



UWI

Policy Guidelines and Frameworks for Mainstreaming of Comprehensive Disaster Management (CDM) in National Policy of Selected Priority Sectors

AGRICULTURE SECTOR

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of Comprehensive
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Policy Guidelines and Frameworks for Mainstreaming of Comprehensive Disaster Management (CDM) in National Policy of Selected Priority Sectors - Agriculture Sector

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LIST OF ACRONYMS

CARICOM	Caribbean Community
CCA	Climate Change Adaptation
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Comprehensive Disaster Management
CDMSF	Comprehensive Disaster Management Strategy and Framework
CIA	Cumulative Impact Assessment
CRiSTAL	Community-based Risk Screening Tool
CSIA	Combined Strategic Impact Assessment
CTO	Caribbean Tourism Organization
DFATD	Department of Foreign Affairs, Trade and Development
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DRRC	Disaster Risk Reduction Centre
ECLAC	Economic Commission for Latin America and the Caribbean
EIA	Environmental Impact Assessment
EKACDM	Enhancing Knowledge and Application of Comprehensive Disaster Management
EWS	Early Warning Signal
FAO	Food and Agriculture Organization
FSN	Food Security and Nutrition
GAR	Global Assessment Report
GDP	Gross Domestic Product
GHG	Greenhouse Gas
HFA	Hyogo Framework for Action
IISD	International Institute for Sustainable Development
ISD	Institute for Sustainable Development
NGO	Non-Governmental Organization
NIC	National Irrigation Commission
OECD	Organization for Economic Cooperation and Development
PDNA	Post-Disaster Needs Assessment
SDG	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SESA	Strategic Environmental and Social Assessment
SFDRR	Sendai Framework for Disaster Reduction
SL	Sustainable Livelihoods
SME	Small and Medium Enterprises
SSC	Sector Sub-committee
UNDP	United Nations Development Programme
UNISDR	United Nations International Strategy for Disaster Reduction
WUA	Water Users Association

EXECUTIVE SUMMARY

In 2013, the University of the West Indies Disaster Risk Reduction Centre (DRRC) of the Institute for Sustainable Development (ISD) launched the “Enhancing Knowledge and Application of Comprehensive Disaster Management” (EKACDM) Programme. The EKACDM, a five-year initiative, aims to “establish an effective mechanism for managing and sharing Comprehensive Disaster Management (CDM) knowledge that is used for decision-making in the public, private and voluntary sectors” in the Caribbean. This assignment is to develop a policy framework and guidelines for mainstreaming CDM in two of the five prioritised economic sectors, agriculture and tourism, and takes place under Output 3.1.1 of the EKACDM Initiative. This report presents a framework and guidelines for the agriculture sector, and is applicable for use in all the EKACDM project countries.

The framework and guidelines are aligned with the Disaster Risk Management (DRM) objectives of the Caribbean Disaster Emergency Management Agency’s (CDEMA) Comprehensive Disaster Management (CDM) Strategy 2014–2024. This policy framework and guidelines are meant to present key DRM issues for consideration in policies and strategies of the sector. The guidelines recognise the importance of DRM, especially at the policy level, in supporting the achievement of development goals, given the heavy dependence of Caribbean economies on agriculture. The guidelines are intended for use by policymakers at regional, national and sectoral levels. This includes stakeholders in sectors and programmes aligned with the agriculture sector, such as finance, poverty reduction, tourism, environment, and development planning; state actors involved in the approval of investments in the agriculture sector; non-governmental organisations (NGOs) and civil society involved in advocacy at national and sectoral levels; and development partners that support national and sectoral level interventions in agriculture.

The framework and guidelines are not for use in operationalising disaster risk management in the agriculture sector. Instead, they are to be used as a point of reference when broadly addressing the integration of DRM and climate change issues in agriculture policy.

Agriculture is a source of livelihood for 35% of the world’s population, and natural hazards severely affect small-scale farmers who generate over half of the world’s agricultural production. Between 2004 and 2013 agriculture absorbed more than 22% of total damage and loss caused by natural disasters in developing countries. That vulnerability reverses improvements to food security, poverty reduction and agricultural development. Therefore, mainstreaming DRM in the agriculture sector is considered important, particularly at the policy level.

This policy framework and the guidelines for mainstreaming Comprehensive Disaster Management (CDM) in the agriculture sector are built on five essential pillars, which represent the key activities to be undertaken in integrating DRM in the agriculture sector.

1. Pillar 1 – Define the Agriculture Sector

The development of any DRM policy for agriculture disaster risk management hinges on a comprehensive understanding of the scope of the agriculture sector. The agriculture sector has many sub-sectors and is strongly linked to water, food security, environment and, land management and land-use planning. Any policy to reduce disaster risk must understand the cross-cutting and interconnected nature of the sector.

2. Pillar 2 – Understand DRM Issues in the Agriculture Sector

Empirical data and findings can enhance the understanding of the sector and the DRR key issues that need to be addressed by policy. An understanding of the sector can be achieved in many ways using a number of tools, methods and approaches such as hazard, vulnerability and risk studies, Strategic Environment Assessment, Post Disaster Needs Assessment and Cost benefit analysis. Understanding the DRM issues in the sector also involve the identification of the various types of stakeholders in the sector, their interest in DRR mainstreaming and their role in the process.

3. Pillar 3 – Define and Visualize the Features of a Mainstreamed Sector

The ideal attribute(s) of a mainstreamed sector can be defined in terms of outcomes. By defining outcomes, the role of the agriculture sector in the broader context of development is clearly established. Outcomes are among the highest level of achievement of results. Essential to the formulation of outcomes are the foundations of a mainstreamed sector which comprises organisational/institutional capacity and leadership commitment, advocacy and knowledge, and sound implementation.

The linkages among the diverse foundations should also be considered because of the “webbed” concept of mainstreaming. In developing policy in the agriculture sector, international, regional and national frameworks should be defined.

4. Pillar 4 – Set Policy Goals and Objectives

Policy objectives are paramount in developing policies for DRM for the agriculture sector. An understanding of the sector includes defining outcomes that exemplify what an ideal sector should look like if DRM is being mainstreamed. The establishment of policy objectives should consider issues identified under Pillar 2. Policy objectives

help to elaborate and define those outcomes that the government wishes to achieve for the sector, and identify any trade-offs that may have to be made. These objectives are also important for monitoring, form an important component of the accountability framework and support an appropriate institutional system for oversight, coordination and control.

5. Pillar 5 – Identify Policy Instruments and Develop Strategies and Plans

Policy instruments – regulatory and non-regulatory – are used to achieve policy objectives, and must be given careful thought and analysis. The agriculture sector intersects with several other sectors, and the selection of policy instruments for risk reduction in the sector can have impact at the farm level, market level, macroeconomic level, and in some instances cross-border impacts can be felt at other country level. Selection of policy instruments must be guided by comprehensive knowledge of the nature and characteristics, and advantages and disadvantages of each of these instruments.

The choice of policy instruments should be guided by a combination of several criteria: the policy objective; the relevance of the tool to the problem under analysis; the technical capacity to use the tool; the data requirements for using the tool; the proposed timeframe for the effective and efficient use of the tool; and the available funds to support the use of the tool.

In addition to the descriptive information, a high-level checklist that summarizes the proposed key activities of each pillar can be used to gauge the extent to which DRM issues have been incorporated in the sector.

1 INTRODUCTION AND BACKGROUND

In 2013, the University of the West Indies Disaster Risk Reduction Centre (DRRC) of the Institute for Sustainable Development (ISD) launched the “Enhancing Knowledge and Application of Comprehensive Disaster Management” (EKACDM) Programme. The EKACDM, a five-year initiative, aims to *“establish an effective mechanism for managing and sharing Comprehensive Disaster Management (CDM) knowledge that is used for decision-making in the public, private and voluntary sectors”* in the Caribbean. The programme is funded by the Government of Canada through the Department of Foreign Affairs, Trade and Development Canada (DFATD), and has as its main priority the successful implementation of the CARICOM Enhanced CDM Strategy and Framework¹. Specifically, the main objective of the project is “to establish an effective mechanism for managing and sharing Comprehensive Disaster Management (CDM) knowledge that is used for decision-making by governments, local communities, the voluntary sector and the private sector”. This objective is consistent with Outcome # 2 of the 2014–2024 CDM Strategy for the Caribbean, which is “increased and sustained knowledge management and learning for CDM”.

The EKACDM Initiative has three (3) main intermediate outcomes:

- Intermediate Outcome 1: Operationalizing a Regional Network to generate, manage and share knowledge on Disaster Risk Management, including gender-related issues;
- Intermediate Outcome 2: Increased use of standardized gender-sensitive educational and training materials for Comprehensive Disaster Management by professionals and students in the Caribbean;
- Intermediate Outcome 3: Establishing effective mechanisms for gender-sensitive, fact-based policy and decision-making on CDM to be mainstreamed into key economic sectors and Small & Medium Enterprises (SMEs).

Ultimately, the EKACDM Initiative is expected to support the implementation of the CARICOM enhanced CDM Framework to reduce the impact of natural and technological hazards and the effect of climate change on men, women and children in the region.

1.1 SCOPE OF CONSULTANCY

This assignment was to develop a policy framework and guidelines for mainstreaming CDM in two of the five prioritised economic sectors, namely, agriculture and tourism, and takes place under Output 3.1.1 of the EKACDM Initiative. This report specifically focuses on the development of a framework and guidelines for the agriculture sector and is applicable for use in all the EKACDM project countries.

The framework and guidelines are aligned with the DRM objectives of the Caribbean Disaster Emergency Management Agency’s (CDEMA) Comprehensive Disaster Management (CDM) Strategy 2014–2024. This framework and the guidelines consider the environment, gender, information and communications technology, and climate change, which are the cross-cutting themes under the EKACDM Initiative.

This output follows from an assessment of CDM integration in five key sectors – health and wellness, agriculture, tourism, finance and economic development and water sectors – across the Caribbean, and EKACDM’s selection of agriculture and tourism as the two focus sectors for the project. The policy frameworks and guidelines are therefore guided by the findings of this assessment.

¹At the time of project design, this applied to the 2007–2012 Strategy, but the 2014–2024 CDM Strategy is now the relevant framework.

2 PURPOSE OF THE POLICY FRAMEWORK AND GUIDELINES

This policy framework and the guidelines have been developed to address some of the challenges that Caribbean countries face in mainstreaming climate change and DRM issues in policies for the agriculture sector. The guidelines are meant to present key DRM issues to be considered in the development of policies and strategies for the sector.

The guidelines recognise that DRM and climate change issues need to be reconciled with development goals, especially at the policy level. Given the heavy dependence of Caribbean economies on agriculture, the policy framework and guidelines also recognise the importance of integrating DRM in this sector to achieve sustainable development. To this end, the framework and guidelines will help countries develop climate-smart and DRM-sensitive strategies for the agriculture sector.

More importantly, practical benefit will be derived from its alignment with the Caribbean Disaster Emergency Management Agency's Comprehensive Disaster Management Strategy (2014–2024). That CDM strategy includes the agriculture sector as one of the priority sectors and this framework and guidelines will assist specifically in the achievement of Priority Area 3 (PA3) "Improved Integration of CDM at sector levels" and its related outcomes which include:

1. Regional outcome 3.1 (RO 3.1) – Strategic disaster risk management programming for priority sectors improved
2. Regional outcome 3.2 (RO 3.2) – Hazard information integrated into development planning and work programming for priority sectors
3. Regional outcome 3.3 (RO 3.3) – Incentive programmes developed and applied for the promotion of the risk reduction/CCA in infrastructure investment in priority sectors.

To this end, the work of CDEMA's agriculture sub-committee and its supporting work plans will be strongly supported through these guidelines.

2.1 USERS OF THE GUIDELINES

The guidelines are intended for use by:

- a. Policymakers at regional, national and sector levels including stakeholders in sectors and programmes aligned with the agriculture sector, such as finance, poverty reduction, environment, and development planning;
- b. State actors involved in the approval of investments in the agriculture sector;
- c. Non-governmental organisations and civil society who are involved in advocacy at national and sectoral levels;
- d. Development partners that support national and sectoral level interventions in the sector.

2.2 LIMITATIONS OF THE GUIDELINES

The framework and guidelines are not for use in operationalising disaster risk management in the agriculture sector. Instead, they are to be used as a point of reference when broadly addressing the integration of DRM and climate change issues in agriculture policy, and in sectors that are strongly related or aligned to the agriculture sector. In this context, the policy framework and guidelines do not represent a DRM policy for the agriculture sector.

The framework and guidelines address the current trends and challenges in mainstreaming DRM in the agriculture sector, and may need to be revised as these considerations change. The guidelines are not country-specific; countries will need to assess their

level of mainstreaming and include those considerations and approaches that are most applicable.

3 TECHNICAL APPROACH TO THE DEVELOPMENT OF THE GUIDELINES

The framework and guidelines were developed using qualitative methods and involved collecting a mix of primary and secondary data. A qualitative approach was deemed more suitable to gather the information necessary to inform the preparation of the framework and guidelines as data collected via this method is generally descriptive and detailed, and allows for a more in depth understanding of the key issues being addressed.

The framework was therefore developed using literature which focused on the key areas of the Caribbean agriculture sector, (e.g., economic contribution, vulnerability to external and internal shocks, its social relevance, etc.), DRM mainstreaming, and the integration of CDM in the agriculture sector. Primary data was collected using the prioritisation instrument/tool that was used to undertake the assessment and prioritisation of the key sectors. The framework considered the five main pillars that anchored the assessment tool, but more importantly, consideration was given to the issues emanating from this assessment and the target users of the document.

The specific methodological approaches are outlined below.

Primary data collection methods used in the development of the framework and guidelines are as follows:

- 1. Development and Adaptation of a Matrix Tool to assess CDM Mainstreaming at Sectoral and National Levels and Prioritisation of Key Sectors** – Based on the literature review of the UNDP framework, a semi-quantitative matrix was developed using the framework and administered to stakeholders in the three target countries. The matrix included each of the five domains and their related sub-elements. Each sub-element was defined and had its own set of two to three indicators and related means of verification that guided the assessment. The matrix also had weights that were applied to each sphere and ratings that related to each indicator to objectively assess the extent to which each indicator was met. A comments section was also included to provide a narrative that justifies the rating applied to each indicator. A similar tool was also developed to assess CDM mainstreaming at the national level. This tool was further adapted and simplified from the sector tool and therefore did not contain weights; ratings were qualitative.

2. **Integration of Stakeholder Perspectives** – In the assessment and prioritisation of the five sectors, a semi-quantitative assessment and prioritisation tool was administered to representatives from each sector level. It integrated multiple stakeholder inputs, objectively assessed CDM at the national and sectoral levels, and scored each sector's progress with mainstreaming. The tool and participatory approaches also identified gaps, challenges and successes at mainstreaming.
 - a. **Stakeholder Identification and Selection** – Stakeholders were identified and selected with the assistance of the National Disaster Offices in each country. They identified stakeholders who were senior and operational level personnel working in the targeted sectors, irrespective of their knowledge of disaster risk management. This mix of decision-making levels brought both strategic and operational level perspectives in the evaluation of the sector, and the assignment of the appropriate ratings. Stakeholders participated in these data collection exercises via a two-day workshop. Data collection for the assessment of national level CDM mainstreaming involved all participants while the sector assessment was done in a group setting and involved sector representatives. Sector representatives whose functions overlapped were permitted to participate in each group as necessary, for example, planning and environment.
3. **Validation of Priority Sectors** – Consultations were held with key stakeholders to solicit feedback and comments on the two priority sectors selected for the development of frameworks and guidelines. Consultations were held with representatives from the Caribbean Disaster Emergency Management Agency (CDEMA), the Food and Agricultural Organization (FAO), the Caribbean Tourism Organization (CTO), and various ministry and department personnel from the target countries involved in the prioritisation process.
4. **Validation of Framework and Guidelines** – A wider stakeholder consultation process, including a face-to-face validation workshop held in January 2018, was used to solicit feedback and comments on the draft guidelines. These stakeholders included representatives from academia, NGOs, Ministries of Agriculture and their relevant departments, ministries responsible for national economic planning and development, environment and planning and also development partners. Countries represented included Barbados, Antigua and Barbuda, Dominica, Guyana, Jamaica, St. Lucia, St. Kitts and Nevis, Suriname and Trinidad and Tobago. Where applicable, comments were incorporated and the policy framework and guidelines finalised.

Secondary data collection methods used in the development of the framework and guidelines are as follows:

 1. **Literature Review** – Several materials and documents were reviewed :
 - a. Materials/documents on the structure and content of policy frameworks – These documents suggested approaches for the structure and content of the policy frameworks and guidelines. Sample frameworks were examined for finance, agriculture, education, land policy and risk reduction. The main takeaway was identifying the framework around which the document would be developed. The framework was identified as five key pillars for integrating DRM and climate change in the sector.
 - b. Literature on challenges with mainstreaming DRM in the agriculture sector – The main document consulted was the CDM Assessment and Prioritisation report that was prepared as a precursor to this framework and the guidelines. The assessment provided insights into the challenges and barriers to mainstreaming in the agriculture sector in the Caribbean. This was buttressed by other literature on mainstreaming DRM in the agriculture sector.

- c. Documents on good practices in DRM mainstreaming – These documents identified approaches and guidelines to integrating DRM and climate change at the policy level and also identified cases where countries or institutions have achieved success in this area.
2. **Development of an Annotated Outline** – Based on the literature review, an annotated report outline was prepared. The outline identified the key issues under each pillar of the framework that will be addressed by the framework and guidelines.
 3. **Key Stakeholder Consultations** – The annotated outline was shared with key stakeholders including CDEMA, the chairperson for the Agriculture Thematic Working Group of CDEMA and CARICOM, and the policy unit of FAO's Sub-regional Office for the Caribbean. Comments were received and the feedback used to update the framework and guidelines.
 4. **Completion of the Policy Framework and Guidelines** – The annotated outline was elaborated into a policy framework and guidelines taking into account findings from the literature review and stakeholder feedback.

3.1 LIMITATIONS

- a. **Stakeholder Engagement** Due to project time constraints, primary data collection via stakeholder engagement exercises proved challenging. Several meetings and forums were attempted to engage key stakeholders across the region following completion of the prioritisation assessment, however, these engagement exercises did not materialise due to scheduling conflicts and the short timeline afforded for such activities to take place. The disadvantage that emerged as a result of this limiting factor was that only a small number of key stakeholders was able to provide comments regarding the selection of the two priority sectors and on the annotated outline developed for the framework and guidelines.

4 THE CONCEPT OF MAINSTREAMING

According to the Global Assessment Report (GAR) 2015, disaster risk is increasing, causing economic losses averaging US\$250 billion to US\$300 billion globally each year. Additionally, the average annual losses (AAL) from earthquakes, tsunamis, tropical cyclones and river flooding are now estimated at US\$314 billion in the built environment alone (UNISDR, 2015a).

The Caribbean region is recognised as being the second most disaster prone region in the world (UNDP, 2011; UNISDR, 2003; United Nations, 2013). This is as a result of its location, heavy dependency on particular sectors for foreign exchange, geology, tectonic setting, and poor land use and environmental practices. Natural hazards such as hurricanes, landslides, and

floods are annual occurrences that present a constant threat to human, economic, social, and environmental development in the region (United Nations, 2013; CDEMA, 2014). Additionally, the inherent physical characteristics as small island states, and the accompanying socio-economic features make the region highly vulnerable to the effects of climate change.

Regular annual disaster losses are estimated at US\$3 billion with significant loss to social and productive sectors. Impacts from hazards will only intensify as a result of climate change, as 60% of the region's population and 70% of its economic activity are within two miles of coastlines (CDEMA, 2014). The region's vulnerability is amplified by the fiscal fragility of many of the Caribbean islands. According to Auguste and

Cornejo, (2015) most of the Caribbean economies' fiscal imbalances have resulted in high levels of public debt, in some cases exceeding its Gross Domestic Product (GDP). The implications are grave, especially in terms of delays in development as well as increase in poverty and inequality. This presents a serious obstacle for the region in achieving sustainable human development as any impact from hazards can significantly erode any development gains achieved by countries of the region. Mainstreaming comprehensive disaster management into national sectoral plans and policies is therefore a very important process in achieving and sustaining development. Pelling and Holloway (2006) in citing work by Tearfund indicate that:

'Mainstreaming' derives from the metaphor of a small, isolated flow of water being drained into the mainstream of a river where it will expand to flow smoothly without loss or diversion. Therefore "mainstreaming risk reduction" describes a process to fully incorporate disaster risk reduction into relief and development policy and practice. It means radically expanding and enhancing disaster risk reduction so that it becomes normal practice, fully institutionalised within an agency's relief and development agenda.

Benson, Twigg and Rossetto (2007) note that to 'mainstream' disaster risk reduction into development means considering and addressing risks emanating from natural hazards in medium-term strategic development frameworks, legislation and institutional structures, sectoral strategies and policies, budgetary processes, the design and implementation of individual projects, and monitoring and evaluating all of the above.

These definitions are reflected in the Comprehensive Disaster Management Policy (CDEMA, 2012), which defines mainstreaming as making comprehensive disaster management an integral dimension of the policies and programmes in all political, economic and societal spheres. Nunan et al. (2012) summarises mainstreaming DRR as a "recognition that too many factors and activities play a role in achieving DRR

and only through a comprehensive cross-sectoral approach will DRR succeed".

The United Nations Development Programme (UNDP, 2004) notes that disasters are both a cause and a product of failed development. Therefore, mainstreaming is a process which seeks to integrate, institutionalise, and embed DRR principles within a government's development agenda. Global recognition of the importance of mainstreaming and integrating DRR within and across all sectors has led to this being clearly articulated in Priority 2 of the Sendai Framework for Disaster Risk Reduction (SFDRR) as well as in Outcome 2 of the Comprehensive Disaster Management Strategic Framework (CDMSF).

4.1 MAINSTREAMING DRR IN THE AGRICULTURE SECTOR

The Food and Agriculture Organization (FAO, n.d.) reiterates that:

"Agriculture is a source of livelihood for over 35 percent of the world's population. Natural hazards and disasters – such as floods, drought, storms, earthquakes, landslides, tsunamis or wildfires – disproportionately affect the small-scale farmers, herders, fishers and forest dependent communities who generate over half of the world's agricultural production."

In the case of the Caribbean, the agriculture sector is one of the most significant sources of income and employment in the region. The sector accounts for approximately 20% of total employment in the region, with 50% of employment in Haiti and Grenada concentrated in the agricultural sector (World Bank, 2012). Between 2004 and 2013, agriculture absorbed more than 22% of total damage and losses caused by natural disasters in developing countries. In Jamaica, direct damage to the agricultural sector during the period 2000–2017 was estimated at US\$277.81 million (Ministry of Agriculture and Fisheries,). In 2008, Hurricanes Faye, Gustav, Hanna and Ike resulted in US\$197.8 million in damage to the agriculture sector in Haiti (World Bank, 2012). Similarly, Caribbean

countries, such as Dominica, that have a significant dependency on agriculture are likely to sustain huge fallouts in the economy from hazard impacts. In the aftermath of Tropical Storm Erica that affected the island in 2015, the agriculture sector sustained the third largest damage accounting for 10% of total damage. Damage to this sector was preceded by the transport and housing sectors respectively (UNDP, 2015).

In addition to the high cost of damage to the agriculture sector in the Caribbean, the need for mainstreaming is also justified by the lack of access to market-based insurance and hedge instruments in the case of major shocks. In the absence of insurance, farmers and those dependent on supply chains must rely on their own resources, and financial resources provided by government and other donors (World Bank 2012).

This data is supported by the findings from the prioritisation of CDM assessment, commissioned under this project, which found several policy gaps and challenges with mainstreaming DRR in the agriculture sector.

These include:

- 1. Policies** – While some policies directly and indirectly related to the sector are in place, it has to be ensured that these instruments are evidence-based and take account of the risk issues facing the sector. The framework and guidelines suggest some approaches for risk analysis and identification and stakeholder involvement as a means of ensuring policies are evidence-based and as such respond to the priority DRM issues facing the sector. Additionally, an integrated risk layer approach is suggested for selecting the best policy instruments that will reduce risk in the sector.
- 2. Legislative Frameworks** – There is a need to strengthen existing legislation that supports DRM mainstreaming in the sector. Many of the pieces of legislation predate the 1990s when disaster risk management was promoted as a strategy to minimise risk to development in countries. As a result, some laws are not disaster risk management or climate-sensitive. To this end, the guide-

lines will present key considerations when updating these laws or alternately identify existing, more updated laws that can support mainstreaming in the sector.

- 3. Strategic Plans and Coordination Plans** – For the most part, these plans are in place and are current. Notwithstanding, the guidelines are relevant for countries to assess how well DRR and climate change issues have been addressed:

- Coordination plans – Coordination plans address all aspects of comprehensive disaster management and it is necessary to ensure that the response and recovery approaches are sustainable and actually result in risk reduction. The guidelines present approaches to consider in various components of the CDM framework.
- Strategic Plans – Though strategic plans for the most part are current for the agriculture sector, engaging stakeholders in these plan development processes are important to their success because, the agriculture sector stakeholders are not confined to those directly involved in the sector, but also include those of other sectors that have a significant bearing on agriculture. Assigning responsibilities and the identification of resources and strategies must consider these stakeholders.

Vulnerability increases with each event, reversing improvements to food security, poverty reduction and agricultural development. As a result of climate change, extreme weather events are becoming more frequent, intense, and costly. Risk-sensitive agriculture is a prerequisite for food security and sustainable development.

This importance of agriculture to global and national economies highlights the importance of DRR in the agriculture sector, and the need to accelerate mainstreaming (Figure 1). With such a significant contribution to economic development, negative and cumulative impacts in the agriculture sector erode livelihoods and coping capacities over time (UNISDR, 2014). With a large percentage of rural economies of developing countries being dependent on agriculture, the implication of disasters and climate change can result in destruction of crops and livestock, physical capital and assets and productive inputs. This level of impact often leads rural poor to use their savings or increase borrowing to assist in their recovery process. This often leads to further depletion of their resource base and affects their livelihood base. The result, over time, is environmental degradation and food insecurity (FAO, 2010, UNISDR, 2014).

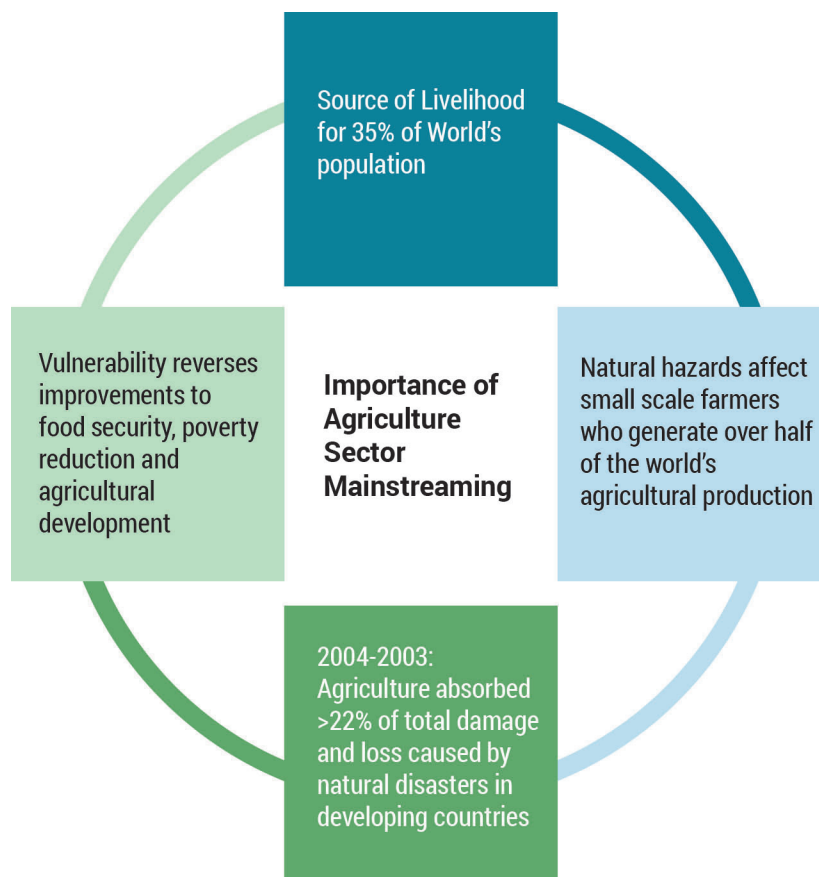


FIGURE 1: IMPORTANCE OF AGRICULTURE SECTOR MAINSTREAMING

Climate change also intensifies this impact, as the dryer dry spells and wetter wet spells lead to flooding and drought. Given this scenario and other factors, the sector continues to face a number of challenges that threaten its sustainability, both in terms of its outputs and sustainability of the techniques employed. The aim therefore is to develop an agriculture sector that is more resilient to risks, including the long-term effects of climate change. This requires that DRR be systematically mainstreamed in the sector.

4.2 SOURCES OF RISK IN THE SECTOR

The risks and sources of risk that are relevant to the agriculture sector are diverse and can be classified in various ways. Classifications of risks are based on differing perspectives, and therefore each classification has its own purposes (Figure 2). The World Bank (2005) differentiates risks that specifically affect the agriculture sector in the following ways:

Production Risk – This include weather conditions, pests, diseases, and technological change. These may also occur during the harvesting or collecting stage. Production risks relate to the possibility that yields or outputs may be lower than projected. This risk has implications for production practices, diversification and the introduction of crop varieties, the adoption of risk mitigation practices such as drip irrigation, drainage and the introduction of resistant varieties as well as site selection

(selection of sites less vulnerable to hazards such as landslides and flooding). Most often hazards directly impact production risks which can result from various sources in the Caribbean. These include:

- Weather-related hazards: Landslides, floods, wind, droughts, and storms
- Tectonic: Earthquakes and volcanic eruptions
- Pests and diseases: These sometimes result for weather-related hazards or can occur due to the geographic location or emerging hazards. Avian influenza, for example, fits into this category.

These guidelines are more concerned with addressing these risks at the fundamental level of production where the direct impacts are felt. Notwithstanding, it must be understood that each category of risk can have implications for the other, for example, production risks resulting from adverse conditions can lead to lower than projected profit levels. Similarly, availability of labour can be affected by the occurrence of hazards.

Market Risks – This risk relates to the possibility that there may be a loss of market for products or that prices received will be less than expected.

Financial Risk – Given the certainties in the production process, farmers often face challenges with cash flow due to long production cycles. The lack of cash flow can also be exacerbated by lack of access to credit and the high cost of borrowing and thus, less profit than expected is generated..

Institutional Risks – These risks usually result from unexpected changes in regulations that affect producers’ activities. These can have significant impact on the profitability of farming activities.

Personal Risks – Risks to the well-being of people who work on the farms. Specific to agriculture disaster risk management, this can affect sources of labour, the level of disaster risk management training and succession and continuity planning.

Asset Risk – This points to the possible damage or theft of production equipment and assets.



FIGURE 2: INTERRELATIONSHIP AMONG SOURCES OF RISK IN THE AGRICULTURE SECTOR

5 A POLICY FRAMEWORK FOR MAINSTREAMING CDM IN THE AGRICULTURE SECTOR

5.1 APPLICATION AND IMPORTANCE OF THE FRAMEWORK AND GUIDELINES

Decisions are taken at various levels of an organisation or sector, but it is at the policy level, defined as the very top level, that decisions are taken that influence the overall strategy and outcomes, and determine the sustainability of the sector and its ability to satisfy the needs of consumers. The strategies developed at this level are often further refined and sharply focused at the organisation or sub-sector level. It is therefore important that mainstreaming start at the highest level, as it influences the entire sector, and the way CDM is integrated at the operational levels.

Policy is concerned with formulation of general statements and strategies that guide or channel managerial decisions, and is important in securing consistency and equity in organisational and sectoral decisions. It allows everyone to take decisions consistent with the guidelines and limits as established at the policy level. This is very important for embedding DRM in decisions at all levels in the sector. The four components of the policy level, outlined below, provide practical direction for integrating CDM in the agriculture sector. At the policy level, mainstreaming activities assess the extent to which DRR/CDM considerations have been included and/or implemented in policies, plans, legislation, and programmes. It also examines the extent to which political commitment, resource mobilisation and allocation are in place to support these plans. The framework and guidelines are therefore applicable to assessing the strength of CDM integration at the following points in the policy development and implementation process:

- a. **Securing Political Commitment and Leadership**
– This is an important driver for mainstreaming as it determines the extent to which policies and laws supporting DRR are implemented. Leadership is necessary to ensure DRR is an agenda item in high level deliberations, that a vision for DRR is created, and that there is reform. The leadership for DRR should include at least one high-level political champion (UNDP, 2010) who will drive the DRR process and provide support, and create the environment for other DRR leaders to effect change at the policy level. Table 1 outlines a checklist which can be used in securing political commitment and leadership.
- b. **Strategies, Policies and Planning** – The political commitment and leadership are expected to be translated into strategies, policies and plans for DRR (UNDP, 2010). Dedicated political commitment is not enough to ensure DRR is integrated into development practice. The test of this commitment is in its translation into strategies, policies and plans for DRR. Table 2 provides a checklist to support DRR integration into strategies, policies and planning.

TABLE 1: HIGH-LEVEL CHECKLIST – POLITICAL COMMITMENT AND LEADERSHIP

Is there at least one high-level political champion who can undertake the leadership to press the DRR agenda forward, secure political and public support and deal with critical issues?
Are there political champions who are advocating for reform?
Are political champions advocating for institutional structures that appropriately and sufficiently integrate DRR in the sector?
Is there a political champion who is driving the DRR agenda in the sector by supporting the process to integrate DRR strategies in the sector, related sector strategies or strategies of other sectors closely integrated with the agriculture sector?
Is there a political champion who is promoting political awareness on the importance of integrating DRR in the development plans and strategies of the sector? Or is there a key individual in government who has responsibilities for DRR?
Is there a political champion who is advocating for the strengthening of plans and programmes to better integrate DRM in the sector?
Is there a political champion who is ensuring that the sector receive sufficient resources to support DRM integration?
Is there a national or sectoral DRM framework with clear roles for political representatives?

TABLE 2: HIGH-LEVEL CHECKLIST – STRATEGIES, POLICIES AND PLANNING

Have policies for the sector or related integrated DRR or DRR/CC policies for the sector been developed?	The agriculture sector comprises sub-sectors and is also strongly aligned with other sectors. To have an impact on DRM mainstreaming, policies for the sector, the sub-sectors or related sectors must integrate DRM issues. Policy objectives must also respond to the DRM issues.
Have there been high-level policy dialogues on integrating DRR/CCA in the sector?	Policy dialogues are useful for identifying perspectives from various stakeholders on critical issues and help each other to see various perspectives on the issues. This makes them useful for gaining commitments and resolving conflicts on issues. As they tend to be problem-focused, the results from policy dialogues are useful for the development of policy and for general use at the policy level.
Have national policies integrated sector issues in its development?	DRM, climate change policies, etc. developed at the national level should address DRM issues of some key sectors or identify the roles of the sectors in achieving policy objectives. These can be specific or general enough to be applicable to the sector.
Have sector plans been developed that integrate DRR in alignment with national development plans?	Strategic plans for the sector are an important tool for the development of the sector as they set the outcomes, goals and objectives for the sector. Each sub-sector contributes to these goals and outcomes. At this level, integrating DRM will be very meaningful and the trickle-down effect into all aspects of the sector will be felt.
Have local sector plans that integrate DRR in alignment with national sector plans been developed ?	Mainstreaming means integrating DRM at all levels. Therefore, each successive plan developed must be in alignment with the existing ones. The sector plans must translate the objectives or goals from the national level to the sectoral level.
Have national policies integrated sectoral issues in its development?	The policy objectives for the development of DRR or climate change policies or any policy of the related sector must be developed through careful analysis and prioritisation of the issues. If the agriculture sector is a national priority sector then some of the issues related to this sector will be integrated in the policy.
Have planners at the local level been provided with the necessary tools to integrate DRM in land-use and development plans?	Land-use planning and land management is a related agriculture sector. DRM integration in the land-use planning and development processes is a high priority.

c. Legislation and Regulations

– Legislation and regulations create an enabling environment for DRM. They set out the rights of citizens and other stakeholders, duties of the state and other stakeholders, enforcement procedure, penalties or incentives for DRR, and standards for DRR.

d. Resource Mobilisation and Allocation

– The framework requires that political commitment and legislative actions be backed by adequate resources to ensure that leaders translate policies and laws into action through implementation. Resource provision depends on an adequate understanding of the economic impact of disasters, and the related impact on development goals. Allocations must be further informed

by cost-benefit analyses or other economic appraisal tools that ensure value for investment. Whilst there is need for dedicated budget lines for DRM, it is recommended that such budgets be calculated as a budget in existing development processes and activities instead of creating separate budget lines. Table 3 provides a checklist which can be used to support the inclusion of DRR in budgetary allocations.

TABLE 3: HIGH-LEVEL CHECKLIST – RESOURCE MOBILISATION AND ALLOCATION

Is mainstreaming in the agriculture sector a national priority, and is this reflected in the budget allocated to the sector?	
Is the government's commitment to implementing mainstreaming in the agriculture sector reflected in the budget allocated? Is the budget adequate?	The policy level sets the framework for operationalising DRR in the sector. A requirement for successful mainstreaming is adequate resource allocation.
What percentage of the budget allocated to the sector is dedicated to mainstreaming DRR?	Whilst sufficient resources may be allocated to the sector, it is important to identify how the budget is apportioned for the sector activities including DRR mainstreaming.
How has the budget for DRR changed when compared to previous years?	Continuous resource commitment is needed to sustain the mainstreaming process, to build on previous successes and implement lessons learnt and best practices.
Are plans within the sector linked to the budgeting framework or other funding mechanisms?	Government budgets alone will not be sufficient to fund DRM projects and programmes that will be developed based on policy objectives. Synergies or joined-up approaches with projects or programmes will be required.
Are resources allocated to the sector used as planned? Is the DRR spending for the sector being monitored and analysed?	A resource mobilisation strategy is always helpful for funding DRR implementation. The best policies and strategies will not result in change unless there is implementation. Even with commitment and in-kind support, resources will be required to implement policies and strategic plans. It is always useful at the policy level to estimate the cost for implementing the policy and identify possible sources of funding.
Has the value and benefits of DRR spending in the sector been quantified?	To make a case for continuous mainstreaming and demonstrate the benefits of mainstreaming, it is necessary to track DRR expenditure in the sector and quantify the benefits or value of mainstreaming.

5.2 POLICY FRAMEWORK FOR INTEGRATING CDM IN THE AGRICULTURE SECTOR

The policy framework for the agriculture sector is proposed to include five essential pillars that must be considered in integrating DRM in the agriculture sector (Figure 3).

The framework and guidelines are aimed at policy-makers in the agriculture sector including regulators, senior level strategic and operational level personnel and supervisors who have to make decisions directly or indirectly related to disaster risk management. It is also relevant for stakeholders, including consumers and industry players.

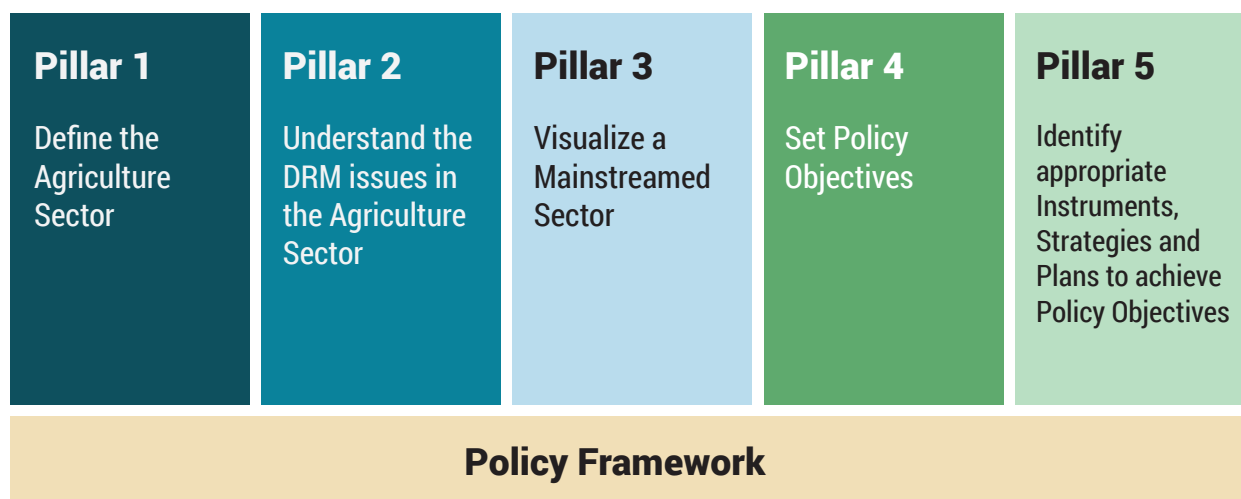


FIGURE 3: PILLARS OF THE POLICY FRAMEWORK

6 PILLAR 1 – DEFINE THE AGRICULTURE SECTOR

The development of any DRM policy for agriculture disaster risk management hinges on a comprehensive understanding of the scope of the agriculture sector. The agriculture sector has many sub-sectors and is strongly linked to water, food security, environment and land management and land-use planning. Any policy to reduce disaster risk must understand the cross-cutting and interconnected nature of the sector.

6.1 SUB-SECTORS

The agriculture sector encompasses a number of sub-sectors and a DRR policy for the sector must integrate the specific issues and needs of these sub-sectors:

1. **Crop farming** – Crop farming is a source of income especially for the rural poor and has a significant impact on poverty reduction. Crops are vulnerable to hazards resulting in loss of income and disruption in food supply. Climate change can affect soil water balance, crop yields and crop expansion exposing them to higher temperatures and longer dry spells.
2. **Livestock** – Climate change can be a major stressor for livestock due to the impact on their food sources, diseases associated with flooding or temperature changes, production levels and water sources among other things.
3. **Agro-forestry** – Agro-forestry has a key role in disaster risk mitigation. Additionally, some of the challenges posed by hazards and climate considerations also affect agro-forestry.
4. **Fisheries** – Like crop farming, fisheries is a source of food and income. The sub-sector is extremely vulnerable to hazards that both affect the terrestrial and marine environment. Climate change impacts on this sub-sector due to impacts on the coastline and marine ecosystems.

6.2 SECTORS AND THEMATIC AREAS INTEGRATED WITH THE AGRICULTURE SECTOR

6.2.1 Water Resource Management and the Agriculture Sector

A number of water sector issues should be at the forefront of policy making where the agriculture sector is concerned. Agriculture is the largest water user in the world and this also holds true for Caribbean states. Lack of water can be due to several reasons such as drought, competition among industries, population growth and urban expansion. Drought management and water conservation therefore become key issues for the sector. Similarly, flooding significantly impacts the sector and risk reduction strategies to minimise the impact of weather-related hazards such as these must be addressed by policy (FAO, 2013).

Water pollution must also be addressed from two perspectives: water-related diseases resulting from the use of polluted water in the sector, especially for crop and livestock; and pollution of water sources due to improper use of pesticides and other agricultural practices.

Water use by the agriculture sector, especially for Small Island Developing States (SIDS), should be clearly understood by policymakers. Socio-economic conditions have been shown to influence water use in the sector. Low- and middle-income countries have a higher proportion of total water use than high-income ones.

6.2.2 Agriculture, Water and Politics

Water is a strategic resource. The availability of water has been linked to the establishment of agricultural zones or agro-parks which have been included in local and national growth strategies. At the local level, the issue of water has been of such magnitude that constituents have applied pressure to political authorities due to unavailability of water for domestic, agriculture and other uses.

Water is a strategic resource...linked to local and national growth strategies.

Policy objectives that relate to the agriculture sector or water sector should not be one-dimensional. Water managers and policy-makers need to assess the entire range of government interventions to understand fully the economic, social and environmental impacts on a given sector, region or group of people.

Improving water resource management requires recognising how the overall water sector is linked to the national economy. Equally important is understanding how alternative economic policy instruments influence water usage across different economic sectors as well as among users at the local, regional and national levels and among households, farms and firms. The water sector should be aware of the connection between macro-economic policies and their impact on, for example, technical areas such as irrigation.

6.2.3 Agriculture and Poverty Reduction

Agriculture, especially in the context of developing countries, arguably has a better potential for reducing poverty than other sectors. While urban economies are often characterised by manufacturing and service industries, rural economies often remain heavily dependent on agriculture, with sometimes large numbers of such populations characterised as poor farmers. Improving risk management practices in the sectors, at various levels, has the ability to improve agricultural incomes and translate into a reduction in poverty.

Improving risk management practices in the sector...has the ability to improve agricultural incomes and translate into reduction in poverty.

6.2.4 Agriculture and Environment

As a sector that heavily depends on the environment, policy directives should ensure that those engaged in agriculture engage in sustainable land management practices, management of forestry resources, environmental protection, and mitigation of hazards. In the Caribbean environmental practices, such as limited soil conservation practices, limited water conservation practices, and unsustainable land management practices, characterise the agriculture sector and contribute to the occurrence of hazards (Figure 4).



FIGURE 4: IMPACT OF AGRICULTURE ON THE ENVIRONMENT

6.2.5 Agriculture and Food Security

Agriculture plays a critical role in all dimensions of food security. However, at the policy level attention should be paid to efforts to ensure that sudden shocks attributed to the occurrence of hazard events do not affect seasonal or long-term access to adequate food supply.

...at the policy level attention should be paid to efforts to ensure that sudden shocks attributed to the occurrence of hazard events do not affect seasonal or long term access to adequate food

A number of strategies will need to be adopted to reduce the risk of unstable food access. These may include diversifying agriculture and employment, access to credit system, monitoring food security and vulnerability and establishing social safety nets. Emphasis on rural areas may need to be brought into sharp focus when examining the link between food security and agriculture disaster risk management.

The link between food security and agriculture shows a strong integration with other areas such as poverty reduction, environmental and social sustainability, access to land tenure and other resources, and urban poverty.

6.2.6 Agriculture and Land Tenure

"Land tenure and environmental conditions are closely related: land tenure can promote land use practices that harm the environment or it can serve to enhance the environment" (FAO, 2013). Insecure tenure of land has been linked to environmental degradation. The lack of clear rights to the land acts as a disincentive for investment in sound land-use practices such as soil conservation, planting of trees and employing land clearance techniques that are less damaging to the environment. A sound environment is a natural protective mechanism against natural risks and where the environment has been degraded, risk levels may accelerate for the agricultural activities located on such lands. Similarly, where short-term leasehold arrangements are the main type of tenure, there is also a disincentive to make any meaningful investments that can mitigate risks.

The lack of clear rights to the land acts as a disincentive for investment in sound land-use practices and investment in risk reduction

Therefore, land tenure rules that are well-adapted can promote sustainable agriculture. Policies geared at strengthening DRM in the agriculture sector should also consider the type of land tenure arrangements and strengthen these as a means of promoting investment in risk reduction activities. For example, by ensuring that the conditions and duration of their leases encourage them to adopt sustainable land use practices, farmers will be better able to improve their environmental practices, and make investments in equipment, research and projects that build their resilience to natural hazards.

“Land tenure strategies should be linked with appropriate land management tools, such as agro-ecological zoning, to ensure that the land is put to a use that is suitable for its soil, land form and climatic characteristics. Increased participation and the empowerment of community structures are also required to ensure effective self-management of the natural resource base” (FAO, 2013).

6.2.7 DRM Integration with Existing Agriculture Sector Policies and Policies of Other Sectors

Before considering the development of a new policy, existing plans and policies relating to DRR must be identified and analysed. In many instances, existing policies have strong DRR linkages or strongly support the mainstreaming process. In such cases it may be better to seek to strengthen an existing policy or policies rather than creating new one as this will lead to duplication and affect buy-in and ownership from stakeholders (UNDP, 2010).

Before considering the development of a new policy, existing plans and policies relating to DRR must be identified and analysed.

6.3 LOCATING THE AGRICULTURE SECTOR IN NATIONAL DEVELOPMENT

It is important that the development of a risk reduction policy for the sector be mindful of the role of the sector and the mainstreaming process, especially in this context, since in the Caribbean the agriculture sector remains one of the most dominant sectors of the economy.

- **National Economy** – The agriculture sector for most Caribbean states is a key contributor to foreign exchange earnings and ultimately GDP.
- **Employment** – The sector remains one of the largest employers of labour especially for rural areas. Large commercial estate-type agriculture and food processing operations provide employment at the household level. For vulnerable groups such as women who are involved in small-scale agro-processing and packing, the sector is an important source of livelihood.
- **Industrial inputs** – Some industries depend on raw materials produced by the agriculture sector. These include cotton, textiles, paper, sugar, oils for cosmetics and other purposes and fruit for food processing.
- **Government revenue** – Direct and indirect tax revenues are generated by governments from the agriculture sector. These include customs duties, income taxes and sales taxes.
- **Food supply** – Countries are able to cater to the needs of their populations through food production. Several tons of foods are produced annually for local consumption. Food production must consider the dietary culture of the Caribbean.
- **Trade** – Agriculture is an important foreign exchange earner for several Caribbean states.

7 PILLAR 2 – UNDERSTAND THE DRM ISSUES IN THE AGRICULTURE SECTOR

Empirical data and findings can enhance the understanding of the sector and the DRR key issues that need to be addressed by policy. An understanding of the sector can be achieved in various ways using different tools, methods, and approaches, which are outlined below.

7.1 MONITORING AND SURVEILLANCE

For a full understanding of the issues that the policy should address, it is important that monitoring take place at several levels, that is, project, programme, plan and policy levels and the interrelationships between these various levels established as this will help to identify issues that need to be addressed.

Monitoring should be done of risks (weather-related hazards, pest and animal diseases), vulnerabilities (assets, farmers) and strategic plans and programmes. It is important that monitoring systems, such as Early Warning Systems, be established and the capacities to use and interpret these systems also built. Where warning systems are already established, the sector should ensure that there are linkages with the sector and any additional manipulation or adjustments to facilitate the sector specific needs be encouraged (Box 1).

BOX 1: AGRO-CLIMATIC BULLETINS

Agro-climatic Bulletins

Regional institutions, such as the Caribbean Institute for Meteorology and Hydrology, provide climatological forecasts for the regions and these are sometimes further analysed by the respective countries. From these regional forecasts, a further analysis and application to the agriculture sector have been done by institutions such as local Meteorological Services and initiatives such as the Caribbean Agro-meteorological Initiative (CAMI).

The Regional Climate Centre describes the features of Agro-climatological Bulletins:

- They report on significant past and present weather and climatic conditions that are essential to agriculture at national, regional and local levels;
- Each issue illustrates average extreme values of meteorological, agro-meteorological and hydro-meteorological elements, with information presented as graphs, tables, drawings, maps, satellite imagery and text;
- The Bulletin gives an overview of the state and phases of agricultural crop, forest plantation and farm animal development. It also features forecasted agro-climatological conditions with descriptions on their possible effects on development and yield.



MONTHLY AGRO-METEOROLOGICAL BULLETIN

Vol. 5 Issue 8

February 2017

IN THIS ISSUE

- Pg.1 February's Weather Summary
El Niño Alert
- Pg.2 Farming Community Report
- Pg.3 Seasonal Outlook
- Pg.4 Farming Outlook

OVERVIEW OF CONDITIONS FOR FEBRUARY

The month of February varied from moderately dry on parts of the east coast to exceptionally wet in central areas and along the west coast. The Atlantic High Pressure System which pushed patches of low level clouds across the area and weak unstable conditions both contributed to the monthly rainfall total.

DAILY RAINFALL FOR FEBRUARY 2017

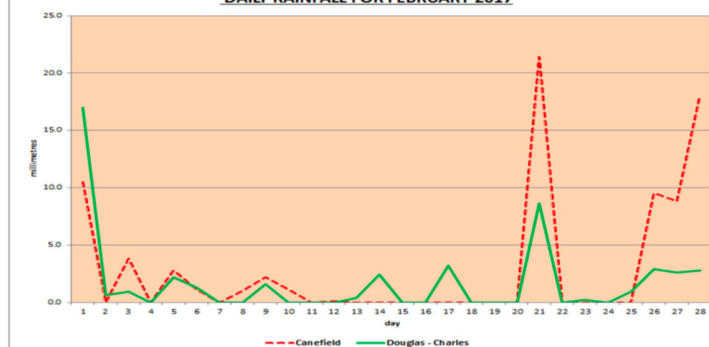


Figure 1 Daily rainfall at Canefield and Douglas-Charles Airports

SUMMARY FOR FEBRUARY 2017

Parameter	Canefield Airport	Douglas-Charles Airport
(February 2017)		
Rainfall Total	80.3mm (normal)	47.6mm (below normal)
Normal	45.8 to 81.7mm	77.2 to 106.7mm
Wettest day	21st (21.4mm)	1st (17.0mm)
Wet Days (≥ 1.0 mm)	11 days	10 days
Temperature	26.4°C	26.4°C
30 year average	26.4°C	25.9°C
Maximum Temperature	32.0°C (4th)	30.5°C (21st)
Minimum Temperature	19.4°C (17th)	18.5°C (22nd & 23rd)
Relative Humidity	65%	73%
Maximum wind gust	52km/h (28th)	63km/h (28th)
Average daily sunshine hours	-	7hrs 36mins
Normal		7hrs 18mins

Table 1 February 2017 weather parameters

EL NIÑO ALERT!!!!

- ♦ ENSO-neutral conditions have returned and is expected to remain at least towards the end of the dry season.
- ♦ Some models anticipate an onset of El Niño into the 2017 wet season.
- ♦ ENSO neutral conditions have little effect on rainfall or temperatures.
- ♦ However, if El Niño manifests by June-July-August 2017, odds are in favour of drier weather with less extreme rainfall than usual for the first half of the wet season.

Monitoring to inform policy is more concerned with the pre-implementation phase and can involve participatory and consultative approaches that solicit the views and feedback of stakeholders on the risk management practices of the sector. It can also involve the use of surveillance systems that are directly related to the sector or other sectors that impact the agriculture sector, for example, monitoring of water quality. Monitoring (and surveillance) depends on the availability of timely, comprehensive and high-quality data and information on the sector. There must also be the requisite expertise and resources to monitor and interpret this information, and draw conclusions for policy and regulation.

7.2 STAKEHOLDER CONSULTATIONS

Any DRM policies developed for the agriculture sector should acknowledge the various types of stakeholders in the sector (Figure 5), their interest in DRR mainstreaming, and their role in the process. It is therefore important to map key decision-makers and stakeholders. The following guideline should be considered in identifying and engaging stakeholders in the process:



FIGURE 5: KEY STAKEHOLDERS

- **Government** – Government has the major task of reducing risk in the sector. There are many who are involved because key decisions are taken at the community, local, sectoral and national levels. At the national level, government is important in the policy dialogue and in policy instrument development, such as legislation and regulation, and in the setting of national strategic plans for the sector. At the sectoral level, institutions play a key role as this is the level at which programmes and projects are implemented and monitored. It is also at this level that DRR capacities will need to be built to facilitate the mainstreaming process. It is important that the link among government actors who are also present at the community level be continuous and linked through strategic and operational frameworks.
- **Communities** – Engaging communities is beneficial from two perspectives. Communities know the hazards, vulnerability and risks facing their communities, and this knowledge can contribute to risk reduction by guiding development away from these areas or making recommendations that can mitigate risks. This is usually because they have developed innovative approaches or applied best practices that can influence decisions around risk. On the other hand, communities are beneficiaries of projects and programmes and engaging them is important for ownership and buy-in. Monitoring mechanisms at the local level helps to determine whether risk reduction outcomes are being achieved.
- **Development Agencies and NGOs** – This group uses advocacy and lobbying to influence policy often providing the data and evidence for policy directions. They are also very helpful in attracting and mobilising resources for risk reduction especially at the community level. Their role in mainstreaming should therefore not be overlooked and should be recognised at the policy level.
- **Academia and Research** – Mainstreaming is a multi-disciplinary process, drawing on the skills of several experts (UNDP, 2010). This is no different for the agriculture sector which has several sub-sectors and several elements making up the

agriculture system. The need for the involvement of several disciplines, such as natural resource management, engineering, land-use planning, development, ICT and others, is relevant for agriculture mainstreaming. Academia can provide research on innovative ways of reducing risk, as well as research data and analysis as evidence to guide decisions, training and technical expertise.

- **Private Sector** – In the development and growth discussion, government is often seen as the enabler and private sector the engine of growth. Considering that disaster management is a development issue, the role of the private sector in mainstreaming should not be overlooked. The private sector has equal responsibility to integrate disaster management in their businesses to safeguard against shocks and allow their continuity should some disruption occur.
- **Media** – Reinforcement of risk reduction messages and advocacy are some of the key functions of media in risk reduction. This group is also important in highlighting risks and their underlying causes especially if it relates to inefficiency and poor decision-making.
- **Consumers** – Engaging a wide variety of actors in the sector increases the chance of the results and outputs from the mainstreaming process being more sustainable. Consultation should therefore not be left to chance or be optional. Consumers drive demand so the need to continuously supply and deliver quality products and produce is a driver for risk reduction. The tourism sector, for example, is a large consumer of agricultural produce. This industry demands consistent supply and so mitigation strategies employed by the sector have to be geared towards meeting consumer needs.

BOX 2: GUIDING QUESTIONS TO IDENTIFY STAKEHOLDERS FOR PARTICIPATING IN MAINSTREAMING

- Who might be affected (positively or negatively) by the development concern to be addressed?
- Who are the representatives likely to be affected?
- Who are the voiceless for whom special efforts should be made?
- Who is responsible for what is intended?
- Who can make what is intended more effective through their participation or less effective by their non- participation or outright opposition?
- Who can contribute financial and technical resources?
- Whose behaviour has to change for the effort to succeed?

Source: Mainstreaming Drylands into National Development Frameworks (UNDP, 2008)

Institutional mechanisms, such as committees, task forces, thematic working groups and other similar groups, can also provide opportunities for soliciting stakeholder feedback. In addition, the following tools outlined in Box 2 above and Table 4 below can be used during the participation process.

TABLE 4: APPROACHES TO STAKEHOLDER ENGAGEMENT

Soliciting Input	Gaining Consensus	Dissemination of Information
Contact Community Leaders Surveys Questionnaires Interviews Public Meetings Assessment of beneficiaries	Advisory panels Problem-solving techniques Consensus-building techniques	Printed Materials Displays Exhibits Open Meetings

7.3 ANALYTICAL TOOLS AND METHODS

The use of analytical tools and methods is critical to the understanding of the risk in the sector (Figure 6). As such, risk and vulnerability studies for the agriculture sector should be undertaken. These methods, and other analytical tools, such as cost benefit analyses, are important for analysing and interpreting risk. It should be ensured that the tools and methods are applicable to the broad policy level and not only the project level.

Sustainable Livelihood Framework	Agriculture Sector Risk Assessment	Climate Risk Assessment
Identify types of households likely to be vulnerables	Developed by World Bank provides a stepwise approach to conducting risk assessment in the sector	These approaches can help identify specific impacts on sub-sectors or geographical locations If there is a strategic crop that is significant to the sector, climate impacts on this crop should be assessed and understood

FIGURE 6: RISK TOOLS AND METHODS FOR AGRICULTURE

7.3.1 Hazard, Vulnerability and Risk Studies and Assessments

A number of tools and approaches is available to the sector to conduct these studies and assessments. While some are tailored for the sector, others are generic and can be applied through sector lenses or modified/adapted for use by the sector.

- a. **Sustainable Livelihoods (SL) Framework** – This provides an insightful analytical approach to help identify which types of households are likely to be particularly vulnerable. This is accomplished through the analysis of the following inter-relationships: shocks, vulnerabilities and households' bundles of assets, and coping strategies. This analysis is done within the context of ongoing policy, institutional and development processes. The SL framework puts households and their livelihoods at the centre of the analysis, assuming that they are continuously influenced by potential threats of shocks and/or disasters. In the SL framework, vulnerabilities, of all kinds, and institutions form core parts of the overall context within which development processes take place. The different bundles of assets of different households, social groups and communities and the institutional contexts ultimately determine the capacities of these households, social groups and communities to cope with disasters before, during, and after their occurrence.
- b. **Agriculture Sector Risk Assessment (ASRA)** – This approach to assessing agriculture sector risk was developed by the World Bank and provides a stepwise approach to conducting risk assessment in the sector. It is a tool that can help decision-makers understand risk exposure and provides a basis for developing appropriate risk mitigation solutions. The approach is highly participatory and provides an orderly way to identify, prioritise and analyse risk. The tools and framework are adaptable to account for the uniqueness of each country and can be applied at sectoral or national levels. It is also considered a key entry point for mainstreaming DRM and CC in the sector.

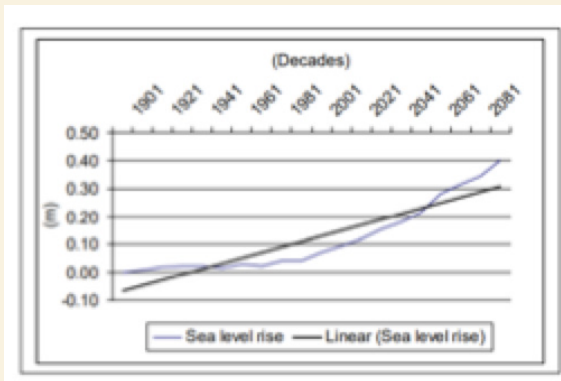
- c. **Climate Risk Assessment** – There are several methodological approaches that are used to determine the extent of climate impacts on the sector. These approaches can help identify specific impacts on subsectors or geographical locations. It is important that these assessments include the subsectors, for example, fisheries and crop farming differs and their unique features will need to be taken into account so that strategic decisions can be made regarding the adaptation strategies to be pursued. Similarly, if there is a strategic crop that is significant to the sector, climate impacts on this crop should be assessed and understood so that strategic, policy level decisions can be taken not only about adaptation strategies, but to identify any other opportunities that could become available due to climate impacts on the sector. Box 3 provides a case study of a climate risk assessment conducted in Guyana and Jamaica.

Several other tools are available for assessing DRM/climate change impacts at more operational levels such as community or sub-sectoral levels. These are useful in advocacy and provide the evidence for change at the policy level. Tools, such as the Vulnerability and Capacity Assessment Toolkit (Red Cross), and Community-Based Risk-Screening Tool (CRiSTAL) (IISD), should be encouraged by policymakers as they help with understanding risk, particularly at the community level.

BOX 3: RISK ASSESSMENTS – THE CASE OF GUYANA AND JAMAICA

Guyana, from as early as 2002, conducted a Coastal Vulnerability and Risk Assessment and this was led by the Caribbean Community Climate Change Centre. The aim of the study was to support select Caribbean countries in preparing to cope with the adverse effects of climate change, particularly sea-level rise in coastal and marine areas. The study examined the socio-economic and bio-physical effects of sea-level rise with a view to identifying potential adaptation measures. The study considered the following sea-level rise scenarios:

- SLR 1 = 0.2 meter for the year 2020
- SLR 2 = 0.5 meter for the year 2050
- SLR 3 = 0.9 meter for the year 2100



From the study, the following is a summary of impacts on the agriculture sector:

1. Inundation – Major impact – Inundation will devastate agriculture, a dominant economic activity on the coast
2. Salinisation – Major impact – Most plants will be unable to survive under such unfavourable conditions
3. Erosion – Major impact Jamaica

Jamaica

Through a study commissioned by the Economic Commission for Latin America and the Caribbean, an assessment of the economic impact of climate change on the agriculture sector was conducted for Jamaica in 2011. There are five approaches that can be used for climate risk assessments and the study used a modified version of the Ricardian model and the assessment focussed on six major export and domestic crops – sugarcane, coffee, banana, citrus, yams and escallion. The aim of the study was to model the probable impacts of climate change on the agriculture sector in Jamaica in the event that either the Special Report on Emission (SRE) scenarios, A2 and B2, based on ECHAM Forecasts, obtain in the 21st century, particularly up to 2050.

For each crop, the study investigated the costs and benefits of investing in adaptation options to projected increases in temperature and changes in the pattern of precipitation. One of the findings from the assessment showed that for sugar cane, replanting and irrigation appear to generate net benefits at the three selected discount rates for Scenario A2, but only at a discounted rate of 1% for Scenario B2. For yam and escallion, investment in irrigation will earn significant net benefits for both Scenarios A2 and B2 at the three selected rates of discount –1%, 2% and 4%.

7.3.2 Strategic Environmental Assessment (SEA) for the Agriculture Sector

Strategic Environmental Assessment (SEA) is a set of analytical and participatory processes for incorporating environmental considerations, at early stages of decision-making, into policies, plans, and programmes that affect natural resources. SEA evaluates, at the highest strategic level, a project's environmental impacts in the context of social and economic factors. SEA fosters and provides critical systematic consideration at the sectoral, regional, and national levels to promote environmental sustainability, smart growth, and pollution prevention. The term "SEA" encompasses a spectrum of analytical processes such as Strategic Environmental and Social Assessment (SESA), Strategic Social Environmental Assessment (SSEA), Country Environmental Analysis (CEA), Combined Strategic Impact Assessment (CSIA), and Cumulative Impact Assessment (CIA).

Because the environment includes critical resources necessary for protecting the agriculture sector against hazards and given the linkages between agriculture and the environment, an SEA is helpful in incorporating environmental considerations into the development of public policies and strategic decisions. An SEA can be completed for the agriculture sector as is often the case for priority sectors of countries.

7.3.3 Post-disaster Impact Assessments

Post-disaster impact data provides information on the nature and extent of the impact of hazards on the agriculture sector. This impact can be further quantified and represented in economic terms such as impact on sector GDP, imports, exports, subsidies and is also useful for identifying the recovery needs of the sector.

The Disaster Assessment Methodology developed by the Economic Commission of Latin America and the Caribbean (ECLAC) has been widely used to collect and assess the socio-economic and environmental impacts of disasters. Cross-cutting issues, such as gender, climate change and the environment, are also included in this assessment.

The techniques used for this assessment provides procedures for estimating the effects and impacts of disasters and provides an integral accounting approach to bring them together in a coherent picture, distinguishing between losses and additional costs and with due account of linkages among different sectors of the economy. Over time, data and information from these assessments can be analysed and compared and used to influence policy. Box 4 is an example of the type of data that can be collected using this technique. Tropical Storm Erica significantly impacted the Commonwealth of Dominica on August 27, 2017. A Rapid Damage and Impact Assessment (RDIA) was undertaken by the government in close collaboration with the World Bank and other partners. This assessment was used to identify immediate post-disaster needs as well as medium- and long-term needs. Over time, data from successive events can be compared and further analysed to identify trends and drive policy-decisions on reducing damage in the sector.

Continuous improvements have been made to the methodology and other approaches, such as the Post-Disaster Needs Assessment (PDNA) technique, which is also a good approach for quantifying damage and loss.

BOX 4: DATA COLLECTION USING PDNA TECHNIQUE

Background

The agriculture sector is a significant contributor to the economy of Dominica. Agriculture contributes approximately 17%, or USD\$93.4M to the country's GDP. The agriculture sector is a major source of jobs in Dominica. Of the estimated 32,000 persons actively seeking employment, an estimated 7,000 are employed in agriculture. This represents 21% of the active workforce. In terms of arable land (including permanent crops), Dominica has approximately 24,000 ha available based on 2012 estimates. A variety of crops is grown, but root crops and ground provisions are among the highest in agricultural importance. Bay oil production is regarded as second followed by banana and plantain. Other important crops include citrus, avocado, coconut, passion fruit and vegetables. Livestock is a minor, but important contributor to the sector. Poultry, cattle, goats, sheep, and pigs are reared primarily for local consumption. In terms of agricultural importance, laying hens for egg production are considered number one, followed by pork production and finally ruminants. Over the past two decades, there has been much attention paid to the agriculture sector. The Government of The Commonwealth of Dominica (GoCD) together with international partners have invested significantly in the sector to promote production and manage pests and disease.

Methodology

A one hour technical workshop focusing on the methodology of the assessment was held on Monday September 7, 2015 and chaired by the Ministry of Finance. The Rapid Damage and Impact Assessment (RDIA) builds on the Damage and Loss Assessment (DaLA) methodology developed by UN ECLAC (see box below) and expands it with quantitative data on social sector and livelihood impacts. Twenty-eight experts attended representing Ministries and organizations from impacted sectors, which include the Ministry of Finance, the Ministry of Agriculture and Fisheries, the Ministry of Education and Human Resource Development, the Ministry of Health and Environment, the Ministry of Housing, Lands and Water Resource Management, the Ministry of Public Works and Ports, the Ministry of Social Services, Family and Gender Affairs, the Ministry of Tourism and Urban Renewal and Dominica Water and Sewerage Authority.

Findings from assessment

Damages	EC\$
Destruction of agricultural lands	\$29,000,000
Damages irrigation and drainage systems	\$1,900,000
Agricultural machinery and equipment	\$4,200,769
Damage to storage and farm related buildings	\$3,047,000

Plantation and production facilities damaged or destroyed	\$13,034,736
Livestock killed	\$851,000
Damage to road infrastructure	\$57,650,000
Total Damages	\$109,722,705
Losses (Aggregated losses)	
Losses due to production changes	\$13,034,736
Losses due to increased production costs	\$74,637
Total Losses	\$13,109,373
Total Damages and Losses	\$122,832,078

- The total damages and losses to the Agriculture Sector are estimated at EC\$122,832,078 (US\$40,789,110). Damage and losses are extensive in areas hardest hit by flooding and landslide.
- The total damages and losses to the Fisheries Sector are estimated at EC\$2,949,324 (US\$1,096,403).
- The total damages and losses to the Forestry Sector are estimated at EC\$1,546,960 (US\$575,078).

Source: Rapid Damage and Impact Assessment Tropical Storm Erika – August 27, 2015

7.3.4 Cost-benefit Analysis

A cost-benefit analysis (CBA) is an economic tool that can be used to compare the costs and benefits of DRR interventions. Research has shown that the economic benefits derived from DRR interventions outweigh their costs. Not enough of these studies are being done to better understand the short-, medium- and long-term benefits derived from investing in DRR. Often, CBA is undertaken at the project or programme

level, but there are very strong linkages with the policy level as it provides justification for spending on DRR and the allocation of sufficient budget for related activities. Not only is it an excellent tool for advocacy and effecting change in high-level decision-making, but it is also useful for identifying the options and instruments best suited for DRR.

7.3.5 Capacity to Use Tools and Methods

The presence of the assessment and analysis tools and procedures by themselves do not completely address the information needs for driving policy. It is important that the capacity of technocrats to use the tools and approaches be present. There are a number of ways to build this capacity such as through training, technical cooperation and access to information repositories and databases. Technocrats can then interpret and present the findings for decision-makers to use in policy development.

There must be adequate expertise and resources to monitor and interpret the data and draw conclusions for policy.

The tools and approaches described above are important in developing an understanding of the DRM problems and issues in the sector and establishing a case for intervention. Findings from these assessments should be used to set policy objectives that achieve the desired change in the sector.

7.3.6 Translating Research into Policy

Research sometimes does not drive policy decisions despite the sometimes compelling evidence that is presented. Health and other sectors have examined this and a number of strategies has been identified that encourages the development of policy objectives based on research. Box 5 provides suggestions for DRM research evidence to be translated into DRM policies for the agriculture sector.

BOX 5: SUGGESTIONS FOR TRANSLATING DRM-RELATED RESEARCH INTO DRM POLICIES FOR THE AGRICULTURE SECTOR

The following suggestions are provided for translating DRM-related research into DRM policies for the Agriculture sector:

- Ensure the research is relevant for the sector. Effective transformation processes from ground-breaking innovation research to application and marketization in practice is required. The value proposition has to be clear;
- Communicate the findings in a way that is meaningful to policy-makers. Researchers do not usually speak the same language as policy-makers (phenomena of “lost in translation”). While researchers need to write well-grounded, rigorous publications to get their work published in scientific publication outlets, policy-makers need short management summaries in a different language and through channels to reach out to their constituency. It may be useful to use intermediaries who will serve as translators;
- Conduct multidisciplinary research, as part of policymaking research to spur collaboration for better translating research findings into actionable policy practices;
- Cite examples of where the research finding, best practice or innovation has worked. The risk-averseness of policy-makers towards untested innovation and creativity potentially bringing negative results can prevent translating it into policy objectives. Many valuable innovations and findings of research remain within the academic discipline and end up in bookshelves without further consideration of being translated into practical use;

Adapted from Grand Challenge “Translating research results into policy actions and support”, (2015) Retrieved from <http://www.policy-community.eu/results/grand-challenges-of-research/grand-challenge-5>

7.4 HIGH-LEVEL CHECKLIST – UNDERSTANDING DRM ISSUES IN THE AGRICULTURAL SECTOR

TABLE 5: UNDERSTANDING THE DRM ISSUES IN THE AGRICULTURE SECTOR

UNDERSTAND THE DRM ISSUES IN THE AGRICULTURAL SECTOR	
Are the DRM issues in the sector sufficiently identified and understood so that appropriate policies and strategies can be developed?	
Are monitoring and surveillance systems in place to collect data on DRM issues and problems?	Data on the various issues to be addressed by policy is important and it is essential that this data is credible, relevant and adequate in time and scope.
Has the views of a wide variety of stakeholders been solicited and integrated in policy, including consumers?	In addition to surveillance and monitoring systems, stakeholder input is important for addressing issues that hinder mainstreaming and providing solutions to those issues. Is the feedback from a wide variety of stakeholders being incorporated?
Are there mechanisms in place to facilitate consistent stakeholder collaboration, engagement and feedback?	To what extent are mechanisms in place to incorporate stakeholder feedback in the sector and are they functioning?
Are emerging risks being identified and constantly monitored internationally, regionally and locally? Are analytical tools and methods available to help understanding risk in the sector at the strategic level?	The DRM landscape is changing and non-traditional hazards are impacting the sector? Are systems in place to monitor, identify and assess emerging hazards? Is there collaboration with international and regional partners to monitor these risks?
Are analytical tools and methods available to help understanding risk in the sector at the strategic level?	Analytical tools are useful in assessing and understanding risk so that solutions and options are more targeted? Is the sector using available tools, tool-kits, techniques and methods to better understand and quantify risk?
How are the results of disaster risk assessments used in decisions concerning allocation of resources for: i. Emergency preparedness? ii. Disaster prevention and mitigation measures? iii. Disaster risk financing and risk transfer tools?	Risk assessment should be used to guide risk reduction interventions in the sector. The assessments are useful for all components of the risk management framework.
Does the capacity to use the tools and methods exist? Is there adequate expertise to properly analyse and understand the risk, identify options and formulate policy response?	Does technical and non-technical expert in the sector have the capacity to use these tools? Have training and other capacity building initiatives been undertaken? Are the results been applied to risk mitigation in the sector?
Is disaster impact data being collected and analysed?	Is there an understanding of the extent to which the sector is being impacted? Are there sub-sectors that are being more severely impacted?

8 PILLAR 3 – DEFINING THE FEATURES OF A MAINSTREAMED SECTOR

8.1 EXPECTED OUTCOMES

It is important that the characteristics of an ideal sector be defined as it serves as a reference point for the development of the policy and will also be used for monitoring and evaluating. The ideal attribute(s) of a mainstreamed sector can be defined in terms of outcomes. By defining outcomes, the role of the agriculture sector in the broader context of development is clearly established. Outcomes are among the highest level of the achievement of results, suggesting that several activities and outputs contribute to the achievement of outcomes and include those that take place at the operational level. The various outputs at the programme, project, organisation and citizen levels provide an opportunity to integrate DRM in those areas and the overall impact should ideally be felt at the outcome level.

If a DRM policy is preceded by a national development plan, it is recommended that this critical document be consulted as it may contain the overall vision or outcome for the agriculture sector, especially if the agriculture sector is a key pillar of the economy. These outcomes represent what an “ideal” sector will look like if DRM and other factors are considered in their achievement. Outcomes are tied to strategic planning periods and so new outcomes may be formulated at the end of those periods. National development plans, strategic plans and the resultant sector plans will define specific progress to be achieved by the sector, within that specific period of time. These outcomes are important for monitoring and evaluation, and gauging the extent to which DRM has been mainstreamed in the sector within that timeframe.

While there are expected outputs from the agriculture sector mainstreaming process, it should be borne in mind that these outputs connect to larger outcomes for the sector. Given the scope and function of the agriculture sector in achievement of national development targets, such as its contribution to trade, employment and GDP, outcomes for the sector may not be framed in DRM language, but in broader terms. However, if DRM is mainstreamed in the sector, it should result in outcomes such as:

- Higher rural income
- Greater food security
- Improved environmental sustainability.

Where there is a deep understanding of the sector, outcomes at local and national levels can be defined and the intervention logic at each stage designed with this in mind. This is important as mainstreaming has different levels of intervention, from local to international, and each should be strategically linked. DRM mainstreaming in the sector is likely to be more successful over the long term if it is promoted at all levels. While there is need to engage all levels, a strong focus on the local level is important because of its cumulative effect at the national level. It is however best that local intervention be guided by national level outcomes.

8.2 FOUNDATIONS OF A MAINSTREAMED SECTOR

The foundations of a mainstreamed sector should be clearly identified as they are essential in the formulation of outcomes. These foundations comprise key requirements for mainstreaming one of which is a strong policy level comprising the presence of key policy documents, resources, and political leadership (see Section 4.1). In addition to these, the following are key foundations for a mainstreamed sector:

- 1. Organisation/Institutional Capacity and Leadership Commitment:** For mainstreaming to be successful, the institutional arrangements and necessary capacity to support the CDM mainstreaming process must be in place. It includes such elements as organisational rules, procedures and incentives. Implicit in organisational capacity is the necessity to appoint a nodal agency at the national level. Similarly, appointing an agency with DRR responsibilities at the sector level will help drive, coordinate and sustain DRR mainstreaming.
- 2. Advocacy and Knowledge:** Advocacy and knowledge is at the heart of any DRR mainstreaming strategy and may include advocacy for policy reforms, organisational change, implementing pilot projects or supporting community resilience building. Efforts should be placed on awareness raising as a means of empowering decision-makers and the general public about DRR goals. Tools and methods for assessing or integrating DRR into development in the sector (see Section 5.3) are critical as they provide the basis for mitigation and prevention solutions.
- 3. Citizen Participation:** Participation of communities in decision-making and the extent to which NGOs, civil society institutions, and community-based organisations are involved in the goal of DRR and Climate Change Adaptation (CCA) affect mainstreaming in the sector. This framework recognises that with participation of the citizenry, there is increased ownership and buy-in for development activities. This, in turn, increases the efficiency and sustainability of development and

ultimately makes DRR more successful. It is the role of civil society to ensure that policy decisions adequately include diverse and vulnerable groups, and not only powerful and well connected groups. The notion that constituents can apply pressure to elected officials forcing them to respond to DRR needs of the sector should be explored.

- 4. Sound Implementation:** Risk-proofing investments, monitoring and evaluation of projects, and compliance and enforcement of laws and regulations can guide policy in the sector. Tools and methods should be used to calculate, assess and anticipate risks. The findings from these assessments can be used to drive policy such as informing construction design standards that ensure developments are hazard-proof. At policy level, the notion that hazard-proofing developments is an investment for which the return is resilience to hazards should be promoted. This return should also be quantified using the appropriate tools and methods and used as an advocacy tool for policy decision.

8.2.1 Links between the Foundations

The “webbed” concept of mainstreaming means that all foundations are linked, and these linkages will have to be considered in developing policy in the agriculture sector. Having these areas integrated in the formulation of outcomes is essential to having a mainstreamed sector as they represent a benchmark definition of the fundamentals of mainstreaming; and provide a basis for analysis and ultimately the elaboration of outcomes. The foundations should be as precisely defined as possible, taking into account national and sector-level factors that may nuance these specific elements.

8.3 INTERNATIONAL, REGIONAL AND LOCAL PERSPECTIVES ON OUTCOMES FOR THE SECTOR

8.3.1 International Frameworks

8.3.1.1 Sendai Framework for Disaster Risk Reduction

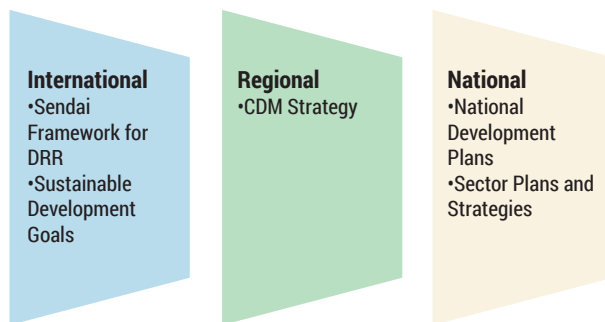


FIGURE 7: INTERNATIONAL AND REGIONAL FRAMEWORKS

Considering the experience gained with the implementation of the Hyogo Framework for Action (HFA), and with a view towards achieving the expected result and objective, states are expected to adopt specific measures in all sectors at a local, national, regional and global level. The Sendai Framework for Disaster Risk Reduction (SFDRR) was developed as a follow-on to the HFA. The framework's expected outcome is the substantial reduction of disaster risk and losses in lives, livelihoods, and health in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries (Figure 7). The goals and targets to achieve these expected outcomes as well as the four priorities for action are:

Priority 1. Understanding disaster risk – Disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment. Such knowledge can be used for risk assessment, prevention, mitigation, preparedness and response.

Priority 2. Strengthening disaster risk governance to manage disaster risk – Disaster risk governance at the national, regional and global levels is very important for prevention, mitigation, preparedness, response, recovery, and rehabilitation. It fosters collaboration and partnership.

Priority 3. Investing in disaster risk reduction for resilience – Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets as well as the environment.

Priority 4. Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction – The growth of disaster risk means there is a need to strengthen disaster preparedness for response, take action in anticipation of events, and ensure capacities are in place for effective response and recovery at all levels. The recovery, rehabilitation and reconstruction phase is a critical opportunity to build back better, including through integrating disaster risk reduction into development measures. The Sendai Framework thus provides the structure that will guide coordination and measurement of actions and progress towards DRM of the countries, in the different sectors and scopes of development. This framework has been the basis for several FAO guidelines and frameworks developed for the sector some of which have translated the four priorities for specific sector application (see Annex A).

8.3.2 Sustainable Development Goals

The UNDP describes the Sustainable Development Goals (SDGs), otherwise known as the Global Goals, as a universal call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity.

The 17 Goals and 169 targets build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are intercon-

nected – often the key to success on one will involve tackling issues more commonly associated with another.

The SDGs work in the spirit of partnership and pragmatism to make the right choices now to improve life, in a sustainable way, for future generations. They provide clear guidelines and targets for all countries to adopt in accordance with their own priorities and the environmental challenges of the world at large. The SDGs are an inclusive agenda. They tackle the root causes of poverty and unite us together to make a positive change for both people and the planet. The SDG is a strategic plan of the UNDP and focuses on key areas including poverty alleviation, democratic governance and peace building, climate change and disaster risk, and economic inequality.

8.3.3 Resilient Livelihoods: Disaster Risk Reduction for Food and Nutrition Security Framework

This framework was developed by FAO because of the recognition that disasters and food security are directly interconnected. Hazards including natural hazards, pests and diseases, can interrupt market access; destroy agricultural produce; spoil food; interrupt market access; damage and destroy food processing infrastructure, assets, inputs and production capacity; deplete savings; and erode livelihoods (FAO, 2013). Therefore, poverty and increased prevalence of food insecurity and malnutrition can result. The purpose of the framework is to provide strategic direction to the implementation of DRR measures in member countries across agriculture sectors in line with the five priority areas of the then Hyogo Framework of Action. At the core of the framework are four main interconnected pillars:

1. Enable the Environment – Institutional strengthening and governance of risk and crisis in agricultural sectors;
2. Watch to Safeguard – Information and early warning systems on food and nutrition security and transboundary threats;

3. Protect and Build Livelihoods – Protection, prevention, mitigation and building livelihoods with technologies, approaches and practices across all agricultural sectors;
4. Prepare and Respond – Preparedness for and response to crises in agriculture, livestock, fisheries and forestry.

8.3.4 Regional Comprehensive Disaster Management Strategy

Consistent with global thinking on DRR, the regional disaster management agency, the Caribbean Disaster and Emergency Management Agency (CDEMA), has developed a Draft Regional Comprehensive Disaster Management (CDM) Strategy and Programming Framework 2014–2024. The new strategy builds on the successes of the 2007–2012 CDM Framework and aims to address the existing gaps in achieving CDM and mainstreaming DRM at the sectoral level. The goal of the CDM Strategy 2014–2024 is to realise “safer, more resilient and sustainable CDEMA participating states through Comprehensive Disaster Management”. This goal is supported by four high-level priority outcomes and sixteen outputs as represented in the CDM Logic Model. The four priority outcomes in the 2014–2024 strategy are:

Outcome 1: Strengthened institutional arrangements for Comprehensive Disaster Management implementation at national and regional levels;

Outcome 2: Increased and sustained knowledge management and learning for Comprehensive Disaster Management;

Outcome 3: Improved effectiveness of CDM at sectoral levels;

Outcome 4: Strengthened and sustained capacity for a culture of safety and community resilience in participating states.

Important to note also is that the implementation of the CDM Strategy also focuses on the inclusion of several cross-cutting themes. These are gender, climate change, information and communications technology (ICT), and environmental sustainability. The CDMSF underpins the conceptual framework for this assignment, which contributes to CDEMA's priority areas for disaster risk reduction.

8.3.5 National Outcomes for DRR

National outcomes for mainstreaming can be determined from national development plans or national level strategic plans for disaster risk reduction. A prerequisite for establishing national outcomes is the existence of a national system of multi-stakeholder coordination, to highlight the need for benefit and desired outcomes for the risk reduction. Such a coordination mechanism is recognised and encouraged by the SFDRR which has stated that . . . "It is necessary to support the implementation, follow-up and review of this framework through supporting countries, including through the national platforms or their equivalent, in their development of national plans and monitor trends and patterns in disaster risk, loss and impact". (UNISDR, 2015b). As per Priority 1 of the Hyogo Framework for Action, the establishment of a national platform or multi-stakeholder coordination mechanism for disaster risk reduction reflects the commitment of governments to implement national disaster risk reduction activities while linking up to the local and international efforts.

8.3.6 Sector Outcomes for DRR

In establishing sector outcomes for DRR, international, regional and national level outcomes for DRR should be consulted and used as a guide. Annex A outlines agriculture sector-specific application of the SFDRR developed by the FAO that illustrates agriculture-specific examples of how the framework can be translated for use by the sector. It identifies agriculture sector-specific issues and links them to the SFDRR. This is very useful for the sector as it can help in identifying some of the agriculture priority outcomes.

Similarly, the CDM and national outcomes for DRR should be used as a guide. The CDM strategy includes a priority outcome for sector mainstreaming and includes work plans that each of the committees or working groups use in their implementation and operationalisation of the CDM strategy. National development plans often include goals, priorities or strategies for risk reduction and the agriculture sector aligns its DRR outcomes with these national level goals. Importantly, the sector should use its local assessment of risk, challenges and issues to guide its prioritisation of issues and resultant outcomes for DRR.

While some countries find value in having a sector-specific DRR plan for the sector, it is the integration of DRR in the development decisions of the sector that is paramount. Therefore, a strategic plan, sustainable plan, development plan or policy for the sector needs to integrate DRR in the outcomes and ensure the inclusion of indicators and targets that will allow monitoring and measurement of progress achieved.

9 PILLAR 4 – SET POLICY GOALS AND OBJECTIVES

Policy objectives are of paramount importance in developing policies for DRM for the agriculture sector (Figure 8). An understanding of the sector includes defining outcomes that exemplify what an ideal sector should look like if DRM is being mainstreamed. Policy objectives help to elaborate and define those outcomes that the government wishes to achieve for the sector and identify any trade-offs that may have to be made. These objectives are also important for monitoring and are an important component of the accountability framework.

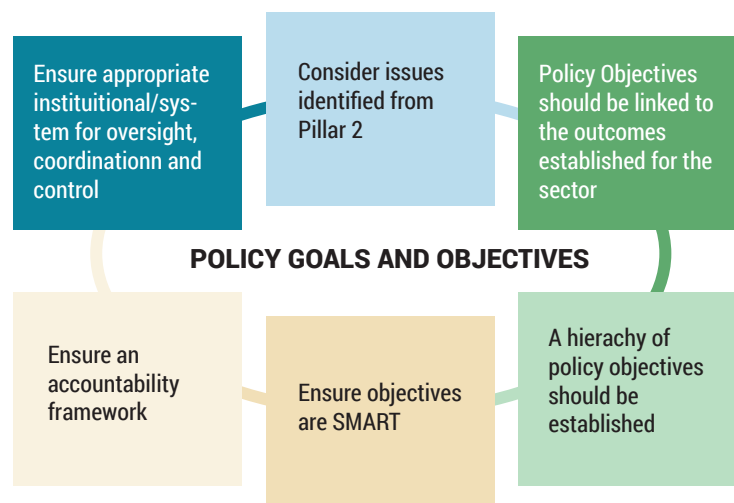


FIGURE 8: CONSIDERATIONS FOR SETTING POLICY GOALS AND OBJECTIVES

9.1 IDENTIFICATION AND ANALYSIS OF PROBLEMS AND ISSUES

The elaboration of a policy, whether specific to DRM or otherwise, must be guided by identification and analysis of key issues at global, regional and local levels. This is because policy must address issues in their broadest terms and consideration given to how those issues are linked to regional and global spheres. This is important as it is these issues that the policy objectives must target and seek to correct, otherwise achievement of the outcomes will be jeopardised.

The analysis should ensure that the environmental, economic, and social dimensions of risk management in the sector are adequately guided by policy. The DRM and climate change issues analysed in Pillar 1 should identify the issues and make a compelling case for DRM interventions in the sector.

9.2 CONSIDER CLIMATE CHANGE AND CLIMATE VARIABILITY

Policy issues such as climate change that have international and local dimensions must be factored in the analysis of the problems. This issue not only affects short-term risks, but also future risks. This is because climate change affects the “normal” growing conditions of crops, livestock and fisheries.

St Lucia’s National Climate Change Policy and Adaptation Plan outline the following main risks to agriculture:

- Increased water demand and reduced supply due to higher temperature and more frequent drought;
- Increased occurrence of agricultural pests due to increased temperatures;
- Reduced crop and livestock production due to modified agro-climatic regimes;

- Accelerated soil erosion due to more frequent and severe flooding;
- Sea level rise leading to land and infrastructure loss, beach erosion, storm surge, floods and inundation of low-lying areas;
- Damages from more frequent and severe hurricanes due to higher ocean temperatures.

If there are primary crops cultivated, the impacts of climate change should be assessed, especially if the crop is a source of foreign exchange earnings for the sector. The case study regarding potato production illustrates how climate change impacts on crop production can be assessed (Box 6). The assessment was undertaken by Dale Rankine et al. of the Climate Studies Group, Mona.

BOX 6: CASE STUDY: THE IMPACT OF FUTURE CLIMATE CHANGE ON SWEET POTATO PRODUCTION, JAMAICA

Aims and Objectives

The aim of this study is to assess the impact of future climate change on field grown sweet potato production. Jamaica currently accounts for 66% of sweet potato production among all CARICOM states and the crop contributed to the 8% increase in non-traditional agricultural exports in 2012 over 2011. The mandate of the Ministry of Agriculture and Fisheries is to promote food security and food safety and increased sweet potato production is identified as one of the targeted interventions through which these will be achieved. The objective of this study is to determine the percentage change in yield, biomass, evapo- transpiration and water productivity across three varieties of sweet potato for 2041–2070 relative to 1981–2010. The varieties examined are Ganja, Uplifta and Yellow Belly.

Findings

High increases in both yield (33%) and biomass (range: 32–37%) are indicated for 2041–2070 relative to 1981–2010 under the A1B (medium emissions) scenario, seemingly added by more consistent rainfall. There was a decrease in reference evapotranspiration by about 15%. The combined

effect of higher productivity and reduced ETo is associated with an increase in water productivity. This further underscores the crop's resilience to climate change, its adaptability to varying environmental conditions and importance for food security, given projections for a warmer Caribbean with more variable rainfall (Romero and Baigorria, 1991; CARDI, 2010; Stathers et al., 2013). Higher CO₂ concentrations in future climates – which are possible, given current trajectories – could produce even higher production increases.

Implication for Policy and Planning

The results suggest that sweet potato may be a potential 'climate change' adaptation crop particularly given its moderate drought tolerance, requiring little labour and inorganic fertilisers for development of the tuber. Additionally, since that the crop can be grown on marginal lands, is highly adaptable to multiple agro-ecological conditions, and is not exposed to destructive winds of tropical cyclones (the tubers are underground), it may be viewed as a reliable food source even in times of adverse weather.

Source: Rankine et al., 2013

Climate change is manifested by temperature increases, extreme weather events, increases in carbon dioxide and changes in rainfall patterns. These have implications for plant, livestock and fisheries growth, weeds, pests and diseases, feed quality, nutrition content, soil structure production and ultimately, food security. In addition, there are expected implications for agriculture infrastructure and buildings. These cli-

mate-related impacts affect both crop and livestock systems and intensify challenges for the agriculture, justifying the development of policy to guide interventions in the sector. To treat with these climate change issues, OECD (2015) recommends that policy-makers address the issues at the national, sectoral and farm levels (Box 7).

BOX 7: ADDRESSING CLIMATE CHANGE ISSUES AT NATIONAL, SECTORAL AND FARM LEVELS

a. National Level – Link the broader social, economic and environmental policy setting with the agriculture sector so that there is support for sustainable productivity growth in combination with mitigation and adaptation. This is necessary considering that in addition to those sectors and thematic areas already mentioned, agriculture is impacted by innovation, trade, investment, infrastructure, and education and training policies. The general education level of farmers has a significant effect on how farmers are able to absorb innovative and resource efficient practices.

b. Sector Level – Agriculture sector policies should be internally consistent and therefore implies that efforts should be made to synchronise misaligned and distortive policies of sub-sectors. This would include policies related to the environment, subsidies, inputs in the production process, public private partnerships, etc.

Policy reforms are needed to address a lingering reliance on distortive subsidies. While some OECD countries have reduced the most environmentally harmful subsidies, more than half of all the support provided is still potentially damaging. There has been insufficient progress in targeting sustainable productivity or climate change goals and such measures remain marginal in expenditure and coverage. In some countries, recent policy developments

have been going in the wrong direction. For instance, over-subsidised insurance can incentivise farmers to maintain practices or crops that are poorly adapted to a changing climate. Market price support which creates incentives for intensification is increasingly used to protect the agriculture sector. Subsidies for inputs, such as fertiliser, account for a large share of government spending on agriculture in some countries, but such measures are likely to induce inefficient fertiliser use and thus lead to higher greenhouse gas (GHG) emissions (N₂O in particular). To address such inefficiencies, market price support and input subsidies should be reduced with a view to eventual elimination.

Further investment in research and development is needed to spur innovations in sustainable climate-friendly and climate-proof productivity, and the private sector can help. Research and development is an important component in identifying innovations and the development of climate-smart agricultural practices. Such research can be driven by the public or private sector as the latter would also have an interest in the development of agricultural technology specifically targeted at resilience building. It should be ensured that through public-private partnership, such research and innovation be disseminated so that the sector benefits.

- c. Farm Level** – At the farm level, policy should be directed at increasing access and availability of knowledge on sustainable, climate-friendly and climate-smart technologies. The target of these initiatives should be to build the capacity of farmers so that they can contribute to achieving sustainable productivity and growth. Relevant and up-to-date information on risk management and the benefits of improving productivity can motivate farmers to apply the information at the farm level. Increasing knowledge should include the impacts of climate change and techniques to adapt to its effects.

Strengthening access to knowledge and transfer mechanisms is key to increasing the adoption of sustainable and productive practices. Relevant and up-to-date information on risk management and resource use efficiency can stimulate take-up of innovative technologies that support sustainable and climate-friendly goals. In terms of risk management, access to tools that assess future weather conditions (e.g., weather forecasting or early warning systems) enable farmers to take pre-emptive actions to minimise the negative effects of extreme events. Training and education about changing climate conditions and the long-term viability of different agricultural practices help farmers and other private agents to make educated investments in adaptation and mitigation.

Financial incentives can encourage farmers to adopt measures that have high upfront costs, or that are socially beneficial, but costly, at the private level. For adaptation, governments have an important role to play in supporting infrastructure projects – at the watershed level – that increase productivity and promote the efficient use of resources. For mitigation, governments have two main policy options: (i) sector-wide or broader economic instruments (such as, taxes on emissions or cap and trade systems); and (ii) voluntary payment approaches promoting targeted measures (such as, carbon offsets). The former can encourage the adoption of a wider range of measures based on the constraints of individual farmers, but the underlying instruments can be difficult to introduce and are not currently used in agriculture. The latter raises other challenges for policy design and implementation, including spatial heterogeneity of the costs and effectiveness of mitigation practices and how to adapt support to such heterogeneity.

Importantly, incentives should focus on sustainability outcomes, as opposed to practices. When agricultural policies incorporate environmental objectives, they frequently do so by promoting or constraining a specific farming practice (such as, imposing limits on the quantity of nitrogen farmers can use). Focusing on practices is often more costly, as it limits the flexibility of farmers. Redirecting policies to focus on climate change-related outcomes – such as, nitrogen balance and emission proxies – would enable farmers to weigh trade-offs and adopt more efficient and effective tools to achieve sustainable productivity growth, including adaptation and mitigation goals.

9.3 GENDER ISSUES IN THE AGRICULTURE SECTOR

Gender analysis is an important first step in mainstreaming gender in the agriculture sector. The World Bank (2009) recommends the inclusion of gender in the following policy processes:

9.3.1 Process of developing national development strategies and plans

9.3.2 Process of developing agriculture sector policies and plans

9.3.3 Budget processes and

9.3.4 Political processes leading to institutional reforms.

The EKACDM project has developed manuals for gender mainstreaming in DRM. These manuals, developed by the Institute of Gender and Development Studies (IGDS), University of the West Indies, should be consulted on the strategies necessary to ensure that the considerations of men and women are integrated in policies which support CDM in the agriculture sector.

The World Bank further recommends the following guidelines for practitioners:

- a. Representation of women in political institutions – The recommendation is for the inclusion of women in governments and parliaments as a means of making agricultural policies more gender-responsive;
- b. Participation of women in political processes – The recommendation is to have explicit and genuine participation of women and the inclusion of gender issues in the strategies;
- c. Development cooperation strategies – These include country cooperation strategies, corresponding country plans and strategies for working in partnership with multi-lateral organisations. These are good entry points for better gender-integrated perspectives;
- d. Gender-responsive budgeting – The conducting of a gender analysis of the agriculture budget, macroeconomic policy analysis, expenditure reviews, etc. are critical and therefore capacity building to undertake such analyses is strongly recommended;
- e. Strengthening analytical support – More gender analyses need to be done to heighten understanding of gender issues. To this end, capacities need to be built to collect gender-disaggregated data so that these analyses can be used in policy processes;
- f. Analysing the political economy of policy-making and strengthening the capacity for policy change management – It is recommended that interventions be aimed at strengthening the capacity of women policy-makers and advocacy NGOs. This is with a view to empowering them to become powerful interests in influencing change and public opinion.

9.4 ARTICULATION OF POLICY OBJECTIVES

Policy objectives for managing disaster risks in the agriculture should be clearly defined and should be linked to the outcomes established for the sector. Policy objectives are important as they elaborate the desired goal of government, provide a roadmap for managing risk in the sector, and facilitate a pathway for more specific intervention in the sector.

Policy objectives should be elaborated at a general level in such a way that it is applicable to the entire sector. Notwithstanding, if there is a case for elaboration of objectives at a micro-level, in keeping with the needs of sub-sectors or institutions, then this should be pursued.

Policy objectives are important as they elaborate the desired goal of government and provide a roadmap for managing risk in the sector...

DRM policy objectives for the sector should be guided by the policy issues and problems to be addressed, international frameworks such as the Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030, regional frameworks such as the Comprehensive Disaster Management Strategy (CDM Strategy) 2014–2024, and outcomes for the sector as guided by the national development plan for the country or otherwise. With that in mind, policy objectives for the sector may include the following areas that are focused on by FAO

9.4.1 improving risk governance across sectors (specifically agriculture);

9.4.2 improving information and early warning systems;

9.4.3 strengthening agricultural institutions and investment;

9.4.4 building household and community resilience;

9.4.5 promoting capacity development to identify, disseminate and upscale context specific technologies and good practices;

9.4.6 enhancing preparedness capacities for response and recovery; and

9.4.7 applying the principle of building back better.

FAO, (n.d.b)

A clear hierarchy of policy objectives should be established and these should be determined based on an objective system of weighting the issues identified and the needs to be addressed. Policy objectives should be carefully analysed to ensure that they are not in conflict and where they are found to be, careful analysis should be carried out of the trade-offs that will need to be made (Table 5). To highlight the importance of the policy objectives, an analysis of the risks associated with the failure to achieve these objectives can be done.

TABLE 6: DEVELOPING SMART POLICY OBJECTIVES FOR CDM MAINSTREAMING IN THE AGRICULTURE SECTOR

Objectives are defined by a beginning and an end point; they go beyond the day-to-day tasks and describe a result linked to achieving a particular goal at the sectoral level. They are clear statements that need be accomplished by a specific end date. Good objectives must be SMART:	
S	SPECIFIC • What do you need to achieve? Are you clear on the parameters and outcomes? • Have you provided enough detail that ensures clarity and common understanding of what is to be achieved? • What is the expected result?
M	MEASURABLE • Could this be measured and decided without argument that the result can be achieved? • How will you know the objective has been achieved? • What indicators will you look for to measure progress and success? • What data is available? Do new measures need to be identified? • Think about quantity and quality measures.

A	ACHIEVABLE / ALIGNED • How does this objective fit with your local strategic priorities in the context of the sector's role? • Does the achievement of sector objectives contribute to overall achievement of national development or DRR objectives? • What would be the impact to DRR in the sector if the objective was not achieved?
R	RELEVANT • Is the objective appropriate for the sector's role in development and in risk reduction? • Can the objectives be achieved with available resources? If not, how can this be addressed? • What help will you require internally from within the sector and externally? • Does the sector have the relevant skills and knowledge to complete the objectives to the defined specifics?
T	TIME-BOUND • Are there clear objectives attached to the objectives? • Are there other objectives that depend on completion of these? • What could impact/compromise the deadline? • How can these be mitigated if they are a concern? • Is the deadline realistic?

Source: ed from Performance Development Review: Guide to writing SMART Objectives, University of Glasgow, https://www.gla.ac.uk/media/media_597942_en.pdf

9.5 ENSURE AN ACCOUNTABILITY FRAMEWORK

It should be reinforced that policy objectives are an important monitoring tool to measure the effectiveness of policy interventions. They are important in determining whether there are any deficiencies in policy approaches and regulations, and thereby contribute to more effective policy and legislation.

Policy objectives are an essential component of transparency and accountability. Through public disclosure of these objectives, governments will have to explain the extent to which these objectives are being achieved and the reasons for not achieving them, especially if there are significant failures in meeting them.

...there will be need to establish mechanisms within government that will bring visibility to policy objectives and assess the level of achievement.

To give effect to the objectives, they should be incorporated in the objectives of the sub-sectors and institutions that make up the sector. It may also be necessary for advocacy groups and civil society to embrace these objectives as they support the government in their achievement and they should also be held accountable in the process. These same objectives are also useful in managing stakeholder expectations for risk reduction. Though objectives are important, they must have the supporting indicators and targets to make them measurable. It is in these finer details that accountability is established.

To achieve the desired level of stakeholder involvement when setting policy objectives, there will be need to establish mechanisms within government that will bring visibility to these objectives and assess the level of achievement. Governments generally use annual reports as a monitoring and transparency tool to publish its risk reduction objectives, report on progress and successes, and identify challenges and risks to the achievement of these objectives. The reports should also outline remedial actions that the government will take to address the challenges. These actions are often positive, for example, providing additional resources where necessary. They can also be negative and could include such measures as the removal of appointed persons who may lack the leadership required to achieve the risk reduction objectives. In employing any of these corrective actions, careful analysis and sound judgement must be employed.

9.6 INSTITUTIONAL DESIGN AND SYSTEM FOR POLICY IMPLEMENTATION

Pillar 1 suggests that there are several organisations involved in mainstreaming in the agriculture sector. The work of these agencies should be properly integrated so that there is collaboration and efficient information flow towards the development of DRM-sensitive policies. Direct responsibility for oversight should be identified among these agencies. In all Caribbean countries, for example, there is a national body responsible for coordinating disaster management. Whilst the sector may prepare its sector strategies and plan, linkage with national development plans will be necessary. In some cases, oversight and monitoring may be done by the agency leading the national development plan process, and in others, aspects of the plan may be monitored by the National Disaster Office (NDO) which will ensure the DRM issues are appropriately addressed, and that risk reduction is being achieved. Whatever the scenario, the direct responsibility for oversight should be clear.

9.7 HIGH-LEVEL CHECKLIST – ESTABLISHING APPROPRIATE POLICY GOALS AND OBJECTIVES TO ADDRESS DRM

TABLE 7: HIGH LEVEL CHECKLIST- ESTABLISHING APPROPRIATE POLICY GOALS AND OBJECTIVES TO ADDRESS DRM ISSUES

Has appropriate policy goals and objectives been established to addresses the DRM issues and problems?	
Are the objectives aligned with the intended outcomes?	Policy objectives should be aligned with the expected outcomes as they help to elaborate and define those risk reduction outcomes that the government wishes to achieve for the sector and identify any trade-offs that may have to be made
Are the objectives of a strategic nature to guide the entire sector?	Policy objectives should be elaborated at a general level in such a way that it is applicable to the entire sector. Policy objectives should provide a roadmap for managing risk in the sector and facilitate a pathway for more specific intervention in the sector.

Have policy issues been weighted or an objective system of prioritization conducted to identify the issues to be addressed?	A range of issues will be generated from an understanding of the risk in the sector. All cannot be addressed simultaneously and a system of objective prioritization will help determine which issues are to be addressed first.
Has any analysis of been done to identify conflicts of objectives and the need for any trade-off?	Has the mix of policy instruments been carefully considered and potential conflicts in instruments identified?
Have policy objectives been incorporated in policies, plans and programmes of sub-sectors?	Once operational, policy objectives should be incorporated in strategic and operational plans and programmes of related sub-sectors as it is the alignment of outputs at these levels that will determine the achievement of objectives.
Have policy objectives been adopted by civil society and advocacy groups?	In addition to government related sectors and thematic areas, civil society should adopt the same policy objectives so that all stakeholders are working toward the same objectives.
Have indicators and targets been established for the objectives to ensure that they are measurable?	Indicators and targets are essential to the measuring the levels of achievement of objectives and holding decision-makers accountable. By doing so, the level of success and progress at risk reduction in the sector can be measured
Have monitoring systems been established for the policy goals and objectives?	In order for monitoring to take place, systems should be established to bring visibility to the objectives and assess the level of progress. Are mechanisms in place to facilitate this? Do annual reports report on achievement of policy objectives for DRR?
Have policy objectives been publicly articulated?	Are all stakeholders aware of the policy objectives? Have they been published and are they accessible to the public?

10 PILLAR 5 – IDENTIFY POLICY INSTRUMENTS AND DEVELOP STRATEGIES AND PLANS

The achievement of policy objectives requires the use of policy instruments which must be given careful thought and analysis. As shown earlier, the agriculture sector is cross-cutting with several other sectors and the selection of policy instruments for risk reduction in the sector can have an impact at the farm, market, and macroeconomic levels and in some instances, cross-border impacts can be felt in other countries. A requirement for the selection of policy instruments must be in-depth knowledge of the nature, characteristics, advantages and disadvantages of each of these instruments.

10.1 REGULATIONS

Regulations are a popular policy instrument not just for the agriculture sector, but for other sectors. Government and other stakeholders must have thorough knowledge of the various pieces of legislation and regulations that support risk reduction in the sector. It may not be necessary to create new legislation for managing risk in the sector. Instead, a principal act that governs the sector should be examined and its key features that support risk reduction should be understood. As emphasised before, the agriculture sector is crosscutting and so legislation governing forestry, veterinary services, crops, pesticides, water, land use, macro-economic development and social protection will have implications for and should be used to reduce risk in the sector. These regulations often affect stakeholder behaviours and set government expectations for risk reduction. They also help to create an enabling environment to start, sustain and institutionalise a culture of mainstreaming.

As a policy instrument for risk reduction, legislation can provide the following:

- a. **Standards and Guidelines** – Standards prescribed by national planning agencies relating to waste discharge and those specific to the sector relating to pesticide use and disposal, for example, are important for risk reduction;
- b. **Procedures and Tools** – Similarly, approaches and tools, such as Strategic Environmental Assessments (SEA) and Environmental Impact Assessments (EIA), are prescribed under planning and development laws, but are applicable and used in agriculture risk management and are especially useful for risk-proofing new or existing project investments in the sector;
- c. **Enforcement and Sanctions** – Enforcement is a key component of legislation and regulation as it is important for compliance. If regulations fail to elicit an adequate level of compliance, this is an indication that the underlying policy objectives have not been met (OECD, 2000a). Box 8 highlights the necessary conditions for compliance and the mix of activities governments should employ to ensure its policy takes effect. The available sanctions under various pieces of legislation should be used to support risk reduction. Failure to enforce and apply sanctions can perpetuate illegal activities that threaten the environment or perpetuate or worsen hazards and vulnerabilities;
- d. **Institutional Capacity** – Laws can create new organisations or mandate existing ones to carry out certain risk reduction activities on behalf of the government. It can also mandate institutions that should lead risk reduction efforts for the sector;

e. Financial Resources – Some regulations mandate governments to set aside specific amounts of financial resources towards risk reduction or mandate the establishment of funds to support risk reduction or specific elements of the disaster risk management framework. These provisions may be embedded in legislation that directly govern the sector or in legislation from a cross-cutting or aligned sector. Where the latter exists, the agriculture sector should ensure it is aware of these means of financial resources and position itself to access these resources;

f. Cooperation Agreements – While cooperation agreements may not themselves be included in legislation, they are often the result of high-level discussions and agreements and form the basis for cooperation among countries and institutions or sectors. They include (i) cooperation frameworks between developed and developing countries; (ii) agreements between donors and NGOs; and (iii) agreements among donors. These differ in that some exist over longer periods of time than others. These cooperation tools are important because they assist in resource mobilisation and harmonisation, technical assistance, support for technology transfer, research, and capacity building. Advocates of mainstreaming must ensure that they contribute to the processes leading to the finalisation of these cooperation frameworks (UNDP, 2008 – Drylands);

g. Tools for Participation – Some legislation mandate the participation of specific groups of stakeholders in the decision-making process. However, while not prepared under any specific laws, some governments, through Cabinet approval, have developed guidelines for participation in the decision-making process. These include codes of consultation which serve to have an inclusive and broad-based decision-making process by ensuring the participation of multiple stakeholders and encouraging a bottom-up process. In some instances, there are tools governing

the behaviours of stakeholders and partners and these are often described in codes of conduct. Tools for participation serve three purposes: (i) soliciting input; (ii) getting consensus; and (iii) disseminating information.

It is to be reiterated that these safeguards may not reside in any single legislation. The processes of defining and understanding the sector will help to identify these linkages so that the available legislation can be enhanced

BOX 8: THE THREE NECESSARY CONDITIONS FOR COMPLIANCE – ACTIVITIES TO ENCOURAGE COMPLIANCE WITH DRM LAWS

Reasons for non-compliance can be found at three different levels:

- The degree to which the target group knows of and comprehends the rules;
- The degree to which the target group is willing to comply either because of economic incentives, positive attitudes arising from a sense of good citizenship, and acceptance of policy goals, or pressure from enforcement activities;
- The degree to which the target group is able to comply with the rules.

At each of those three levels governments should employ a mix of activities to ensure that its policy will take effect:

- Communication with the target group to inform it about its rights and duties and to explain the rules;
- The use of many kinds of policy instruments (taxes, prohibitions and subsidies, for example) to influence the behaviour of the target group, backed up with a variety of enforcement activities (such as, inspections and sanctions);
- Adequate implementation to make the policy workable in practice, which means that governments have to ensure that the necessary information is provided to the target group and other technical facilities or mechanisms are made available.

At each of the three levels, failures can make government policy ineffective.

Source: OECD, 2000b

It should be noted that enforcement of regulations that promote disaster risk management in the sector can take place in various formats and should have effect at various levels of the sector.

10.2 NON-REGULATORY POLICY INSTRUMENTS

Despite the popularity of regulatory instruments, decision-makers should examine non-regulatory instruments as a means of addressing risk. To better manage risks in the sector, consideration can be given to adopting integrated risk management layers and the instruments adopted as part of the risk management strategy.

10.2.1 Integrated Risk Management Layer

Another approach to achieving policy objectives for DRR and CCA is to adopt the integrated risk management layer conceptual framework (Box 9). “The vulnerability of individual stakeholders and the agriculture sector as a whole depend on the nature of the risk (that is, their correlation, frequency, timing and severity) and effectiveness of the risk management instruments in use” (World Bank, 2016). It therefore means that following the completion of the assessment of risk, management strategies can be proposed and these fall broadly into three categories:

- a. **Risk Mitigation** – These actions are taken prior to a risk event to reduce the likelihood of risk or losses. These are useful for risks that occur with relatively low frequency, but with lower intensity impact. These options are varied and numerous and include improvements in agronomic practices, such as soil drainage, mulching, conservation farming, disease and stress resistant crops, crop diversification, income diversification, improved early warning systems, and modern information and decision support systems;
- b. **Risk Transfer** – Some risks cannot be mitigated and in such instances, risk transfer tools should be explored. These transfer the potential consequences to a third party for a fee or premium. In some contexts, the use of informal risk transfer mechanisms represents an important component for families and communities;
- c. **Risk Coping** – Some risks cannot be mitigated or transferred and so coping strategies have to be developed to better help impacted stakeholders absorb and recover from impacts of hazards. These instruments improve resilience with events through ex ante preparation to sustain production and livelihoods following an event. These instruments include compensation, social safety net programmes, buffer funds, savings, strategic reserves, livelihood recovery programmes, (debt restructuring, government assistance to farmers, contingent financing and subsidies, and grants).

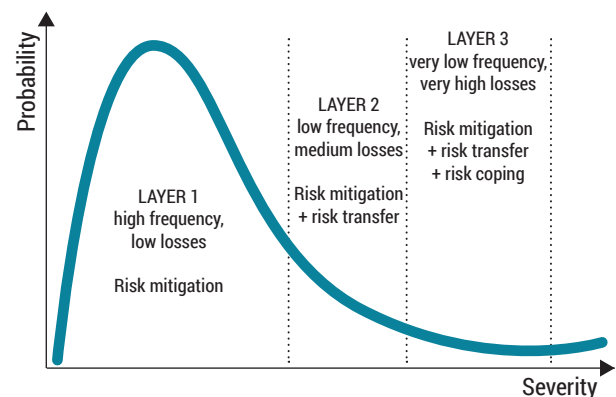


FIGURE 9: SUGGESTED APPROACH FOR MANAGING RISK IN THE AGRICULTURE SECTOR

Risk management strategies should be selected after a thorough understanding of risk (See Pillar 2) as this will determine the approach that is most suited (Box 10). The World Bank suggests the following:

- a. Risk Mitigation – Mitigation is best suited for hazards that have a high frequency, but result in low losses;
- b. Risk Mitigation and Risk Transfer – These strategies are recommended for scenarios where hazard frequencies are low, but result in medium losses;
- c. Risk Mitigation, Risk Transfer and Risk Coping – All three strategies are required for scenarios where hazard frequency is very low, but the resultant losses are high.

The strategies put forward by OECD are very similar to those of the Caribbean countries. The Jamaica Water Sector Policy, drafted by the Ministry of Water and Housing in 2004 (currently being revised), identified agriculture as a major user of water mainly through irrigation systems. Resultantly, this policy had identified the following irrigations strategies to address this challenge:

- 1. Establishment of Water Users Associations (WUA) – WUAs are seen as a way to reduce public expenditure and to ensure better operation and maintenance (O&M), by making users responsible for the facilities that they enjoy;

BOX 9: STRATEGIES USED TO ADDRESS WATER MANAGEMENT ISSUES IN AGRICULTURE

An OECD study has shown that a number of countries are using policy targets to achieve policy strategies to address broad water management issues. To integrate water management issues in the agriculture sector, the following strategies are recommended:

- Set quantified policy targets aimed at improving water efficiency in the agriculture sector;
- Set sustainable limits on the use of surface or ground water to ensure the availability of sufficient quantities of water to meet environmental needs;
- Set policy targets for water resource management at the water basin or local level management;

- Where irrigated agriculture is important, policy targets should seek to improve water use efficiency and upgrade the existing water delivery infrastructure;
- Link policy targets and plans across domains of agriculture, water and climate change.

Other strategies identified by OECD include:

- Decentralization of institutional arrangements concerning water governance – from national government levels to one encouraging greater local engagement and involvement of water users in resource management in agriculture;
- Competition and trading as a paradigm for water management.

Source: <http://infoagro.net/programas/ambiente/pages/agricultura/documentos/7.pdf>

2. **Role of the National Irrigation Commission (NIC) Ltd** – With the establishment of WUAs, the role of the NIC will shift progressively to focus on planning, monitoring and regulating the irrigation sector. Regulation in this context will primarily embrace policy as well as technical and organisational issues;
3. **Cost Recovery Strategies** – This involves initiatives to integrate the irrigation pricing policy with the Government's agricultural policy. This will, inter alia, consider the pace of crop diversification and improvements in cultural practices on the farms. It is also intended that any level of subsidy contemplated will be treated as an invoice payable by the Government to the NIC on behalf of the farmers;
4. **Strategies to Improve Irrigation Efficiencies** – Factors, which contribute to low conveyance efficiency, include the poor physical condition of canals in which weed growth, silting, constriction by tree roots and seepage are major components. Along the distribution canals, the illegal uses of water – dumping of refuse, seepage and weed growth – are important contributors to low efficiency. Improvements in conveyance systems will require investments in canal lining, installation of pipe systems, and measuring devices;
5. **Legal and Institutional Framework** – Consistent with the development of the WUAs and the changing role of the NIC, a comprehensive review of the legal framework will be undertaken and appropriate modifications made.

10.3 CRITERIA FOR SELECTING INSTRUMENTS AND TOOLS FOR MAINSTREAMING

The choice of policy instruments should be guided by a combination of the following criteria:

- **The objective** – The choice instrument or tool should address as precisely as possible the policy issue and related objective that it is intended to target. An instrument may be used to support more than one policy objectives and instruments and tools are not mutually exclusive;
- **The relevance of the tool to the problem under analysis**
- **The technical capacity to use the tool** – While a tool or instrument may be ideal to address the policy issue, it should be ensured that the capacities to implement the tool are available. That includes the institutional mechanism, technical and human capacity, training and budgetary resources;
- **The data requirements that are available or that can be supported in the process of using the tool** – Data availability is often a challenge for policy-making and the agriculture sector is no different. The consistency of data collection and availability of data can hamper decisions about the extent of the policy issue or problem to be solved and also hamper the implementation of the ready option best identified to remedy the problem;
- **Whether the proposed timeframe for use of the tool is realistic** – Sufficient time needs to be allocated for some instruments and tool to work. The drafting and approval of legislation and regulation, for example, often takes time to work and the effect of newly passed legislation may not be felt immediately. This is often due to the time it takes to operationalise the provisions of the legislation;

- **Whether there are enough funds to support the use of the tool** – Policies should be assessed and an estimate of the cost of implementation determined. It is important from the outset that the cost for supporting the use of the tool be determined and government budgets together with alternative sources of funding be identified to support the use of tools and policies;
- **The availability of any required software, and technology** – Risk assessment may require the use of specialised softwares such as GIS. Similarly, estimating climate impacts on agriculture requires specialised softwares for such purposes. These should be identified and their availability determined;
- **The political, economic and social climate with regard to receptivity towards findings from the use of the tool**

10.4 HIGH-LEVEL REFERENCE CHECKLIST

To support the integration of DRM issues, this checklist has been designed to provide a quick reference and summary for the previously discussed pillars and associated guidelines. The checklist can be used to gauge the extent to which DRM issues have been incorporated in the sector.

PILLAR 1 – DEFINE THE AGRICULTURE SECTOR

DEFINING THE AGRICULTURE SECTOR	
Has the agriculture sector been properly defined?	
Have all the sub-sectors that comprise the sector been identified and agreed?	Does the national system identify the sub-sectors that comprise the agriculture sector? Is the agriculture sector consistently using these classifications or have they adopted other classifications? Using a standardised classification ensures consistency in collecting and reporting agriculture data.
Have the linkages with the agriculture and other sectors and development issues been made?	The agriculture sector is cross-cutting and thematic areas or other sectors that will impact mainstreaming need to be identified and integrated in agriculture policy.
Have existing agriculture sector policies and strategies been assessed to determine how well DRM has been integrated?	While agriculture sector policy may not be specific to DRM, the latter needs to be integrated in the sectoral policy documents and strengthened where DRM integration is found to be weak.
Have existing agriculture sector policies and strategies of other related sectors been assessed to determine how well DRM has been integrated?	Similar to above, policies of other sectors are to be assessed and strengthened to ensure they take account of their impact on the agriculture sector and include options or recommendations to strengthen DRM integration.
Have the scope and functions of the agriculture sector been defined so that its contribution to national development can be appropriately identified?	Is there a full understanding and recognition of the various contributions that the agriculture sector makes to the economy? The roles and function of the sector need to be located in national development so that the DRM strategies and policy options that are put forward can sufficiently address all dimensions of the sector's role in development.

PILLAR 2 – UNDERSTAND THE DRM ISSUES IN THE AGRICULTURE SECTOR

UNDERSTAND THE DRM ISSUES IN THE AGRICULTURE SECTOR	
Are the DRM issues in the sector sufficiently identified and understood so that appropriate policies and strategies can be developed?	
Are monitoring and surveillance systems in place to collect data on DRM issues and problems?	Data on the various issues to be addressed by policy is important and it is essential that this data be credible, relevant and adequate in time and scope.
Have the views of a wide variety of stakeholders, including consumers, been solicited and integrated into policy?	In addition to surveillance and monitoring systems, stakeholder input is important for addressing issues that hinder mainstreaming and also for providing solutions to those issues. Is the feedback from a wide variety of stakeholders being incorporated?
Are there mechanisms in place to facilitate consistent stakeholder collaboration, engagement and feedback?	To what extent are mechanisms in place to incorporate stakeholder feedback in the sector and are they functioning?
Are emerging risks being identified and constantly monitored internationally, regionally and locally?	Is the DRM landscape changing and are non-traditional hazards impacting the sector? Are systems in place to monitor, identify and assess emerging hazards? Is there collaboration with international and regional partners to monitor these risks?
Are analytical tools and methods available to help understanding risk in the sector at the strategic level?	Are the analytical tools useful in assessing and understanding risk so that solutions and options are more targeted? Is the sector using available tools, toolkits, techniques and methods to better understand and quantify risk?
How are the results of disaster risk assessments used in decisions concerning allocation of resources for: i. Emergency preparedness? ii. Disaster prevention and mitigation measures? iii. Disaster risk financing and risk transfer tools?	Risk assessment should be used to guide risk reduction interventions in the sector. The assessments are useful for all components of the risk management framework.
Does the capacity to use the tools and methods exist? Is there adequate expertise to properly analyse and understand the risk, identify options, and formulate policy response? Is disaster impact data being collected and analysed?	Do technical and non-technical experts in the sector have the capacity to use these tools? Have training and other capacity building initiatives been undertaken? Are the results being applied to risk mitigation in the sector? Is there an understanding of the extent to which the sector is being impacted? Are there sub-sectors that are being more severely impacted?
Is disaster impact data being collected and analysed?	Is there an understanding of the extent to which the sector is being impacted? Are there sub-sectors that are being more severely impacted?

PILLAR 3 – DEFINE THE FEATURES OF A MAINSTREAMED SECTOR

DEFINE THE FEATURES OF A MAINSTREAMED SECTOR	
Have outcomes been established that define what an “ideal” mainstreamed sector looks like?	
Are outcomes for the sector linked to outcomes in national development plans?	National development plans and strategies set the frame for national development and the role that sectors will play in this process. Has the role of the sector in the national development plan been identified? Has the link with the sector and national outcomes been established? Have targets and indicators for risk reduction been included?
Have global and regional frameworks been consulted and mapped to sector outcomes?	Have global and regional DRM frameworks for the sector been identified? Have global frameworks been translated and made relevant to the sector in the local national context? Have regional frameworks been adopted to the national and sector context? Have plans been developed to translate regional outcomes to the sector level through a logical framework
Have transparency and accountability systems been established to monitor the achievement of outcomes?	Are outcomes at the sectoral and national levels being monitored along with their related outputs to determine the extent to which mainstreaming is taking place and to the extent to which development outcomes are being achieved?

PILLAR 4 – SET POLICY GOALS AND OBJECTIVES

Have appropriate policy goals and objectives been established to addresses the DRM issues and problems?	
Are the objectives aligned with the intended outcomes?	Policy objectives should be aligned with the expected outcomes as they help to elaborate and define those risk reduction outcomes that the government wishes to achieve for the sector and identify any trade-offs that may have to be made.
Are the objectives of a strategic nature to guide the entire sector?	Policy objectives should be elaborated at a general level in such a way that it is applicable to the entire sector. Policy objectives should provide a roadmap for managing risk in the sector and facilitate a pathway for more specific intervention in the sector.
Have policy issues been weighted or an objective system of prioritisation conducted to identify the issues to be addressed?	A range of issues will be generated from an understanding of the risk in the sector. All cannot be addressed simultaneously and a system of objective prioritisation will help determine which issues are to be addressed first.
Has any analysis of been done to identify conflicts of objectives and the need for any trade-offs?	Has the mix of policy instruments been carefully considered and potential conflicts in instruments identified?
Have policy objectives been incorporated in policies, plans and programmes of sub- sectors?	Once operational, policy objectives should be incorporated in strategic and operational plans and programmes of related sub-sectors as it is the alignment of outputs at these levels that will determine the achievement of objectives.
Have policy objectives been adopted by civil society and advocacy groups?	In addition to government-related sectors and thematic areas, civil society should adopt the same policy objectives so that all stakeholders are working toward the same objectives.
Have indicators and targets been established for the objectives to ensure that they are measurable?	Indicators and targets are essential to measuring the levels of achievement of objectives and holding decision-makers accountable. By doing so, the level of success and progress at risk reduction in the sector can be measured.
Have monitoring systems been established for the policy goals and objectives?	In order for monitoring to take place, systems should be established to bring visibility to the objectives and assess the level of progress. Are mechanisms in place to facilitate this? Do annual reports document the achievement of policy objectives for DRR?
Have policy objectives been publicly articulated?	Are all stakeholders aware of the policy objectives? Have they been published and are they accessible to the public?

PILLAR 5 – EXAMINING THE APPROPRIATENESS AND RELEVANCE OF LAWS TO ADDRESS RISK REDUCTION

Has there been an examination of available instruments and strategies, advantages and disadvantages and selection of the most appropriate ones to support the policy?	
Has there been an examination of available instruments and strategies, advantages and disadvantages?	Are policy instruments and strategies to reduce risk diverse and do they include regulatory and non-regulatory instruments? Have these been identified and has the range of positive and negative impacts of each been identified? Has consideration been given to how negative impacts can be reduced? Have the instruments been assessed to determine which are more suitable for the policy objectives?
Do the instruments and strategies together achieve the policy objectives and issues that are intended to be addressed?	Has the mapping of instruments/strategies to objectives been done? Are the instruments selected the most appropriate ones to achieve policy objectives? Has the uniqueness of the sector or sub-sectors been considered to include institutional set-up stakeholders and their diverse interests? Are the selected instruments the most efficient ones? Are their international implications for the selection of instruments and have these been identified?
Have criteria been established to select the most appropriate instrument?	Have specific factors or criteria been identified and considered in the selection of policy instruments to achieve policy objectives?
Have national DRM and sector laws been examined and their relevance and appropriateness for risk reduction determined?	
Is there a sector Act that provides an overarching framework for integrating DRM in the sector?	Bear in mind that the a National Act for disaster risk management may not provide sufficient legislative support and enforcement required to address the peculiarities of the sector. Existing sector Acts should be used in risk reduction efforts. Acts may exist for pest and pesticide management, forestry management, regulating fishing and certification of fishing vessels and fisher folk, irrigation, institutional capacity, etc. Where there are gaps in legislation, the solution may lie in utilising legislation governing allied sectors or strengthening existing laws.
Are the provisions in the Act well understood and applied to DRM in the sector?	Understanding DRM issues will help in strengthening application to DRM and utilising enforcement as part of that process.
Is there a national DRR Act that identifies roles for the sector in the mainstreaming process?	Does the National DRR Act recognise the role of sectors and institutions in mainstreaming? Do coordinating mechanisms established under the National DRM Act include sector representatives and provide opportunities to integrate sector concerns in the broader risk reduction effort?

CONCLUSIONS AND RECOMMENDATIONS

The agriculture sector is critical to the economies of the Caribbean and is the key in their efforts to achieve sustainable development. The framework and guidelines provide a starting point for policy-makers to integrate CDM in the agriculture sector and support efforts to reduce the economic, social and cross-sectoral impacts of disasters on the sector. Policy-makers will need to be mindful of the changing environment and the evolution of issues that they need to solve. The policy framework and guidelines are therefore focused on addressing some of the challenges that Caribbean countries encounter in mainstreaming DRM and climate change issues in policies for the agriculture sector and also provide a platform which supports DRM integration in development policies and strategies for the sector.

It is expected that in adopting the framework and guidelines, countries will be able to reduce the overall vulnerability of the sector to disasters and reduce the economic and social risks faced as a result of the absence of DRM considerations in national legislation, policies, plans, strategies and programmes.

Consistent monitoring of progress is therefore a requirement for ensuring that the framework remains relevant. It should also be determined what progress the sector has made and the current status of its mainstreaming efforts as this will determine the relevance of the pillar or pillars and the specific instruments recommended.

One means of ensuring this relevance is to undertake comprehensive periodic reviews that not only gauge progress with mainstreaming, but also evaluate the environment to identify changes, additional threats or additional opportunities that can be incorporated in the framework.

Whilst strategic decisions are taken at the policy level, the accompanying operational level decisions also represent criteria for success and achieving progress with mainstreaming. Policy-makers should therefore also consistently monitor and strengthen the institutional framework to allow seamless filtering of strategic level decisions to operational levels with the associated systems for implementation. Similarly, strategic level decisions must target various levels of the agriculture sector so that they are relevant and impactful for all stakeholders from farm level to the broad sectoral level.

To support future iterations of the policy framework and especially the guidelines, it is recommended that success cases of policy level interventions be documented to provide case studies of Caribbean examples that can be incorporated into policy development workshops as best practices. It is also important to ensure that the framework and guidelines remain aligned with CDEMA's disaster management strategies to support regional efforts in mainstreaming DRM in the agriculture sector.

ANNEX A – SECTOR-SPECIFIC APPLICATION OF SFDRR

Specific recommendations per priority of the Sendai Framework for DRR

Priority 1: Understanding disaster risk in the agriculture and Food Security and Nutrition (FSN) sectors

Generating information and knowledge regarding the relevant risk for the agriculture sector

- 1.** Generate information with scientific grounds for the characterisation and understanding of the multiple risks affecting the agriculture sector, through:
 - a.** Vulnerability mapping: trends on climate change, poverty, food insecurity, etc.;
 - b.** Characterisation of risk determining factors: types of soil, agroecological zoning, land use, water regimes, agrometeorology, etc.;
 - c.** Generation of information at a scale that allows accounting for the local contexts and territorial variations, and breaking it down per vulnerable group and being gender-sensitive.
- 2.** Develop or strengthen threat monitoring systems and, particularly, climate information systems, through:
 - a.** The improvement in accuracy of analyses and forecasts, replacing, as far as possible, meteorology data extrapolation and developing instead meteorology networks starting from primary climate data observation stations;
 - b.** Establishing connections among meteorological networks and the existing early warning systems at the local and sectoral levels.
- 3.** Have, in the agriculture sector, trained personnel and structures focused on the generation, compilation, interpretation and publication of information relevant to risk monitoring, noting levels of exposure, vulnerability and capacity upon threats according to gender, age, ethnic group and other social-demographic variables.
- 4.** Strengthen the agriculture, environmental and climate scientific knowledge chain, through:
 - a.** Development of national systems for innovation or capitalisation, local knowledge use and distribution, technological and scientific information to strengthen resilience of productive systems (good practices, agriculture technology, genetic material, etc.);
 - b.** Development of joint research programmes and agendas for DRM and climate change, between the agriculture sector and academia (universities and research institutions);
 - c.** Development or strengthening of knowledge exchange platforms relevant to DRM and climate change among countries in the region;
 - d.** Strengthening of all stakeholders in the agriculture and livestock value chain, in preparation for the presence and effective use of technological innovations on site (production supplies and equipment, price information systems, etc.).
- 5.** Develop skills for damage and loss assessment specific to the agriculture and livestock, forestry, and fisheries sectors, that allow for due characterising of the degree of direct and consequential losses and damages in the sector, either due to intensive disasters, or due to small-scale slow-start recurring disasters and using this information in a strategic manner.

6. Establish mechanisms for the use of this information by decision-makers in the agriculture sector, planning entities, and other pertinent sectoral entities, and decentralised government organisations, for them to translate the information into public actions and policies to duly include risk and effectively contribute to its reduction.
7. Offer to producers, focused, local and timely agroclimate information, from reliable sources, to allow them to better apply productive decision-making (seeding, varieties, use of supplies, crop management, etc.). This should be done through easily accessible means, such as mobile phones, radio, industry networks, etc., training and sensitising change agents.
8. Develop DRM systems and training packages that include the understanding of the risk and the ways to manage it, as well as technological alternatives to increase resilience among producers. These systems and packages shall have to be adapted and destined to:
 - a. Extension systems personnel in ministries of agriculture, decentralised governments and other pertinent instantiations to improve and focus their interventions and contribution to the DRR of producers;
 - b. Formal and informal education systems, particularly in the rural area, and in the agriculture and environment fields, including schools, technical and higher education.
9. Developing awareness campaigns among producers to increase the level of knowledge about their surroundings, the risks they face and the ways to mitigate them, with detailed strategies according to the characteristics and empowerment of each group. This shall have to allow the strengthening of its resilience and the promotion of more DRM local initiatives, with a proactive approach.

Priority 2: Strengthening risk governance in the agriculture and FSN sector governance in the agriculture sector

1. Going further in the development of DRM regulations in the agriculture sector, in particular, through the development of DRM and climate change adaptation plans for the agriculture sector, with a territorial, participative and inclusive approach.
2. Institutionalise DRM and climate change adaptation within the ministries of agriculture and equip them with the financial and human resources, as well as with the mechanisms required to:
 - a. Proactively promote the topic among the regular programmes and projects of the sector, as well as to give coherence to the sectoral activities that point towards DRM and climate change adaptation (whether earmarked as DRM or not);.
 - b. Develop an assessment and monitoring system regarding DRM and the increase of resilience in productive systems. Provide them the due follow-up, as well as the sectoral indicators corresponding to the Sendai Framework inter-sectoral coordination mechanisms.
3. Promote the development of agriculture and related sector policies and legal frameworks (particularly environment, territorial order and planning), to provide specific guidelines for the development of sustainable agricultural production, adapted to climate and that does not generate negative external factors.
4. Develop or strengthen coordination mechanisms that define clear responsibilities and accountability mechanisms regarding both the reduction of current risks, as well as the creation/prevention of new risks. This shall have to be done at:
 - a. Inter-sectoral levels, effectively linking the agriculture sector with the national systems for risk management, climate change, FSN, territorial planning and public treasury;

- b.** Among the national, territorial and local governments;
 - c.** Among the public sector, the private sector and civil society.
- 5.** Develop multi-stakeholder spaces for the discussion and assessment of the performance of DRM plans, to increase transparency regarding risks and the risk management process, with accountability mechanisms in relation to the roles that the different stakeholders (public and private) must take on in the process of building more resilient societies. Participation at community level is integral to this process.
- 6.** Strengthen social participation, particularly in communities, producer associations and groups related to agriculture and FSN, especially the most vulnerable ones, with an equitable participation of men and women in access to information, aid and resources, and in decision-making processes regarding the planning and implementation of DRM and climate change adaptation. This can be done through:
- a.** Development of organisational skills of local associative structures (community, productive and others);
 - b.** Development of implementation capacities (resources and work tools) and technical capacities (methodologies and materials) in DRM and climate change adaptation of decentralised sectoral structures to facilitate local governments working with community stakeholders;
 - c.** Foment risk studies, considering gender, age, ethnic group and any other social-demographic factors pertinent to the analysis of vulnerabilities and exposure, and the development of community DRM plans to respond to such diversity with specific strategies.

Priority 3: Investment in disaster risk reduction for the resilience of the agriculture and FSN sectors

Approach the underlying causes linked to productive systems:

- 1.** Ministries of agriculture must take on the responsibility of leading proactively the transformation of the current productive systems towards sustainable productive systems, resilient to threats of multiple nature, and with the capacity to adapt to climate evolution to guarantee the resilience of livelihoods.
- 2.** With this purpose, ministries of agriculture must equip themselves with solid extension systems with capacity to reach and influence a sufficient critical mass of producers to begin transformation. For this, they shall have to:
 - i.** Acquire extension mechanisms and methodologies adapted to family farming to achieve an effective adoption, transmission (such as, farm schools, pilot farms, etc.) and multiplication of production technologies and innovations (through alliances with producer associations and industries, community leadership programmes, etc.);
 - ii.** Propose validated technological options (crop management, genetic improvement, water harvest and efficiency in the use of water), that are adapted to the different territorial contexts and types of users, and train extension personnel for their promotion with suitable strategies for all different groups.
- 3.** Develop activities for the recovery of natural resources, to contribute to the good functioning of agro- systems (soil recovery, reforestation, etc.).
- 4.** Develop accessible loan schemes, adapted to smallholders for the funding of the necessary innovations in their production systems. Mobilisation of resources for DRM.
- 5.** Foment the change of paradigm from the current reactive culture (focused on emergency response) towards a prevention culture that allows

increasing the allocation of public resources for risk reduction and resilience increase tasks.

6. Channelling DRM public resources through the corresponding different sectors instead of through vertical funds or the related governmental instances. This should allow DRM to become part of the regular activities and sectoral planning and investment, instead of being isolated and project-based.
7. Develop a resource mobilisation strategy at a national level for DRM in the agriculture and FSN sector that includes different cooperation alternatives such as International Financial Institutions, multi- and bilateral cooperation, and green climate funds. Economic and financial transfer of risk.
8. Based on a strategic inter-sectoral action, combine control and command tools with appropriate economic incentives (public subsidies, payments for environmental services, loan facilities, etc.) to discourage investments towards practices that are unsustainable and harmful for the environment, and to promote the adoption of sustainable productive systems, adapted to climate.
9. Institutionalise and enforce the use of disaster risk assessment tools in public investment planning processes, to guarantee that the newly invested resources do not create new risks and through this process:
 - a. Develop economic and financial instruments to assess the risks arising from investments, particularly in scenarios of climate change, and to make them mandatory;
 - b. Assess the risk resulting from investment, in the same way as environmental (and sometimes social) impact assessments are produced for all public investment projects;
 - c. Foment the use of these types of risk analysis tools also for private investments, through different suitable channels (such as financial institutions from the agriculture and livestock, forestry and fisheries sectors).
10. Encourage territorial zoning and ordering to constitute a DRM element. For this, the following will be necessary:
 - a. Include climate change impact and trends in criteria, legal frameworks and territorial orders and planning policies;
 - b. Improve coordination levels among sectoral organisms involved in territorial planning and land use, and the agriculture sector.
11. Foment the development of productive infrastructure construction codes and land use directives, and strengthen their due application and enforcement in the rural area.
12. Foment, at different government levels, a culture to maintain rural infrastructure and agro-ecosystems for resilience, and thus contribute to them continuing to provide the essential services they offer to the population and producers.
13. Foment the development of insurance schemes adapted to the traditional agriculture smallholder, indexed through:
 - a. The development of detailed databases, risk probability assessments and other information regarding the main threats to the agriculture sector for the support of the indexed insurance and/or to achieve premiums according to the actual conditions of each country;
 - b. Providing support for innovative technological solutions to reach producers in remote zones;
 - c. Development of alternative schemes, such as community contingency funds of inclusive access.
14. Develop, at the ministry of agriculture level, systems for catastrophic insurance, contingency funds and other social protection mechanisms for the aid of people affected by disasters in the sector.

Priority 4: Improve effective preparation to respond and to “build back better” within the scope of recovery, rehabilitation and reconstruction in the Agriculture and FSN Sectors early warning and response preparedness systems

- 1.** Develop early warning signals (EWS) with specific indicators for the different sub-sectors (agriculture, livestock, forestry production and fisheries), that cover different types of threats (climate, epidemiological – phyto and zoo-sanitary plagues and pests – agrochemical contamination, etc.).
- 2.** Implement EWS and its response protocols, with sufficient territorial coverage (reaching marginal groups or zones) and organised among the different stakeholders and government levels and related to contingency plans.
- 3.** Include the technical specifics and needs of the agriculture sector in the contingency plans, and guarantee they reflect the priority needs of rural communities.
- 4.** Develop adapted response protocols for zones where there is weak State presence, particularly in the north triangle of Central America and remote areas of different countries. Focus on solutions linked to rehabilitation of livelihoods and “build back better”.
- 5.** Give due consideration to public mechanisms for rehabilitation and post-disaster compensation to territorial productive specifics, and also consider men and women, and reach all affected persons.
- 6.** Include civil society organisations and community groups in the development of livelihood rehabilitation plans.
- 7.** Assess livelihood rehabilitation mechanisms that perpetuate or rebuild the risk.
- 8.** Include risk prevention and mitigation aspects in development and livelihood restoration plans and programmes, as well as in resilience-construction programmes upon future threats.

- 9.** Guarantee that the rehabilitation and reconstruction of productive infrastructure meet “build back better” standards in regards to current and future risks.

ANNEX B – CASE FOR MAINSTREAMING DISASTER RISK MANAGEMENT

As is widely known, disasters erode the gains of development. The Caribbean region is recognised as being the second most disaster prone region in the world (UNDP, 2011; UNISDR, 2003; United Nations, 2013). This is as a result of its location, heavy dependency on particular sectors for foreign exchange, geology, tectonic setting, and poor land use and environmental practices. Natural hazards such as hurricanes, landslides, and floods are annual occurrences that present a constant threat to human, economic, social, and environmental development in the region (United Nations, 2013; CDEMA, 2014). Additionally, the inherent physical characteristics as small island states, and the accompanying socio-economic features make the region highly vulnerable to the effects of climate change.

Regular annual disaster losses are estimated at \$3 billion with significant loss to social and productive sectors. Impacts from hazards will only intensify as a result of climate change, as 60% of the region's population and 70% of its economic activity are within two miles of coastlines (CDEMA, 2014). The region's vulnerability is amplified by the fiscal fragility of many of the Caribbean islands. According to Auguste and Cornejo (2015), most of the Caribbean economies' fiscal imbalances have resulted in high levels of public debt, in some cases exceeding its GDP. The implications are grave, especially in terms of delays in development as well as increase in poverty and inequality. This presents a serious obstacle for the region in achieving sustainable human development, hence the importance of mainstreaming CDM in national policies and programmes. Tearfund defines mainstreaming in this way:

'Mainstreaming' derives from the metaphor of a small, isolated flow of water being drained into the main stream of a river where it will expand to flow smoothly without loss or diversion. Therefore "mainstreaming risk reduction" describes a process to fully incorporate disaster risk reduction into relief and development policy and practice. It means radically expanding and enhancing disaster risk reduction so that it becomes normal practice, fully institutionalised within an agency's relief and development agenda.

(Pelling and Holloway, 2006)

Benson et al. (2007) note that to 'mainstream' disaster risk reduction into development means considering and addressing risks emanating from natural hazards in medium-term strategic development frameworks, legislation and institutional structures, sectoral strategies and policies, budgetary processes, the design and implementation of individual projects, and monitoring and evaluating all of the above.

These definitions are reflected in the CDEMA Comprehensive Disaster Management Policy, (2012), which defines mainstreaming as making comprehensive disaster management an integral dimension of the policies and programmes in all political, economic and societal spheres.

The common thread running through these definitions is that mainstreaming requires a holistic and multi- sectoral approach to be successful. As aptly summarised by Nunan et al. (2012), mainstreaming DRR is a "recognition that too many factors and activities play a role in achieving DRR and only through a comprehensive cross-sectoral approach will DRR succeed".

The United Nations Development Programme (UNDP, 2004) notes that disasters are both a cause and a product of failed development. Therefore, mainstreaming is a process which seeks to integrate, institutionalise, and embed DRR principles within a government's development agenda. Global recognition of this has seen clear articulation in Priority 2 of the Sendai Framework for Disaster Risk Reduction (SFDRR) as well as in Outcome 2 of the Comprehensive Disaster Management Strategic Framework (CDMSF) of the importance of mainstreaming and integrating DRR within and across all sectors.

According to the Global Assessment Report (GAR, 2015), disaster risk is increasing, causing economic losses averaging US\$250 billion to US\$300 billion globally each year. Additionally, the average annual losses (AAL) from earthquakes, tsunamis, tropical cyclones and river flooding are now estimated at US\$314 billion in the built environment alone (UNISDR, 2015a).

Sendai Framework

Although advancements were made to systematically reduce disaster risks through the implementation of the HFA, it has been replaced with the Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030. This is the third international framework on Disaster Risk Reduction and was adopted in 2015 at the Third UN World Conference in Sendai, Japan. Its overarching goal is to:

... “prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience”.

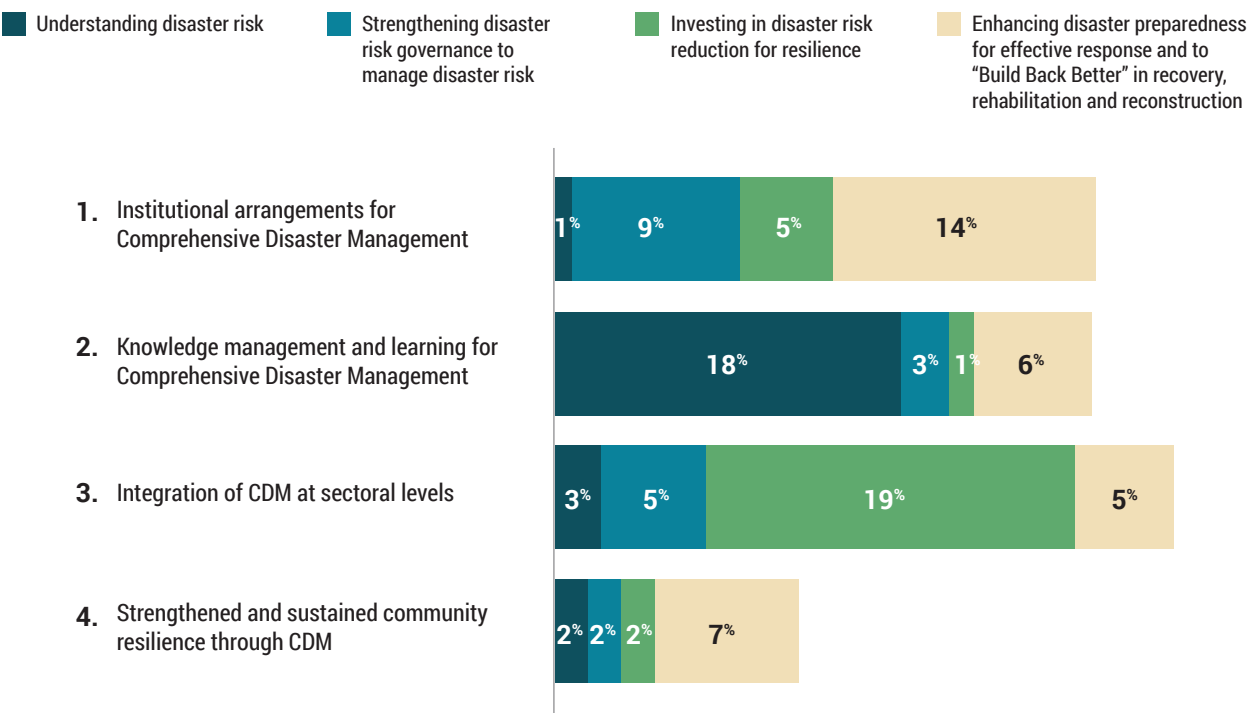
With four priorities for action and seven target goals, this Framework places greater focus than HFA on local actions and involvement in disaster risk reduction,

governance, and disaster risk prevention, reduction, and recovery. There is greater emphasis on State responsibility for reducing the risk of disasters and engaging stakeholders at all levels to use an inclusive and risk-informed approach to address Disaster Risk Management. Following are the priority areas of action:

- a. **Priority 1: Understanding disaster risk** – Having an understanding of disaster risk in all its dimensions of vulnerability; capacity, exposure of persons and assets, hazard characteristics, and the environment
- b. **Priority 2: Strengthening disaster risk governance to manage disaster risk** – Disaster risk governance at the national, regional and global levels is vital to the management of disaster risk reduction in all sectors. It is also important to ensure the coherence of national and local frameworks of laws, regulations and public policies which, by defining roles and responsibilities, guide, encourage and incentivize the public and private sectors to take action and address disaster risks
- c. **Priority 3: Investing in disaster risk reduction for resilience** – Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment
- d. **Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction** – Strengthening of disaster preparedness for more effective response and ensuring capacities are in place for effective recovery. The recovery, rehabilitation and reconstruction phase needs to be prepared ahead of the disaster, creating an opportunity to «Build Back Better» through integrating disaster risk reduction measures. Women and persons with disabilities should publicly lead and promote gender-equitable and universally accessible approaches during the response and reconstruction phases.

Consistent with global thinking on DRR, the regional disaster management agency, the Caribbean Disaster and Emergency Management Agency (CDEMA), developed a draft Regional Comprehensive Disaster Management Strategy and Framework (CDMSF) 2014–2024. The new strategy builds on the successes of the 2007–2012 CDM, and aims to address the existing gaps in achieving CDM and mainstreaming DRM at the sectoral level. The goal of the CDMSF 2014–2024 is to realise “safer, more resilient and sustainable CDEMA in participating states through Comprehensive Disaster Management”. This goal is supported by four high-level priority outcomes and sixteen outputs as represented in the CDM Logic Model. The implementation of the CDMSF also focuses on the inclusion of several cross-cutting themes. These are: (i) Gender (ii) Climate Change (iii) Information and Communications Technology, and (iv) Environmental Sustainability.

It is significant to note that the outcomes of the SD-FRR are closely aligned to the long term goals of the CDMSF, with both affirming the need to substantially reduce disaster risk and build resilience. CDEMA mapped the SFDRR Priorities for Action and the priority areas of the CDMSF to demonstrate the high level of compatibility between these two frameworks (Figure 9). The CDMSF provides the conceptual framework for this assignment, the outputs of which will contribute to attaining the desired results in CDEMA's priority areas.



Source: CDEMA, (2012)

FIGURE 10: COMPREHENSIVE DISASTER MANAGEMENT STRATEGY FRAMEWORK (CDMSF) PRIORITIES FOR ACTION

Past Initiatives: 2007 – 2012 CDM Strategy

The previous iteration of the CDM strategy, 2007–2012, also had sector mainstreaming as a priority. More specifically, Outcome 3, was “Disaster Risk Management has been mainstreamed at the national level and incorporated into key sectors of the national economies (including health, tourism, agriculture and nutrition)”. Related outputs to this outcome were:

- a. CDM is recognised as the roadmap for building resilience, and decision-makers in the public and private sectors understand and take action on Disaster Risk Management;
- b. Disaster Risk Management’s capacity enhanced for lead sectoral agencies, national and regional insurance entities, and financial institutions;
- c. Hazard information and Disaster Risk Management is integrated into sectoral policies, laws, development planning and operations, and decision-making in tourism, health, agriculture and nutrition, planning and infrastructure;
- d. Prevention, Mitigation, Preparedness, Response, Recovery and Rehabilitation Procedures developed and Implemented in tourism, health, agriculture and nutrition, planning and infrastructure.

The evaluation of the 2007–2012 CDM Strategy found that much progress has been made with sector mainstreaming. The key findings from this assessment have been documented in the 2014–2024 CDM Strategy as follows:

- a. The enabling environment (through the presence of model CDM legislation, policies and strategies) at the national level has been selectively advanced in some countries and remains an area of priority for others. Moreover, the degree to which sectors have an enabling environment which increasingly integrates DM, climate and gender considerations was greater than in the former strategic period;

- b. There was an uneven improvement in terms of the use and adoption of model tools for CDM implementation and especially, a greater emphasis is being placed on monitoring, evaluation and reporting at various levels. There was an overall high positive change in mainstreaming efforts over the period. However, there is still need for a continued focus on the integration of work plans and the provision of resources for CDM implementation at the sectoral level. The congruence of National Sustainable Development Plans or Strategies with sectoral plans and CDM policies must continue to be supported and aligned. Evidence of the integration of gender into national and sectoral plans must be increased and the presence and adoption of Emergency Response Plans and Business Continuity Plans must be fostered at the sectoral level.

Current Initiative: 2014 – 2024 Comprehensive Disaster Management (CDM) Strategy

The current CDM strategy has one of its four priority areas dedicated to sector-level CDM mainstreaming. Priority Area 3 (PA3) is “Improved Integration of CDM at sector levels” and its related outcomes are:

- 1. Regional outcome 3.1 (RO 3.1) – Strategic Disaster risk management programming for priority sectors improved
- 2. Regional outcome 3.2 (RO 3.2) – Hazard information integrated into development planning and work programming for priority sectors
- 3. Regional outcome 3.3 (RO 3.3) – Incentive programmes developed and applied for the promotion of the risk reduction/CCA in infrastructure investment in priority sectors.

The seven sectors are prioritised in the CDM strategy; Health, Education, Tourism, Agriculture, Civil Society, Finance and Economic Development, and Physical Planning and Environment Planning. Four of these (Health, Tourism, Agriculture and Finance) are the focus of this consultancy. The fifth sector included

in this assessment, water, is not included in the CDM strategy. OutcomePA3 seeks to address how sectoral stakeholders plan, coordinate and implement CDM at the national and regional levels by:

- Promoting DM programmes in sectors
- Integrating hazard and disaster information and concerns into sectoral development agendas
- Highlighting the need for investing in disaster-proof measures/initiatives by the sectors
- Coordinating preparedness, response and recovery efforts amongst various stakeholders.

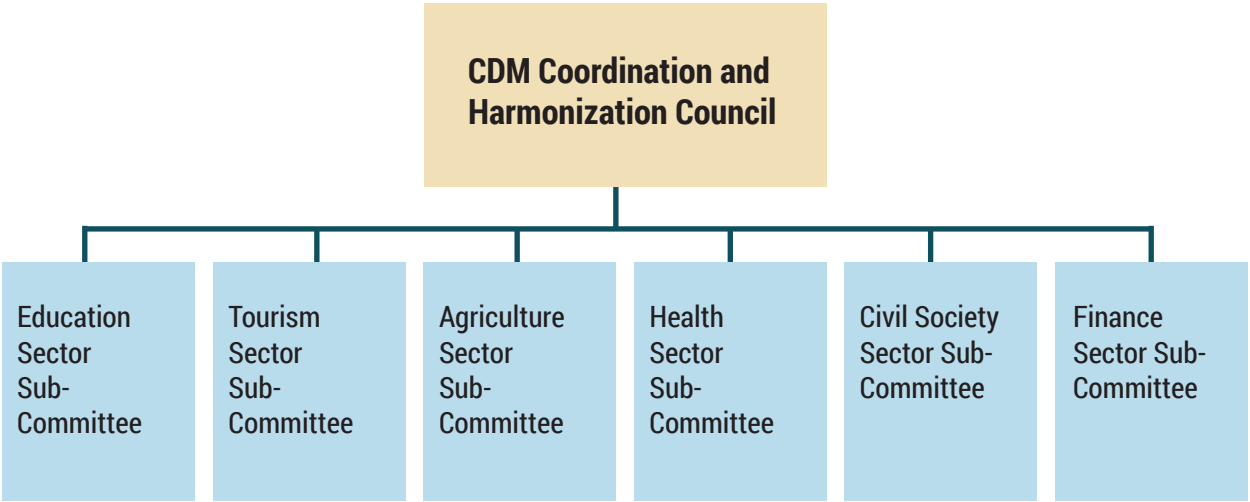
A performance monitoring framework has been developed and is the key tool being used to monitor and evaluate the strategy. The outcome indicators for PA3 (RO3.1 – RO3.3) used to determine ‘improved integration of CDM at sectoral levels” are:

1. RO 3.1 – Number of Participating States with sector- specific DRM plans that have been implemented

2. RO 3.2 – Number of participating States that have integrated normative requirements for risk mitigation
3. RO 3.3 – Number of Participating States applying incentive programmes for DRR and CCA.

The indicators suggest that achieving the outcome for the sector mainstreaming priority area greatly depends on the extent to which participating states put in place plans, appropriate standards, and provide incentives in the priority sectors. The specific country and sector contexts are therefore important factors in determining progress and these include existing progress, strengths, challenges and gaps in mainstreaming.

The CDM governance mechanism (Figure 10) is the vehicle for the implementation of the CDM Strategy. This mechanism includes sector sub-committees for each of the priority sectors created under the CDM Coordination and Harmonization Council (CHC). This mechanism is designed to allow inter-institutional partnership that allows for cooperation, coordination and participation, across and within the sectors.



Source: CDEMA, (2012)

FIGURE 11: COMPOSITION OF THE CDM GOVERNANCE MECHANISM

Through the work of the sector sub-committees (SSC), mainstreaming in the sector is expected to be advanced building on the progress achieved in the previous iteration of the CDM Strategy. Activities expected to be continued and enhanced are:

- a. Developing training materials for sector actors where education and training programmes need to be further developed and implemented for these sector actors. Training and education efforts should address the fundamentals of DRR within a multi-hazard environment. Additionally, the quality of CDM training materials should be enhanced;
- b. Building local/community level capacities for CDM where local capacity for sector-specific disaster mitigation, preparedness and response is improved, and community mobilisation increased. This will support advocacy for a concomitant increase of resources for communities at risk and individual/family preparedness;
- c. Building sectoral level capacities for CDM where SSC are strengthened, resources – particularly funding – mobilised, institutional capacities enhanced within the sector, sector DRM strategies developed, and hazard information incorporated into sectoral planning and development. Improved capacity will also result in emergency plans being either developed or enhanced within the sector, recovery/reconstruction is enhanced and key sector actors are sensitised about DRM;
- d. Improving information sharing where management systems and services (inventories, directories etc.) are developed for sectors and levels of information sharing are increased within sectors;
- e. Enhancing collaboration and dialogue (among actors across sectors and at different levels) where coordination among sectors is enhanced, synergies identified and partnerships established, where appropriate, and dialogue and cooperation within and across sectors are promoted and improved;
- f. Performing various types of assessments (including risk, vulnerability, needs and capacities) and

where capacity for disaster damage assessment is enhanced, there are improved methods for predictive multi-risk assessments and socio-economic analysis of risk reduction actions; capacity for developing and applying methodologies, studies and models is strengthened and sectoral needs and vulnerability assessments completed at the national level;

- g. Standardising CDM tools and approaches where vulnerability assessment methodologies are consolidated and improved with risk management protocols developed for the sector.

For the most part, these work programme areas for the sector committees show strong alignment with the assessment tool used to determine the extent to which sectors have progressed with mainstreaming and factors affecting the level of progress.

CDM Audit

Another initiative aimed at assessing progress and providing a basis for recommendations for improving mainstreaming in the sectors is the application of the CDM Audit Tool 2015–2016. Though the audit is not yet available for scrutiny, CDEMA facilitated its use in a review of national DRR priorities, allowing countries to arrive at their top three national priorities based on the 2014–2024 CDM Strategy. From the discussion, participating countries identified the following as the five priority areas:

- a. Early Warning Systems (EWS)
- b. Community Resilience
- c. Capacity Building, Training and Public Awareness
- d. Institutional Strengthening
- e. Private-Public Partnership

The report from this event (CDEMA, 2016) notes that “these priorities were also validated by the results emerging from the application of the CDM Audit Tool 2015–2016. These findings are based on an analysis of the CDM Audit tool results in six countries. Four out of the five priority areas fall under the preparedness category of the audit tool, and only the partnership between public and private sector falls under mitigation. Institutional strengthening links to governance in the tool, the application of which found that the integration of CDM into national sector policies and work plans, and the existence of sectoral legislation mandating CDM responsibilities, are weak areas to be addressed. The results show that proper planning frameworks are weak because these sectors generally lack disaster plans which are congruent with national and community CDM plans.

Recommendations from the Audit to address priority areas relevant to sector mainstreaming include:

- Developing and adopting a model of legislation, regulation and policy to manage risk at the regional level, for all sectors;
- Establishing chairs at appropriate universities within the region to coordinate risk engineering research specific to the region;
- Encouraging the establishment of a regional training centre that can, inter alia, facilitate the Implementation of the Global School Safety Framework (CDEMA’s Model Safe School Programme) throughout the region with a view to harmonisation of approaches to school safety;
- Engaging private sector directly in advancing disaster risk reduction efforts (e.g., creating a regional private sector network on DRR, promoting the collaboration between National Disaster Management Offices and National Chambers of Commerce).

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THE EKACDM INITIATIVE

The Enhancing Knowledge and Application of Comprehensive Disaster Management, EKACDM) Initiative is a five year project which was implemented in the Caribbean region from September 2013 to December 2018 by the Disaster Risk Reduction Centre, the Institute for Sustainable Development, the University of the West Indies. This Initiative seeks to establish an effective mechanism and programme to promote an integrated approach to Comprehensive Disaster Management knowledge in the Caribbean region, to fast track the implementation of the CARICOM Enhanced Comprehensive Disaster Management (CDM) Strategy and Frameworks (2007 - 2012 and 2014 - 2024).

The ultimate outcome of the EKACDM Initiative is to reduce the impact of natural and technological hazards and the effects of climate change on men, women and children in the Caribbean region. It seeks to position the region with greater knowledge and practical solutions to strengthen climate adaptation, and other sustainable practices that will make the region more resilient and sustainable.

For further information:

<http://www.uwi.edu/EKACDM/index.aspx>

<http://uwi.edu/drrc/>

<http://www.uwi.edu/isd/>