



MINISTRY OF AGRICULTURE AND FISHERIES

PLAN OF ACTION FOR DISASTER RISK REDUCTION



Prepared by

MINISTRY OF AGRICULTURE AND FISHERIES

and the

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

AUGUST 2011

Preface

Belize is prone to natural disasters due to its geographical location. Its eastern border with the Caribbean Sea makes it susceptible to natural hazards that plague this region. The country has been exposed to many natural and man-made hazards over the past century. The hazards that have been causing most of the damage include frequent hurricanes, flooding, and sea-borne storm surges. The Belizean economy's dependence on natural resource-based activities exacerbates its vulnerability to aforesaid natural hazards and disasters. Vulnerability appears to be especially high in communities where poverty levels are among the highest in the country and the population shows the greatest diversity. In August 2007, Hurricane Dean, a category five hurricane, hit the north of Belize affecting 14,000 people and causing an economic damage of USD 14 million mostly due to direct wind damage and flooding. The occurrence of the Tropical Storm Arthur in June 2008 and its impact on the agricultural sector has reinforced the urgent need to strengthen preparedness capacities in this sector. The reduction of Belize's vulnerability to natural disasters, therefore, lies in developing a sound model to build resilience through understanding these hazards, their intensities and frequency of occurrence and to assess likely impacts and prepare for a comprehensive risk reduction framework of action.

In this context, after Hurricane Dean occurred, the Ministry of Agriculture and Fisheries (MAF) of the Government of Belize requested assistance from the Food and Agriculture Organization of United Nations (FAO) in 2008 to implement the FAO Technical Cooperation Project: *“Improved national and local capacities for hurricane related disaster mitigation, preparedness and response in the agricultural sector”*. This Plan of Action (PoA) was developed on initiative of the MAF as part of the project. The overall objective of the PoA is to strengthen disaster prevention, risk mitigation and preparedness within agriculture and fisheries and enhance coordination for DRR with other development sectors of Belize.

The PoA has been prepared through an extensive consultation process facilitated with a range of key DRR stakeholders within and outside of MAF operation. It also builds on the field experiences gained during the DRM project. More specifically, the process included literature review (policy, strategy) and inception meetings with the key government officials; intensive discussion at the national level (sector-wise) with representatives of the most relevant agencies; discussion at the district level through Key Informant Interview (KII) as well as informal meetings to explore key issues and discussion at the local level with village councils and community people. Based on the inputs obtained a draft of the PoA was prepared and presented to various stakeholder meetings for review. A final wrap-up meeting was organized with the national level organizations to share the key outcomes of the process and incorporate final recommendations. Finally, in August 2011 at a multi-disciplinary stakeholder meeting with the national DRM focal points and other national key partners in DRR, the PoA was technically endorsed, with the recommendation to be submitted for formal endorsement to MAF and the Cabinet; in order to bring it to quick implementation thereafter.

Acknowledgement

The development of the Plan of Action (PoA) for MAF to strengthen DRR in agriculture was only possible through strong political will, institutional and technical support provided by MAF and other stakeholders and individuals of agriculture, fisheries and cooperatives sub sectors. National and local level staff of MAF provided valuable feedback during the institutional analysis phase as well during feed-back sessions. Only their active participation and repeated contributions during this iterative consultation process has made it possible to consolidate the PoA presented herewith.

The level of engagement and the constructive technical support and feedback provided by the representatives of NEMO, CARDI, MET Office, MNRE , UNDP and other relevant organizations in the process and their cooperation all the way through was indispensable, and fundamental to ensure the quality of the product and its embeddedness into national DRM policies, strategies and plans.

The contributions of members from various communities to this product is highly commendable. In fact, several aspects of this document have been built on the experience and comments shared by them during field analysis.

The FAO Lead Technical Officer Dr Stephan Baas (NRC Division) has provided the overall technical guidance and facilitated the development of this PoA. He enriched the thematic and structural aspects of the document as well as synchronized the flow of description of contents.

Mr. Ricardo Thompson and Ms. Francine Magloire (*both acted as National Project Coordinators in successive periods*) played a hands-on role in preparing the PoA, including organizing workshops, providing technical guidance and feedback during the iterative formulation process of this document.

Finally, a special thanks to Concern Worldwide–Bangladesh, who provided a TCDC consultant (under sub-contract agreement with FAO) to assist with the development process of this PoA for MAF.

Acronyms

ASL	Above Sea Level
BAHA	Belize Agriculture Health Association
BFD	Belize Fisheries Department
BZD	Belize Dollar
CARDI	Caribbean Agricultural Research & Development Institute
CARICOM	Caribbean Community
CBDRR	Community Based Disaster Risk Reduction
CCA	Climate Change Adaptation
CCCCC	The Caribbean Community Climate Change Centre
CDB	Caribbean Development Bank
CDERA	Caribbean Disaster Emergency Response Agency
CPF	Country Program Framework
CRVA	Community Risk and Vulnerability Assessment
DA	Department of Agriculture
DAC	District Agricultural Coordinator
DANA	Damage And Needs Assessment
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GoB	Government of Belize
HFA	Hyogo Framework for Action
KII	Key Informant Interview
IDB	Inter-American Development Bank
IEC	Information, Education and Communication
MAF	Ministry of Agriculture and Fisheries
MNRE	Ministry of Natural Resources and Environment
NEMO	National Emergency Management Organization
NHDAC	National Human Development Advisory Committee
NPEAP	The National Poverty Elimination Action Plan
NPESAP	The National Poverty Elimination Strategy and Action Plan
POA	Plan of Action
SIB	Statistical Institute of Belize
SIDS	Small Island Development States
UNDP	United Nations Development Program
UNDAF	United Nations Development Assistance Framework
UNFCCC	United Nations Framework Convention on Climate Change

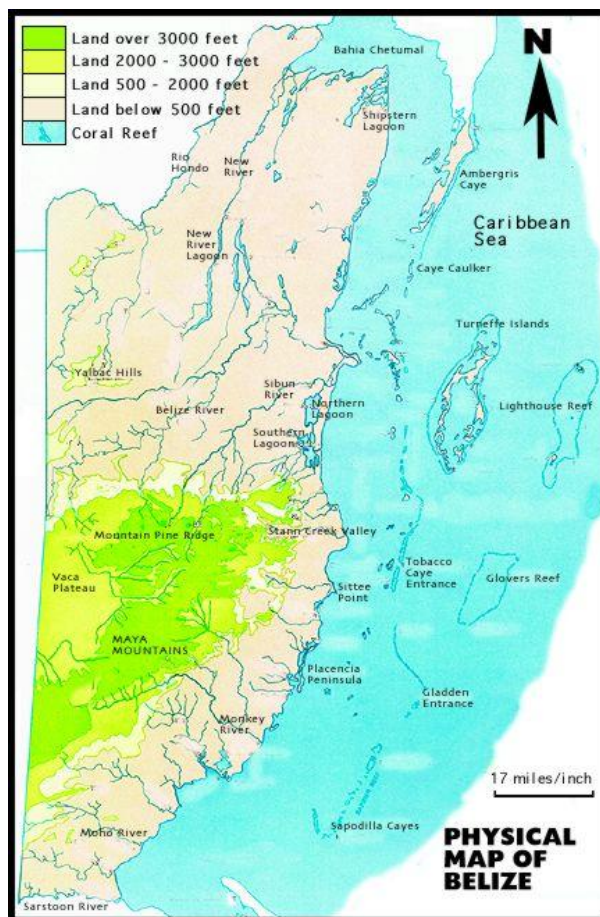
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A. INTRODUCTION

A.1 Background

Belize is one of the smallest and least densely populated countries in Central America. It is bordered to the north by Mexico, to the west and south by Guatemala and to the east by the Caribbean Sea¹. The total land area is 22,960 sq. km. (8,867 square miles) of which 95% forms the mainland. About 5% of the land mass is distributed over more than 1,060 islands. The total national territory (including territorial sea) is 46,620 sq. km. (approximately 18,000 square miles). Most of the northern half and much of the southern third of the country, including the entire coastal area and the islands, are flat and low-lying. Large sections of the coastline have an elevation of less than one meter above sea level (ASL) to a distance of several kilometres inland².



According to the Belize Country Data of 2010, Belize has a total population of 344,700 with a population density of 14 inhabitants per square kilometre³. Although Belize is considered as a middle income country with a HDI ranking of 95 (Human Development Index 2005), according to the 2009 Country Poverty Assessment, 33% of households (representing 43% of the population) in Belize are poor, and 10% of households (accounting for 16% of the population) are poverty-stricken (NHDAC, 2009), with uneven access to resources across groups and communities along age, gender or ethnic societies⁴.

Over the last 5 years, the largest contributors to gross national income were agriculture (14%), private services (trade, transport & communication, restaurant & hotels, etc) (16%), wholesale and retail trade (14%), taxes on products (16%), and manufacturing/mining and quarry (11%). In real terms the economy grew little from 2005 to 2008, compared to a 13.1% growth rate in 2000 (FAO, 2011). The growth rate registered zero in 2009 after its

3.6% increase in the previous year (Central Bank of Belize, 2009).

¹ <http://www.discovercentralamerica.com/country.htmlcountry=belize>

² <http://www.hydromet.gov.bz/about-us/meteorological-information>

³ <http://data.worldbank.org/country/belize>

⁴ National Human Development Advisory Committee (NHDAC), 2010.

A.2 Brief profile of the agriculture sector

Belize has a suitable climate for agriculture along with abundant water resources. Approximately, 800,000 hectares or about 38% of Belize's total land area is considered potentially suitable for farming and raising livestock. But currently, only 9.7 % of the land (about 78,000 hectares) is used for agricultural practices⁵. About half of this area is under pasture, with the remainder in a variety of permanent and annual crops. According to the *Bureau of Western Hemisphere Affairs*⁶, the traditional system of "milpa" (shifting cultivation) involves the annual clearing of new land for crop production; however, increasing numbers of farmers are making permanent use of cleared land by mechanical means.

The main reasons for the low rate of utilization of arable land can be explained mostly by the rationale of the input cost to develop the land, providing potable water and electricity, constructing irrigation facilities, and in some cases clearing the land, without touching protected areas. Lack of secure markets and profitable new farming options are also factors contributing to the apparent underutilization of the land resource⁷.

The current structure of agriculture in Belize is characterized by three main sub-sectors: a) a fairly well organized traditional export sector for sugar, banana, citrus, and marine products which are the principal sources of agricultural employment and foreign exchange earnings. b) a small-scale farm sector, producing food mainly for local consumption, and c) a well-integrated large-scale commercial sector (i.e. Mennonites). The Mennonites do not directly participate in the traditional export sector, but they do export food products.

A recent census of farms in Belize shows that 24% of farms have less than 5 acres, 33% between 5 and 20 acres, and 74% of farms in the country are below 50 acres. (FAO, 2011)

Agriculture and fisheries sectors together employ approximately 26% of the total work force in the country (*MAF Report, 2008*). In commercial terms the most important agricultural export crops are citrus, bananas and sugar; the principal cereal grains produced as annual crops are mainly rice, corn, and sorghum. Mostly, vegetables, root crops and beans are important for the domestic market and, to a much lesser extent only meant for the export purpose. The smallest and poorest farms typically grow corn and beans in shifting cultivation practices (milpa). In addition to the traditional major crops, commercial Belize farms grow a diversity of beans. A significant amount of hot pepper is grown in the region for processing them into hot sauces for both the domestic and export markets. Tomatoes, onions, sweet peppers, and other vegetables are important for the domestic market⁸.

While use of farm livestock is a common practice in the pasture land. The principal types of livestock at present are beef cattle, dairy cattle, poultry, and pigs, although there is growing

⁵ Martin, D. & Manzano, O. 2010.

⁶ <http://www.state.gov/p/wha/>

⁷ Martin, D. & Manzano, O. 2010, p.107.

⁸ Food and Agriculture Organization. 2011.

interest in sheep rearing. There are very few fattening operations for beef cattle, with grass-fed beef being the main product.

The agriculture sector is envisioned, by the Government of Belize (GoB), as the base to support economic growth, development, and poverty reduction. Belize's agriculture policy has emphasized market-led strategies, increasing diversification and achieving self-reliance for food products as the main goal. This has resulted in the development of new export commodities (papayas, aquaculture, Habanero peppers) and an expansion of the food crop and livestock sub-sector. However, the sugar, banana and citrus industries still remain the three most important agricultural export sub-sectors propelling growth.

A.3 Vulnerability of the agriculture sector to natural hazards and climate risk

Natural disasters are recognized in Belize as one of the major challenges for agricultural development and to promote food & livelihood security of the small farmers' communities. Bordered by the Caribbean Sea, the country is recently exposed to frequent hurricanes and tropical storms. Almost 45% of the total population living at low elevations are particularly vulnerable to storm surge and coastal flooding (*NHM Policy*).

The high level of vulnerability of the agriculture and fisheries sectors was evident in the devastation caused by the impacts of Hurricane Dean, Tropical Storm Arthur, Tropical depression 16 and Hurricane Richard between 2007 and 2010. The massive impacts of three recent natural disasters on agriculture are shown in the following table.

Table 1: Recent natural disasters and their impact on agriculture sector

Sl.	Name of the Event	Date & Year	Agriculture sector damage cost (BZD)
1	Hurricane Dean	August 21, 2007	The total losses to this sector is approximately 131.1 million (\$40.40 in direct damage and \$90.70 in indirect loss)
2	Tropical Storm Arthur	May 31, 2008	\$25 million. This includes direct loss to the farmer (damage assessment), which is estimated at around \$11.7 million, and other losses.
3	Tropical Depression (TD)-16	October 30, 2008	\$7.8 million (papaya and rice -30% of total major crops)
4	Hurricane Richard	October 21, 2010	Direct damages to the agricultural sector is \$34.68 million

(Source: DANA reports, NEMO)

The vulnerability of the agricultural sectors in Belize is not only due to its geo-physical location and hydro-meteorological hazards but it is also due to the shortcomings of the current disaster risk reduction & response mechanisms to effectively mitigate the impacts.

In addition, to its already existing high exposure to natural hazards, the country is one of the Small Island Development States (SIDS) classified as most vulnerable to climate change. The impacts of global climate change are likely to be felt through greater climate variability (changes in dry and rainy seasons), even more extreme events (hurricanes, floods, droughts) and damage to water resources, agricultural systems, ecosystems, human settlements and coastal resources.

The following table shows a scenario of the impact of disasters and climate change on agricultural sectors.

Table-2: Sectoral impact of disaster and climate change

Sectors	Disaster	Climate Change
Agriculture	<ul style="list-style-type: none"> • Sugarcane crop is exposed to flood damage in Orange Walk and Corozal. • Citrus and banana crops are especially vulnerable to wind and flood damage in Stann Creek. 	<ul style="list-style-type: none"> • Expected increases of 1–2 degrees Celsius and rainfall changes of ± 10 percent are predicted to lower productivity of beans, corn and rice by 10 percent. • Banana, citrus and emerging vegetable crops face same threats as above.
Water resources	<ul style="list-style-type: none"> • Saline intrusions during storms affect Belize City, as well as offshore islands and coastal plains. • There is inadequate drainage and sanitation around Belize City during heavy rain. 	<ul style="list-style-type: none"> • Sea level rise has intensified the saltwater intrusion problem, particularly on offshore islands and coastal plains. • Changes in evaporation rates and rainfall are affecting water resources in the country's interior.
Fisheries	<ul style="list-style-type: none"> • Exports of shrimp and other marine products are at risk to be affected by tropical storms and storm surges. • Habitats such as sea grass beds, mangroves, and coral reefs are vulnerable to storms and siltation. 	<ul style="list-style-type: none"> • Traditional catches are expected to migrate as Belizean water warms up. • Sea level rise and coral bleaching also threaten habitats for fish nurseries, such as mangroves and coral reefs.

(Martin & Manzano, 2010)

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

In order to create effective policy frameworks for adaptation to climate change practical methodologies and recent scientific advances in the areas of DRR, climate change and development need to be implemented in an integrated way. The Plan of Action for DRR in Agriculture will catalyze a process in MAF to contribute more systematically to the existing national strategic framework for DRM, with a view on agriculture and fisheries, and to enhancing the coordination and collaboration among the key actors from the national level as well as from the local level.

A.4 Brief profile of the fisheries sector

Belize has a tremendous potential for aquaculture development, which includes both inland freshwater and coastal land-based impoundment production systems, as well as sub-tidal sea-based production system. Although only three species are currently being cultured in Belize, the potential exists for the husbandry of a wide range of finfish and macro-invertebrate species. The

full scope for aquaculture development has been estimated at \$BZD 908,200,000 per annum. The aquaculture sub-sector is now firmly established as a significant contributor to the Belizean economy. The fishing industry contributes significantly to the economy of Belize mostly from exports of lobster, conch, and shrimp. In 2007, the fisheries sector's contribution to the country's GDP was 1.5% and ranked 4th in export earnings (*MAF, 2008*).

This sector continued to play a significant role in the national economy with export earnings valued at approximately \$BZD 45,567,650 in 2008 (*SIB, 2009*). The capture fisheries sector earned approximately \$BZD 20.5 million in 2008 primarily from the exportation of conch and lobster products (\$BZD 13.8 million and \$BZD 6.49 million respectively). Aquaculture export earnings were estimated at \$BZD 22.84 million with shrimp and finfish (Tilapia and Cobia) contributing \$BZD 18.5 million and \$BZD 4.32 million respectively. This sector continued to play an important role in the employment sector by providing direct employment to 2,346 fishermen and over 123 personnel working in processing plants. This has elevated the importance of the fisheries sub-sector from the fourth largest foreign exchange income earner, to the third largest foreign exchange earner. The main focus of the industry has been shrimp farming. However, over the last three to four years Tilapia production has become relevant and the first harvest of Cobia for the export market was realized in mid-2007.

More than 50% of the licensed fishermen are between the age of 15 and 35 years and most of these fishermen originate from impoverished rural and coastal communities. The fishermen cooperatives employ 123 fulltime employees and the aquaculture farms employ 1,059 employees (853 fulltime and 206 part time workers) who are responsible for processing, packaging and administrating the daily activities.

The Belize Fisheries Department (BFD) is a Department under the Ministry of Agriculture and Fisheries of the Government of Belize. The BFD was established on January 1st, 1965 and was mandated to sustainably manage and develop the fishing sector of Belize, through the Fisheries Act of 1948 and its amendment regulations and subsidiary legislation (*UNDP, 1996*).

A.5 Vulnerability of the fisheries sector to natural hazards and climate risk

The ecosystems on which the inland fisheries depend would be influenced by climate change through altered temperatures, flow regimes and water levels. Belize however, lies in the subtropical geographical belt where its climate is governed more by variations in rainfall than temperature, evaporation, wind or humidity (*Esselman and Boles, 2001*). Changes in precipitation and water availability may result in changes in ponds/lake levels and altered distribution and abundance of fish stocks.

Table 3: Recent natural disasters and their impact on the fisheries sector

Sl.	Name of the Event	Date & Year	Fisheries sector damage cost (BZD)
1	Hurricane Dean	August 21, 2007	• Fisheries: \$1.32 million.
2	Tropical Storm Arthur	May 31, 2008	• Fisheries: \$5.4 million • Aquaculture: \$7.8 million

(Source: DANA reports, NEMO)

Coastal fishing communities are often small and community members are bonded by kinship and their reliance upon income derived from fishing. Attrition of income may erode the traditionally positive social interaction enjoyed by small fishing communities. Fishing villages are among those most vulnerable to climate change as they may be severely impacted by sea-level rise and erosion as they typically occupy low elevation coastal land. Fishing camp sites, particularly those on the outer cayes and islands, fish landing sites and cooperatives receiving and processing facilities are as vulnerable as the fishing villages due to the vulnerability of the locations.

B. NATIONAL POLICY FRAMEWORK AND LEGISLATION RELEVANT FOR DISASTER RISK REDUCTION

B.1. Development policies

Recently adopted national policies and legislations for food security, agriculture, natural resource and rural risk reduction & development plans are favourable to DRR and provide a sound foundation and national commitment to enhanced risk reduction measures. Key policies and legislations in this regard include the following:

- **The National Poverty Elimination Strategy and Action Plan 2007–2011 (NPESAP)** is guided by the following four principles:
 - “Fostering sustainable economic growth and development;
 - Enhancing the capabilities of poor people to respond to economic opportunities and access assets;
 - Reducing the social, economic and environmental vulnerability of the poor; and
 - Promoting good governance, pro-poor policy and access for audible “voice” in decision making by poor people.”

The NPESAP expands on the specific activities indicated in the **National Poverty Elimination Strategy** (NPES⁹). The modification has been made to indicate the link between poverty reduction and disaster risk reduction. The strategy & action plan underscores support for coordination between various institutions and the public and private sectors, and a comprehensive action plan for policy and programmatic actions (NHDAC, 2007) that indirectly includes the issue of disaster risk reduction.

- **National Food and Agriculture Policy** of 2009 was developed by the MAF for the period of 2002 to 2020 (*drafted in 2002*); Its major objectives include: i) greater efficiency in resource allocation; ii) minimizing sharp fluctuations in market prices and reducing investment risks and uncertainty; iii) promoting specific commodities for which risks are identified and growing markets; iv) achieving a higher level of self-sufficiency in food

⁹ NHDAC, 2007

production, and v) increasing the country's competitiveness in regional and extra-regional markets¹⁰.

The recent policy statements of MAF highlight the critical importance of agricultural exports, farmer organization, technological innovations, extension and cross-cutting issues of gender, youth and disaster risk management, for sustainable growth. One of the policy objectives is to implement policies and measures for sustainable environmental development by improving natural resource management (land, water and forestry), expanding sustainable tourism and improving natural disaster prevention and management. This element of the policy recognized the clear linkages between agriculture, environment and climate change.

- **National Environmental Policy and Strategy:** In 2006 the Ministry of Natural Resources and the Environment updated the Belize National Environmental Policy and Strategy. The document especially recognizes the serious implications climate change has and will have in the future on the livelihoods of people considered as poor. Among the six guiding principles of the National Environmental Policy and Strategy used in the preparation of this document, four of them are directly related to disaster risk reduction and climate change.

B.2 National legislation relevant for DRR

- **The Land Utilization Act** (revised in 2000), which enables the National Emergency Coordinator to be a member of the Land Subdivision and Utilization Authority. “This Act effectively provides government with the opportunity to regulate, promote, create and approve land development applications and, special development areas within which hazard mitigation measures can be incorporated”¹¹
- Enacted in 1992, the **Environmental Protection Act** addresses modern environmental problems including problems associated with hazards. The Act assigns authority to the Department of the Environment to approve environmental impact assessments, subject to consultation with the National Emergency Coordinator;
- The **Coastal Zone Management Act** of 1999 (supplemented in 2000); mandated the Coastal Zone Management Authority and Institute, established within the public service, with **broad consultative and advisory roles on policies and planning** relating to coastal development and resource use; and
- The **Reconstruction and Development Corporation Act**, which facilitated the 1970 relocation of the government’s main administrative centre from Belize City to Belmopan, following damage from Hurricane Hattie in 1961, but has not been applied since and has no currently functioning administering unit.
- The “**Belize Building Act** (2003) regulates the construction of buildings countrywide¹²

¹⁰ Ministry of Agriculture & Fisheries & Government of Belize. 2003.

¹¹ National Policy Document Committee, 2004.

¹² Caribbean Disaster Emergency Response Agency and the Caribbean Development Bank, 2006.

B.3. Specific DRR policies and legislation

Policies and legislation directly underpinning the importance of DRR and the shift from a previously reactive disaster management system to a more proactive disaster risk reduction system, which gives equal importance to prevention and mitigation as compared to response include:

- **Belize’s Disaster Preparedness and Response Act (2000)**¹³ is the primary legislation governing disaster risk management in the country recognizing that Belize has both national and international environmental responsibilities. The act established the National Emergency Management Organization (NEMO) as a government agency, headed by a National Emergency Coordinator, to whom it assigned broad responsibilities for “coordinating the general policy of the government related to the mitigation of, preparedness for, response to and recovery from emergencies and disasters.” The act is skewed toward preparedness and response and is silent on financial protection and risk transfer.
- **The National Hazard Mitigation Policy** was adopted in 2004. The main purpose of the policy is to provide an integrated approach to hazard risk management and sustainable development, at national, district and community levels covering all sectors. The policy advocates for the adoption of intervention methods and preparedness measures aimed at reducing or decreasing existing risks and minimizing losses and damages resulting from the occurrence of dangerous phenomena. It also provides an important benchmark for stakeholder cooperation and a useful platform for pro-actively addressing hazard reduction issues within the context of development planning. An integrated approach is critical to the incorporation of vulnerability reduction considerations at all levels of the development planning process¹⁴.
- **National Hazard Mitigation Plan:** A 10-year National Hazard Mitigation Plan, emphasizing a multi-sector, integrated, coordinated approach to hazard mitigation, was adopted in 2007. It has the same two goals as the National Hazard Mitigation Policy¹⁵

B.4. The need for the PoA for DRR in agriculture

Though country’s policies and legislation provide a sound foundation to enhanced DRR and CCA commitments, the need remains for greater and more consolidated actions towards an integrated, multi-sectoral and better coordinated approach to DRR including links to CCA. Moreover, the current national framework for disaster risk mitigation & preparedness has only very limited focus on the agriculture and fisheries sectors; priority issues for enhanced DRR in agriculture and fisheries are yet to be addressed. This requires a) wider sharing and “understanding” of the existing DRR policy documents, b) linking policy recommendations to resource allocations at all levels of action, c) systematically implementing DRR measures in

¹³ Belize Disaster Preparedness and Response Act, Chapter-14, revised edition 2000.

¹⁴ National Policy Document Committee. 2004, p. 7.

¹⁵ Caribbean Disaster Emergency Response Agency and the Caribbean Development Bank. 2006, p. xiv.

agriculture and monitoring and evaluating their impact and sustainability, and d) using the above to draw lessons for future improvement.

The proposed PoA for DRR in the agriculture and fisheries will be instrumental to strengthen sectoral contributions to DRR, including in the context of climate change. Careful coordination with other key stakeholders in DRR will ensure effective mainstreaming of DRR & CCA at all levels.

C. PARTNERS FOR DISASTER RISK REDUCTION IN AGRICULTURE AND FISHERIES

A comprehensive disaster risk reduction and management system can only function in a well orchestrated collaboration among all key stakeholders. In this context it is important to further enhance the role and responsibilities of MAF for DRR and collaboration with its key partners to enhanced DRR in agriculture. Key partners for DRR in agriculture include the following:

C.1. National Emergency Management Organization (NEMO)

The NEMO was established in 1999 under the Disaster Preparedness and Response Act of 2000¹⁶ and is the umbrella organization to coordinate DRR and DRM in Belize. The NEMO coordinated the preparation of the national Disaster Response Preparedness Plan. With the support of the Caribbean Disaster Emergency Response Agency (CDERA) and the Caribbean Development Bank (CDB), NEMO has also prepared Belize's National Hazard Mitigation Policy (see section B3). NEMO has a Secretariat and 12 Operational Committees. The NEMO secretariat is responsible for the development, refinement and testing of all emergency plans as well as ensuring the existence of national capacities to execute the said plans. The committees are designated to manage specific areas of an emergency and are represented in the NEMO structure through the participation of the Chief Executive Officers of the Ministries with specific mandates. These committees support emergency management responses through the activation of pre-prepared action plans approved by NEMO. The 12 committees become active in times of alert and emergencies, leaving a gap in the NEMO structure in times of non-emergencies. The appointed staffs of NEMO are responsible for emergency management countrywide as well as the coordination of all international assistance in the event of a disaster. (*See Figure-1*)

C.2. Caribbean Agricultural Research and Development Institute (CARDI)

CARDI-Belize specializes in research and development on cereals and grain legumes, mainly corn, soybean peanut, red peas and cowpeas. Additionally, CARDI Belize is involved in the production of nucleus and commercial seeds of hot peppers. It also maintains and manages germplasm banks of the cereals and grain legumes, as well as vegetables that can be accessed by the Region to aide in the recovery of food production after natural disaster. As a result, there are

¹⁶ Belize Disaster Preparedness and Response Act, Chapter-14, revised edition 2000.

a number of niches where CARDI can play a potential role through participatory research at community level such as in field testing and dissemination thereafter of selected hazard tolerant varieties.¹⁷

C.3. Belize Agricultural Health Authority (BAHA)

The BAHA is a statutory body designed to modernize and regulate the agricultural health services in Belize. It was established under the Laws of Belize "Belize Agricultural Health Authority Act, Chapter 211 of the Substantive Laws of Belize Revised Edition 2000." BAHA is governed by a Board of Directors, which is the policy making organ of the Authority, with representatives from both government and the private sector. Mission of BAHA is to provide optimum, competent and professional services in food safety, quarantine, plant and animal health in order to safeguard the health of the nation and facilitate trade and commerce.

C.4. Ministry of Natural Resources (MNRE) and National Meteorological Service

The interface of natural resources and watershed management with sustainable agricultural practices are key for the planning of sustainable, long term disaster risk reduction measures. Thus for enhanced DRR the coordination and collaboration between MRNE and MAF is essential. The Ministry of Natural Resources and Environment also coordinates Belize's membership and contribution to UNFCCC. The Ministry and its departments are thus a key partner in the process of cross-sectoral integration between CCA and DRR.

At national level the ministry leads among others the **Belize National Climate Change Committee** with wide representation from various sectors, and is responsible for coordinating actions related to climate change both local and with respect to regional and international issues. The committee is organized into sub-groups to address the various aspects of climate change

The **National Meteorological Service** being part of the Meteorological Department under MNRE is the leading governmental authority on weather, water and climate. It provides meteorological, hydrological and climate-based products and services to the Belizean public through systematic and accurate monitoring and data collection, reliable data analyses and timely dissemination of user-friendly information on regular and emergency events and processes¹⁸. The National Meteorological Service is responsible for providing aviation weather information and forecasts, and specialized weather forecasts for agriculture, forestry, marine, military, and tourism. It also provides public weather forecasts for the media, which is then distributed via newspapers, radio and television. Forecasts are also distributed by the Meteorological Office by facsimile, e-mail, the department's website and recorded telephone messages. The Chief Meteorologist is a member of the NEMO and provides advice on hurricanes, floods and other forms of severe weather conditions, which could provoke an emergency. The National Meteorological Service is the principal advisor and negotiator for the government on matters related to climate change. The Chief Meteorologist is the focal point for the United Nations Framework Convention on Climate Change (UNFCCC).

¹⁷ CARDI 2008; CARDI 2009.

¹⁸ The National Meteorological Service of Belize (<http://www.hydromet.gov.bz/about-us/purpose>)

C.5. United Nations Development Program

The United Nations, drawing on the collective strengths of all agencies, funds and programs, is committed to working with the GoB and civil society partners to achieve the agenda endorsed by the 2005 World Summit, the Millennium Declaration (MD), the Millennium Development Goals (MDGs), and other internationally agreed treaty obligations. UNDP has given active support to the national development priorities, strategic objectives and programs notably with the publication of the United Nations Development Assistance Framework (UNDAF) in 2007¹⁹. UNDP has taken the initiative to critically assess the relevance of the UNDAF to the rapidly evolving environment in Belize, and to adjust UN cooperation accordingly with the new UNDAF to be released in 2011. UNDAF 2007-2011 “Delivering as One” is based on ‘down-stream’ interventions and ‘up-stream’ policy advice aiming at supporting the GoB in its efforts towards poverty reduction, democratic governance and sustainable development (UNDP, 2007). With regard to DRR the UNDAF focuses on basic education, health and protection for vulnerable and excluded populations, as well as enhanced ability to adapt to and mitigate the impact of disasters and to manage natural resources. Outcome 3 of the UNDAF focuses specifically on national frameworks and capacities to adequately address adaptation to and mitigation of the impact of disasters as well as the comprehensive, equitable, sustainable and effective management of its natural resources.

C.6. The Caribbean Community Climate Change Centre (CCCCC)

The CCCCC coordinates the Caribbean region’s response to climate change. It is the official repository and clearing house for regional climate change data, providing climate change-related policy advice and guidelines to the Caribbean Community (CARICOM) Member States through the CARICOM Secretariat²⁰.

C.7. The MAF: its current and new roles in Disaster Risk Reduction

The Ministry of Agriculture and Fisheries (MAF) of Belize is responsible for operational and extension services on agriculture and fisheries technologies, skill & knowledge at the rural community level throughout the country. In the field of DRR & CCA, MAF has a leading role to engage other key stakeholders in the overall risk reduction process in agriculture & fisheries sectors. In addition to that, MAF needs to flag up the importance of mainstreaming DRR & CCA in all other relevant sectors to support and achieve sustainable results. It is essential that, building on the existing national policies, strategies and plans, MAF systematically incorporates DRR and CCA as an integral component into its own policy planning, as well as flag up the gaps & needs in national documents to ensure country wide efficient and effective agriculture and fisheries services for (i) reducing the impact of natural hazards by promoting proactive DRR approaches in the agriculture and fisheries; (ii) increasing efficiency and productivity of agriculture and fisheries and (iii) increasing resilience of people’s livelihoods in the rural areas.

¹⁹ UNDP, 2007; Food and Agriculture Organization (FAO), 2011.

²⁰ Caribbean Community Climate Change Centre. 2009.

Key mandates of MAF/Department of Agriculture/extension service and their roles & responsibilities for DRR

The Agriculture Department is mandated to:

1. Undertake climate change impact assessment and hazard risk & vulnerability studies on all the major crops in Belize.
2. Prepare adaptation options for those crops, which are frequently threatened by local disasters. These may include the introduction of varieties, which are more tolerant to the new climatic regime, diversification, and the introduction of new agronomic practices.
3. Promote the use of new cultivars and practices in the agricultural community.
4. Include a report on risk management and climate change related activities in the Ministry's Annual Report
5. Provide a report on its climate change activities to the National Climate Change Committee and the Chief Meteorologist.

The Fisheries Department is mandated to:

1. Undertake hazard risk vulnerability studies of the fish species resident in Belizean waters.
2. Sensitize the fishing community to opportunities that may arise as new species become more abundant in Belizean waters.
3. Monitor and protect the nation's reefs and mangroves to preserve these important fishery habitats.
4. Include a report on risk management and climate change related activities in the Ministry's Annual Report
5. Provide a report on its climate change activities to the National Climate Change Committee and the Chief Meteorologist.

MAF therefore has a broad role to play to promote DRR at national and local levels. However, it still has limited overall capacity in DRR & CCA as well as limited relevant consultative support from the NEMO.

MAF has a comparative advantage of implementing DRR & CCA options at grass roots level, including through field based action research and extension, assisting in building an effective Early Warning System for farmers and fishermen, developing DRR planning, promoting & transferring innovative & viable technologies and grounding viable interventions at local level.

It is important for MAF to prove organizational commitment to practice and ensure accountability, transparency and participation also in DRM and at all levels. MAF needs to regularly conduct community based vulnerability studies to design, plan and coordinate effective actions for Community Based DRR including staff capacity building. MAF also should strongly focus on evidence based monitoring & evaluation systems of regular programs as well as of the implementation of the PoA.

The PoA for DRR in the agriculture and fisheries sectors will be instrumental to strengthen the sectoral approach and contributions to DRR, including in the context of climate change. The plan outlines new roles and responsibilities of MAF as partner for enhanced DRR in Belize.

D. PLAN OF ACTION TO STRENGTHEN DISASTER RISK REDUCTION CAPACITIES IN THE MINISTRY OF AGRICULTURE AND FISHERIES

Due to increasing frequency and severity of natural hazard events, existing underlying vulnerabilities and high dependence on agriculture in Belize, there is a need for a comprehensive approach that integrates DRR into the broader socio-economic development plan of the country. The MAF of Belize has initiated this integration process by developing this PoA that encompasses all agricultural sub-sectors. The plan of action has been developed in line with the priorities set in the Hyogo Framework for Action (HFA), 2005-2015, which was adopted at the World Conference on Disaster Reduction in 2005 in Kobe, Japan as a framework document to address DRR in a proactive manner and linked to relevant government policies and strategies. The HFA defines five priority areas for action and these have been used as a reference to structure and organize the Main Result Areas (See section E). The HFA priorities for action are to:

- Ensure that DRR is a national and a local priority with a strong institutional basis for implementation,
- Identify, assess and monitor disaster risks and enhance early warning
- Use knowledge, innovation and education to build a culture of safety and resilience at all levels,
- Reduce the underlying risk factors and
- Strengthen disaster preparedness for effective response at all levels.

The plan contributes to building a Comprehensive Disaster Risk Management System in Belize and also to reduce the underlying vulnerabilities of people and the agricultural sectors in the country. The Action Plan has identified and prioritized a set of key activities that MAF along with the allied stakeholders will carry out as part of an enhanced national Disaster Management System coordinated by NEMO, including actions for Prevention/Mitigation/Preparedness for response/Early Warning/Recovery, and Rehabilitation). The implementation of the PoA will be informed by previous and existing initiatives and a strong reliance on coordination, and collaboration among agencies. Linkages between hazard mitigation and other policies, particularly those related to disaster and environmental management will be identified.

D.1 Objectives of the Plan of Action

This PoA focuses on a process to strengthen the role of MAF in DRR and suggests selected priority issues and entry points for MAF through building on the ministry's current strengths. The objective of the PoA is to strengthen disaster prevention, risk mitigation and preparedness within the agriculture and fisheries sectors as well as of other development sectors of Belize.

The document will also help to move towards a comprehensive approach to reduce the socio-economic losses arising from recurrent natural disaster events by integrating DRR as part of broader socio-economic development in the county.

The plan of action will be used to better:

- Articulate and integrate MAF/DA's contributions for a comprehensive DRM approach in Belize coordinated by NEMO, and linked to national development policies and strategies
- Provide MAF/DA with a framework to strengthen skills and increase capacities for DRR, enabling it to effectively provide DRR and CCA related services;
- Enhance farmers' and fishermen's access to timely, sector-specific climate information and early warning products and make them available for climate change impact assessments.
- Upgrade DA's extension services and diversify technical products delivered to farmers and fishermen, to make them more resilient against adverse impact of natural hazards and expected impacts of climate change;
- Contribute to better coordination between key stakeholders in DRR at national, district and in particular at sub-district levels;

D.2 Guiding principles for the implementation of Plan of Action

- Acting upon the requirements of people first.
- Contributing towards building a disaster resilient society.
- Enhancing the role of MAF as key partner for DRM planning and implementation while recognizing and strengthening collaboration with civil society and local communities.
- Promoting high professionalism and staff capacity development for DRR in MAF.
- Blending existing practices, experience and capacities with innovative technologies and measures for enhanced DRR.
- Better linking disaster risk reduction measures with disaster response and recovery.
- Systematically linking actions & operations for DRR & CCA actions.
- Integrating disaster risk reduction practices and sustainable socio-economic development practices through cross departmental coordination and collaboration.

E. MAIN RESULT AREAS OF PLAN OF ACTION

E.1 Main Result Area -1		INSTITUTIONAL SET-UP FOR DRR IN MAF
GOAL	Establish effective institutional set-up for DRR and CCA in Agriculture and Fisheries	
STRATEGY-1	Institutionalizing Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) within MAF.	
ACTIONS	1. Establish a Planning & Implementation Committee of 3-5 members on DRR and CCA in Agriculture & Fisheries headed by a senior position of the MAF and with representation from fisheries, livestock, and cropping subsectors. The committee will develop synergies and maximize resources through dialogues, linkage & networks among the ministry, national and international NGOs and research organizations. The committee will co-opt representatives from the private sectors.	
	2. Review and assess MAF's policies, sector planning documents and various programmes & activities and integrate or mainstream DRR and CCA aspects into those policy documents and programmes to ensure sustainable impacts.	
	3. Conduct a comprehensive Capacity Development Needs Assessment of the MAF to identify capacity gaps on DRR & CCA and develop a staff capacity building mechanism and organize class room and field based training workshops for all levels of MAF staff on DRR including follow up staff development plans.	
	4. Gradually incorporate DRR & CCA activities into job-descriptions of MAF staff to guide DRR and CCA implementations processes at national, district and local level (in the light of revised organizational policies and strategies).	
	5. Prepare a detailed work plan to implement the Plan of Action according to specific needs.	
STRATEGY-2	Strengthen complementary collaboration with other DRR key actors	
ACTIONS	1. Enhance operational relations with NEMO, MET-OFFICE and other relevant government and non-government institutions to jointly deliver in an integrated manner improved services for DRR to farmers (in particular small scale producers/farmers) and fishing communities.	
	2. Liaise closely with research organizations for developing and providing suitable cropping systems, crop varieties (stress tolerant/ hazard resistant) and cropping technologies (for DRR & CCA) to farmer communities. Conduct research to aid and support sustainable fisheries management goals.	
	3. Improve and streamline coordination with private sector actors regarding DRR	

	<p>4. Collaborate with NEMO to ensure that an Agricultural Food Security Sub Committee is convened and active before, during and after disasters led by Senior Technocrats from MAF and its partners with specific tasks like -</p> <ul style="list-style-type: none"> a) Maintain buffer stocks at national level of seeds, fertilized pesticides, b) Ensure training for farmers pertaining to food security resilience and c) Contribute and participate in studies (and CRVAs) with NEMO, CCCCC, and the Met Office.
STRATEGY-3	Adopt an efficient & effective CBDRR approach
ACTIONS	<p>1. Design and roll out a cross-sectoral Community Based Disaster Risk Reduction process at community level</p>
	<p>2. Work with existing farmer groups of interested & progressive farmers (as local entrepreneur) in risk prone areas to transmit technical knowledge & skill for executing community based risk reduction practices</p>
	<p>3. Organize field based learning sessions on DRR with village councils and community focal groups and farmers to develop community based disaster risk reduction plans; and assist farmers in submitting them to available funding sources.</p>
	<p>4. Facilitate incorporation of Community Based Disaster Risk Reduction Plans (CBDRRP) into the district and agriculture and fisheries sector development plan and inform National Disaster Management Planning of NEMO.</p>

**E.2 Main Result
Area - 2**

ENHANCED APPLICATION OF CLIMATE INFORMATION PRODUCTS, EARLY WARNING SYSTEMS AND IMPACT ASSESSMENT METHODOLOGIES

GOAL	Improve knowledge & access of local communities to climate information and early warning messages tailored to the needs of agricultural producers and fishermen's communities
STRATEGY	Use efficiently the best available practices for climate information delivery, early warning methodologies and impact analysis, more systematic monitoring of current and future climatic risks for agriculture and improved dissemination and outreach to local level
ACTIONS	<ol style="list-style-type: none"> 1. Establish/agree on a standard methodology for Community Risk & Vulnerability Analysis (CRVA) with special focus on the agriculture sector and conduct thereafter a consistent analysis of all hazard exposed districts/villages of Belize. 2. Advise NEMO and other relevant institutions in carrying out an in-depth socio-technical study on current and future climate risks and impacts on the agriculture and fisheries sectors and use the study outcomes for the agricultural development planning. 3. Improve extension staffs' expertise on climate information products, early warning dissemination and ways to enhance their outreach to the local level. 4. Collaborate with the Met-Office (agro-meteorological departments) on improved climate information and early warning tools and products tailored to the needs of AG producers (including short term and seasonal weather forecasts). These tools would assist farmers to optimally adjust their planting dates, crop varieties, and management practices to reduce agricultural vulnerabilities to hydro meteorological hazards. 5. Train selected MAF staff to translate climate information into location specific agricultural impact outlook and strategic cropping advice on the basis of agro-meteorological forecasts. 6. Enhance outreach of information products through radio, TV and extension to the grass root level.

**E.3 Main Result
Area-3**

KNOWLEDGE BUILDING AND AWARENESS CREATION

GOAL	Enhance knowledge management and awareness for DRR and CCA in agriculture and fisheries
STRATEGY-1	Awareness creation, knowledge and information dissemination on DRR and CCA in agriculture; MAF has the comparative advantage in terms of its grass roots level presence through extension staff working closely together on daily basis with the agriculture communities.
ACTIONS	1. Set up an information inventory base, which will accommodate, link and update regularly from various sources agro-climatic information, crop-data, knowledge & technologies, and lessons learned. MAF will ensure that the information base is easily accessible and usable for all stakeholders. This inventory will be posted on the MAF's web site.
	2. Include agriculture and fisheries aspects into a comprehensive public awareness, information and education programme on DRR involving media houses, schools, voluntary agencies and other institutions in order to ensure broad commitment to disaster risk management.
	3. Refine the existing communication strategy on dissemination of innovative DRR & CCA technologies which are not yet known at community level and provide orientation and guidance to local government and community institutions on responsibilities in DRR & CCA
	4. Prepare agriculture specific information, education and communication (IEC) materials like posters, leaflets, crop-calendars, billboards, etc. for disaster prone farmers and widely disseminate among the communities. DRR & CCA related knowledge and skills can also be disseminated through popular audio-visual aids, TV & radio programs, documentary film show etc.

**E.4 Main Result
Area-4**

TECHNICAL OPTIONS TO REDUCE THE UNDERLYING RISK FACTORS

GOAL:	Enhance application of good practice interventions at local level to increase resilience against natural hazards and climate risks.
STRATEGY-1	Systematically assess and document and test good practices for DRR to location specific needs of farmers & fishermen.
ACTIONS	1. In the light of CRVA and with community consent develop a menu of location and hazard specific agricultural good practices/options for DRR and CCA covering all regions of Belize.
	2. Promote practical participatory action research on DRR & CCA good practices with and between farmers, fishermen as well as extension and research institutes.
	3. Develop simple monitoring system and establish mechanism to systematically monitor the application of good practices for DRR and CCA.
	4. Compile the information and lessons learnt for wider replication of success cases.
STRATEGY-2	Dissemination of tested options for enhanced DRR and CCA in Agriculture
ACTIONS	<ol style="list-style-type: none"> 1. Organize on-job training of trainers for the technicians, extension professionals and expert farmer groups (local entrepreneur) on small scale technical options for DRR on the ground. 2. Develop a dissemination strategy for wider replication of DRR & CCA good practices and/or technologies that have been tested and proven effective, including through the advisory services of the Extension Department. <ol style="list-style-type: none"> 2.1 <i>Cropping system and input management</i> <ul style="list-style-type: none"> • More diversified cropping systems for increased resistance to floods and drought; • Community managed nursery & seed productions technologies of hazard resilient varieties (protective cover structures for vegetable seed production) • Multipurpose storage facility at community level (seed, fertilizer, fodder, etc) • Home based food preservation (small scale agro-processing) • Relocation from affected land to safe land 2.2 <i>Livestock production and management</i> <ul style="list-style-type: none"> • Animal breeding • Supplementary feeding during crisis period • Forage and silage production and preservation (IICA technology) 2.3 <i>Sustainable irrigation water management</i> <ul style="list-style-type: none"> • Drip irrigation for vegetable production of small farmers • Rainwater harvesting • Water conservation 2.4 <i>Fisheries</i> <ul style="list-style-type: none"> • Fish fingerlings production • Safety at sea • Sustainable fishing practices • Diversification in non-fisheries related economic activity • Monitoring socio-economic status of fisheries in coastal communities

**E.5 Main Result
Area-5**

PREPAREDNESS FOR EMERGENCY RESPONSE

GOAL	Reduce hazard impacts and losses in agriculture and fisheries
STRATEGY	Initiate better preparedness activities at national and local level
ACTIONS	1. Prepare a hazard impact assessment methodology integrating regular baseline assessments with a livelihood based damage, loss and needs assessment for agriculture. The combined methodology will help MAF keep regularly updated community profiles as basis for reliable post disaster socio-economic damage and impact assessments in hazard affected villages in Belize
	2. Guide the formulation of emergency preparedness and contingency plans for agriculture and fisheries as part of overall emergency preparedness planning coordinated by NEMO at national and district levels and in all hazard exposed villages (with direct participation of farmers groups).
	3. Establish partnership with the Credit Union and other financial institutions to assess scope and feasibility for financial back up and risk transfer mechanisms in the AG sector. Priority areas will be to <ul style="list-style-type: none"> • Promote culture of savings during good times • Promote insurance for individual farm to recover from risk. • Develop an incentive program that encourages the productive sector to actively participate in implementing practices that mitigate and adapt to climate change. • Develop crop insurance in the citrus and sugar growing areas of Belize.
	4. Maintain basic buffer stock at national level of key inputs (seeds, fertilized pesticides) for distribution and replenishment of contingency stores of supplies of Seed, Fertilizer, and other supplies during a threatened disaster alert or in the event or the aftermath of a disaster emergency;

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G. ANNEXURE-1

Basic definitions

Adaptation: The adjustment in the natural or human system in response to actual or expected climatic stimuli or their effects, which moderates harm and exploits beneficial opportunities. (UNFCCC)

Climate change: A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. (UNFCCC)

Capacity: The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals.

Capacity Development: The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions.

Disaster: A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

Disaster risk: The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.

Disaster risk management: The systematic process of using administrative directives and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

Disaster risk reduction: The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

Disaster risk reduction plan: A document prepared by an authority, sector, organization or enterprise that sets out goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives.

Early warning system: The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss.

Hazard: A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Mitigation: The lessening or limitation of the adverse impacts of hazards and related disasters.

Natural hazard: Natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

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

Prevention: The outright avoidance of adverse impacts of hazards and related disasters.

Public awareness: The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards.

Recovery: The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

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

Response: The provisions of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Risk: The combination of the probability of an event and its negative consequences.

Risk assessment: A methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend.

Risk management: The systematic approach and practice of managing uncertainty to minimize potential harm and loss.

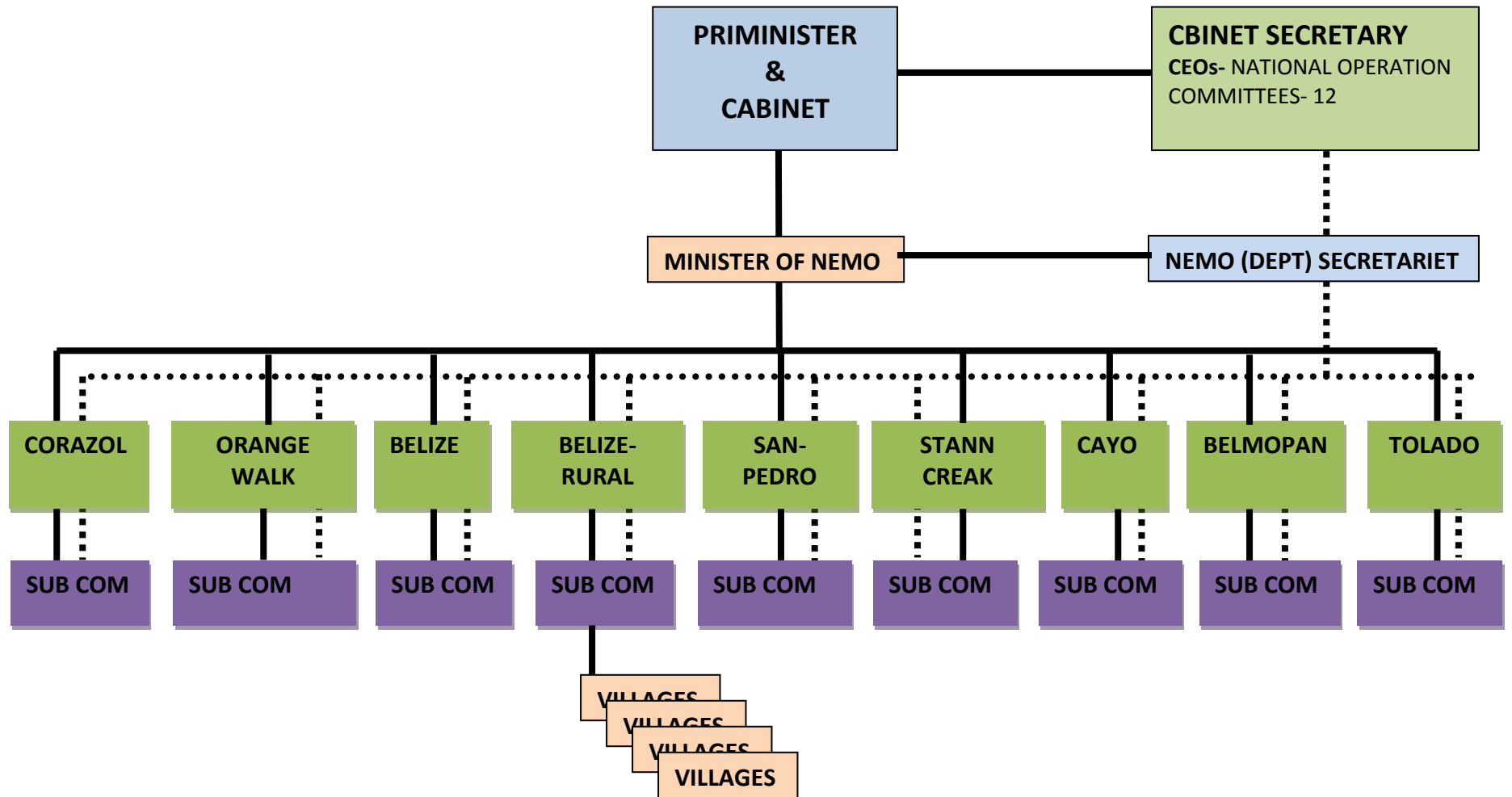
Risk transfer: The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.

Sustainable development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

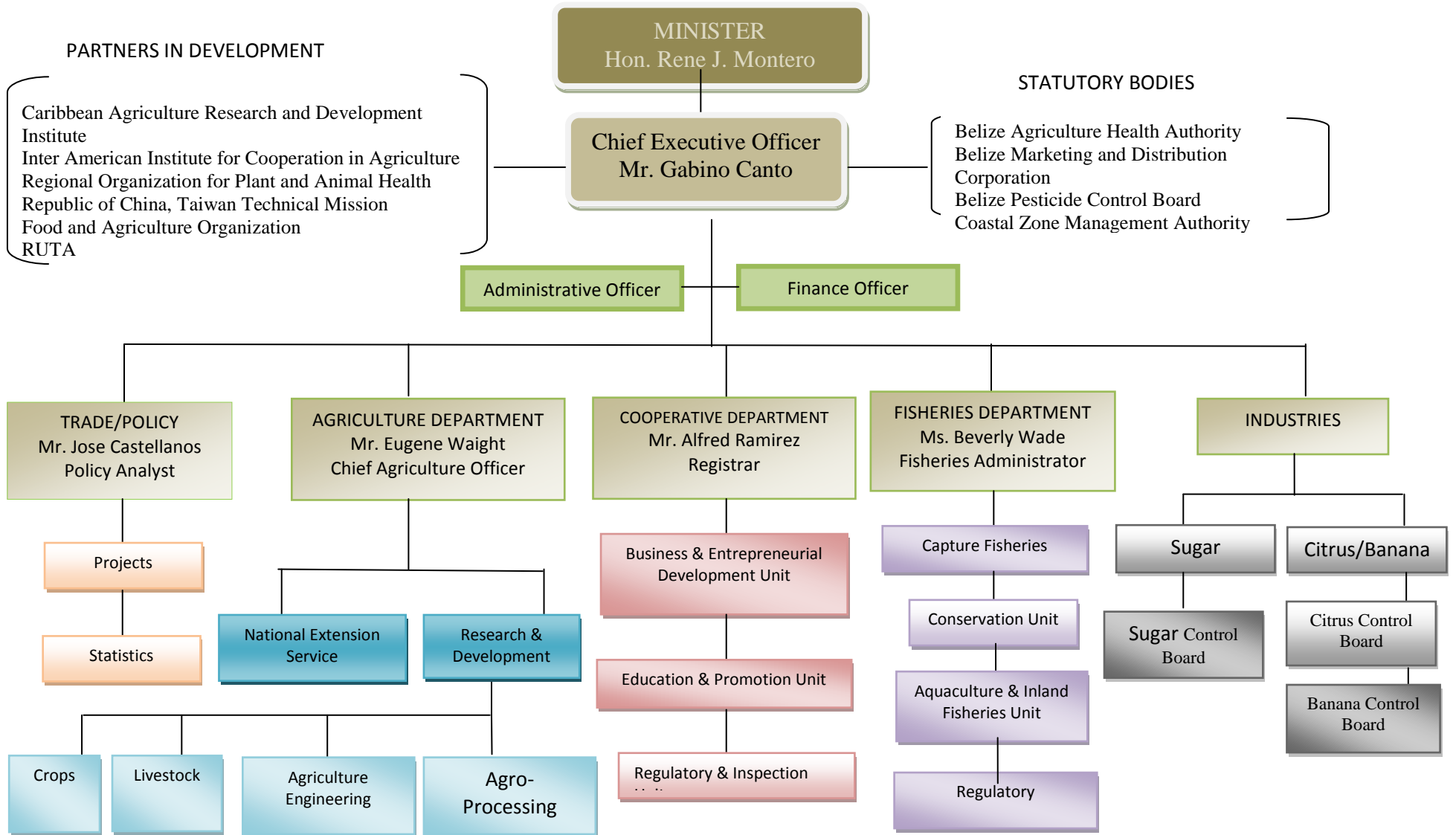
Vulnerability: The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. (2009 UNISDR)

Hurricane: Starting out as tropical depressions, they become a hurricane when the maximum sustained surface wind speed exceeds 74 miles per hour (119 km/hr) and are characterized by winds directed inward in a spiraling pattern towards the hurricane's eye. They are generated over warm ocean water at low latitudes and are particularly dangerous due to their destructive potential, large zone of influence and erratic movement. (*National Hazard Mitigation Plan*)

I. Figure 1 Organogram: National Emergency Management Organisation



J. Figure 2 Organogram: Ministry of Agriculture and Fisheries





<http://www.fao.org/climatechange/72209/en/>

This Plan of Action (PoA) has been prepared through an extensive consultation process with the Ministry of Agriculture and Fisheries and other key stakeholders of DRR in Belize. The objective of the PoA is to strengthen disaster prevention, risk mitigation and preparedness with a focus on agriculture and fisheries. It identifies selected DRR priority issues for MAF to contribute as key partner to the comprehensive disaster risk management approach in Belize.