

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 practices¹. 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*², 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 resource³.

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 market⁴.

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

¹ Martin, D. & Manzano, O. 2010.

² <http://www.state.gov/p/wha/>

³ Martin, D. & Manzano, O. 2010, p.107.

⁴ Food and Agriculture Organization. 2011.

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.

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.