



Caribbean  
Climate  
Justice



## **Climate Change Brief No. 4: Climate and Food Security**

### **Food Security**

Food security is defined by the Food and Agriculture Organization (FAO, 1983) as “ensuring that all people at all times have both physical and economic access to the basic food that they need. Food security has four dimensions: availability of food, accessibility (economically and physically), utilization (the way it is used and assimilated by the human body), and stability of the three dimensions (FAO, 2015).

The global extreme poverty rate was expected to increase in 2020 for the first time in 20 years. COVID-19 and its associated economic crisis, compounded by the effects of armed conflict and climate change are reversing hard-won gains in poverty reduction and shared prosperity (World Bank, 2020).

The FAO, in its 2015 report on the State of Food Insecurity in the CARICOM Caribbean, indicated that the prevalence of undernourished people in the CARICOM region ranged from less than 5% in Dominica and Barbados to 53.4% in Haiti, with an average for the Caribbean of 19.8%. All CARICOM countries have made progress in reducing undernourishment, with the number of undernourished people declining from 8.1 million in 1990-92 to 7.5 million in 2014-16. During that period, the proportion of undernourished people reduced from 27 percent to 19.8 percent (FAO, 2015).

Unfortunately, food imports are the largest source of food for CARICOM populations. Food imports were expected to reach US\$ 8-10 billion in 2020, which would represent a more than doubling of the US\$ 4 billion figure in 2015. Almost all CARICOM countries import more than 60 percent of the food they consume (FAO, 2015).

### **Impacts of Climate Change**

Climate Change is expected to negatively impact food security in the Caribbean in several ways and on many levels. The fifth assessment report (AR5) of the Intergovernmental Panel on Climate Change (IPCC 2014) indicates clearly the risks that climate change poses to food security. Among those risks are (i) loss of terrestrial and inland water ecosystems, and livelihoods, (ii) food insecurity and the breakdown of food systems, (iii) loss of rural livelihoods and income, and (iv) loss of marine and coastal ecosystems.

## Water

One of the obvious areas in which climate change will impact food security is in the water sector. Water availability will be affected, with models suggesting as much as a 25% reduction in rainfall. This will have negative consequences for stream flows and groundwater recharge. In many Caribbean countries, crop production is primarily rain-fed, so greater variability and uncertainty in



rainfall will have negative impacts on crop yields. Sea level rise will also result in the salinization of aquifers, which in turn will reduce the availability of water for irrigation.

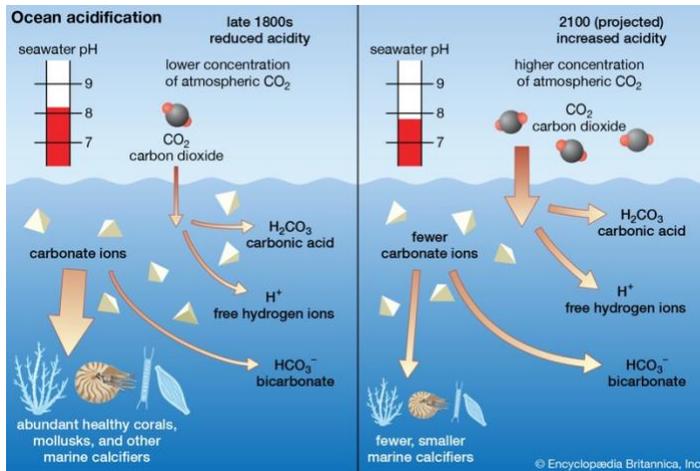
## Temperature

The most obvious manifestation of climate change is in higher global temperatures. Higher temperatures may have negative impacts on crop yields. The IPCC AR5 projects declines in yields and crop suitability under higher temperatures in tropical and semi-tropical regions. Additionally, higher temperatures change the profiles of pests and diseases. As temperatures and humidity change, it becomes increasingly likely that pests and diseases will migrate to new areas, where they may have deleterious effects on the important crops and livestock. Higher temperatures will also influence ecosystem dynamics and this will impact crop productivity.



In the oceans, higher temperatures result in the bleaching and death of corals, which are important components of tropical marine ecosystems. Also, warmer ocean temperatures affect the migratory patterns of fish, which in turn will impact the fisheries sector in the Caribbean. It is forecast that there will be a redistribution of global fisheries, with a potential of up to 40 percent in fish catch in tropical regions.

## Higher Carbon Dioxide Concentrations



As more carbon dioxide is emitted from the burning of fossil fuels for energy and atmospheric CO<sub>2</sub> concentrations increase, the amount of carbon dioxide that is absorbed by our oceans also increases. Oceans are an important sink for carbon dioxide. However, as more carbon dioxide is absorbed and dissolved in our oceans, the concentration of carbonic acid in the oceans increases. This has the effect of lowering the pH or increasing the acidity of the ocean. This process is known as

ocean acidification. More acidic oceans cause coral reefs to bleach and die, but it also interferes with the ability of shellfish like lobsters, shrimps, mussels, clams, oysters, whelks, conch and crabs to form and maintain their shells.

## More Intense Hurricanes

One of the scary consequences of climate change for residents in the Caribbean is the prospect of more intense hurricanes. Hurricanes have devastating impacts on lives, but they are also very harmful to livelihoods and none more so than livelihoods in the agricultural sector. Strong winds, heavy rainfall and land slippages cause serious damage to both crops and livestock, in many instances completely destroying farms and the crops they contain and killing livestock. Strong winds and storm surges also cause significant damage to fishing boats and infrastructure.

## References

1. FAO 2015. The State of Food Insecurity in the CARICOM Caribbean. Meeting the 2015 Hunger Targets: Taking Stock of Uneven Progress. Subregional Office for the Caribbean. Food and Agriculture Organization of the United Nations. Bridgetown, Barbados.
2. IPCC 2014. Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA
3. World Bank. 2020. Poverty and Shared Prosperity 2020: Reversals of Fortune. Washington, DC: World Bank