Creating Conduits: Tackling Climate-Driven Food Insecurity in Jamaica

Sameer Gupta and Callan Woolnough

Issue

Climate-driven food insecurity in Jamaica, a key Caribbean Community and Common Market (CARICOM) member and Seasonal Agricultural Worker Program (SAWP) partner, persists due to implementation gaps in climate-resilient agricultural practices caused by funding shortfalls and fragmented data systems, requiring Canada to leverage its established partnerships through targeted climate finance, agricultural technology transfer and regional supply chain coordination.

Background

Climate Change Is Eroding Food Security in Jamaica

Jamaica's status as a small island developing state (SIDS) makes it highly vulnerable to sea-level rise, hurricanes, drought and saltwater intrusion into freshwater aquifers, all of which collectively reduce agricultural productivity (Food and Agriculture Organization [FAO] 2023a; 2023b; Stanberry and Fletcher-Paul 2024, 38**;** Geoghagen-Martin 2018). These environmental pressures have resulted in over 55 percent of Jamaicans experiencing food insecurity from 2021–2023, while 22.1 percent could not afford a healthy diet in 2022 (*The Gleaner* 2025). This data highlights the urgent need for targeted interventions to strengthen food system resilience in Jamaica.

Vision 2030 and Policy Frameworks

Jamaica's *Vision 2030 National Development Plan* prioritizes climate adaptation through hazard risk reduction and the promotion of resilient agricultural systems (Planning Institute of Jamaica 2009). This aligns with the National Food and Nutrition Security Policy's goal of ensuring access to nutritious food for all Jamaicans (Ministry of Agriculture and Fisheries and Ministry of Health 2013). However, implementation gaps remain, particularly in scaling up initiatives such as drought-resistant crop adoption, improved irrigation and farmer training. These gaps are primarily due to persistent funding shortfalls and fragmented data systems, which limit the ability of policy makers and farmers to target resources effectively and measure progress (Scobie 2016).

Hurricane Beryl's Impact

The impact of Hurricane Beryl in 2024 illustrates the acute vulnerability of Jamaica's food system to climate shocks:

- agriculture and fishing losses totalled USD $41 million (Angueira 2024);
- crop damage affected over 23,000 hectares of farmland, including 18,700 hectares of vegetables and 1,780 hectares of banana and plantain (Pate 2024a);
- livestock losses included 43,000 poultry and 1,000 cattle (ibid.); and
- infrastructure damage included 236 greenhouses destroyed and 62 km of farm roads damaged (ibid.).

These losses led to a decline in crop yields and further increased Jamaica's reliance on food imports, which have steadily climbed to over US$1 billion annually (Stanberry and Fletcher-Paul 2024, 111). This dependence exposes

the country to price volatility in global food, energy and financial markets, demonstrating the far-reaching effects of food security for national or regional prosperity (*Jamaica Gleaner* 2024; Taghizadeh-Hesary, Rasoulinezhad and Yoshino 2019; Dai et al. 2025).

Structural Vulnerabilities

Significant structural challenges, particularly the informality of Jamaica's agricultural sector, have further exposed the country's food systems to environmental and economic shocks. Approximately 43 percent of Jamaica's economy operates informally, and this rate is even higher among agricultural workers (Jamaica Business Development Corporation [JBDC] 2024; International Labour Organization 2021). Informality thus compounds Jamaica's physical vulnerabilities by limiting adaptive capacity.

Physical and Environmental Constraints

Soil degradation is projected to affect an estimated 44 percent of Jamaican arable land by 2030 (*Jamaica Gleaner* 2018), while water scarcity is projected to worsen as agriculture already consumes 75 percent of the country's freshwater resources, and Jamaica loses as much as 10 percent of local supply each year due to saltwater intrusion (Government of Jamaica 2023, 32; Water Task Force 2009). These physical constraints intensify food system vulnerability, as degraded soils cannot support resilient crop production while water stress limits farmers' ability to maintain consistent yields during climate shocks.

Financial and Institutional Barriers

Most smallholder farmers lack access to essential resources such as agricultural insurance, affordable credit and timely climate information, leaving them highly exposed to climate impacts and unable to invest in adaptation measures (JBDC 2024). At the farm level, limited access to capital constrains farmers' adoption of climate-resilient practices needed to address soil and water challenges, such as improved irrigation, soil conservation techniques or drought-resistant seed varieties. For instance, while GK Insurance launched its GK Weather Protect crop insurance policy in 2021 with premiums as low as JMD$5,700 per season, uptake has remained limited due to farmers' unfamiliarity with parametric insurance products and concerns about basis risk — the potential mismatch between actual losses and insurance payouts (Jamaica Ministry of Agriculture 2021; Pate 2024b). This illustrates the persistent gap between available financial tools and practical access for those most at risk.

Systemic Dependency Patterns and Moral Hazard

The lack of robust institutional safety nets and fragmented supply chains further weakens the resilience of local agriculture. Instead of systematic risk management, farmers have come to expect government *ex-post* disaster relief through input vouchers and direct assistance, creating an unsustainable dependency that leaves smallholders particularly disadvantaged in recovering from climate-related losses and undermines incentives for proactive adaptation investments. This pattern is evident in government responses: JMD$2.6 billion in recovery funds after Hurricane Dean in 2007 (Jamaica Information Service 2007), and J$165 million announced after Hurricane Beryl in 2024, alongside JMD$50 million annually distributed through Members of Parliament for production incentives and drought mitigation programs (Brooks 2007; Jamaica Ministry of Agriculture 2024; 2020). This cycle of post-disaster relief, while necessary for immediate recovery, creates moral hazard by reducing farmers' incentives to invest in climate-resilient infrastructure or insurance products, perpetuating the cycle of vulnerability and dependence on government intervention.

Canada's Strategic Stake

Canada's engagement in Jamaica's climate-driven food security crisis is grounded in a long history of economic, diplomatic and strategic cooperation that directly connect to the structural vulnerabilities outlined above. The broad scope of this engagement with Jamaica (and CARICOM) provides a durable foundation for a whole-of-government approach. The SAWP brings over 8,000 Jamaican workers to Canada's agri-food sector each year, supplying what has become a vital lifeline for Canadian farmers, with roughly half of farmers participating in the program (Statistics Canada 2022; Canadian Agricultural Human Resource Council 2024, 124). This extended relationship gives Canada deep familiarity with Jamaican agriculture and labour dynamics and can be leveraged to accelerate and amplify impact — for example, by linking SAWP labour flows to workforce development.

Canadian financial institutions continue to play a central role in financing agriculture and climate adaptation in Jamaica through targeted lending programs and dedicated agricultural sector financing (Council on Hemispheric Affairs 2022). Diplomatically, Canada's role as CARICOM's representative at the International Monetary Fund (IMF) and World Bank positions it to champion SIDS-friendly financing tools and concessional climate finance (Government of Canada 2025a). Through the CARIBCAN trade agreement, Canada also has more than four decades of experience leveraging commerce to bolster economic and social development in the region (Phagoo 2023).

The retreat of US climate leadership has amplified Canada's opportunity to emerge as CARICOM's primary partner. At the 2025 CARICOM Summit, Canada announced CDN$38 million for regional climate action (Government of Canada 2025c), including CDN$10 million for the FAO-backed climate-smart agriculture training. Recent efforts also include CDN$58.5 million for renewable energy projects through the Caribbean Development Bank (Government of Canada 2025b; FAO 2024; Prime Minister's Office 2023), and CDN$20 million for Sustainable Agriculture in the Caribbean (Government of Canada n.d.).

This commitment directly supports CARICOM's "25 by 2030" food import reduction target while advancing Canadian interests: stabilizing SAWP labour flows; reducing climate-driven migration pressures; and creating markets for Canadian agricultural technology exports such as solar irrigation, hydroponics and vertical farming systems (CARICOM 2025; FAO 2023b; Agriculture and Agri-Food Canada 2022). These initiatives align with Jamaica's *Vision 2030 National Development Plan*, which prioritizes climate adaptation and food security, creating synergies between Canadian technical expertise and local priorities (Planning Institute of Jamaica 2009). By aligning technical assistance, climate finance and research partnerships, Canada reinforces its role as both a humanitarian ally and a strategic investor in Caribbean development and agricultural resilience.

Risks

Several risks and constraints could undermine the effectiveness and sustainability of Canada's engagement in Jamaica's food security and climate adaptation efforts. Domestically, foreign aid spending may face political scrutiny, particularly given recent US funding cuts threaten to undermine Caribbean climate initiatives, with Jamaica alone seeing 73 percent of US Agency for International Development funds halted (Sandefur and Kenny 2025). Canada must communicate mutual benefits such as SAWP labour supply stability and opportunities for Canadian agri-tech exports, to build public and political support for filling these investment gaps.

Regional indebtedness mean Canadian firms may be hesitant to invest in infrastructure or extend insurance without clear incentives or risk-sharing mechanisms, potentially limiting the reach of agri-finance innovations. The risk of perceived paternalism also looms if Canadian-led initiatives do not prioritize local ownership and leadership. Effective collaboration with Jamaican and CARICOM partners is crucial to ensure programs are context-appropriate and locally driven.

Finally, fragmented supply chains, limited institutional capacity and weak extension services in Jamaica could hinder uptake, limiting the impact of new programs or financing models. This underscores the need for cross-sectoral coordination and capacity building on a regional Caribbean scale, rather than a purely siloed, bilateral approach.

Recommendations

Expand climate-smart agriculture training. Canada should expand climate-smart agriculture training and extension services to reach at least 5,000 Jamaican farmers by 2026, prioritizing women and youth, in partnership with the FAO and local institutions. This builds on existing Canadian commitments while addressing the skills gap identified in Jamaica's agricultural sector.

Invest in soil-free agriculture pilots. Canada should invest in hydroponics and soil-free agriculture pilots in drought and flood-prone regions to demonstrate scalable, climate-resilient production models and reduce water use. These pilots directly address Jamaica's water scarcity challenges, where agriculture consumes 75 percent of freshwater resources.

Facilitate agri-finance access. FinDev Canada (Development Finance Institution) should facilitate access to affordable agri-finance and climate insurance by providing catalytic investment and advisory services to Jamaican and Canadian financial institutions developing

tailored risk products and concessional credit solutions aimed at smallholders. This addresses the current low uptake of crop insurance products due to high premiums and farmer unfamiliarity.

Leverage multilateral influence. Canada should leverage its influence at the IMF and World Bank to advocate for concessional, SIDS-friendly climate finance and flexible loan terms for food-climate infrastructure in Jamaica and the wider Caribbean. This capitalizes on Canada's unique position as CARICOM's representative at these institutions.

Channel Canadian expertise through regional innovation hubs. Canada can build on its recent announcement of a Caribbean Future Skills Fund (Global Affairs Canada 2024) by partnering with the National Research Council (NRC) and climate or agriculture-focused Canadian universities to establish innovation hubs in the Caribbean. The hubs can deploy some of the CDN$3 million earmarked for the Fund to establish talent pipelines that feed joint research, generate employment and support capacity building. By leveraging the NRC's business development expertise to commercialize research outputs, the hubs would help stimulate the growth of the region's intellectual property portfolio.

About the Authors

Sameer Gupta is a student in the University of Waterloo's Master of Arts in Global Governance program, based at the Balsillie School of International Affairs.

Callan Woolnough is a student in Wilfrid Laurier University's Master of International Public Policy program, based at the Balsillie School of International Affairs.

Acknowledgements

The authors would like to thank Stephanie Rose Cortinovis and Professor Lucy Hinton for their invaluable comments, encouragement and guidance throughout the course of this fellowship.

Works Cited

Agriculture and Agri-Food Canada. 2022. "Government announce funding through the Innovative Solutions Canada program [Backgrounders]." Government of Canada, March 15. www.canada.ca/en/agriculture-agri-food/news/2022/03/government-announce-funding-through-the-innovative-solutions-canada-program.html.

Angueira, G. A. 2024. "Jamaica's female farmers rebuild after Hurricane Beryl through women-led cash voucher program." AP News, September 6. https://apnews.com/article/jamaica-hurricane-beryl-hurricanes-farmers-united-way-resilience-c13e0bfe898f3e660c8640dfcf1367ee.

Brooks, Kerry-Anne. 2007. "Jamaica: Initiatives implemented for recovery of agricultural sector after Hurricane Dean." ReliefWeb, December 28. https://reliefweb.int/report/jamaica/jamaica-initiatives-implemented-recovery-agricultural-sector-after-hurricane-dean.

Canadian Agricultural Human Resource Council. 2024. "Sowing Seeds of Change: Agriculture Labour Market Forecast 2023-2030." https://cahrc-ccrha.ca/sites/default/files/2024-02/CAHRC_LMI-Report_FEB_2024_EN%20%281%29.pdf.

CARICOM. 2025. "25 by 2030: Regional Food Import Reduction Strategy." Georgetown: CARICOM Secretariat. https://caricom.org/food-security-initiative-expanded-extended-to-2030/.

Council on Hemispheric Affairs. 2022. "Canada-Caribbean Banking Relations: Scotiabank's Role in Regional Development." Washington, DC. https://coha.org/canadas-financial-dominance-in-the-former-english-caribbean-colonies-fecc/.

Dai, Yun-Shi, Peng-Fei Dai, Stéphane Goutte, Duc Khuong Nguyen, and Wei-Xing Zhou. 2025. "Multiscale Risk Spillovers and External Driving Factors: Evidence from the Global Futures and Spot Markets of Staple Foods." arXiv preprint. https://arxiv.org/abs/2501.15173

FAO. 2023a. "State of Food Security and Nutrition." FAO. https://openknowledge.fao.org/server/api/core/bitstreams/bb7496ec-6e8c-41f2-8428-6f08174be3c4/content.

———. 2023b. Sustainable Hydroponics Production to Increase Food Security in Jamaica. FAO. www.fao.org/americas/news/news-detail/Sustainable-Hydroponics-Production-to-increase-food-security-in-Jamaica/en.

———. 2024c. "FAO and Canada Launch CA$10 million Regional Project." FAO. www.fao.org/americas/news/news-detail/fao-and-canada-launch-ca-10-million-regional-project/en.

Geoghagen-Martin, J. 2018."Climate Change & Small Island Developing States." 49th Session of the United Nations Statistical Commission, March 7, New York, NY. https://unstats.un.org/unsd/statcom/49th-session/side-events/documents/20180307-1M-Jamaica-Climate-Change-&-SIDS-1March2018.pdf.

Government of Canada. 2025a. "Canada and the Caribbean Community (CARICOM)." Government of Canada. www.international.gc.ca/world-monde/international_relations-relations_internationales/caricom/index.aspx?lang=eng.

———. 2025b. "Climate Finance Announcement." Government of Canada. www.canada.ca/en/services/environment/weather/climatechange/canada-international-action/climate-finance/announcements.html.

———. 2025c. "Minister Hussen attends 48th CARICOM and Announces New Support for the Caribbean Region." Government of Canada. https://www.canada.ca/en/global-affairs/news/2025/02/minister-hussen-attends-48th-caricom-and-announces-new-support-for-the-caribbean-region.html.

———. n.d. "Project Profile – Sustainable Agriculture in the Caribbean." International assistance projects funded by Global Affairs Canada. https://w05.international.gc.ca/projectbrowser-banqueprojets/project-projet/details/p006153001.

Government of Jamaica. 2023. "Updated Climate Change Policy Framework." www.mof.gov.jm/wp-content/uploads/Updated-Climate-Change-Policy-Framework_with-message-16032023.pdf.

Global Affairs Canada. 2024. "Canada to Establish Caribbean Future Skills Fund." News release, Ottawa, Canada. December 19, 2024. https://www.canada.ca/en/global-affairs/news/2024/12/canada-to-establish-caribbean-future-skills-fund.html

International Labour Organization. 2021. "Support for the Transition to Formality in the Household Services, Agriculture and Fisheries Sectors in Jamaica." https://www.ilo.org/projects-and-partnerships/projects/support-transition-formality-household-services-agriculture-and-fisheries.

Jamaica Information Service. 2007. "Gov't to Provide $2.6 Billion for Hurricane Recovery." Kingston, Jamaica. https://jis.gov.jm/govt-to-provide-2-6-billion-for-hurricane-recovery/.

Jamaica Ministry of Agriculture. 2020. "Agriculture Ministry Providing $50 Million For Production Incentive, Drought Mitigation." August 10. www.moa.gov.jm/content/agriculture-ministry-providing-50-million-production-incentive-drought-mitigation.

———. 2021. "Crop Insurance Launched for Farmers and Fishers." August 11. www.moa.gov.jm/content/crop-insurance-launched-farmers-and-fishers.

JBDC. 2024. "Formalizing Operators in the Jamaican Agriculture & Fisheries Sector." www.jbdc.net/project/ilo-formalizing-operators-in-the-jamaican-agriculture-fisheries-sector/.

Ministry of Agriculture and Fisheries and Ministry of Health. 2013. "National Food and Nutrition Security Policy." Government of Jamaica. www.moa.gov.jm/sites/default/files/pdfs/National%20Food%20and%20Nutrition%20Security%20Policy.pdf.

Pate, D. 2024a. "Hurricane damage to agricultural sector swells to J$4.73 billion." *Our Today*, July 17.https://our.today/hurricane-damage-to-agricultural-sector-swells-to-j4-73-billion/.

———. 2024b. "Jamaican Farmers to Receive GK Weather Protect Payout." *Our Today*, July 26. https://our.today/jamaican-farmers-to-receive-gk-weather-protect-payout/.

Phagoo, Vishanna. 2023.). "Caribcan arrangement extended to 2033." *Trinidad and Tobago Newsday*, June 22. https://newsday.co.tt/2023/06/22/caribcan-arrangement-extended-to-2033/.

Planning Institute of Jamaica. 2009. *Vision 2030 Jamaica: National Development Plan*. Kingston, Jamaica: Planning Institute of Jamaica. https://sustainabledevelopment.un.org/content/documents/1501jamaica.pdf.

Prime Minister's Office. 2023. "Prime Minister Announces Caribbean Development Bank Partnership." Ottawa, ON: Government of Canada. www.pm.gc.ca/en/news/news-releases/2023/10/18/prime-minister-and-caribbean-leaders-take-next-steps-fight-climate.

Sandefur, Justin and Charles Kenny. 2025. "USAID Cuts: New Estimates at Country Level." Blog post. Center for Global Development, March 26. www.cgdev.org/blog/usaid-cuts-new-estimates-country-level.

Scobie, M. 2016. "Policy coherence in climate governance in Caribbean small island developing states." *Environmental Science & Policy* 58: 16–28.

Stanberry, D. and L. Fletcher-Paul. 2024. "Food Availability in the Caribbean." In D. Stanberry and L. Fletcher-Paul (Eds.), *Food Security in the Caribbean: Historical Perspectives, Current Challenges, and Sustainable Solutions*: 93–133. Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-66055-9_4.

Statistics Canada. 2022. "Agriculture and agri-food labour statistics." *The Daily*. Government of Canada, June 13. www150.statcan.gc.ca/n1/daily-quotidien/220613/dq220613d-eng.htm.

Taghizadeh-Hesary, F., Rasoulinezhad, E. and Yoshino, N. 2019. "Energy and food security: Linkages through price volatility." *Energy policy* 128: 796–806. https://doi.org/10.1016/j.enpol.2018.12.043.

The Gleaner. 2018. "Ongoing Loss of Farmland Cause for Concern." Kingston, Jamaica: Gleaner Company. https://jamaica-gleaner.com/article/lead-stories/20180809/ongoing-loss-farm-land-cause-concern.

———. 2024. "Food Import Dependency Threatens National Security." Kingston, Jamaica: Gleaner Company. https://jamaica-gleaner.com/article/esponsored/20221214/food-security-national-security.

———. 2025. "Many Jamaicans Grappling with Food Insecurity, Inability to Afford a Healthy Diet." Kingston, Jamaica: Gleaner Company. https://jamaica-gleaner.com/article/news/20250127/many-jamaicans-grappling-food-insecurity-inability-afford-healthy-diet.

Water Task Force.. 2009. "Vision 2030 Jamaica: Water Sector Plan." Kingston, Jamaica: Planning Institute of Jamaica. www.vision2030.gov.jm/wp-content/uploads/sites/2/2020/12/Water-Sector-Plan-June-2009.pdf.