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Climate Change and Globalization: Food Security in the Caribbean

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Donna is a proud Canadian-born St. Lucian and Jamaican. She is currently enrolled in her first year of a compressed nursing program at the University of Western Ontario. A few of her long-term aspirations include becoming a nurse practitioner and obtaining her Doctor of Nursing to pursue different leadership and/or teaching roles in nursing. She recently graduated from the University of Toronto, majoring in Human Biology and double minoring in Practical French and Caribbean Studies. While in school, she helped to serve my Caribbean community as an Administrative Director on the West Indian Students Association. A few of her hobbies include playing the piano, swimming, listening to music and of course, learning about her heritage and the impact that it continues to have on persons in the Caribbean and the diaspora.

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ABSTRACT

Climate change and food security are among the world's biggest challenges. A growing population and climate change mean vulnerable regions like the Caribbean will continue to face unique strains. The effects of climate change are associated with poverty and a decrease in food security because of the decline in food production and access to sufficient nutritious food. Trade liberalization increases the number of challenges experienced by the local Caribbean agricultural sector and has devastating effects on food security and rural livelihoods. Reduced crop diversity and production and low household incomes result in changed diets. These changes have increased the prevalence of non-communicable diseases (NCDs), such as diabetes and hypertension, as well as obesity and other long-term health problems. Current and proposed strategies to aid with the challenges of climate change include further research on creating heat-tolerant cattle breeds, technological developments, micro-insurance interventions, and the expansion of greenhouse farming. The traditional and acquired knowledge and skills of individuals in the agricultural sector are fundamental in creating strategies to adapt to the impacts of climate change, and it is essential to ensure the strengthening of food security and food sovereignty. Financial resources in the Caribbean are inadequate, and therefore, the Global North must pay its dues in shouldering the responsibility of reducing the economic and environmental vulnerabilities in the Caribbean.

Climate change and food security are among the world's biggest challenges. Both issues are exacerbated by their interactions with each other. A growing population and climate change mean vulnerable regions like the Caribbean will continue to face unique strains. The Caribbean is experiencing progressive warming over time, alterations in the frequency, duration and intensity of rainfall, and an increase in tropical storms and hurricanes. These effects are associated with poverty and a decrease in food security because of the decline in food production and access to sufficient nutritious food.

This paper will investigate how climate change has affected the Caribbean economically by examining the topic of globalization. It will also discuss the implications of climate change on food and agriculture. Moreover, it will explore how it has affected diets and food security and whether the region's people have adapted and how. Furthermore, this paper will assess the strategies being explored to mitigate the ramifications of climate change. By reviewing the history of globalization, the interactions between climate change and food, and the proposed plans of action to adapt to current and projected challenges, one may better understand the importance of these compounding effects and how it influences the region presently and in the future.

Beckford and Rhiney describe globalization as the factors contributing to the world becoming a *global village,* such as barrier breakdowns of communication, trade, access to information and transportation. It is a process that promotes the unification of countries socially and economically. Despite being viewed as a progressive and beneficial process, it highlights the poverty within developing regions. Economic globalization in the Caribbean refers to reducing trade barriers that allow unrestricted competition in external economies. This trade liberalization increases the number of challenges experienced. Notably, the local agricultural sector devastates food security and rural livelihoods (Beckford and Rhiney 2016, 6-7). This is important to communicate due to agriculture's significance and essential role in the Caribbean despite its declining GDP contribution.

Domestic food production in the Caribbean Community (CARICOM) is at an all-time low, driving members to become net importers, except for Guyana and Belize, to deal with problems concerning the quality and quantity of food available to consumers (Beckford and Rhiney 2016, xvi). To understand why the Caribbean faces these persisting issues, one must recall its history and how globalization has evolved its economy, demography, politics, sociocultural aspects, and environmental sectors. Since colonization, the region has been experiencing globalization through its transnational integrations, some of which have negatively impacted the Caribbean and are challenging to reverse. For example, during the plantation era, the Caribbean was successfully dominated by the external influences of mainly Europe, Africa, and Asia. This domination brings forth a deliberate and forced dependence on developed countries, and previous colonizer states that pressures a dependency on external authorities, markets, and geopolitical agendas (Beckford and Rhiney 2016, 3-4).

In terms of globalization, Wilk writes that the danger of the global food system is not on the minds of many when thinking about the economic systems that bring it to the table. Food can now connect politics and health, big corporations and kitchens, and more. This means that those who have power gain the ability to control the “daily bread” of the powerless (2007, 14).

Gahman and Thongs examine "development justice" in the Caribbean, which they state needs to take place to establish and secure a liveable future for inhabitants of the Caribbean, given the realities they face. In addition to climate change, they add that the Caribbean suffers challenges caused by (neo)colonial social connections and debt bondage. These challenges are sustained because of the lack of economic wealth in the region and the refusal of external organizations to pay reparations for the enslavement, indentureship and dispossession of Indigenous people from their history and culture. The lack of monetary wealth, in turn, makes it challenging to finance climate change risk-reduction strategies. It is argued that with the continuation of neoliberal policies and, thus, trade liberalization and privatization, growth and development are not possible. Consequently, Caribbean governments negotiate economic

dependency with private investments and accept foreign loans as external assistance. If this dependency continues and climate change policies are premised on neoliberalism, the gap between the rich and the poor will increase, ecosystems and wildlife will be reduced, and disaster risks, food insecurity, and vulnerability will increase (2020, 763-764).

The role of the Global North is to implement "development justice," in which systemic adjustments are made. The goal should be to reduce inequalities surrounding wealth, power, and resources between countries, the rich and the poor, and men and women (Gahman and Thongs 2020, 768). In terms of climate change which will continue to be an ongoing issue, improvements must be made to reduce the effects of the expected increase in life-threatening catastrophes, which may be done by providing both resources and financial assistance without the expectation of receiving payments back. Scholars and politicians must demonstrate responsibility by abstaining from reverting to historical tendencies of imperialism, land dispossession, white supremacy, colonialism, and neoliberal approaches when initiating recovery efforts in the Caribbean (Gahman and Thongs 2020, 773).

Globalization is only one part of global change which shapes agricultural trends and the vulnerabilities of Caribbean agriculture. The other part is environmental change. Both have affected export agriculture and domestic food production. Vulnerabilities to Caribbean agriculture may also be looked at as a result of shocks and stresses. Environmental shocks include hurricanes and floods and environmental stresses consist of soil erosion and shifts in rainfall patterns (Barker 2012, 43). Since the 1960s, the region's climate has been changing immensely with rising air and sea temperatures, an increase in the severity of hurricanes and a reduction in rainfall. However, this observation is not constant within the region. Consequences to domestic production and export agriculture would include a decline in the water available for crops because of an increase in evapotranspiration. In addition, rising sea levels are expected to cause more damage to rice and sugar crops by flooding rivers and other flooding events. Coastal regions in the Caribbean are especially vulnerable as these locations are used for export crops, namely rice and sugar cane (Barker 2012, 43).

The principal agricultural export in Grenada is nutmeg. It exports the second most nutmeg after Indonesia. Before hurricane Ivan, there were 6,500 nutmeg farmers and over 30,000 people whose income was associated with nutmeg production and distribution. Hurricane Ivan destroyed 90% of nutmeg trees while the area used to grow nutmeg was decreased by 29%. Consequently, production was reduced by over 60%. Cocoa, commonly grown with nutmeg as an understory crop was also damaged. Both these crops take years to recover. Therefore, the nutmeg and cocoa sector rehabilitation severely cost the country as they could not export pre-Ivan amounts for several years. In addition to the food production that was affected by the environmental shock of hurricane Ivan, people lost their sources of income, and there was a lower contribution to agricultural exports and, thus, a lower contribution to the county's GDP (Barker 2012, 50).

Reduced crop diversity and production and low household incomes result in changed diets. Families are experiencing difficulties acquiring enough nutritious food. Home cooking and agricultural labour are being regarded more with contempt; meanwhile, the consumption of cheap, imported, processed foods and drinks continues growing. Children are at the forefront of this shift in consumption with a changing preference for sweet, soft, and easy-to-cook foods rather than cassava or plantain. Many processed imported foods in the Caribbean include corned beef, soft drinks, tinned fish, rice, flour and instant noodles. The consumption of these imported goods creates an urban nutrition problem because of the limited access to agricultural land, low incomes and the comparatively lower cost of imported foods compared to local fresh foods, which are, therefore, consumed by households classified as relatively poor (Connell et al. 2020, 10).

These changes in food consumption and poor nutrition have increased the prevalence of non-communicable diseases (NCDs) such as diabetes and hypertension. The current trends in economics interconnected with urbanization and environmental change have significantly affected the

health of individuals in the Caribbean. Governments are aware of this growing public health issue; however, they tend to avoid taking action, such as heavily taxing or banning imported goods, fearing a decline in votes during elections. Enormous hormonal and physiological changes resulting from the inter-generational outcomes of poor nutrition have been detected in fetal development. These outcomes include NCDs, obesity and other long-term health problems. These cumulative effects, in turn, increase healthcare costs and decrease healthcare efficiency in a system historically known to have had more communicable and "tropical" diseases. Resources and labour are needed to treat such diseases, which are more costly and intensive (Connell et al. 2020, 13-14).

Climate change's impact on agriculture and fisheries must be minimized to alleviate the threat to food security in the Caribbean. With factors such as globalization and climate change, the Caribbean must take action to prevent adverse impacts and better prepare for changing and intensifying climatic conditions. This will ensure that food security and food sovereignty are safeguarded and enhanced. Lenderking, Robinson and Carlson describe food security as the ability of people to have physical, social and economic access to a sufficient quantity and quality of food that meets their dietary requirements for a healthy life. Food security becomes reduced when put at risk by climate change: food availability, access, stability, and utilization decrease. Food security challenges and strategies to alleviate them were analyzed to determine whether they are effective and how they can be ameliorated (2020, 238-239).

Challenges faced in Caribbean small island developing states (SIDS) include a reduction in crop growth rate, yield, and fertilization, the heat stress of various animals, and an inability of specific households to afford adequate, nutritious food. One proposed strategy included obtaining a global perspective on solutions to increase agricultural research and development. Further research was suggested for creating heat-tolerant cattle breeds in Puerto Rico and the US Virgin Islands, where beef and dairy are primarily produced. Other proposed advancements included technological developments—information and communication technology, artificial intelligence, renewable energy, and biotechnology. In terms of helping lower-income families adapt to economic barriers, it was advised that policies be implemented to increase income opportunities for rural households who typically find employment in agriculture. This would aid in diversifying livelihoods and securing a more stable income. Lastly, it was put forward that governance and institutional capacity must be improved to improve food security and climate adaptation. These governments should have policies focused on local and traditional knowledge and building communities with the capacity and resources available to help reshape and form their food supplies (Lenderking, Robinson, and Carlson 2020, 241-242).

Thomas-Hope describes food security as a process that commences with food production and ends with consumption. Food availability is also often considered in terms of the quantity and variety of food available to be distributed. It is also expressed in terms of accessibility, including the affordability and ability to access nutritious and culturally preferred food. To make this possible, households must have an income that allows purchasing locally produced foods and other food items such as sugar and salt to complement the food. The different abilities in food acquisition between households lead to variations in food security. Not only is economic capacity critical, but also self-sufficiency and the ability to purchase food from other countries. (2017, 3-4). Addressing the structural inequalities is one long-term solution to manage the stressors brought on by climate change. Knowledge sharing between institutions, local farmers, and the more vulnerable, specifically the poor, is also required to ensure that strategies incorporate culturally and socially grounded solutions (Thomas-Hope 2017, 9).

Spence explores the use of micro-insurance interventions as a method to strengthen food security in CARICOM countries. This strategy would target small-scale farmers and fishers to help them recover from the impacts of climate change (2017, 206). Micro-insurance with low-cost premiums built into insurance portfolios consists of tailored interventions that would assess the risk of impact from environmental disasters on low-income families, production groups and communities and provide payment

based on the likelihood and cost of the determined risks (Spence 2017, 210).

Many concerns surface when considering the use of micro-insurance. One salient question that must be asked is how adequate the funds would be when provided to a given farmer or production group when a disaster arises. In other words, will paying insurance premiums amount to the funds required to build back a more robust agricultural sector and reduce environmental vulnerabilities or will it be used in ways that are not sustainable? Regardless of whether or not the funds are sufficient, it is a matter of if countries in the Caribbean have the required resources, technology, and knowledge to create alternatives to agricultural products, better hurricane detection equipment and materials to build a stronger infrastructure and ultimately enhance food security. This is one reason why the Caribbean should not be the sole region to take on responsibility for climate change. More prominent, developed countries that have the resources, money and power should be the ones to provide not only funds but the tools and knowledge instead of the individuals who already come from low-income households who may not be able to afford insurance premiums. Therefore, if used as an intervention, affordability and sustainability must be considered (Spence 2017, 211).

Adaptations that individuals within the Caribbean are developing include creating planning documents that outline strategies to aid with decreasing the ongoing and forecasted vulnerabilities of climate change impacts. Current adaptation planning documents from Caribbean SIDS were evaluated to assess their contents, and substantial differences were found in their guidance on vulnerability risk assessments and climate hazard risks. Improving these shortcomings may improve adaptation planning in the Caribbean. Government ministries in CARICOM, the focus group, have been trained in adaptation planning in the Caribbean since 2013. These groups of people involve ministries responsible for climate change policies, non-governmental organizations, and banks (Thomas et al. 2019, 2013-2015).

Another initiative taken up by communities in the Caribbean includes the expansion of greenhouse farming. In 2011, Spain and CARICOM provided special education and training in greenhouse technology to various countries in the region. Shortly after, St. Kitts and Nevis opened the region's largest greenhouse, St. Kitts Eco-Park (an agro-tourism destination), in 2014. Among the benefits of greenhouse technology includes minimizing environmental vulnerabilities to crops, consistent production, and the knowledge of managing crops (Beckford and Norman 2016, 205). Some challenges associated with establishing greenhouse technologies in the Caribbean include the cost to construct them, the cultural reluctance to change to greenhouse technology, and the hesitancy of creditors to fund greenhouses due to the high perceived risks. To reduce these challenges, education should be made available and economically accessible to small-scale farmers, public awareness regarding greenhouse farming may be conducted through public education, and access to credit should be granted to farmers (Beckford and Norman 2016, 208).

The traditional and acquired knowledge and skills of individuals in the agricultural sector are fundamental in creating strategies to adapt to climate change's current and projected impacts. It is essential to ensure the strengthening of food security and food sovereignty. However, their financial resources are inadequate. Therefore, the Global North must pay its dues in shouldering the responsibility of reducing the economic and environmental vulnerabilities in the Caribbean. By reviewing the history of globalization, the interactions between climate change and food, and the current and proposed plans of action to adapt to these challenges, the purpose of creating a more secure future for people in the Caribbean becomes not only more urgent but necessary.

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