority. 2013. “Tropical Cyclone Report Hurricane Tomas.” NOAA website: www.nhc.noaa.gov/pdf/TCR-AL212010_Tomas.pdf

OAS, 2011: “Caribbean Emergency Legislation Project Document.” www.oas.org/dsd/EnvironmentLaw/CaribbeanLegislationProject/Documents/CELP

Opadeyi, Jacob; and Spence, Balfour: Vulnerability Benchmarking Tool, 2007: OECS Secretariat.

Ramsaran, Ramesh and Roger Hosein. 2008: “CARICOM: Some Salient factors Affecting Trade and Competiveness.” *The Round Table*: 97: 396, 355-375.

Tearfund: Mainstreaming Disaster Risk Reduction: a tool for development organizations, 2005.

UN News Service, 2012: “UN relief agency estimates 1.8 million Haitians have been affected by Hurricane Sandy,” UN News Centre. November, 2012. www.un.org/apps/news/story.asp

UNDP, 2011: “Caribbean Implementation of the Hyogo Framework For Action. Mid-Term Review.” www.unisdr.org/files/18197_203carby.caribbeanimplementationoft.pdf (accessed June 27, 2013).

UNISDR: Disaster Resilience Scorecard for Cities, 2015.

UN/ISDR & UN/OCHA, 2008: “Disaster Preparedness for Effective Response: Guidance and Indicator Package for Implementing Priority Five of the Hyogo Framework.” <http://unocha.romenaca.org/Portals>

USAID. 2011. “Fact Sheet #1, Fiscal Year (FY) 2011: Disaster Risk Reduction – Latin America and the Caribbean.” <http://reliefweb.int/report/guatemala/disaster-risk-reduction>

USAID, 2013. “Haiti – Hurricane Sandy: Fact Sheet #1, Fiscal Year (FY) 2013,” USAID/OFDA. February, 2013. www.usaid.gov/sites

Williams, Elizabeth. 2012. “Christmas landslides cut off roads in Tobago” *Trinidad Express*, December 26.

Williams, Elizabeth. 2013. “Landslides threaten homes in Tobago.” *Trinidad Express*, April 28. www.trinidadexpress.com/news/Landslides-threaten-homes-in-Tobago-

World Bank, 2012: Agricultural Risk Management in the Caribbean: Lessons and Experiences 2009 -2012.

Zephyr, Dominique. 2011. "Haiti in Distress: The Impact of the 2010 on Citizen Lives and Perceptions." www.vanderbilt.edu/lapop/haiti/2010-Haiti-in-Distress-English.

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 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:

- a. 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;
- b. 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
- c. 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 |

ANNEX II

Summary of Results by Pillar – St. Vincent & the Grenadines

| PILLAR | | Total Score | # ITEMS MEASURED | AVERAGE SCORE |
|---|--|-------------|------------------|---------------|
| Governance | | | | |
| Integrated Framework for DRM and CCA | Institutional Structure | 3 | 3 | 2.67 |
| | Participation and Coordination | 3 | | |
| | Contribution of Organization | 2 | | |
| | | 8 | | |
| 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 | 9 | 2.89 |
| | Programme for Assessing Knowledge and Skills Set | 4 | | |
| | Best Practices Guidelines | 4 | | |
| | Learning Activities Executed | 4 | | |
| | Linking Research & DRM /CCA | 4 | | |
| | Support Legislation | 1 | | |
| | PR and education Campaign | 2 | | |
| | Knowledge of Scenario | 2 | | |
| | Availability of Training | 3 | | |
| | | 26 | | |
| Governance Score | | 40 | 14 | 2.86 |
| Risk and Vulnerability Assessment and Monitoring | Probability Estimates of Hazards & Perils | 4 | 6 | 3.67 |
| | Updates of Exposure & Vulnerability | 3 | | |
| | Existence of Process to Update | 3 | | |
| | Critical Assets Identified | 4 | | |
| | Tools/methodology for VA | 4 | | |
| | Use of Hazard Maps for Planning | 4 | | |

| PILLAR | | Total Score | # ITEMS MEASURED | AVERAGE SCORE |
|--|---|-------------|------------------|---------------|
| Risk and Vulnerability Score | | 22 | | |
| Financial Capacity for DRM /CCA Activities | Financial Plan and Budget | 1 | 5 | 1.40 |
| | Existence of Contingency Funds | 1 | | |
| | Incentives and Financing | 2 | | |
| | Insurance & other Risk Transfer Mechanisms | 1 | | |
| | Mobilization of Financing for CCA /DRM | 2 | | |
| Financial Capacity Score | | 7 | | |
| Reduction of Hazards | | | | |
| Land use – Effectiveness of Land Zoning | Land at Risks | 2 | 4 | 1.75 |
| | Employment at Risk | 2 | | |
| | Output at Risk | 1 | | |
| | Population at Risk | 2 | | |
| | | 7 | | |
| Building Codes, Standards and Designs | Applicable Codes for Physical Assets | 1 | 4 | 1.25 |
| | Conformity of Codes in Building Practices | 2 | | |
| | Implementation of Codes | 0 | | |
| | Sustainable Building Design Standards | 2 | | |
| | | 5 | | |
| Development and Transfer of DRM/CCA Technologies | Integrated Production Systems | 4 | 8 | 3.63 |
| | Post-harvest Technologies | 3 | | |
| | Improved Land Management Practices | 4 | | |
| | Settlement Guidelines in Hazard Prone Areas | 4 | | |
| | Improved Models of SALT | 4 | | |
| | Sustainable Bio-diversity, land & Soil Management | 4 | | |
| | On-farm Water Conservation | 2 | | |
| | Improved Livestock Management Systems | 4 | | |
| | | 29 | | |
| Reduction of hazards Score | | 41 | 16 | 2.56 |
| Identification, | Ecosystem Services | 4 | 3 | 3.00 |

| PILLAR | | Total Score | # ITEMS MEASURED | AVERAGE SCORE |
|---|---|-------------|------------------|---------------|
| Monitoring and Protection of Critical Ecosystem Services | Identified and Managed System to Monitor Changes in Species Diversity | 3 | | |
| | Land Policy in Support of Ecosystem Services | 2 | | |
| | Identification, Monitor. Score | 9 | | |
| Societal and Cultural Capacities for DRM and CCA Activities | | | | |
| Grassroots Organizations Coverage, Effectiveness and Connectedness | Presence of At Least One NGO | 2 | 4 | 1.75 |
| | Grass Root Organization Meeting Frequently | 1 | | |
| | Farmers /Fisher folks Contacted Immediately After Event | 2 | | |
| | Disaster resilience planning in Communities /Sub-sector | 2 | | |
| | | 7 | | |
| Engagement of Sector Employers | Ministries /Department Pass DRM /CCA information to Employees | 2 | 2 | 2.00 |
| | Business Continuity Plan | 2 | | |
| | | 4 | | |
| Systems of Engagement | Mobile, Social computer-aided and Non-technology Systems | 3 | 1 | 3.00 |
| Societal & Cultural Score | | 14 | 7 | 2.00 |
| Agriculture Sector and Sector Dependent Infrastructure Capacity to Cope | | | | |
| Adequacy & Effectiveness of Maintenance of Protective Infrastructure | Protective Infrastructure Exist | 2 | 2 | 1.50 |
| | Processes Exist to Maintain protective Infrastructure | 1 | | |
| | | 3 | | |
| Adequacy Food Supply Chain Infrastructure and Related Services | FNS of the Country Critical | 3 | 1 | 3.00 |
| Continuity of all Critical Administrative Functions | # Days Disruption to Critical Administrative services | 3 | 1 | 3.00 |
| Infrastructure Capacity Score | | 9 | 4 | 2.25 |
| Capacities and Procedures for Effective Disaster Preparedness, Response and Rehabilitation | | | | |

| PILLAR | | Total Score | # ITEMS MEASURED | AVERAGE SCORE |
|---|--|-------------|------------------|---------------|
| Early Warning System | Length & Reliability Of Warning System | 4 | 2 | 3.00 |
| | Reach of Warning System | 2 | | |
| | | 6 | | |
| Event Management | Existence of Formulated Plans | 2 | 1 | 1.00 |
| Equipment and Supply Needs | Equipment and Supply Needs Defined | 3 | 1 | 3.00 |
| Food, Staple Goods and Fuel Supply | Food Gap | 1 | 3 | 1.67 |
| | Staple Gap | 2 | | |
| | Fuel Gap | 2 | | |
| | | 5 | | |
| Interoperability and Inter-agency Compatibility | Ability to Cooperate at all Levels | 5 | 2 | 4.50 |
| | Existence of Emergency Operation Centre With SOPs | 4 | | |
| | | 9 | | |
| Drills | Testing Of Plans Annually | 0 | 2 | 0.50 |
| | Effectiveness of Drills | 1 | | |
| | | 1 | | |
| Post Event Recovery Planning | Comprehensive Post Event Recovery Plans | 4 | 5 | 3.80 |
| | Post Event Arrangements for Aid | 4 | | |
| | Standardized Format for Information collection | 5 | | |
| | Response, Recovery and Rehabilitation Projects Implemented | 4 | | |
| | Post-mortem in Event response and Post-event Planning | 2 | | |
| | | 19 | | |
| Disaster Preparedness Score | | 45 | 16 | 2.81 |
| Total Score | | 187 | 71 | 2.63 |

Summary of Agriculture DRM and CCA Issues and Gaps Identified - SVG

| 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. | National Integrated Framework for DRM and CCA exists, where the one or two physical contributions by the public and private sectors are defined for specific areas – perhaps via informal agreements | 2 |
| | Widespread lack of multiple skill or experience types in many organization | 2 |
| | Legislative framework to support DRM and CCA in Agriculture in place, but is currently outdated | 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 |
| 2.0: Assessing and monitoring risks and vulnerabilities, and enhance early warning systems | Scenarios setting out sector-wide exposure and vulnerability from each hazard level have significant shortcomings in terms of coverage, when updated, level of review thoroughness | 3 |
| | Update processes for hazard estimates and exposure and vulnerability assessments and asset inventory exist, but with at least 1 major omission in terms of frequency, thoroughness or agency buy-in. Risk identification may be compromised in some areas, accordingly | 3 |
| 3.0: Assessing the Financial Capacity for the Development and Implementation of Disaster Risk Management and Climate Change Adaptation activities in the Agriculture Sector | Multiple financial plans from different agencies exist, but with substantial gaps | 1 |
| | Contingency Fund and Credit facility exist, but is only 0-25% adequate, and routinely diverted for other purposes | 2 |
| | Incentives for some issues, but coverage gaps exist for some segments of the agriculture sector population not in place | 2 |
| | Between 0-25% of likely losses from “most probable” scenario are covered sector-wide by insurance and other risk transfer mechanisms/instruments | 1 |
| | Sector knows of some funding sources and alternative financing strategies, uses these | 2 |

| Thematic Areas/Pillars | Gaps in Agriculture DRM and CCA Integration within the Agriculture Sector | Scored obtained |
|---|--|-----------------|
| | occasionally, but some needed expenditures are not made even if funds are available | |
| 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 |
| | High level of employment at risk – between – 2.5-5% of employment at risk from “most probable” scenario | 2 |
| | High level of production output at risk – between 5-7.5% loss of and other agribusinesses output from “most probable” scenario | 2 |
| | High level of population at risk – between 5-7.5% of the farming and fishing population displacement from “most severe” scenario | 2 |
| | Building codes, standards and designs for farm buildings to enhance the resilience of farm structures limited in application - Damage to 10-20% of all physical structures and assets (to the point safety risk) in the “most probable” scenario | 1 |
| | Building Codes are reviewed for suitability for “most probable” scenario every 15 years. They are known to be obsolete in significant respects | 2 |
| | Building Codes are <60% implemented on applicable structures | 0 |
| | Scattered use of green building standards developing on the developer’s interest, but interest is expanding | 2 |
| | Scattered introduction and use of on-farm water conservation and management practices, but interest is expanding | 2 |
| 5.0: Identifying, monitoring and protecting critical ecosystem services that confer a disaster resilience benefit to the agriculture sector | Land use policies (or lack thereof) may lead or have led to damage to one or more critical ecosystem services | 2 |
| 6.0: Enhancing Societal and cultural capacities for Disaster Risk Management and Climate Change Adaptation activities in the Agriculture Sector | Between 25-50% of farming/fishing communities are covered by grass roots organization specifically established for disaster resilience within the sector | 2 |
| | Grass roots organizations meetings are infrequent - Ad hoc meetings in less than 25% of farming/fishing communities of a few “enthusiasts”. | 1 |

| Thematic Areas/Pillars | Gaps in Agriculture DRM and CCA Integration within the Agriculture Sector | Scored obtained |
|---|---|-----------------|
| | Likelihood that farmers/fisher-folks will be contacted immediately after an event, and regularly thereafter to confirm safety, issues, needs, etc. is low - 70% or less of farmers/fishers expected to be contacted | 2 |
| | Major gaps coverage or effective engagement | 2 |
| | Employers take limited part in communicating DRM and CCA issues with workers | 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 |
| 7.0: Assessing Agriculture Sector and Sector Dependent Infrastructure Capacity to Cope with Disasters the Sector might Experience | Protective infrastructures deficient | 2 |
| | Maintenance of protective infrastructure limited, with Haphazard inspections in response to incidents or reports from the public. Significant known backlog of maintenance issues such that effectiveness of infrastructure may be impaired | 1 |
| 8.0: Capacities and Procedures for Effective Disaster Preparedness, Response and Rehabilitation | The reach of the early warning system is low, with between 70-80% of farming/fishing communities reached | 2 |
| | Plans formulated to address “most likely” and “most severe” scenarios, shared and signed off by all relevant actors in the sector exist, but are known to be incomplete or otherwise deficient | 2 |
| | Food gap outcome is negative - estimated food gap is 72 hours | 1 |
| | Staple gap outcome is negative, with an estimated 10 % shortfall in supply within 24 hours relative to demand | 2 |
| | Fuel gap outcome is negative, with the estimated fuel gap placed a 48 hours | |
| | Inadequate cooperation at all levels with other sectors and other levels of government | 2 |
| | Non-existence of testing of plans annually, by reference to stimulated emergency and actual non-emergency events | 0 |
| | Drills indicate the sector is broadly unprepared for disaster in terms of training and skills | 1 |
| Limited post-mortem experience sharing | 2 | |