



# SITUATION AND TRAINING NEEDS ASSESSMENT IN SELECTED PILOT VILLAGES IN BELIZE

Submitted to: Dr. Stephan Baas  
Technical Coordinator

Prepared by: Alfred F. Serano  
National Consultant, Capacity Building

JULY 2009

TCP/BZE/3202

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned. The views expressed in this information product are those of the author(s) and do not necessarily reflect the views of FAO.

# Table of Contents

LIST OF FIGURES AND TABLES.....	iv
1.0 INTRODUCTION .....	1
1.1 Physical and socio-economic background.....	1
1.2 Climate.....	3
1.3 Major Disasters Affecting Belize.....	3
2.0 METHODOLOGY .....	5
2.1 Social Mobilization.....	5
2.2 Participatory tools .....	6
2.3 Technical tools.....	6
3.0 PROFILE OF SELECTED PILOT VILLAGES.....	8
3.01 Profile of Concepcion Village.....	10
3.02 Profile of Santa Martha Village .....	10
3.03 Profile of Calla Creek .....	11
3.04 Profile of El Progreso Village.....	11
3.1 DIRECT OBSERVATION .....	12
3.11 Village Organizations .....	12
3.1.2 Village Council.....	12
3.1.3 Schools: .....	13
3.1.4 Churches .....	13
3.1.5 Other Organizations.....	13
3.2 Communications:.....	13
3.3 Electricity: .....	14
3.4 Food:.....	14
3.5 Housing and shelter: .....	14

3.6 Water: .....	15
3.7 Land Tenure .....	16
4.0 HAZARD AND VULNERABILITY ANALYSIS .....	17
4.1 Agricultural Drought.....	18
4.2 Hurricane and Flood .....	18
5.0 DISASTER PREVENTION AND MITIGATION .....	20
6.0 AGRICULTURAL ACTIVITIES IN SELECTED PILOT VILLAGES.....	24
6.1 Agriculture in Concepcion Village.....	24
6.2 Agriculture in Santa Martha Village .....	25
6.3 Agriculture in Calla Creek Village .....	25
6.4 Agriculture in El Progreso Village.....	26
7.0 CAPACITY DEVELOPMENT FOR SELECTED VILLAGES .....	27
7.1 Capacity Development for Calla Creek Village .....	28
7.2 Capacity Development for El Progreso .....	29
7.3 Capacity Development for Santa Martha Village.....	29
7.4 Capacity Development for Concepcion Village .....	30
7.5 Capacity Development for other Village Stakeholders .....	30
7.5.1 Expected Results .....	30
8.0 RECOMMENDATIONS.....	31
9.0 CONCLUSION .....	32
10.0 REFERENCES .....	33
APPENDIX 1: List of Acronyms and Abbreviations.....	34
APPENDIX 2: Calendar of Training, Capacity Building & Institutional Strengthening .....	35

## LIST OF FIGURES AND TABLES

Figure 1: Map of Belize .....	4
Figure 2: Pictures from Social Mobilization Events in Selected Pilot Villages .....	7
Table 1: Age distribution of Participants in Percentage from Selected Pilot Villages .....	9
Figure 3: Project Participants in Percentage According to Age Group .....	9
Table 2: Types of Houses in Calla Creek Village .....	15
Figure 4: Map of Belize Showing Areas Prone to River Flooding and Rain Inundation .....	21
Table 3: Notable Natural Disasters that have affected Agriculture in Belize: 1995-2008.....	22
Table 4: Population, # of Farmers and Average Household size in Pilot Villages .....	23

## **1.0 INTRODUCTION**

This report is divided into nine (9) sections. It highlights activities that were carried out in the selected pilot villages of Calla Creek, and El Progreso in the Cayo District; Santa Martha in the Orange Walk District; and Concepcion in the Corozal District, and elaborates on the situation and training needs assessment done in the pilot villages.

The specific objective of carrying out this assessment was to gather baseline information in order to understand the communities, identify hazards that affect them and to design and implement capacity-building process for the project related to the strengthening of the technical DRM capacities at all levels and their links to activities in agriculture.

Section 1 provides an introductory overview of Belize with reference to its Physical and Socio-economic background, Climate and Major Disasters affecting the country.

Section 2 focuses on the methodology employed in carrying out the situational analysis as well as the social mobilization sessions.

Section 3 describes the profile of selected pilot villages, as well as direct observations and land tenure.

Section 4 highlights the issue of hazard and vulnerability analysis, the different types of hazards that affects the country and the selected villages, while section 5 talks about disaster prevention and mitigation.

Section 6 looks at the issue of agriculture and agriculture in the selected communities, while section 7 deals with the issue of capacity development of both the farmers and farmers groups as well as the selected communities.

Section 8 focuses on recommendations as to the way forward with reference to the social mobilization and capacity building aspects of the project.

### **1.1 Physical and socio-economic background**

Belize, due its location is classified as both a Central American and Caribbean country. It is bounded on the North by Mexico, to the south and west by Guatemala and on the east by the Caribbean Sea. With reference to geographic coordinates, Belize is located at 17° 15' north latitude and 88° 45' west longitude. The country covers an area of 22,966 sq km (8,867 square miles), of which 95 % is mainland and 5 % distributed among more than 1,060 islands.

Belize is an ethnically diverse nation with a population of 322,100 people, comprised of several ethnic groups with an average growth rate of 3.4%. The Mestizos (34%); Kriols (25%); Mayan (11%) and the Garifuna (6%) are the most dominant groups in terms of population.<sup>1</sup> However, it is important to note that the Mennonites (3%), even though they are not significant in numbers contribute significantly to the agricultural sector and food security.

The country is divided into six (6) administrative districts (Corozal and Orange Walk in the north, Belize and Cayo in the central zone, and the Stann Creek and Toledo districts in the south) which vary in their population density, ethnicity and patterns of culture. Overall 51.44% of the population resides in urban areas while 48.56% lives in rural areas.<sup>2</sup>

According to the UNDP Human Development Report 2007/2008, the Human Development Index (HDI) for Belize is 0.778, which gives the country a rank of 80<sup>th</sup> out of 177 countries. Therefore, Belize by virtue of its ranking is a middle-income country.<sup>2</sup> Despite its ranking, according to the Government of Belize, 2002 Living Standards Measurement Survey (LSMS), approximately one third of the population lives at, or below the poverty line, while 10.8% of the population is designated as indigent.<sup>3</sup>

Belize's economy is generally characterized as a small open economy, heavily dependent on tourism and agriculture for its foreign exchange earnings and employment. Agriculture continues to form the foundation of the productive sector and the rural economy of Belize as it continues to be a major contributor to the national economy, in terms of foreign exchange earnings, poverty reduction, food security, and income and employment generation. It is also responsible for employing 19.5% of the working population and contributing about 29% to the Gross Domestic Product.<sup>4</sup> Recent natural disasters have undermined the agriculture industry, and the capacities of small farmers to achieve livelihood security.

---

<sup>1</sup> Statistical Institute of Belize. [Belize 2000 Housing and Population Census](#).

<sup>2</sup> Human Development Report 2007/2008. Accessed on June 18, 2009.  
[http://hdrstats.undp.org/countries/country\\_fact\\_sheets/cty\\_fs\\_BLZ.html](http://hdrstats.undp.org/countries/country_fact_sheets/cty_fs_BLZ.html)

<sup>3</sup> Government of Belize, 2007. [2002 Living Standards Measurement Survey \(LSMS\)](#)

<sup>4</sup> Statistical Institute of Belize 2009. [2008 Mid- Year Population Estimates](#)

## **1.2 Climate**

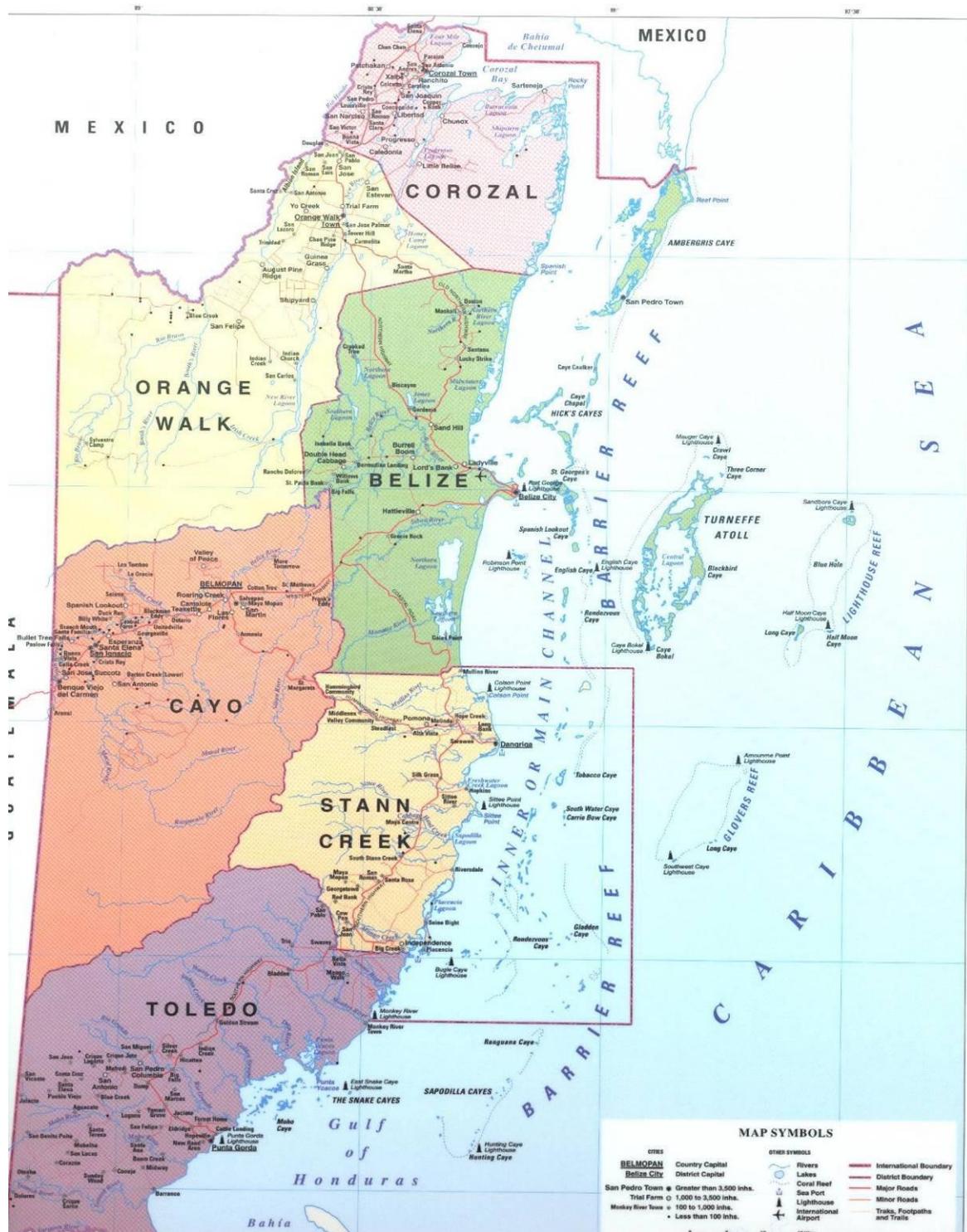
Belize has a subtropical climate, which is hot and humid with temperature ranges from 50° F to 95° F. The annual mean is around 79° F. The coolest months in Belize are November to January. The average temperature remains 75°F during these months. The warmest months are from May to September when the average temperature remains 81°F. Belize enjoys a dry season from February to May and a rainy season, which commences in June along with the hurricane season, which lasts up until November. Like the rest of its Caribbean partners, it lies within the hurricane belt. The Belizean climate is influenced by three large global/regional climatic systems inclusive of the Atlantic Ocean Climatic System, the Pacific Ocean Climatic system and also periodically by changes in the North American weather systems.

## **1.3 Major Disasters Affecting Belize**

The major disaster issues facing Belize are hurricanes, tropical storms, flooding and drought. Belize is located within the hurricane belt of the Atlantic; therefore, Belize is highly susceptible to the above named natural disasters, which affect the country of late on an annual basis. The effects of these hazards have resulted in loss of life, destruction of property, damage to the infrastructure and the agricultural industry. While the hurricane season for this hemisphere is June to November, Belize is most vulnerable between September and October. Consistent, large-scale warming of both land and ocean surface temperature is resulting in sea level rise. Climate change and sea level rise are expected to make Belize even more vulnerable to natural disasters.

During the last decade, Belize has suffered infrastructure and economic losses especially in the agricultural sector because of hurricanes and floods. Most of the damages were due to wind and flooding. Hurricanes Mitch (1998), Tropical Storm Chantal (2001), Hurricane Dean (2007), Tropical Storm Arthur (2008) and Tropical Depression # 16 (2008) all resulted in extensive flooding and damages to industries such as Banana, Sugar cane, Papaya, Rice, Corn and vegetables across the country.

Figure 1: Map of Belize



## **2.0 METHODOLOGY**

In order to gather information for this report, a number of activities were conducted in all the selected villages. It is important to note that since this is a new project, only basic activities were carried out with reference to social mobilization (see 2.1). Additionally, participatory tools (see 2.2) and technical tools (see 2.3) were employed as part of the process in gathering information to streamline the capacity-building portion of this DRM project. It is important to mention at this stage that more information was gathered and activities conducted in Calla Creek than in any other selected village mainly due to the response of the community, and the fact that three (3) members of the village council are a part of the project. The community with the poorest response thus far is El Progreso Village. Therefore, as part of the continued awareness of the selected communities to the project, a mix of participatory strategies will be utilized to get participation and buy-in from the community.

### **2.1 Social Mobilization**

In order to create awareness of the project, series participatory meetings were conducted in all four villages. These events were conducted utilizing participatory tools such as focus group discussions, brainstorming and ranking. At all sessions, the following were the basic objectives:

- (i) Disseminating information about the DRM project;
- (ii) Explaining the benefits of implementing good agricultural practices for DRM;
- (iii) Engaging the participants in identifying potential projects to benefit them that will include good agricultural practices;
- (iv) Prioritizing the list of identified good practices.

The above meetings proved fruitful as a list of good practices have been developed, and are about to be implemented.

## **2.2 Participatory tools:**

Participatory tools utilized in gathering information for this DRM project from selected pilot villages are:

- Focus group discussions
- Transect Walk
- Direct Observation
- Brainstorming
- Ranking

## **2.3 Technical tools:**

With reference to technical tools the following listed tools were utilized in all selected pilot villages with the exception of mapping, which was done in Calla Creek only. The map generated in Calla Creek can be seen in figure 2.

- Semi Structured Interviews
- Mapping
- Personal Interviews with Villagers, Village Council Officials, Water Board Officials
- Discussions with the NEMO Official
- Information gathering from sources

**Figure 2: Pictures from Social Mobilization Events in Selected Pilot Villages**



**Meeting with Concepcion group**



**Calla Creek**



**Validation of Map by Villagers in Calla Creek**



**Meeting with Santa Martha group**



**Map of the Eastern part of Calla Creek**



**Discussions as part of Transect Walk in Santa Martha Village**

### 3.0 PROFILE OF SELECTED PILOT VILLAGES

The four selected pilot villages for this project are classified as villages having over 95% small farmers. This is so by virtue of their cultivated land holdings of less than twenty (20) acres. Farmers in the Cayo district grow many different types of crops, and are also into livestock production. The Northern districts on the other hand are dominated by the cultivation of sugar cane. Information gathered have revealed that approximately fifty-seven (57) percent of all cane farmers are small farmers.

As part of the assessment done in the selected pilot villages, semi-structured interviews were conducted with all project participants. Included in the interview, was a section with reference to age. Analysis of the portion with reference to age<sup>5</sup> among the participants, have revealed the following:

- (i) All Villages have a similar trend with reference to participants' age distribution. More than half the participants in three villages and exactly half in El Progreso Village are below the age of forty (40). Therefore, sixty (60) percent of the participants are below the age of forty (40).
- (ii) More than one forth (27.27%) of the project participants in all three districts are below the age of thirty (30).<sup>6</sup>
- (iii) Approximately twenty one (21) percent of the participants are above the age of fifty (50).

Table 1 and Figure 3 clearly demonstrate that a wide cross section of participants with reference to age is involved in the DRM project. However, it is important to note that the majority of the project participants are young, which is an important criterion that will assist in understanding and enabling the sustainability of the 'good practice' interventions. On the other hand, one cannot ignore the fact that 21.21% of the participants are above the age of fifty (50). Therefore, this issue will be taken into consideration when developing and delivering the training sessions in order to build capacity amongst the farmers.

---

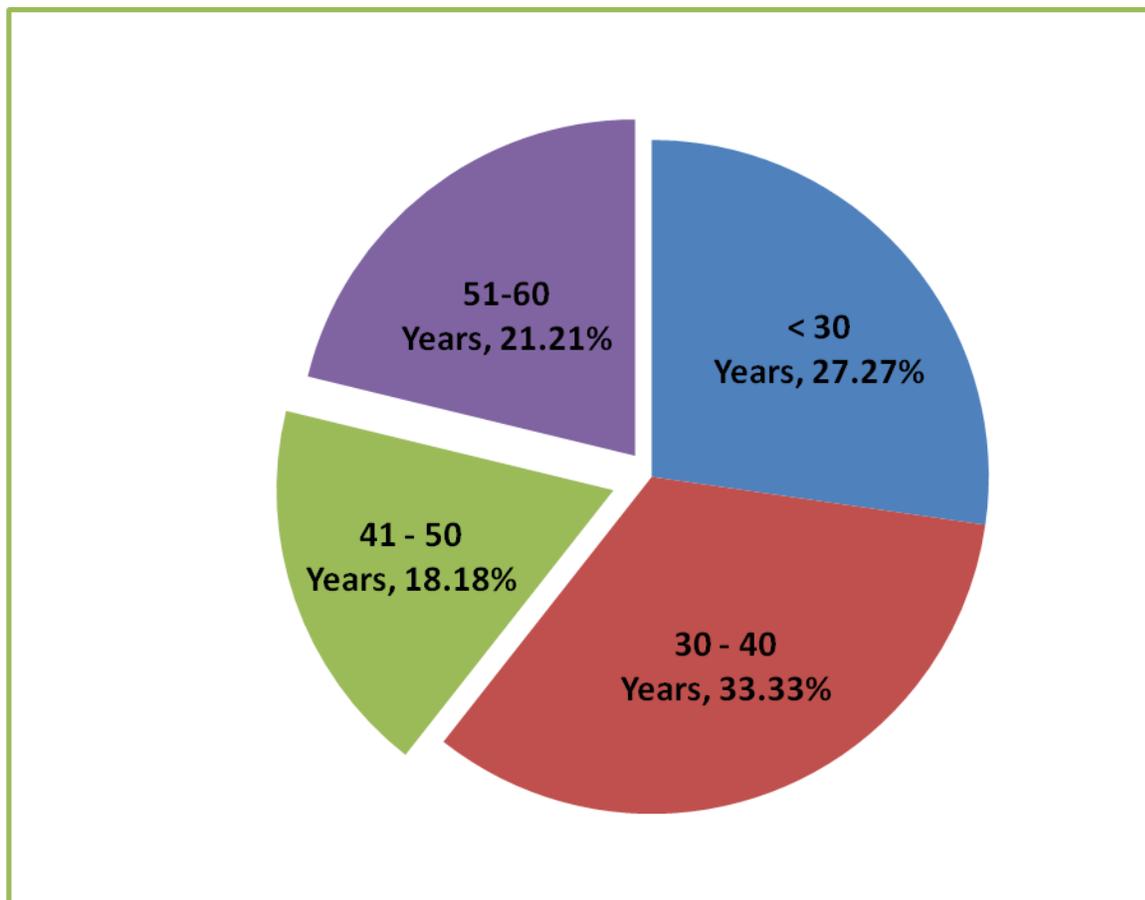
<sup>5</sup> Table 1: Age distribution of Participants in percentage from selected pilot villages

<sup>6</sup> Figure 3: Project Participants in Percentage According to Age Group

**Table 1: Age distribution of Participants in Percentage from Selected Pilot Villages**

PERCENTAGE				
Age Category	Concepcion	Santa Martha	Calla Creek	El Progreso
< 30	28	33	33	20
30 - 40	33	33	33	30
41 - 50	18	17	17	30
51-60	21	17	17	20

**Figure 3: Project Participants in Percentage According to Age Group**



### **3.01 Profile of Concepcion Village**

Concepcion Village is located in the Corozal District along the Northern Highway six (6) miles away from Corozal Town, and approximately one (1) mile north of the Chan Chen Road and one (1) mile south from the Libertad junction. It shares a portion of its southern boundary with Libertad Village.

Concepcion village has an estimated population of approximately 700 persons within 140 families. Majority of the residents of Concepcion earn a living by working in several different professions outside the Village. There are approximately fifty-five (55) farmers residing in the village who earn an income from the cultivation of sugar cane and or vegetable production. The approximate monthly or annual income of households is very difficult to estimate since most of the respondents do not know their annual income due to a lack of record keeping. Nevertheless, through discussions and later analysis, it is estimated that approximately eighty-five (85%) percent of their income comes from their agriculture production, while the other fifteen (15%) percent comes from other sources.

Over ninety (90) percent of the population of Concepcion is Mestizo, which is one of the largest ethnic groups in Belize. Spanish is their first language, however majority of them speak English.

### **3.02 Profile of Santa Martha Village**

Santa Martha Village is located in the eastern part of the Orange Walk District approximately twenty (20) miles from Orange Walk town along the old Northern Highway. It has an estimated population of 300 persons in 125 households. It is important to note that more than half the population is under the age of 15, since the primary school has a population of 175 children.

According to the National Poverty Assessment Santa Martha is one of the poorest villages in Northern Belize. Residents of Santa Martha Village earn a living by being involved in agriculture as cane farmers, vegetable farmers or from working outside the village in other industries. The approximate monthly or annual income of households is very difficult to estimate since most respondents do not know their annual income, especially the farmers due to lack of record keeping. However, through discussions and later analysis, it can be said that approximately eighty (80%) percent of their income

comes from their agriculture production, while the other twenty (20%) percent comes from other sources. Because of the type of agriculture that the residents in Santa Martha practice, especially on marginal lands, their income from agriculture is very low.

### **3.03 Profile of Calla Creek**

Calla Creek Village is located in the western part of the Cayo District approximately three (3) miles west of San Ignacio Town, and 1.3 miles south of the Western Highway through Clarissa Falls area on the banks of the Mopan River. The estimated population of Calla Creek is approximately 300 persons within 57 families in 67 houses. Of the total population, 90 children are between the age of 5 -14 years and are attending Primary School in the Village.

The approximate monthly or annual income of households is very difficult to estimate since over 90% of the respondents either refused to answer or don't know their annual income especially the farmers. Nevertheless, through discussions and later analysis, it is estimated that approximately ten (10%) percent of their income comes from their agriculture production, while the other ninety (90%) percent comes from other sources such as having a full-time job outside the village in areas such as construction, hotel and tourism services and by working on other farms outside the village.

### **3.04 Profile of El Progreso Village**

El Progreso Village, similar to Mango Creek, is located in the Cayo District near the Mountain Pine Ridge Reserve, approximately 7 miles off the Western Highway along the Mountain Pine Ridge Road. The population of El Progreso Village is estimated to be approximately 700 persons within 111 families and 125 houses. Residents of El Progreso Village earn a living by being involved in agriculture as farmers. The approximate monthly or annual income of households is very difficult to estimate since 95% of the respondents do not know their annual income especially the farmers due to lack of record keeping. However, through discussions and later analysis, it can be said that approximately ninety (90%) percent of their income comes from their agriculture production, while the other ten (20%) percent comes from other sources such as having a part-time job transporting agricultural produce for other farmers who do not own vehicles or other activities.

Over 95% of the residents in El Progreso Village are Mestizo. Spanish is the predominant language in the Village spoken by all residents. However, the younger generation, those born in Belize, since their parents are Central American Immigrants, are able to speak both Spanish and English.

Majority of the residents in El Progreso Village are Immigrants from neighboring Central American countries. Most farmers did not finish Primary School, however they are engaged in the production of vegetables such as Sweet Pepper, Cabbage, lettuce, Pumpkin, Tomato, cilantro, and other types of crops such as potato, corn, beans, plantain. The farmers utilize the crops cultivated primarily as a source of their livelihood to earn cash and for food security.

### **3.1 DIRECT OBSERVATION**

#### **3.1.1 Village Organizations**

##### **3.1.2 Village Council**

In all selected villages, the Village Council is the highest authority in the village. Village Councils in Belize are established by virtue of the Village Council Act, Chapter 88 of the laws of Belize, revised edition 2003. It is made-up of seven (7) elected members who hold office for a term of three (3) years. All Village Councils are lead by a directly elected chairperson, who and is supported by six (6) elected councillors. The Chairpersons for the pilot villages are as follows:

- Concepcion Village: Mr. Manuel Cunil
- Santa Martha Village: Mr. Hubert H. Hoare
- Calla Creek Village: Mr. Gumercindo Tuyud
- El Progreso Village: Mr. Julio Ruano

### **3.1.3 Schools:**

Within the selected pilot villages, there are six (6) primary schools. The Roman Catholic Diocese manages a school in all villages except Santa Martha Village, which have a Government of Belize managed school. The villages of Concepcion and El Progreso have two primary schools each, of which the Roman Catholic Diocese and the Government of Belize manages one each.

### **3.1.4 Churches**

There are twelve (12) churches in the selected pilot villages representing different denominations. The breakdown is as follows:

- Concepcion Village: four (4) churches
- Santa Martha Village: three (3) churches
- Calla Creek Village: two (2) churches
- El Progreso Village: three (3) churches

### **3.1.5 Other Organizations**

Other organizations that assist or work with the selected villages especially in times of disaster are the Belize Red Cross and the National Emergency Management Organization (NEMO).

## **3.2 Communications:**

The road network to and from all the villages are classified as an all weather road. Therefore, farmers are able to transport their produce to the market with relative ease.

With reference to telephone communication, both Cellular Phones networks from the Belize Telemedia Limited and SMART are utilized in Concepcion Village only. The other villages of Santa Martha, Calla Creek and El Progreso, use only the SMART network due to network access. Most households in the selected villages have access to Cellular Phones, which makes communicating by phone with villagers relatively easy.

### **3.3 Electricity:**

Electricity is provided through the national grid with most of the houses having electricity in three of the selected villages except the village of El Progreso. This village is not connected to the national electricity grid. However, a few families have solar panels and/or portable electrical generators.

### **3.4 Food:**

Due to economic situations, residents in Belize purchase food for their household that last between one (1) to two (2) weeks. The villages selected for this project are no different, as most of them purchase food for either one or two weeks supply. Majority of the residents are Mestizo in origin, therefore, their major diet consists of rice, corn, beans, flour, assorted vegetables and chicken meat. It is important to note that Belize is self-sufficient in all except vegetables that is imported from Mexico during certain times of the year; and flour, which is milled in Belize from wheat that is imported.

Farmers within the selected communities produce small quantities of corn, beans and vegetables for home consumption and for sale on the local market. Most villagers are used to buying food; therefore, their vulnerability of being affected by food shortage during times of disaster is great. According to the survey, the average household spend approximately Bz. \$ 80.00 per week on food items.

Within the selected pilot villages, there are a total of twenty (22) small shops where villages purchase small quantities of their food products. Therefore, the bulk of their purchases are done in the major town within the district. Other purchases are done in the bordering city of Chetumal in the state of Quintana Roo, Mexico by the villagers in the northern districts, and in neighbouring Melchor de Mencos in Guatemala by the villagers in the west.

### **3.5 Housing and shelter:**

Housing in all the selected pilot villages are basically the same. They are either wooden houses with metal roofing or thatched leaves; or concrete houses with metal roofing. As part of the method used in collecting the information on houses, a complete count was done in the village of Calla Creek only as part of a VCA. The results for Calla Creek only are in table 2.

With reference to emergency shelters within the villages, it was noted that designated shelters by NEMO were Schools, Community Centre or Churches. In many cases, the

shelters were inadequate to withstand a Category 4 hurricane. Additionally, shelters in the village of Calla Creek were inadequate for flooding due to its location. During the floods caused by TD 16 that affected Western and Central Belize, the residents of Calla Creek Village were evacuated out of the village due to the height of the flood and the fact that over seventy five (75) percent of the houses were at ground level. Of the total that was at ground level, fifty (50) percent of them were inundated.

In the other selected communities, the shelters there seem to be inadequate, as they are not built to withstand a category 4 hurricane. During Hurricane Dean in 2007, many of them were damaged.

**Table 2: Types of Houses in Calla Creek Village**

Type of House	# of Houses
Wooden House on 9 feet concrete posts with metal roofing	14
Wooden Houses at ground level with metal roofing	26
Wooden Houses at ground level with Thatch roofing	7
Concrete Houses at ground level with metal roofing	17
Two Story Concrete Houses with metal roofing	3

### 3.6 Water:

All selected pilot villages have potable water provided through pipes to tap from a storage tank to residents of their villages. An appointed five (5) member Village Water Board, headed by a chairperson, manages this resource. In all the piloted villages, residents pay a flat rate of US \$5.00 (Bz \$10.00) per month for unlimited unmetered water.

Of the four villages, three of them utilize an electric water pump in order to pump water from their source to the tank. However, El Progreso is different, as they do not have

electricity or a water pump. The village water source is located in the Hidden Valley Falls area of the Mountain Pine Ridge, which is 436 meters above sea level and four (4) miles from the village as the crow flies. Water is transported by gravity from the source to a 20,000-gallon tank, which is 347 meters above sea level. From there it is piped down to the residential area of the village, which is 300 meters above sea level. The water system that serves El Progreso Village is also shared with neighbouring San Antonio Village. Therefore, due to the technology utilized here, this community will have water even during times of electrical power failure.

Calla Creek water source and pump on the other hand is vulnerable to flooding since the well and pumping station are located on the bank of the Mopan River. Fortunately, the storage tank is located in a safe elevated area, and is able to store enough water to supply the village for at least one week. However, during the last flooding that occurred during TD16, a portion of the village across the river from the tank was cut off for days due to damage to pipes and the pumping station, and the fact that the water reservoir was not filled to capacity, affected the residence on the tank side.

Concepcion and Santa Martha both have wells as their source of water. Therefore, having their water source being affected by flooding is minimal.

### **3.7 Land Tenure**

Land in Belize falls within the following broad categories: (i) National lands (Government or state-owned land, Lease land); (ii) Privately owned lands (property or titled land), and (iii) Protected Areas. Majority of the land tenure arrangements in the selected pilot villages are leased land from the GOB with many of them not living-up to the stipulations required by the Ministry with responsibility for land.

However, the situation in El Progreso and Concepcion are different. In the case of El Progreso, according to the survey, 80% of the respondents have indicated that they do not have any documentation for the land that they are living on or farming. The land belongs to the GOB (national land) therefore they are just squatting. However, they have also indicated that they have applied to the GOB to lease the land that they occupy. It is important to note that immigrants from Central America inhabit this village predominantly. On the other hand, thirty three (33) percent of the participants from Concepcion do not own any farming land. Therefore, for them to carry out any type of agricultural activities they rent land from owners of large tracts of land.

Therefore, finances for agricultural purposes from Banks are difficult to obtain because of the type of arrangements that exists, and the fact that finances for agricultural purposes from banks carry a high interest rate of about 16% per annum on the principal. However, it have been observed that many small farmers are now turning to Credit Unions to borrow for agricultural purposes since the terms and conditions are more favorable, and they are able to borrow as much as Bz. 7000.00 (US \$3,500.) unsecured once they are members in good standing with the Credit Union, and have the capacity to repay the loan. Credit Union loans normally carry a 1% interest per month on the reducing balance.

#### **4.0 HAZARD AND VULNERABILITY ANALYSIS**

Several different types of hazards classified as natural disasters have affected the Selected Pilot Villages and have significantly affected agricultural production and livelihoods of the residents. These include hurricanes, floods and droughts (see Table 2) of which this DRM project is focusing on mitigating their effects.

Recent preliminary survey of land degradation in Belize indicated that almost a third of the roughly one (1) million acres of agricultural land in Belize occurs on land classified as marginal or unsuitable for agricultural activity. More than a third of all agricultural land in Belize is on acidic soils particularly sensitive to land degradation. Almost a tenth of agricultural activity occurs on steep slopes prone to erosion. This event is common in Central and southern Belize. In total approximately 4% of all agricultural land is located in areas at extreme risk of erosion, should there be sufficient rainfall such as those associated with storm events. This DRM project has selected El Progreso as one of the pilot villages, which fit the above description. Therefore, good practices such as the use of covered structures with drip irrigation have been identified for this area.

The acceleration of land degradation due to the absence of effective watershed management, which traditionally served as basins for excess water resources, and the conversion of forested area into agricultural lands is also resulting in the intensification of the impacts of flood events and increases the vulnerabilities of local populations. This was clearly demonstrated in the June 2008 when Tropical Storm Arthur hit the Stann Creek District and resulted in severe flooding which that caused the death of seven persons due to drowning. It was the finding of the initial damage assessments that areas of landslides coincided directly with those areas of steep slopes cleared for subsistence farming and that areas reporting greatest lost of agricultural crops were those areas where the riparian buffer was removed to accommodate crops. These

floods, similar to floods in the past isolated many of the impacted communities and caused great loss to the agricultural sector.

#### **4.1 Agricultural Drought**

Agricultural drought is defined in relation to crop tolerances, and evapo-transpiration losses. It is a “naturally occurring phenomenon” whose presence is merely indicated by “precipitation significantly below normal recorded levels.” In Belize Periodic droughts are localized in certain regions within the country particularly within communities of the west (e.g. Calla Creek Village) and north (e.g. Santa Martha in the Orange Walk District and Concepcion in the Corozal District) of the country. This has resulted in severe water shortages especially for crop cultivation within rural communities. Periods of extensive dries are associated with large outbreaks of forest fires within our coastal savannahs and pine forested areas. These fires pose significant treat to biodiversity and serve to accelerate the incidence of soil erosion.

Thirty three (33) percent of Belize’s agricultural lands are in very drought-prone areas. Three sites have been selected that are considered drought prone, they are El Progreso in the Cayo District, Santa Martha in the Orange Walk District and Concepcion in the Corozal District. Therefore, in order to produce crops successfully during the dry season some form of irrigation is essential where water application to crops will be managed.

According to information received from the National MET service, almost forty (40) percent of the country’s landmass is at risk to drought. In terms of the impact of such phenomena, it is estimated that at least fifty-five communities (including El Progreso in the Cayo District, Santa Martha in the Orange Walk District and Concepcion in the Corozal District) representing at least 18,000 people are directly affected by drought-prone lands. Therefore, the agricultural ‘good practices’ recommended for the pilot communities are essential as its success can be replicated to other drought prone areas.

#### **4.2 Hurricane and Flood**

In Belize, most floods occur during the height of the rainy season, which is also the hurricane season (June to November). Tropical disturbances have produced major flash floods as early as May, and as late as December. Within the last three (3) years, the country have been affected by both hurricane and flood which resulted in damage and losses estimated at over US \$50 million (Bz. \$100 million).

In August 2007, Hurricane Dean, a category five (5) hurricane, hit the north of Belize affecting 14,000 people and causing economic damage of US \$14 million (Bz. \$ 28 million)

mainly due to direct wind damage and flooding. The agricultural sector in the Northern Districts was hardest hit as some of the major crops (rice, corn, papaya, onion, sugarcane, plantain) got affected. Small farmers, in the rural communities, including Concepcion and Santa Martha were devastated as there was no form of resilience.

The most recent devastating flood experienced in Belize took place as a result of Tropical Depression #16 (TD16) in October of 2008 that caused major damages to crops, livestock, houses, household effects and personal belongings. According to NEMO, twenty-five (25) houses were flooded within the Village of Calla Creek. The flood was very devastating because Calla Creek by virtue of its location lies on the bank of the Mopan River. Based on a vulnerability and capacity assessment survey that the National Capacity Building Consultant conducted in the Village of Calla Creek in collaboration with the Belize Red Cross, it has revealed that over 90% of the houses are vulnerable to flood, while over three hundred (300) acres of farmland is vulnerable to flooding.

The map displayed in figure 3 show the areas of the country prone to river flooding or rain inundation. A careful look at the map shows that the villages of Calla Creek in the Cayo District and Santa Martha in the Orange Walk District are both prone to river flooding and rain inundation, while Concepcion Village in the Corozal District, due to its location is prone to flooding due to rain inundation only.

It is evident that in most emergency and disaster situations, Belizean farmers, women and children are particularly vulnerable both during and after disaster events and as such should be included in national and local planning processes. The assessment following Hurricane Dean of 2007 indicated less resilience among small farmers to disasters as many of their practices were not geared towards risk mitigation. Assistance given to farmers during this time was mainly to assist them to recover and in many cases start over. Therefore, this FAO project with reference to disaster risk reduction that came out of the damages caused by Hurricane Dean to the agricultural sector is timely. Additionally because the impacts of natural disasters on small farmers, women and children are high, it underscores the need for the inclusion of small farmers and their families in national planning and risk management processes. The above issue of including the vulnerable within the selected pilot villages will be addressed during social mobilization and capacity building training sessions.

## 5.0 DISASTER PREVENTION AND MITIGATION

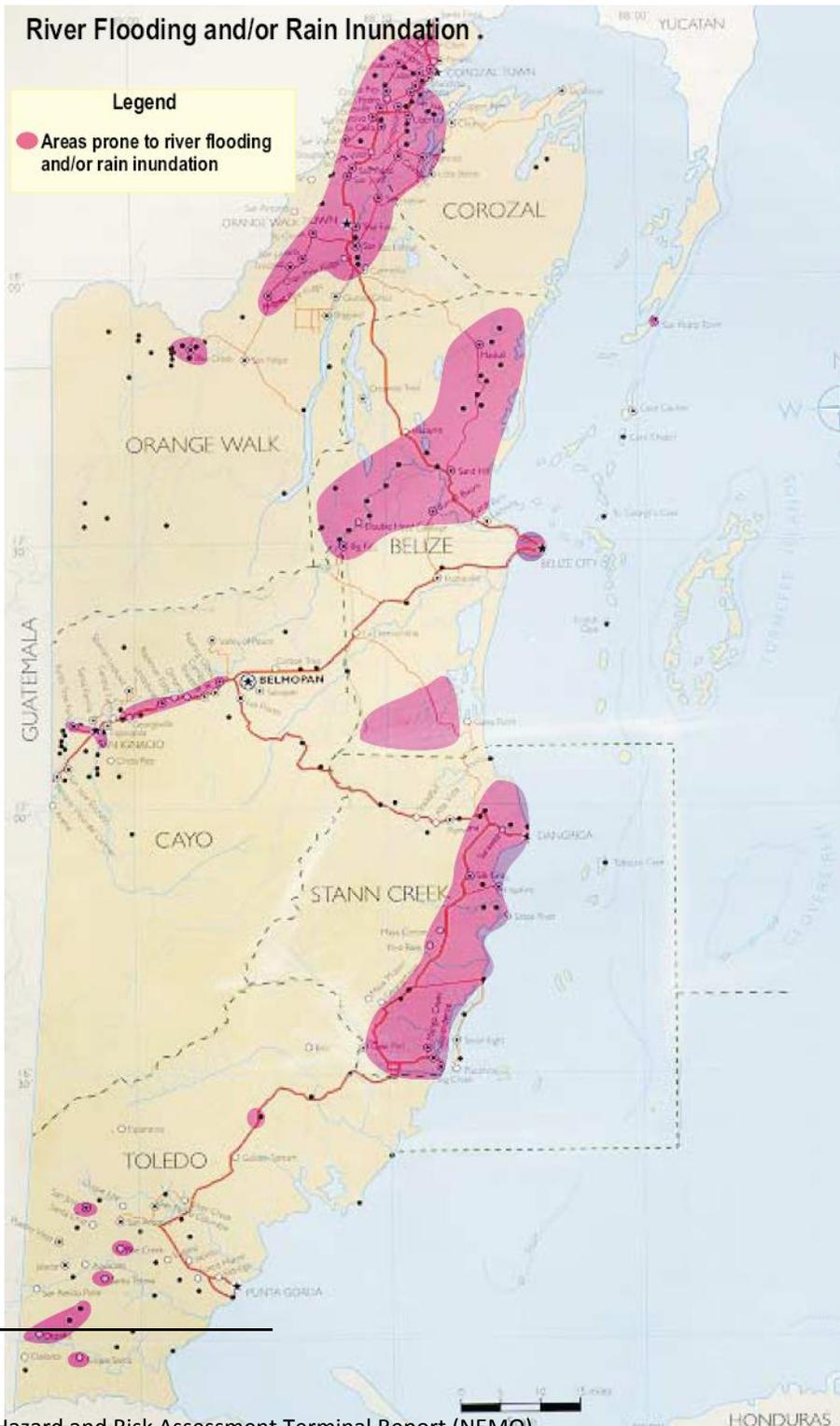
Farmers across Belize utilize both official and traditional sources of emergency warnings in their disaster loss-reduction strategies. Official warnings are normally issued by the Belize National Meteorological Services in conjunction with NEMO and conveyed by the media (radio and television) or disseminated through various community organizations such as the Village Council, School and Churches. Discussions with farmers and villagers indicate heavy reliance on official media (radio, television) as sources of official flood warning.

Nevertheless, despite being alerted by warnings, evacuation obedience to these warnings is not always immediate as have been evident in times of disaster, since many people were reluctant to leave their home due to the fear of having their belongings stolen.

From observations and discussions with village council officials, farmers and residents, the selected pilot village does not have any type of disaster mitigation plans. However, most of them carry out certain activities on their own to assist them in mitigating the impact of disaster. For example floods, whereby livestock farmers would move their animals to higher ground; or farmers planting vegetable crops would plan their planting to coincide with periods when weather conditions are favorable and certain variables such as moisture application can be controlled.

Recently, organizations such as NEMO and the Belize Red Cross have been visiting affected communities gathering information to seek funding for a project within the community in the area of Disaster Risk Reduction. Therefore, with such initiatives in place, it is of utmost importance that the FAO/BZE/3102 TCP facility in collaboration with NEMO, Belize Red Cross and the Calla Creek Village Council synergize to assist the community and implement some good practices for hazard risk management especially in the agricultural sector.

Figure 4: Map of Belize Showing Areas Prone to River Flooding and Rain Inundation<sup>7</sup>



<sup>7</sup> Belize Hazard and Risk Assessment Terminal Report (NEMO)

**Table 3: Notable Natural Disasters that have affected Agriculture in Belize: 1995-2008**

EVENT	DATE
Flood Event	Sunday, October 01, 1995
Hurricane Mitch	Monday, October 26, 1998: major damage to the banana industry
Hurricane Keith	Saturday, September 30, 2000
Tropical Storm Chantal	Tuesday, August 21, 2001
Hurricane Iris	Monday, October 08, 2001
Flood Event- Belmopan area	19 <sup>th</sup> June 2002 (22.83 ins rainfall recorded at Hummingbird Hershey) resulted in flooding in Belmopan area. Western and Hummingbird Highway submerged.
Extreme Temperature	2003 & 2007
	2003- intense heat wave (April and May): 50,000 chicken died
	2007- intense heat wave 20,000 chicken died
Flood Event- Stann Creek District	Extreme rainfall event (18.6 ins in Pomona and Melinda) 21-25 May 2006 resulted in localized flooding of coastal roads (May 25 2006).
Hurricane Dean	August 21, 2007. Caused losses in the agriculture sector in Northern Belize to the tune of \$.
Tropical Storm Arthur	June 2008 Affected Hope Creek and Sittee River Villages including the Stann Creek Valley
Tropical Depression # 16	October 2008 Affected western and central Belize, causing \$ loss to the agricultural sector.

\* Sources: Adopted from data originating from NEMO & the National Meteorological Services Belize

**Table 4: Population, # of Farmers and Average Household size in Pilot Villages**

<b>NAME OF VILLAGE</b>	<b>ESTIMATED POPULATION</b>	<b># OF FARMERS</b>	<b>AVERAGE HOUSE HOLD SIZE</b>
CONCEPCION	650	55	4.7
SANTA MARTHA	300	40	2.4
CALLA CREEK	300	34	5.6
EL PROGRESO	700	50	5.5

Of all the selected pilot villages, Calla Creek and Santa Martha have the smallest population, while El Progreso Village has the largest estimated population. Therefore, in terms of social mobilization and Capacity building, population size will be taken into consideration when developing the strategies in order to get maximum effective participation.

Both Concepcion and Santa Martha farmers are predominantly cane farmers. However, a few have diversified into vegetable and other agricultural production. On the other hand, farmers from El Progreso are vegetable farmers, while those from Calla Creek are part-time farmers into cattle production and the production of vegetables in a back yard setting. Therefore, the DRM project seeks to assist the selected farmers group within these villages with interventions that they have identified, with the inclusion of good practices in order to build their resilience.

Residents of all the selected pilot villages are Mestizo and predominantly Spanish speaking; however, many of them do understand and speak English, with the exception of El Progreso who only have a small portion of the population that speak English.

## **6.0 AGRICULTURAL ACTIVITIES IN SELECTED PILOT VILLAGES**

Agriculture continues as one of the major pillars of the Belizean economy and is the foundation of the productive sector and rural areas. The Statistical Institute of Belize (SIB) figures for 2007 indicate that Primary agriculture and fisheries are responsible for 29% of employment and more than 21% of GDP at constant prices.

It is estimated that Belize has a farming population of approximately 12,000 farmers, operating a total land area of 265,000 acres (5% of the total land area), of which 146,000 acres are for crops and 119,000 acres are under pasture. Small farmers (those with less than 20 acres under cultivation) account for more than 75% of all farmers. These include a large number of milpa (slash & burn) subsistence farmers. It is important to note that figures with reference to land holdings in the pilot villages are not readily available. Therefore, as part of the social mobilization strategy, this information will be collected.

### **6.1 Agriculture in Concepcion Village**

Farmers in Concepcion Village are mainly involved in the production of sugarcane, however, there are a few who have diversified from sugar cane and are into the production of vegetables, fruits and corn for the local market. According to information analyzed from the MAF, of the total amount of farmers in this village, only sixteen (16) of them are involved in vegetable production. This is due partly to the availability of land, and the lack of finances and water to produce using drip-irrigation.

Thirty three (33) percent of the participants from Concepcion do not own any farming land. Therefore, for them to carry out any type of agricultural activities they rent land from owners of large tracts of land. It is interesting to note that these farmers work hard for their livelihoods. It has been observed that they rent land that were once in papaya production, for the production of their vegetables, since on these sites that have access to water from wells dug by the papaya company. For irrigation purposes, they use the abandon wells and bi-walls that once serve as irrigation for the papaya fields.

The above is a very good example of utilizing available resources. Therefore, for this group, it is evident that with the planned intervention of “Irrigation development for vegetable production”, their coping and resilience capacities will be developed in order to reduce their vulnerability to hazards.

## 6.2 Agriculture in Santa Martha Village

Most farmers in Santa Martha Village are sugarcane farmers. However, there are several groups involved in the production of various types of vegetable crops. Information has revealed that during the months of June to October rainfall is high, which pose a risk to flooding, and is also the hurricane season. On the other hand, during the months of November to May there is a shortage of water, therefore supplemental water is essential for successful vegetable crop production.

Certain areas of Santa Martha also have a problem with salinity during the dry season. Farmers are only able to produce in this area up until the month of March. However, it has been revealed that during the height of the dry season, they move to other area, and during the rainy season, they produce on high land. This in itself shows a pattern of risk reduction, which is slated to be perfected and introduced as a good practice within the community.

The planned DRM interventions for Santa Martha are (i) Dairy cattle production, (ii) Irrigation development on three site and (iii) Local fowl production enhancement. These are all compatible with small mixed farming systems, and will lead to resilience and thereby reduce their vulnerability to hazards.

## 6.3 Agriculture in Calla Creek Village

Calla Creek, based on estimates have a population of approximately three hundred (300) persons. Of the total amount, according to information analyzed from the Agricultural Extension data, approximately thirty-four (34) farmers, earn some type of income from agriculture due to the type and amount of crops/livestock that they produce. Farmers in Calla Creek Village can be classified as small or subsistence farmers. Observations have revealed that there is only one (1) farmer who can be classified as a large farmer due to the substantial amount of animals (100 pigs, 550 sheep and 1000 chicken) that he rear. The dominant agricultural activities include livestock rearing (cattle, sheep, chicken & pigs); grain production (corn and beans), fruit tree, and vegetable and root crops production (Sweet Pepper, Cabbage, Pumpkin Tomato, cassava, coco yam) to a lesser extent. The farmers utilize the crops cultivated and livestock reared as a source of income, and as a source of food security.

The Center of village and most farms are concentrated along the banks of the Mopan River, which increases their vulnerability to flooding. However, a few farms are located

on higher ground away from the flood plains, in the hills, which makes them ideal to mitigate their losses during the floods but susceptible to drought.

The most recent flood, caused by TD 16 that affected Calla Creek caused some major damage to household, crops and livestock production. Information has revealed that twenty-five (25) houses got affected by the flood. With reference to agriculture, residents suffered a combined loss of approximately seventeen (17) acres of crops consisting of corn, vegetables and plantain and the loss of approximately fifty (50) pigs.

The overall picture that emerges is that Calla Creek Village, by the nature of its physical attributes (geology, topography, climate etc.) is vulnerable to flooding. This natural vulnerability is enhanced by the socio-economic vulnerability of the population characterized by low income levels from agriculture. Therefore, a significant proportion of the residents work outside of the village in other areas, despite the fertile land that they have available to them for agricultural purposes. It has also been observed that the majority of the lands with fertile alluvial soils are being used for livestock grazing on unimproved pastures.

None of the prospective project participants can be classified as full-time farmers as they all have another job that they depend on heavily for a source of income. When asked what portion of their finances derives from agriculture as oppose to other activities, many of them refused to answer or did not know. However, through discussions and later analysis, it can be said that approximately ten (10%) percent of their income comes from their agriculture production, while the other ninety (90%) percent comes from other sources such as having a full-time job outside the village in areas such as tourism, construction, and agriculture, working on other farms outside the village.

#### **6.4 Agriculture in El Progreso Village**

Almost every household in El Progreso Village have a home garden and practice some form of agricultural activity. The dominant crop in this village is the production of vegetables for the local market. Due to the unavailability of irrigation system, farmers depend heavily on rainfall as a source of water for their crops. Data have shown that during the months of July to November, rainfall is generally high and crop production is vulnerable to excessive moisture. Additionally during this period, due to the hilly terrain and rolling lands with shallow soils overlying limestone, there is danger of soil erosion and soil loss on sloping lands. The months of January to June have traditionally being months where there is a deficit in available moisture for the cultivated crops.

The overall picture that emerges is that El Progreso Village, by the nature of its physical attributes (geology, topography, climate etc.) is vulnerable to drought. This natural vulnerability is enhanced by the socio-economic vulnerability of the population characterized by high dependence on agriculture, with limited knowledge of improved agricultural practices. It has also been observed that the majority of the farmers utilize a lot of pesticide in the production of their vegetable crops with little or no regard for withdrawal periods. Therefore, as part of capacity building and technical training for the farmers of El Progreso, the issue of safe and effective use of pesticides have been identified as one area of training.

## **7.0 CAPACITY DEVELOPMENT FOR SELECTED VILLAGES**

Capacity building is an important component of any project; therefore, building the capacity of the stakeholders of this DRM project is essential. However, in order for the training sessions to be successful, it must have the full participation of all stakeholders.

The capacity development for the project will take on an approach whereby DRM and other technical training will be carried out to benefit the following groups (Appendix 2):

- Farmers from the selected pilot villages
- Villagers (Housewives, students & Village Council Officials) from the selected pilot villages
- Extension Officers (MAF and BAHA)
- NEMO District Coordinators
- Other relevant stakeholders

All farmers who are a part of the project will benefit from several different types of training as outlined in the village sections below, to develop their capacities as part of the project and to assist them in becoming more resilient to disasters. Additionally, community DRR awareness and planning sessions will be held throughout the project cycle to create awareness and to assist beneficiary villages in developing development plans with reference to disaster risk reduction in the agricultural sector.

The technical aspect of the training will be very straightforward. Farmers and Farmer groups will be engaged in training at the field level using several different participatory tools with the assistance of the MAF and other identified trainers according to the

training calendar found in appendix 2. The objective of the technical trainings will be two-fold:

- (a) To train farmers in technical aspects of agriculture related to their project in order, in order to build their capacity for them to be successful, and hence build their resiliencies' to disasters.
- (b) Involve MAF in the training sessions in order to build the technical capacities within the MAF at national and district levels to more effectively manage all phases of the disaster cycle and to create ownership.

Listed below under the Capacity development intervention for each pilot village, are the areas of technical trainings with reference to the selected 'good practice' interventions. However, it is important to note that key among involvement of the villagers will be the conducting of community DRR awareness and planning, thereby giving them information about the project to create awareness and eventually acceptance and buy-in.

Taking into consideration the agricultural and socio-economic situation in all communities, a number of interventions with reference to DRM have been identified in collaboration with the community to be implemented as a part of the project.

### **7.1 Capacity Development for Calla Creek Village**

The DRM practices recommended for implementation in Calla Creek along with their corresponding capacity development trainings are as follows:

- 1) Pasture improvement.
  - Cattle and pasture management with emphasis on beef cattle.
  - Team building and working and planning collectively.
  - Animal nutrition and dry season feeding systems.
- 2) Homestead gardening.
  - Local foods, balanced and healthy diets.
  - Non refrigerated preservation of foods.
  - Composts from kitchen wastes and soil management.
  - Virtues of team work and systematic planning.

- 3) Fruit tree and horticultural nursery.
  - Varietal selection, plant propagation of both fruit and horticultural plants, and nursery management.
  - Post harvest handling of fruit, processing, preservation and marketing.
  - Virtues of team work and systematic planning.
- 4) Local fowl production enhancement.
- 5) Planning, Record Keeping and team building

## **7.2 Capacity Development for El Progreso**

The DRM practices recommended for introduction in El Progreso Village along with their corresponding capacity building trainings are as follows:

- 1) Agryl Tunnel Structures
  - Production using covered structures
  - Soil management organic matter/fallow
  - Pesticide use and applications
  - Integrated pest management
- 2) Appropriate irrigation systems
- 3) Local fowl production enhancement

## **7.3 Capacity Development for Santa Martha Village**

The DRM practices recommended for introduction in Calla Creek along with their corresponding capacity building trainings are as follows:

- 1) Dairy cattle production.
  - Cattle management with emphasis on dairy cattle.
  - Cheese and cream production and storage.
  - Virtues of team work and systematic planning.
- 2) Irrigation development at each site.
  - Soil management for sustainable vegetable production.
  - Pesticides use and its impact on the environment, the user, and the consumers of produce.

- Virtues of team work and systematic planning.
- 3) Local fowl production enhancement.

#### **7.4 Capacity Development for Concepcion Village**

The DRM practices recommended for introduction in Concepcion Village along with their corresponding capacity building trainings are as follows:

- 1) Irrigation development for vegetable production.
  - Soil management for sustainable vegetable production.
  - Pesticides and the impact on the environment, the user, and the consumers of produce.
  - Virtues of team work and systematic planning.
- 2) Local fowl production enhancement.

#### **7.5 Capacity Development for other Village Stakeholders**

Capacity building sessions with reference to community DRR awareness and planning for the other stakeholders (Villagers) will be tailored and conducted on a Village basis, taking into consideration the population and age distribution. This process has started with the beneficiary farmers and farmers groups, and will continue by engaging the villagers at large.

The objectives of the capacity building sessions for villages are as follows:

- (a) Educate the community about the project;
- (b) Create awareness on the issue of Disasters and DRR and the ways in which it impacts on local agriculture and livelihood;
- (c) Assist the community in creating awareness sessions and planning.

##### **7.5.1 Expected Results**

The Capacity building sessions will have the following as the expected results:

- a) That a minimum of forty (40) percent of the target audience will be familiar with what is Disasters and DRR and how it impacts on daily life.
- b) That throughout the target audience there will be a greater awareness of the problems associated with how disaster impacts agriculture and livelihood.

- c) That seventy (70) percent of stakeholders (farmers and villagers) know of ways to adapt to hazards how to reduce the effects/impacts.
- d) A plan is in place to ensure that the public education campaign continues after the project funding is exhausted.

To execute the above, there will be a combined effort with the involvement of the District Extension Officer assigned to the project, the District NEMO Coordinator, the Rural Community Development Officer (RCDO), and the District Association of Village Councils (DAVCO) and the Belize Red Cross. Involving the above where possible will create synergies, avoid duplication and maximize the use of available resources to the benefit of the community. Additionally, with the involvement of the above entities, the capacity development sessions that are delivered in the pilot villages will have a greater impact and chance at success and successful replication in other communities beyond the life of the project.

## **8.0 RECOMMENDATIONS**

The following recommendations should be taken into consideration:

- i. In building capacity, different strategies will have to be employed to effectively reach all project participants.
- ii. Include the most vulnerable (women and children) in DRM processes within communities.
- iii. A Disaster Risk Mitigation Plan needs to be developed for all pilot communities.
- iv. Foster more effective inter-departmental coordination within GOB departments and the Ministry of Agriculture.
- v. Establish and routinely update an agricultural database that is easily accessible.
- vi. Establish a National Agriculture Committee on disaster management within the Ministry of Agriculture.

## **9.0 CONCLUSION**

In concluding, it is important to mention that the issue of DRM in the agricultural sector of Belize is very important. The agricultural sector and farmers have suffered great losses due to hazard such as hurricane, drought and floods. In order to mitigate such losses and create synergies, it is important that sustainable good agricultural practices be implemented. Therefore, this FAO DRM project is very timely. Farmers, farmers groups and the village residents will be participate more willingly due to their experiences with regard to damages that they have suffered over the past years.

## 10.0 REFERENCES

Abstract of Statistics, 2004: Central Statistical Office, Ministry of National Development. Belmopan.

Frutos, R., November 2005. *Six Hydrologic Indices to evaluate the State of Aridity in Belize, El Petén, Guatemala, and Yucatan*. National Meteorological Services, Ladyville, Belize.

Statistical Institute of Belize. Belize 2000 Housing and Population Census.

Human Development Report 2007/2008. Accessed on June 18, 2009. [http://hdrstats.undp.org/countries/country\\_fact\\_sheets/cty\\_fs\\_BLZ.html](http://hdrstats.undp.org/countries/country_fact_sheets/cty_fs_BLZ.html)

Government of Belize, 2007. 2002 Living Standards Measurement Survey (LSMS)

Statistical Institute of Belize 2009. 2008 Mid- Year Population Estimates

Food and Agricultural Organization, 2001. *Reducing agricultural vulnerability to stormrelated disasters*. Available from: <http://www.fao.org/DOCREP/MEETING/003/X9178e.HTM>. Accessed June 10, 2008.

## **APPENDIX 1: List of Acronyms and Abbreviations**

BAHA	Belize Agricultural Health Authority
DAC	District Agricultural Coordinator
DAVCO	District Association of Village Council
DFC	Development Finance Cooperation
DNA	Damage and needs assessment
DRM	Disaster Risk Mitigation
EO	Extension Officer
FAO	Food and Agricultural Organization of the United Nations (FAO)
FO	Farmers' Organization
GOB	Government of Belize
MAF	Ministry of Agriculture and Fisheries
NAgro	National Agronomist
NCB	National Capacity Building Consultant
NEMO	National Emergency Management Organization
NRFE	National Rural Finance Expert
PC	Project Coordinator
PCB	Pesticide Control Board
RCDO	Rural Community Development Officer
TCP	Technical Cooperation Project
UB	University of Belize

**APPENDIX 2: Calendar of Training, Capacity Building & Institutional Strengthening**

ACTIVITIES	FOR WHOM	WHO IS RESPONSIBLE	WHO WILL DELIVER	YEAR 1 (2009)						YEAR 2 (2010)											
				7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
<b>TRAINING, CAPACITY BUILDING &amp; INSTITUTIONAL STRENGTHENING FOR EXTENSION STAFF &amp; OTHER STAKEHOLDERS</b>																					
Training in the use of improved standardized livelihood based methodology for conducting damage and needs assessment in the agriculture sector utilizing the training of trainers model (3days)	Stakeholders	NCB, PC	NCB & TCDC-DNA																		
National workshop to discuss the major findings of the institutional assessment of the national DRM system in the agriculture sector;	Stakeholders	NCB, PC	TCDC-DRM (3rd mission)																		
Capacity building for Extension Officers and relevant stakeholders ( five {5} half days follow up sessions related to field implementation guidelines for specific good practice options) during the project cycle.	Ext & Others	PC	NCB & NAgro																		







