

BELIZE

A CASE STUDY CONDUCTED BY THE CLIMATE
RESILIENT FOOD SYSTEMS ALLIANCE

DECEMBER 2022

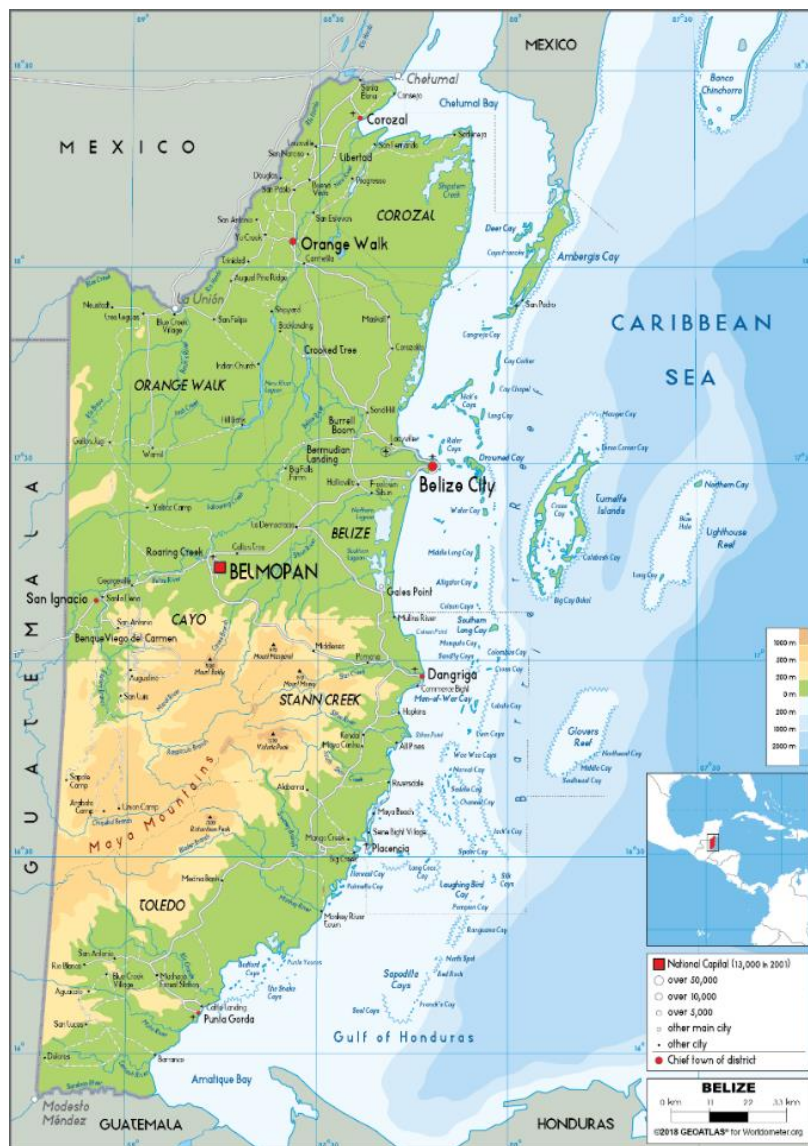


Contents

1. Geography and Economy	3
2. Agrifood System	6
2.1 Food Production	6
2.2 Food processing and distribution	8
2.3 Food consumption.....	8
2.4 Food disposal – loss and waste	9
3. Agrifood systems risk assessment.....	10
4. Climate, Agriculture and Food Systems Policies	13
4.1 Agriculture and food system policies.....	13
4.2 Climate policies	13
5. Ongoing Projects from CRFS Alliance members	15
6. Priority actions in climate and food systems	17
7. Needs and gaps for implementation	20
8. Entry points for the Climate Resilient Food Systems Alliance	21
References.....	24

1. Geography and Economy

Belize is a country on the northeast coast of Central America, sharing a border with Mexico to the north, Guatemala to the south and west, and the Caribbean Sea to the east. A land of mountains, swamps, tropical jungles and mangrove forests along the coast, Belize hosts hundreds of low-lying islands called "cayes", which host rich marine life as part of the Mesoamerican reef, the second largest barrier reef in the world. The country's total area is 22 970 km² and includes 1 540 km² of lagoons and 690 km² of approximately 450 small islands (FAO 2015).



With a total population of approximately 400,000 inhabitants in 2021, Belize is the least densely populated country in Latin America. The country has a unique history which is expressed in the cultural and linguistic diversity of its population, including Mestizo, Creole (Kriol), Garífuna, Caribbean, Maya Kekchi, Maya Mopán, Mennonite, Maya Yucatec, among others. More than half of the country's population is multilingual.

The capital, Belmopan, was built inland, about 50 miles (80 km) west of Belize City, the original capital that was ravaged by a hurricane in 1961.

Despite being part of Central America, Belize is often considered a Caribbean country as it shares a similar history to that of English-speaking Caribbean (island) nations. Indeed, Belize's institutions and official language reflect its history as a British colony, known as British Honduras from 1862 to 1973. In 1981, Belize became an independent Commonwealth realm, retaining the British Crown as head of state.

Belize maintains strong ties to both the Latin American and the Caribbean regions. The only country to hold full membership in all three regional organisations, Belize is a member of the Caribbean Community (CARICOM), the Community of Latin American and Caribbean States (CELAC), and the Central American Integration System (SICA).

Belize is a member of the Commonwealth of Nations. The head of state is King Charles III and is represented in the country by Governor General Her Excellency Froyla Tzalam. Mrs. Tzalam is the country's third Governor General. The primary executive organ of government is the Cabinet led by a Prime Minister, the honourable Johnny Briceño since 12 November 2020 (Government of Belize, Press Office, 2020).

Belize has undergone significant economic transformation over the last two decades, mainly due to the growing tourism industry and to oil extraction. The country has a per capita income of 6,228.30 (USD current) in 2021 and GDP growth of 15.2 percent in 2021, as it continued to rebound from the COVID-19 pandemic. Belize's open, private sector-led economy is based primarily on tourism, agriculture, and other services.

The primary sector, which includes agriculture and seafood exports, increased by 11.2 percent in 2021. Sugarcane and banana yields recovered from weather-related damage and cattle exports surged with the removal of trade barriers, which drove growth. The secondary sector, which includes manufacturing and industry, fell by 1.2 percent in 2021. Electricity and water generation costs weighed down value-added gains from the limited food manufacturing and construction activities (International Trade Administration, 2022).

The top exports of Belize are raw sugar, bananas, fruit juice, and non-fillet frozen fish; exporting mostly to Seychelles, United Kingdom, United States of America, Ireland, and Spain. The top imports of Belize are refined petroleum, rolled tobacco, boats, passenger

and cargo ships, and others; importing mostly from United States, Mexico, China, Guatemala, and Japan (OEC, 2020).

Belize's economy depends directly on seasonal agricultural exports, such as sugarcane, banana, and citrus products to support the economy. This means that fruits, vegetables, and other natural products are among the most expensive in the nation's domestic marketplace. The result of this limited access to healthy food has been a high rate of stunted growth and poor nutrition among children. This is particularly important as this demographic has grown the last two decades (The Borgen Project, 2020). According to FAO statistics, 7.4 percent of Belize's population suffers from undernourishment, while 6 percent of the population dwells in a situation of severe food insecurity (FAOSTAT, 2020).

2. Agrifood System

2.1 Food Production

Agriculture is critical to Belize's development, given its importance in food self-sufficiency, employment, and being one of the country's major exports and earnings of foreign exchange.

The tourism and agrifood sectors drive the Belizean economy and its food security. The two sectors generate 28 and 17 percent of national employment, contributing 21 and 14 percent to the GDP, respectively.

Belize imports 40 percent of its food, despite producing 80 percent of local consumption of cereals.

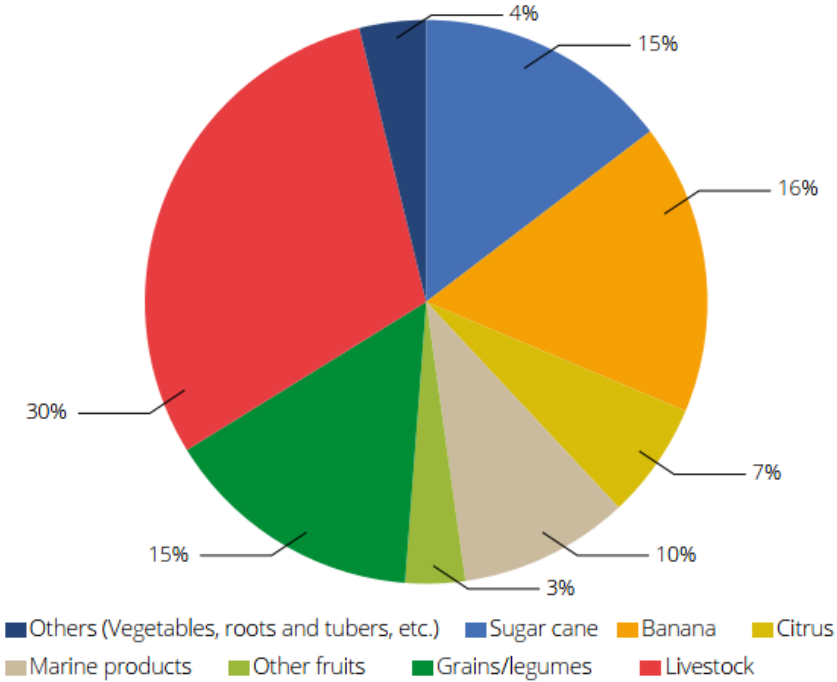
The agrifood sector is a major contributor to the country's economy (14% of GDP). Agriculture in Belize is characterised by three main subsectors:

- a well-organised export-oriented commercial subsector specialising mainly in banana, citrus and sugar;
- a highly diverse and subsistence smallholder subsector producing a wide range of food crops, especially vegetables, mainly for local consumption; and
- a vertically integrated, medium and large-scale commercial subsector (dominated by Mennonites) producing cereals and livestock products for local and export markets.

Marine products also form a part of the Belizean diet (fresh fish) and contribute to the country's export earnings (lobster, conch and shrimp). Given that most fisherfolks belong to export-oriented fishing cooperatives, the fishing sector's share in food security has been less than what is expected for a country with a significant coastline.

While 75 percent of farmers are part of a highly diverse and subsistence smallholder subsector producing a wide range of food crops, especially vegetables, mainly for local consumption, the main sectors of agrifood production are export-oriented (FAO, EU and CIRAD, 2022). These include a well-organised export-oriented commercial subsector specialising mainly in tropical fruits and agricultural commodities (banana, citrus and sugar); a vertically integrated, medium and large-scale commercial subsector (led by members of the Mennonite community) producing cereals and livestock products for local and export markets; and a fisheries sector which contributes significantly to the country's export earnings (lobster, conch and shrimp).

Figure 1. Belize agricultural production (FAO EU and CIRAD 2022).



Although family farmers contribute significantly to this, they face considerable challenges in accessing markets and technical assistance. Many of them and their families suffer from poverty. The need for alternative solutions to diversify production and better integrate these farmers into the Belizean economy constitutes one of the most significant challenges related to food security and nutrition faced in the country.

The National Agriculture and Food Policy of Belize (2015–2030) embraces the urgency to address this challenge. Among the objectives set to strengthen the agriculture sector are: improving the competitiveness of agriculture products, with particular emphasis on raising the level of productivity of family farmers; supporting market driven production; promoting domestic and regional trade opportunities; and increasing resilience of the sector to both natural and economic shocks.

Therefore, ensuring the involvement of the family farming sector in agriculture development is key, which would include raising the level of productivity of family farmers and promoting the linkage of this group to specialised markets, such as schools.

2.2 Food processing and distribution

Food crops are generally sold as fresh and unprocessed products, mainly distributed through municipal markets and supermarkets.

Agroindustrial processing is minimal and mostly limited to slaughtering, packaging and freezing livestock products (poultry and beef) and manufacturing some sauces, jams and jellies.

The agroprocessing and food production sector, a high priority of the Government of Belize, is in a developmental phase. It is supported by fiscal incentives to encourage commercialisation and value addition (FAO, EU and CIRAD, 2022).

2.3 Food consumption

Belizean food systems need to provide healthy food that is accessible to all its citizens. This entails promoting healthy consumption patterns focused on tackling nutrition problems, attaining greater socioeconomic inclusion and reducing territorial inequities.

Food availability, measured purely as daily food energy availability (kcal/per capita), is considered adequate, as the country's daily average of nearly 3 000 kcal/person exceeds the average recommended level by 30 percent.

The high cost of nutritious foods and increasing unemployment and poverty resulting from the COVID-19 pandemic have further pushed healthy diets out of reach to many of the population. High poverty rates (more than 50 percent) and unemployment, which is even higher among young people and women, contribute to food insecurity and vulnerable livelihoods.

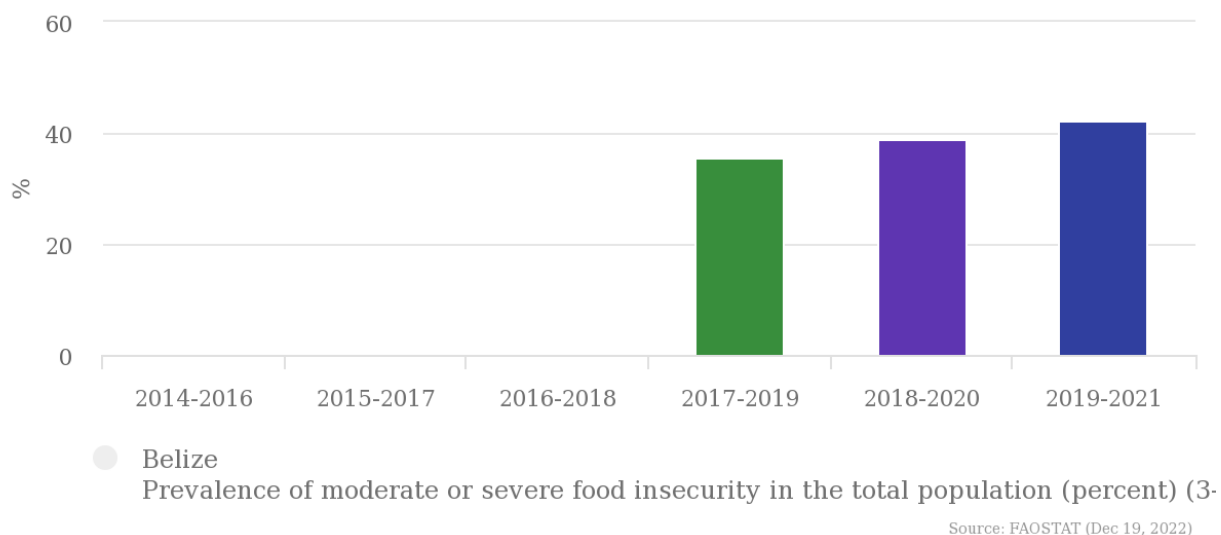
Obesity and diabetes remain high, especially among women, at 34.6 percent and 17.4 percent, respectively (FAO, EU and CIRAD, 2022).

Food security and nutrition have concerned the country over the last years. In 2001, the government ratified Belize's Food security and nutrition policy and established the National Food and Nutrition Security Commission (NFNSC). The policy outlined key strategies to ensure the sustainable supply, accessibility and use of safe, high quality, nutritious, diversified, and culturally accepted foods for all Belizeans to improve their well-being and quality of life.

The Food and Nutrition Policy and Plan of Action for Belize 2010–2015 highlights the need for coordination across sectors (education, health, agriculture) to ensure that there is a comprehensive food security and nutrition information system in place, that includes nutritional objectives into policies and programmes, as well as the implementation of sustainable mechanisms such as integrated farming systems. Several issues are highlighted

as critical for government attention and action, which should be addressed by projects developed under six programmatic areas. The school environment and school feeding have been identified as one of the key strategies for intervention.

Figure 2. Prevalence of moderate or severe food insecurity in the total population (percent) (3-year average) (FAOSTAT, 2022).



Similar to what has been reported in other agricultural communities in Central America (Orantes-Navarro et al. 2019), recent studies have reported a high prevalence of non-communicable diseases and, particularly, chronic kidney disease, among a young population cohort, apparently overlapping with sugarcane production areas, something that the Pan American Health Organization has recently highlighted (Lin *et al.*, 2021).

2.4 Food disposal – loss and waste

Food waste reduction is an important component of the more sustainable agrifood systems needed to address global environmental challenges and deliver across a range of United Nations sustainable development goals, including zero hunger, poverty, food waste reduction and biodiversity (Parfit *et al.*, 2021).

Retail food losses in Belize are estimated to be enough to feed all the hungry people in the country (FAO, 2014).

Food crops are generally sold as fresh and unprocessed products, mainly distributed through municipal markets and supermarkets.

Furthermore, litter has been reported as affecting tourism destinations throughout the Caribbean. Fishing-related litter prevail in coastal villages and remote areas. Combined with litter, chronic erosion due to extreme waves, sea level rise, and coastal habitat loss aggravates scenic coastline deterioration (Lincoln et al. 2022). Massive coastal 'litter blooms' are common following heavy rains, strong waves and wind.

3. Agrifood systems risk assessment

Global climate change is one of Belize's most serious threats to sustainable development. Impacts experienced in the country to date include sustained droughts, floods, increased coastal erosion and changing precipitation patterns. Combined, these climate changes and related phenomena significantly impact many environmental, physical, social and economic systems within the country (UNFCCC, 2021). Belize is vulnerable to hurricanes, storms and associated flooding, wind damage, and storm surge, especially in Belize City. The country's low-lying terrain exacerbates the effects of flooding and sea level rise. More than 50 percent of the population and business centres are on or near the long, low-lying coastline, most of which are at or near sea level.

Belize is also at risk to extreme temperature events. According to the Natural Disaster Hotspot study by the World Bank, Belize is the 61st highest exposed country for relative mortality risk from multiple hazards in the world and ranked 8th out of 167 countries for climate risk. Belize is a country prone to cyclone events and has experienced 14 storm events during the period 1931- 2010, with tremendous damage to the agriculture and tourism sectors specifically. The country's low-lying terrain in coastal areas enhances areas prone to flooding due to hurricanes and other storms. Belize is at risk of flooding when its many rivers (that originate in the high mountains in the east) are impacted by torrential rainfall. Belize's major infrastructure, such as public buildings, health, commercial and transportation facilities, are located on or near the coast, making them extremely susceptible to rising sea levels.

Some areas of Belize experience drought conditions on a yearly basis (Climate Change Knowledge Portal, 2021). Since 2008, the IDMC has recorded seven major weather-related disasters, resulting in over 10 thousand people being internally displaced (IDMC, 2022).

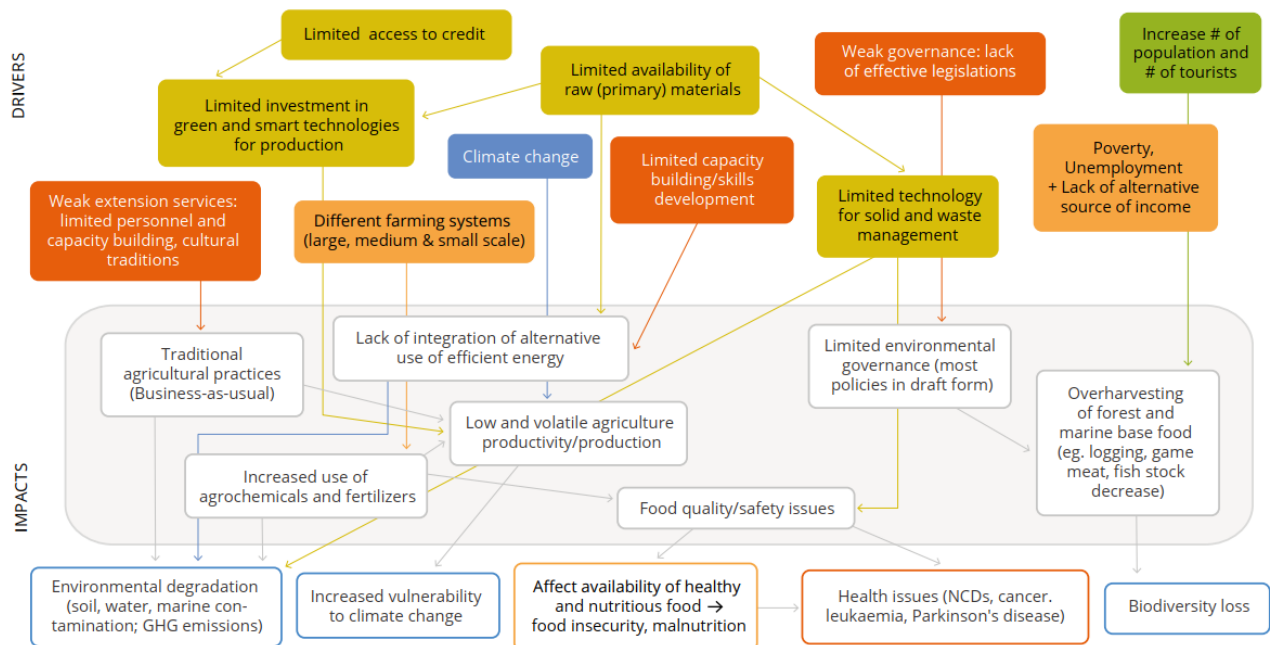
Agriculture in Belize is susceptible to weather variability and vulnerable to climate hazards, such as hurricanes, floods, and droughts. Weather variability caused by climate change will likely increase over time, potentially resulting in rainfall decreases ranging from about 7 percent in the northern zone to around 10% in the southern zone. The most detrimental effects on agriculture are likely to come from increased variability in the seasonal rainfall distribution, which is expected to lead to more frequent droughts and floods. Additionally, projected rises in temperature of 1.3 °C by the 2030s will increase stress on crops and livestock, impacting agricultural systems, forcing changes in management practices, and threatening food production.

In the agriculture sector, Belize expects a projected loss of production within the range of 10 percent to 20 percent which could lead to million dollars in lost revenue by the year 2100 (UNDP, 2009). Warmer sea surface temperatures, ocean acidification, sea-level rise, and

extreme weather events also threaten the fisheries sector. A decline in this industry can significantly affect Belize's food security as well as the country's GDP. It would also affect over 3,500 licensed fishers, which could lead to an annual loss of approximately USD 12.5 million per year.

Belize has included nature-based solutions such as safeguarding coastal wetlands within its updated nationally determined contribution (NDC) to the Paris Agreement, an international treaty on climate change. By committing to protect and restore both mangrove and seagrass ecosystems, the country recognised the benefits that these ecosystems offer: buffering coastal communities against the full impact of storms and flooding; providing wildlife with critical nursery and foraging grounds; and removing carbon dioxide from the environment and storing this carbon in their soils.

Figure 3. Reasons behind low resilience to climate change and continuing environmental degradation, which undermine the food systems of Belize (FAO *et al.*, 2022).



As in other countries, land degradation in Belize is caused mainly by anthropogenic drivers, especially the expansion of the agricultural frontier through deforestation combined with unsustainable crop and livestock production practices. Climate change will likely amplify the forces driving land degradation in several ways. Sea level rise will lead to more extensive saltwater intrusions, resulting in the salinisation of low-lying lands that will reduce their ability to support agriculture. Meanwhile, changes in temperatures and precipitation patterns could promote the appearance of invasive species of plants, animals, insects, and pathogens that could similarly reduce the ability of some lands to support agriculture. As a

result, pressure will increase to meet the growing demand for food by more intensively cultivating existing agricultural land and expanding production into marginal lands that are ill-suited for sustaining agriculture (CIAT and World Bank 2018).

The 2015 National Adaptation Strategy to Address Climate Change in the Agriculture Sector in Belize (NAS) highlights that Belize is self-sufficient in staples (rice, corn, beans, and livestock products), and seasonally available vegetables and fruits. As history has shown, however, climate-related disasters have often significantly affected the agriculture sector. During 2000-2016, agricultural losses due to hurricanes and tropical storms totaled more than US\$ 232 million (Ishizawa et al. 2017). In February 2018 alone, losses to the sector from excessive rain and flooding amounted to US\$ 1.9 million. Looking ahead, therefore, food production and food security should not be taken for granted.

In addition, the change in weather patterns has shifted the cycle of pests and diseases affecting crops. Furthermore, pests, such as the Asian Thrips, which are not common in Belize, devastated the soyabean crop in 2021, causing a ripple effect on the country's food systems. The impact of these changes will result in lower levels of food and agricultural production, and damage to the fisheries ecosystem.

Furthermore, Belize is facing a serious problem with water contamination from agrochemicals and fertilisers used in crop production and for solid and liquid waste management. The impact from contamination combined with climate change may affect the agrifood sector and render some agricultural commodities unsuitable for production. In such cases, diversification to other products may be required to sustain the country's food systems. A high concentration of microplastics has been detected in the Mopan River of Cayo district, for example. It is likely that all rivers in Belize are similarly contaminated and this plastic waste will eventually end up in the marine ecosystem (Belize, 2019).

The COVID-19 pandemic has increased the challenges facing Belize's agriculture sector, which disrupted supply chains, reduced purchasing power and weakened the demand for food products, including from Belize's tourism sector (WB, 2022).

A recent climate change adaptation project in Belize promoted by the World Bank has estimated that the value of ecosystem services (fishing, tourism, shoreline protection) generated by the coral reefs and mangroves contributed between 15% and 22% of GDP in Belize (in the range of US\$395–559 million per year) in 2007 (WB, 2022).

Environmental and human activities are threatening Belize's ecosystems and the roles they play. Overharvesting of marine resources has been a challenge, increasingly exacerbated by the impacts of climate change. Rising sea levels and increasing sea temperatures negatively impact the Barrier Reef system that supports several key economic activities (Lincoln et al. 2022). Increasing sea temperatures are leading to massive coral bleaching within the Belize reef system.

4. Climate, Agriculture and Food Systems Policies

4.1 Agriculture and food system policies

The Ministry of Agriculture, Food Security and Enterprise is the main governmental agency responsible for driving the transformation of the country's food systems.

Under Plan Belize (2020–2025), the Government is committed to promoting transformative changes to make the agriculture sector highly productive, profitable, gender-responsive, attractive to young people and environmentally sustainable. In addition, the Government has pledged to address food security and rural development by creating 30 000 jobs in the agricultural sector through the introduction of climate-smart technologies and policies, and public and private sector investments (Belize, 2020)

4.2 Climate policies

Belize became a party to the United Nations Convention on Climate Change (UNFCCC) in 1992 and ratified it in 1994. To further augment its international commitments, Belize acceded to and ratified the Kyoto Protocol in 2003 and further joined another 195 countries by signing onto the Paris Agreement in 2016.

The Government of Belize further committed to combating climate change by drafting the National Climate Change Policy, Strategy and Action Plan (NCCPSAP) which was presented and approved by the Cabinet in 2015. At this point, climate change took the front page as being a threat to sustainable development and thus led to enhance Belize's commitment to the full implementation of the Convention. After acceding to the full treaty, Belize presented its first Nationally Determined Contributions (NDCs) the following year (2016) as the country's climate change plan.

Before the creation of the National Climate Change Office (NCCO), there were various institutional arrangements to address climate change within the departments and offices of the government. Initially the National Meteorological Department was the focal point for climate change and was the agency in charge of developing Belize's first and second national communications. In 2009 the Belize National Climate Change Committee was formed and was tasked to mainstream climate change mitigation and adaptation into the various line ministries.

In 2012 the National Climate Change Office (NCCO) was created under the then Ministry of Fisheries, Forestry, the Environment and Sustainable Development. The Climate Change Office became operational and formalised the approval of the NCCPSAP in 2015. Since then, Belize recently updated its NCCPSAP to provide enhanced policy guidance for updated administrative and legislative frameworks, in harmony with other sectoral policies, for the pursuance of a low carbon development path and increased adaptive capacity for Belize, including key sectors from the NDC. This has been done with the development of the

National Climate Change Policy, Strategy and Master Plan 2020 – 2025. An updated and enhanced NDC has also recently been submitted to the UNFCCC in September 2021, and an NDC Implementation Plan (2020 – 2025) and NDC Finance Strategy were developed for key sectors, including land use change and forestry, agriculture, tourism, human health and hazard risk, as well as others.

In 2021 Belize prepared and updated its NDC and NCCPSMP.

In terms of a legal framework, Belize does not have any specific climate change legislation. The Environmental Protection Regulations, under the Environmental Protection Act, is the closest Belize has gotten to legislation for climate change. Nonetheless, there is legislation that can be pertinent to mainstreaming climate change into the national development agenda for climate change. These rules, laws and legislations pertain to the protection of the environment and natural resources (fisheries, forests, agriculture, energy, transport, and health, among others) (NCCO, 2015).

The Disaster Preparedness and Response Act Chapter 145, the Recondem and Development Corporation Act, the National Lands Act Chapter 192, and the Land Utilization Act may be the closest to addressing policy planning on environmental internal migration of the citizenry.

Although there have been delays in the development of climate change legislation, Belize has developed several frameworks, plans, and policies over the years to respond to the effects of climate change which is affecting much of the population. Others include:

1. The National Climate Change Policy Strategy and Action Plan (NCCSPSAP 2015-2020)
2. The update National Climate Change Policy, Strategy and Master Plan (NCCPSMP 2020 – 2025)
3. Belize's Nationally Determined Contributions (NDCs 2016 & 2021)
4. Horizon 2030 Long Term National Development Framework for Belize (under revision)

5. Ongoing Projects from CRFS Alliance members

Organisation	Project title	Description	Partners	Further details
IDB/UNEP	CRew+	Upscaling and enhancing the Caribbean Regional Fund for Wastewater Management through an integrated approach of applying technical solutions with innovative financing mechanisms	GEF UN Environment Caribbean Regional Coordinating Unit (UNEP CAR/RCU); Caribbean Environment Programme, GIZ	Link here
IFAD/GCF	Resilient Rural Belize Programme (Be-Resilient)	The project will increase resilience of smallholder farmers in Belize to climate change impacts that have negative consequences on agricultural yields of important commodities for the country. Specifically, the project will develop climate-proof selected value chains (six vegetables, one fruit, and bee keeping) of smallholder farmers, which strengthen economic stability and resilience. The project will also increase access to markets through rehabilitation of critical infrastructure. It will deploy grant award and on-lending mechanisms	Green Climate Fund (GCF), Ministry of Economic Development, Ministry of Finance, Ministry of Agriculture, Ministry of Infrastructure, Development and Housing, National Climate Change Office	Link here

		and work with producers' organisations and local communities to meet their needs in addressing the impacts of climate change.		
FAO	Enhancing adaptation planning and increasing climate resilience in the coastal zone and fisheries sector of Belize	Strengthen adaptation planning governance and institutional coordination Produce evidence basis to design adaptation solutions.	GCF Ministry of Economic Development and Petroleum, local NGOs Line ministries such as Fisheries division, Coastal Zone Management Agency, Met Office	
FAO	Managing Belizean Agriculture Resilience [M-BAR]	The Government of Belize has applied technical instruments developed by the project to strengthen risk management, transportation, storage and distribution arrangements in the Agro-food system to protect farmers from economic shocks and natural disasters.	University of Belize, Ministry of Agriculture, BMDC, CARDI	

6. Priority actions in climate and food systems

Policies and strategies, such as the Belize National Agroforestry Policy (2020), National Forest Policy of Belize (2015), National Adaptation Strategy to Address Climate Change in the Agriculture Sector in Belize (2015), and the draft National Agriculture and Food Policy (2015), provide useful guidance on priority actions. The worthwhile recommendations from many of these documents have not been incorporated into programmes being implemented in Belize.

Effective implementation of improved policies and programmes is critical for the transformation of the agrifood systems in Belize:

- poverty, vulnerability and inequalities should be addressed with targeted policies, including social protection, which create income opportunities while promoting healthy and sustainable consumption trends;
- key to building more sustainable and resilient agrifood systems is the implementation of integrated and decentralised, climate-smart food and agricultural policies and strategies, including scaling up digital economy tools and equipment;
- public and private sector collaboration on credit for investment and promotion of consumption of quality food, supporting increased domestic and regional market opportunities, is essential for greater economic inclusion and territorial balance;
- increased collaboration between the public and private (including agriculture and agroprocessing cooperatives) sectors is essential to achieving the food security and nutrition goals of Belize; and
- improved governance at the national, district and community levels is essential for implementing the integrated and multi-sectoral approaches required for sustainable food and agriculture systems transformation

In Belize, women and young people lack access to land, credit and education opportunities. They also lack access to assets, technology and market information, which reduces their participation in economic activities and contribution to the food security of their communities and families. For instance, the lack of the right to land and property results from women not being seen as the head of households (Ramirez et al., 2020). One of the most daunting challenges facing young people and women is access to finance.

The Government has committed to increasing the budget for youth development from USD 2 million to USD 6 million for projects with a social impact. This includes assistance through programmes to expose "youth to new creative and technological skills, and opportunities for start-up businesses" with "quick microfinancing for young entrepreneurs" (Belize, 2020b).

PRIORITY 1: RESILIENT AGRIFOOD SYSTEMS THROUGH INNOVATION

Address projected decreases in agrifood systems production, estimated at 10-20% loss in agricultural production by 2100, and annual losses of approximately USD 12.5 million per year in the fisheries sector, affecting 3,500 licensed fishers (Belize 2021, Updated NDC).

Improve both crop and livestock husbandry practices, increase access to drought tolerant crops and livestock breeds; adopt better soil and water management practices; reduce post-harvest losses and provide early warning/meteorological forecasts and related information to be competitive in the region.

Under Plan Belize (2020–2025), the Government is committed to promoting transformative changes to make the agriculture sector highly productive, profitable, gender-responsive, attractive to young people and environmentally sustainable. In addition, the Government has pledged to address food security and rural development by creating 30 000 jobs in the agricultural sector through the introduction of climate-smart technologies and policies, and public & private sector investments (Belize, 2020). This includes reducing post-harvest losses & food loss & waste.

PRIORITY 2: AGRIBUSINESS DEVELOPMENT, LED BY YOUTH AND WOMEN IN AGRIBUSINESS

The Government is committed to increasing the budget for youth development from USD 2 million to USD 6 million for projects with a social impact. This includes assistance through programmes to expose "youth to new creative and technological skills, and opportunities for start-up businesses" with "quick microfinancing for young entrepreneurs" (Belize, 2020).

PRIORITY 3: NDC TARGET: STRENGTHEN THE RESILIENCE OF COASTAL COMMUNITIES BY DEVELOPING STORM SURGE EARLY WARNING SYSTEM

By 2023, pilot an early warning system for storm surges in one coastal district and develop a national monitoring system and coastal response plan for storm surges and flooding (Belize 2021, Updated NDC).

PRIORITY 4: NDC TARGET: DEVELOP AND IMPLEMENT AN ENHANCED EARLY WARNING SYSTEM FOR DROUGHT AND EXTREME WEATHER EVENTS TO SUPPORT FARMERS IN PLANNING FOR AND RESPONDING TO THE IMPACTS OF CLIMATE CHANGE BY 2025

Expand on the Belize Agriculture Information System to reach a broad awareness amongst relevant populations of hazards and good practices. Explore crop and commodity insurance schemes and pilot insurance products including education and awareness raising campaigns by 2024 (Belize 2021, Updated NDC).

PRIORITY 5: NDC TARGET: EXPLORE INCOME DIVERSIFICATION FOR FISHERIES

Explore the development of alternative livelihood plans for fishers and their households and include alongside further regulation in the sector, capacity building and strengthening of fisher organisations, especially in local and indigenous communities, who are affected by the establishment of restricted fishing measures (Belize 2021, Updated NDC).

7. Needs and gaps for implementation

- Early warning systems and index insurance mechanisms (see targets in updated NDC).
- Linking with the tourism sector, ensuring this activity can contribute to environmental protection and local food supply chains.
- Nutrition and health: provide accessible, healthy food for all. This entails promoting healthy consumption patterns focused on tackling nutrition problems, attaining greater socioeconomic inclusion and reducing territorial inequities.
- The agroprocessing and food production sector, a high priority of the Government of Belize, is in a developmental phase.
- Agrifood information systems and coordination with regional bodies and neighbouring country initiatives (e.g., Alliance of Small Island States (AOSIS) & the Caribbean Regional Fisheries Mechanism).
- Limited access to improve agricultural knowledge, information, innovation and technologies.
- Food loss and waste: avoiding post-harvest losses and waste throughout the food system.
- Export-oriented sector could benefit from incentives to adopt green technologies to reduce emissions and promote climate-smart strategies through risk-proofing.
- Increase development, adoption and promotion of green climate technologies and innovations (e.g., using stems and leaves from the banana sector, which are considered as garbage, for paper products for a niche tourism market).
- Adopt and enforce water management regulations.

8. Entry points for the Climate Resilient Food Systems Alliance

Based on the desk review, discussions with local stakeholders from Belizean counterparts, as well as exchanges among members of the CRFS Alliance, the following six entry points are identified for future collaboration with Belize. These proposed entry points are linked to recent initiatives, many recently launched at COP27 in November 2022.

8.1. Multirisk governance for resilient agrifood system: Finalise and disseminate national food systems transformation pathways and dialogues

The first priority discussed is to disseminate national food systems transformation dialogues and discuss the needs to finalise the national food system transformation pathway. We understand this document is currently in a draft format, facilitated by local FAO offices, and suggest liaising with this process or others to ensure a multilevel governance framework for collaborations for building resilient agrifood systems in the country.

The food system dialogues held in the context of the UNFSS are meant to shape national pathways to food systems that are sustainable and equitable. They provide opportunities for many people who work in food systems - across the public sector, private sector and civil society - to identify priorities, pursue opportunities and solutions. The results of the dialogues are meant to link existing national policies and initiatives to the priorities of stakeholders, as well as to wider agendas and policies that link groups of nations together.

8.2. Early warning systems: multi-hazard warning systems and early action for farmers, fishers and coastal communities.

Belize's updated NDC clearly identified a need for early warning systems for storm surges. However, considering recent discussions on cascading risks, the proposal to develop multi-hazard early warning systems could respond to the multiple challenges faced by actors across the food system. Multi-hazard early warning systems are designed to cope with multiple hazards occurring simultaneously or cumulatively over time and any potential cascading impacts and provide relevant impact and risk information to enable individuals, communities and organisations threatened by a hazard to implement appropriate anticipatory actions to reduce the possibility of harm or loss. Therefore, multi-risk early warning systems need to be coupled with actionable alerts, which trigger immediate implementation of anticipatory action and emergency response mechanisms. This implies connecting the early warning system to a range of government institutes and local stakeholders through clear anticipatory action and contingency plans with funding to undertake the necessary actions based on input from the warning system.

Designing such early warning systems in Belize could contribute to the implementation of the Early Warnings for All initiative, also known as the UN Global Early Warning Initiative for the Implementation of Climate Adaptation, drawn up by the World Meteorological Organization and partners, and launched at COP27.

8.3. Risk transfer (e.g. parametric insurance): Shock-responsive and risk-sensitive social protection

Risk transfer mechanisms contribute to formally or informally shift the financial consequences of particular risks from one party to another, at the level of household, community, enterprise or state. These include social protection schemes and risk insurance, which can help to reduce the negative impacts of shocks and stresses on vulnerable people, as well as reinforce coping or absorptive capacities. Social protection comprises a set of policies and programmes that address economic, environmental and social vulnerabilities to food insecurity and poverty by protecting and promoting livelihoods (FAO, 2017). Social protection systems may integrate features that can be leveraged to channel resilience building, in what is defined as risk-informed and shock-responsive social protection systems.

Insurance, usually made available by the private sector, the public sector or in the framework of a public-private partnership, is one of the oldest risk transfer mechanisms. Index-based (or parametric) insurance is also emerging as a potentially powerful risk transfer tool. Relevant initiatives exist within the CRFS Alliance (e.g. InsuResilience Partnership on climate risk insurance) as well as coming out of COP27 (such as the Global Shield against Climate Risks and the Africa Climate Risk Facility).

8.4. Nutrition education, promoting local agribusiness for local products and local consumption and supporting community health initiatives

There is a growing recognition of the need to transform food systems to reduce the cost of nutritious food and ensure that everyone can afford a healthy diet all over the world. Even the cheapest healthy diets are unaffordable for more than three billion people in the world. Shifting towards healthy diets that include resilience and sustainability considerations can also protect people from non-communicable diseases while reducing environmental degradation, contributing to achieve Sustainable Development Goals by 2030. Making food systems sustainable, resilient and inclusive, and healthy diets accessible and affordable for everyone is paramount to building forward better from COVID-19.

Considering the priorities identified by the local government with regards to nutrition, as described above, the fourth potential entry point for the CRFS Alliance refers to linking nutritious local food supply chains to local demand. This could be done through promoting local processing by emerging youth and women-led agribusinesses which could contribute to local needs, be it the tourism sector, which could be a new niche market for local cuisine, or local school meals (see FAO 2022). At COP27, Egypt (in its role as COP27 Presidency) and the World Health Organization have launched the Initiative on Climate Action and Nutrition (I-CAN), an initiative to integrate the global delivery of climate change adaptation and mitigation policy action and nutrition and sustainable food systems to support bi-directional, mutually beneficial outcomes.

8.5. Ecosystem restoration along inland and coastal ecosystems to protect coastal communities and conserve coral reefs and natural capital

Key international decisions in 2022 have emphasised the pivotal role nature plays in our lives and in social, economic and environmental sustainable development. Both the Sharm el-Sheikh Implementation Plan (from UNFCCC COP27) and the Kunming-Montreal Global Biodiversity Framework (from CBD COP15) call for the implementation of "nature-based solutions" and/or "ecosystem-based approaches" to help people adapt to climate impacts.

Healthy and diverse ecosystems are more resilient as they can reduce the adverse impacts of climate-related hazards, and at the same time, provide essential ecosystem services (e.g. fresh water, clean air, fertile soil, pollination and biodiversity), which contribute to food security and building resilient livelihoods. The ridge-to-reef approach promotes integrated management of freshwater and coastal ecosystems, through climate policy integration and nature-based solutions, including restoring mountain forests ('ridge'), integrated water management, and mangrove restoration to protect coastal communities from storm surge. This can contribute to protecting the marine 'reef' barrier, enhancing fisherfolk livelihoods, and promoting sustainable tourism.

8.6. Contribute to the #123 food loss and waste pledge through agribusiness innovation led by women and youth

Reducing food losses and waste is a key priority strategy to ensure food security, nutrition, resilience and sustainability of agriculture and food systems. In low-income countries, food is lost and wasted as a result of financial, managerial and technical limitations in harvest handling, storage, cooling and processing facilities, and transportation infrastructure. In these countries, smallholder farmers in particular are often dependent on agriculture for their food and income and thus a reduction in food losses and waste can have a substantial impact on their livelihoods, food security and nutrition. In medium and high-income countries, food is lost and wasted mostly due to consumer behavior, such as limited purchase planning, unclear regulations of "best-before" and expiration dates, set quality standards with regards to shape or appearance, as well as coordination failures between various supply chain actors. Food waste in developed countries can be addressed, among others, through raising awareness among food industries, retailers and consumers.

Develop agribusiness innovation to improve transportation, storage and processing services along the food value chain to decrease Food Loss and Waste. This policy entry point could contribute to the #123 Food Loss and Waste Pledge for Climate Action, a call for governments, companies, institutions and individuals to pledge to align their action agendas to halve food waste by 2030 and reduce food losses by at least 25 percent, toward accelerating actions to achieving SDG target 12.3. The #123 Pledge is hosted by the United Nations Environment Programme (UNEP), FAO, the World Resources Institute (WRI), Champions 12.3 and the Food is Never Waste Coalition.

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