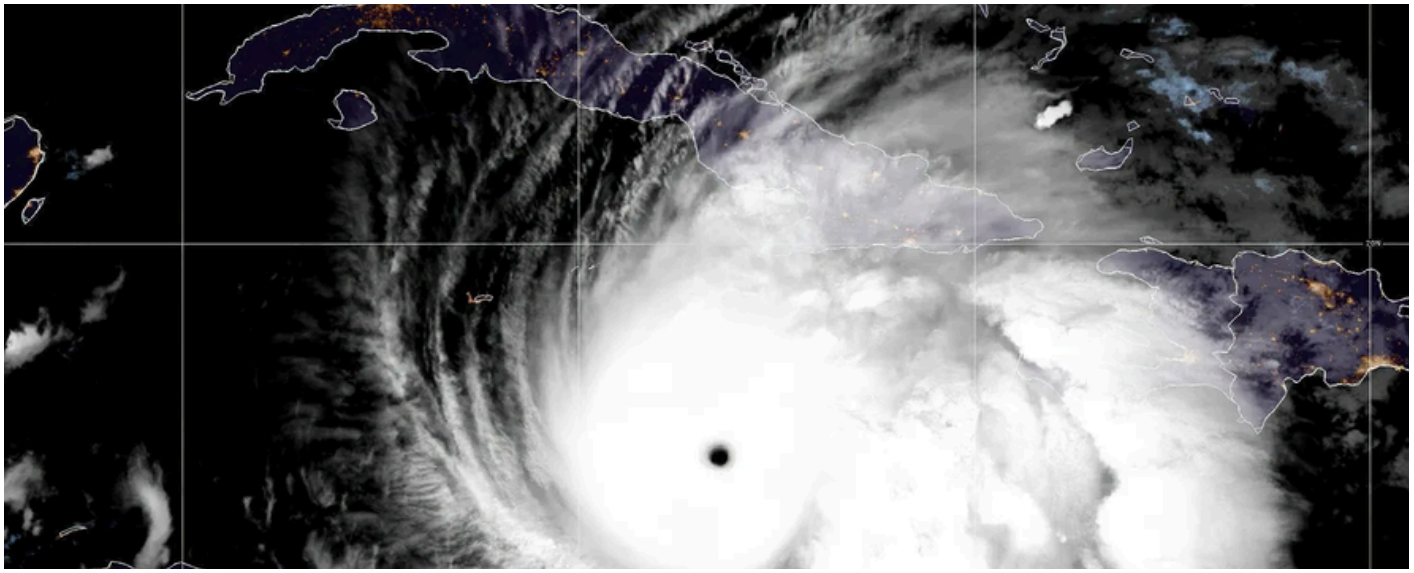
THE UNIVERSITY OF THE WEST INDIES

POLICY BRIEF

Strengthening Local Meteorological Services To Improve Disaster Preparedness

No. 1 - December 11, 2025

Tannecia Stephenson, Jacqueline Spence-Hemmings, Michael Taylor and Jayaka Campbell



Hurricane Melissa satellite image at around 6 a.m. EST. Credits: Goes-19/Cira/Noaa/Planet Pix via ZUMA Press Wire/Shutterstock

EXECUTIVE SUMMARY

Major Hurricane Melissa made landfall in Jamaica as a category 5 hurricane on October 28, 2025, causing unprecedented destruction. As climate change intensifies hurricanes, rainfall extremes, heatwaves, and drought cycles, Jamaica's ability to forecast, warn, and communicate risk becomes increasingly vital. Strengthening data monitoring and forecast products developed by the Meteorological Services Jamaica, will better support disaster preparedness efforts in the island at the levels of community to agencies, help quantify the extreme nature of the weather events experienced, and provide the data needed for climate change attribution, global advocacy on climate change response, and efforts to operationalize loss and damage financing.

INTRODUCTION

- Hurricane Melissa made landfall in Jamaica as a catastrophic Category 5 storm on October 28, 2025, causing unprecedented destruction.
- The Meteorological Service Jamaica (MJS) successfully provided forecasts of track, category, wind speed, forward moving speed, rainfall and storm surge for Jamaicans, which was crucial to the country's planning ahead of the impact of the hurricane.
- The forecast were informed by monitoring systems maintained by the MSJ, including a radar, and automatic weather stations (AWSs), and incorporated satellite imagery and outputs from computer models. These were further complemented by a combination of observation tools, advanced computer models and forecast products from the Miami-based National Hurricane Centre (NHC), as well as storm surge products from the NHC and Caribbean Institute for Meteorology and Hydrology situated in Barbados.
- The information was directly provided through forecast bulletins, press briefings, and the MSJ app.

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Strengthening Local Meteorological Services To Improve Disaster Preparedness

MAKING THE CASE

Hurricane Melissa exposed some of the vulnerabilities in the existing weather monitoring systems in Jamaica:

- **Interruption and unavailability of real time data collection:** Thirty of thirty-one automatic weather stations reporting in near real time via online modality went down due to loss of electricity or internet connection during the passage of Melissa. The MSJ also operates with the unavailability of real time modality for observation of 90% of its AWS network.
- **Inaccessibility of stations after extreme weather**: MSJ teams were deployed to collect rainfall data post the storm, a process that has been impacted by accessibility of roads and communities.
- **Reliance on external partners for key variables**: A subset of the data network comprises manual rain gauges so the MSJ relies on observers to collect rainfall data which, in the case of Melissa, would be almost impossible especially in the western section of the island.
- **Absence of flood forecast maps**: Until there is an expansion of data monitored by the MSJ, some forecast products will not be developed within the country.
- **Limited in-house modelling capacity**: MSJ depends on model simulations produced externally to assist in the forecasting process.
- **Limited information sharing platforms**: ·MSJ does not currently have a functional database, and this hampers the timeliness of quality control and analysis of data to inform critical reports and to inform key stakeholders.

RECOMMENDATIONS

The following are some recommendations emerging from the experience with Hurricane Melissa and other weather extremes that have impacted Jamaica. The MSJ must:

- **Procure 28 robust AWSs and 7 tide level monitoring systems** for the south (3), west (1) and north coasts (3), in the first instance; 4 drones for pre and post monitoring of severe weather events. This will ensure improved quantification of the extreme event, and systematic verification of forecasts. The equipment procured should be satellite-based to improve robustness of the communications to ensure there are stations that can still report under extreme weather conditions. **
- **Develop and deploy a near real time weather data sharing dashboard** that is accessible to heads of emergency and water agencies/authorities to help inform on the extent of weather impact and to provide data to guide allocation and positioning of resources pre and post an extreme weather event. The quality controlled data may also be shared with other local and international stakeholders consistent with a data sharing policy to be developed and MOU with landowners. **
- **Pilot new forecast products** such as flood mapping. This will require partnership with academia. **
- **Develop a training programme** that engages expertise within Jamaica, e.g. the Climate Studies Group Mona, at The University of the West Indies, to expand the capacity of forecasters to run high resolution models over Jamaica, which incorporates local data. ***

* Short-term (0–6 months); **Medium-term (6–18 months): ***Long-term (18+ months)

CONCLUSIONS

The strengthening of meteorological services in Jamaica is critical for minimizing loss of lives and safeguarding livelihoods, property and the country's development. Building resilience in the weather monitoring systems of the country, expanding monitoring systems and forecast products, and investing in additional technical capacities, are approaches that will enhance Jamaica's ability to incorporate data in decision making. With climate-related hazards intensifying, investing in meteorology is not optional—it is one of the most effective strategies for national resilience and long-term prosperity.

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POLICY BRIEF

Reducing Water-related Risk through Household Strategies

No. 2 - December 11, 2025

Shaneica Lester

EXECUTIVE SUMMARY

Major Hurricane Melissa made landfall in Jamaica as a category 5 hurricane on October 28, 2025, causing unprecedented destruction. After a disaster, water supply may be disrupted due to damage and power outages, so communities should adopt household level strategies to reduce risks. It is important to protect household health through simple, everyday water safety considerations and practices.

INTRODUCTION

- Hurricane Melissa made landfall in Jamaica as a catastrophic Category 5 storm on October 28, 2025, causing unprecedented destruction.
- Post extreme heavy rain events, water challenges may emerge including contamination, disruption of supply; low pressure; saltwater intrusion in coastal reservoirs; and stagnant floodwaters.
- Effective post-storm recovery requires clear strategies to protect water quality and secure reliable supplies, ensuring communities can safely access, distribute, and use water even when infrastructure is damaged or disrupted.

MAKING THE CASE

Hurricane Melissa impacted access to reliable supply of water. Since the hurricane some communities are at increased risk of:

- **Intermittent Supply**. Water is accessible at certain times of the day.
- **Inaccessibility of regular supply.** Some households may need to travel long distances to access water, facing: o Long queues; o Unsafe terrain; o high transport costs; o Increased physical strain, especially on women, elderly, children.

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Reducing Water-related Risk through Household Strategies

MAKING THE CASE

- **Outbreak of water borne diseases**. Water-washed diseases such as skin infections and eye infections can increase when there is not enough water available for proper hygiene. Water-borne diseases such as diarrhoea and cholera can occur from drinking or cooking with contaminated water.
- **Extended periods of disruptions**. Households often rely on rivers, springs, or informal water vendors when piped water is disrupted for an extended period. These sources may become contaminated. Additionally, water quality often deteriorates from the source to the point of use, especially when carried over long distances in reused containers. Water-borne diseases, such as diarrhoea and cholera, can result from using unsafe water.
- **Cost inequalities**. Some households may struggle to afford bottled water or filtration supplies when public systems fail.

RECOMMENDATIONS

The following are some short-term recommendations emerging from the experience with Hurricane Melissa and other weather extremes that have impacted Jamaica:

- **Track times water is available.** If your water supply is intermittent, keep a record of when water is available and plan household use and storage carefully.
- **Plan ahead for water collection**: Be aware of these challenges and plan water collection carefully, as they can impact health, safety, and livelihoods. Whenever possible, rely on emergency water points or community water shops set up in your area to reduce these risks.
- **Treat or boil** all water from questionable sources.
- **Practice proper hygiene** even when water is limited.
- **Use small containers** for hand-washing stations.
- **Prioritize clean water** for cooking, drinking, washing hands, brushing teeth and washing dishes.
- **Use clean containers for storage**, keep them covered, elevated and sanitized, even inside the house.
- **Label containers for drinking** versus household use to keep drinking water safe. Also, take care to avoid contaminating drinking water when retrieving it from its storage container.
- **Share information about safe water vendors** with neighbours and coordinate group purchases or community distribution points where possible.

CONCLUSIONS

Households need clear guidance on maintaining safe water practices after a storm to reduce health risks and manage limited supplies. Recommendations should emphasize proper storage, disinfection, and adherence to local boil-water advisories. Policies must also support equitable access to emergency water resources, especially for vulnerable populations. Strengthening communication channels ensures families receive timely, actionable instructions during recovery.

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POLICY BRIEF

Building Psychological Resilience in the Aftermath of Hurricane Melissa

No. 3 - December 11, 2025

Caryl James, Tracey-Ann Coley, and Jhodi Bowie Dean

EXECUTIVE SUMMARY

Any natural disaster affects one's basic needs for survival, starting with their safety and security. Jamaica has faced its fair share of hurricanes up to category 4, but for a category 5, this was the first. Outside of the obvious destruction, disruption, and loss of life, the psychological impact of exposure to such a natural disaster has created its own trauma. Added to this, not enough information has been generated and circulated about how to manage the aftermath of this devastating occurrence. This breeds a sense of uncertainty and powerlessness which can impede the individual's ability to cope, leading to a myriad of challenges such as but not limited to phobic anxiety, posttraumatic stress disorder, depression, fear, guilt and chronic stress which can be further compounded by not knowing what resources are available for help or even the procedures to engage in to work through these challenges. While the majority may not develop a psychiatric disorder, some may experience adverse psychological and behavioural outcomes which may persist for a long time. As we navigate this uncharted path, it is incumbent to bring to our awareness how to make this transition taking into account the short-term and long-term impacts, direct and indirect effects, the affected and unaffected, the community's recovery process at a personal and situational level as we move towards adapting and building our resilience. This policy is intended to add to the knowledge of the impact of a category 5 hurricane on mental health, including reflective and progressive processes for its people to engage in.

INTRODUCTION

- Hurricane Melissa made landfall in Jamaica as a catastrophic Category 5 storm on October 28, 2025, causing unprecedented destruction.
- Many grappled with the shock of the threat to their safety and survival. Others did not believe the reports because of previous "escapes" and were unprepared.
- Research shows that approximately one-third of people who experience natural disasters may experience mental health outcomes such as PTSD, anxiety, depression, among others.
- A plan for the implications that this might have on mental health was not thought out, nor were assessment measures implemented.
- While most may appear to cope well, some may not go back to normal functioning; a few may go on to develop psychiatric illnesses, and others may experience a delayed onset of psychological challenges. Notably, beyond its onset, its psychological impact can last for extended periods. This increases the health burden to an already economically strapped society.

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POLICY BRIEF

Building Psychological Resilience in the Aftermath of Hurricane Melissa

MAKING THE CASE

Hurricane Melissa exposed the following vulnerabilities:

- **How we undervalue the importance of mental health**. The lack of pointed government initiatives/policies, such as scholarships and training opportunities, geared towards building up human resources in the field of clinical psychology and clinical social work.
- **Understanding the short-term and long-term ramifications of natural disasters on mental wellness** and consequent changes in socioeconomic conditions, financial loss, displacement, and social disruptions.
- **Understanding and discussion** around how the unique differences in responses to Melissa may be adaptive, manageable, or maladaptive.
- **Lack of preparation for the rise in mental illnesses and mental health challenges** that typically occur with a natural disaster and the implications of this impedes our ability to rebuild health-wise, and as a society.

RECOMMENDATIONS

The following are some recommendations emerging from the experience with Hurricane Melissa (and other weather extremes that have impacted Jamaica):

- **Train government officials** or build a team of policy influencers to specifically look at disaster responses from every angle (Short to medium-term)
- **The use of training progammes such as psychological first aid** for stakeholders, leaders, lecturers, and students to mitigate against the impact of such disasters in the future. These should be informed by theoretical models such as the Adaption and Development After Persecution Model and Trauma (ADAPT) model (Silove, 2013) which connects psychosocial factors to mental health challenges to events such as natural disasters along with five psychosocial domains (i: Safety/Security; ii: bonds/networks; iii: justice; iv: roles/identities, v: existential meaning) which during normal circumstances stabilize a society or the Federal Emergency Management Agency (FEMA) (FEMA, 2021), although designed for a developed context has its applicability to our setting as it deals with six phases of the recovery process (pre-disaster phase, disaster impact phase, heroic response phase, disillusionment phase, reconstruction phase). (Short to long-term)
- **Be intentional in offering various sources of mental health support** tailored to different ages and stages, making room in a non-judgmental way for diverse responses. Pay special attention to the intersectionality of the personal and socio-environmental factors, as the implementation needs to be tailored to the needs of the individual; otherwise, it is futile and a waste of time and resources. (Short to Long-term)
- **Be aware of and make plans to address the common psychological issues associated with natural disasters**, such as sleep disruption, changes in eating patterns, substance use, and other psychiatric-related illnesses, such as anxiety, PTSD, depression, adjustment disorders, grief, and loss. (Short to medium term)
- **Evaluate the affected population to determine levels of severity** in terms of reaction so that proper/effective triaging can take place. Making allocations for those with direct and indirect impact. (Short to long-term)

* Short-term (0–6 months); **Medium-term (6–18 months): ***Long-term (18+ months)

CONCLUSIONS

Hurricane Melissa has underscored the urgent need to prioritize psychological resilience as a fundamental component of natural disaster preparedness and recovery. While Jamaica continues to rebuild its physical infrastructure, equal attention must be given to rebuilding the emotional and psychological well-being of its people. Effective mental health response requires coordination, proactive planning, and long-term investment in human resources and systems that can support individuals across the full spectrum of trauma responses. By implementing the recommended strategies – strengthening mental health capacity, tailoring interventions to diverse needs, and ensuring basic survival requirements are met - we can foster a more resilient population capable of navigating the psychological aftermath of future disasters. Building this resilience is not only essential for individual recovery but is also critical for the nation's sustainable development and collective strength moving forward.

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POLICY BRIEF

Strengthening Jamaica's Biosecurity for Post-Hurricane Recovery

No. 4 - December 11, 22025

Damion Whyte

EXECUTIVE SUMMARY

Hurricane Melissa has highlighted gaps in our biosecurity system, including a lack of baseline information on wildlife (native and invasive) across the island, increased risk of invasive species spreading, wildlife disease outbreaks, wildlife interactions with people, greater movement of native species in protected areas, and agricultural and public health vulnerabilities. Strengthening biosecurity across the environmental, agricultural, community and public health sectors is essential to assessing and preparing for future hurricane-related risks, protecting biodiversity, supporting recovery, and building resilience. This policy brief identifies gaps revealed by Hurricane Melissa and provides recommendations for short, medium, and long-term actions to safeguard Jamaica

INTRODUCTION

- Hurricane Melissa made landfall in Jamaica as a catastrophic Category 5 storm on October 28, 2025, causing unprecedented destruction.
- The extreme weather event, compounded by pre-storm flooding that disrupted Jamaica's ecosystem, displaced wildlife, damaged vegetation, damaged infrastructure and created new pathways for alien invasive species.
- The Jamaican ecosystem, including wildlife, was already significantly impacted by alien invasive species, climate change, habitat loss and remains highly sensitive to storm-related disturbance.
- Strengthening national biosecurity protocols will be important for recovery after Hurricane Melissa, enhancing resilience and safeguarding livelihoods.

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POLICY BRIEF

Strengthening Jamaica's Biosecurity for Post-Hurricane Recovery

MAKING THE CASE

Hurricane Melissa exposed the following vulnerabilities:

- **There is minimal or no baseline information** on several species, making it difficult to assess the impact of the hurricane on affected wildlife populations and vegetation.
- **There are national vulnerabilities in surveillance and rapid response**, particularly regarding invasive species management and the risk of spread of diseases.
- **Illegal trade** remains a significant problem, with people introducing species that may have been displaced or released after the hurricane.
- The flooded areas, improper storage of water (open tanks, unsealed drums) and disruption of the waste management system create **conditions favourable for mosquito population surges, the breeding of invasive Cuban treefrog, an increase in rats (possible vectors of leptospirosis) and contamination of water sources.**
- **There is a lack of public awareness of biodiversity issues**, reporting mechanisms and how to contact the relevant authorities regarding invasive species, diseases, or animals that need help.

RECOMMENDATIONS

The following are some recommendations emerging from the experience with Hurricane Melissa and other weather extremes that have impacted Jamaica:

- **Establish a coordinated post-disaster biosecurity surveillance system** (short term). Deploy rapid assessment teams to detect wildlife die-offs, disease outbreaks, and ecosystem vulnerabilities.
- **Establish biosecurity surveillance using citizen science**, where people report species, they encounter via different media (medium term).
  - Provide targeted information to fisherfolk, farmers, and community members to identify unusual species, outbreaks, or ecological changes.
  - Ensure that agencies respond effectively to the public and provide clear reporting pathways.
  - Develop an education program to inform the public about the importance of native species and the impact of alien invasive species.
  - Strengthen inter-agency coordination to ensure timely responses to community reports.
- **Implement emergency protocols** for invasive species newly detected in storm-affected areas (short-term and medium-term).
- **Develop guidelines for wildlife disease monitoring** following extreme weather events (medium term).
  - Integrate plants, animals, and agricultural surveillance across agencies.
- **Invest in long-term ecological monitoring and habitat restoration** (long term).
  - Prioritise forest, wetland and coastal restoration to increase future resilience.
  - Prioritise monitoring of wildlife population, especially since diseases such as bird flu have been confirmed in the Cayman Islands

* Short-term (0–6 months); **Medium-term (6–18 months): ***Long-term (18+ months)

CONCLUSIONS

Hurricane Melissa underscored the need for a national biosecurity approach. The hurricane highlighted that several species introduced through the pet trade or accidental release remain present in Jamaica. Some species escaped during the hurricane; the extreme weather is likely to threaten native species, affect ecosystems, and increase public health risks. Invasive species management requires early detection, rapid response, community engagement, and long-term ecological monitoring and restoration. By implementing the recommendations, Jamaica can better protect biodiversity, sustain livelihoods, and enhance resilience.

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POLICY BRIEF

Post-Melissa Guidelines for Builders, Contractors and Professionals in the Construction Industry

No. 5 - December 11, 2025
Julia Bonner Douett. MBA, PMP, BH(M)

EXECUTIVE SUMMARY

The cost of rebuilding the infrastructure in hurricane ravaged parishes in Jamaica, namely Saint Elizabeth, Westmoreland and the parts Hanover and Trelawney have been reported to be over 9 billion U.S. dollars, including road infrastructure, agriculture and residential and non - residential structures. However, with every tragedy there is an opportunity. The Jamaica Building Codes were developed through funding from the Jamaican government by Engineers and technical experts associated with the Jamaica Institute of Engineers, JIE and other such entities. The codes are fashioned based the International Code Council reference documents and were revised through the Bureau of Standards Jamaica to improve Jamaica's resilience in the face of a natural disaster such as Melissa.

INTRODUCTION

- Hurricane Melissa made landfall in Jamaica as a catastrophic Category 5 storm on October 28, 2025, causing unprecedented destruction.
- There is a total of 11 building codes, seven of which are fully published and the other four are smaller documents not yet published (older versions) that refer to specific subject matter areas.
- The published codes are available for viewing and reading free of charge on the ICC website: Codes.ICCsafe.org/codes/global/ja.
- On this site in the search bar, type Jamaica to view the 7 published codes. Choose the code you would want to read and the chapters of interest.
- Nevertheless, both the seven published documents and the four older 2009 versions (existing as application documents to the ICC base codes) are also available have the Bureau of Standards Library.

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POLICY BRIEF

Post-Melissa Guidelines for Builders, Contractors and Professionals in the Construction Industry

MAKING THE CASE

A category 5 hurricane such as Melissa would have caused significant damage to almost any infrastructure. However, pictures of the devastation in West showed that some structures managed to withstand fury of Melissa. In these cases, some roofs were gone, but most of the physical base building remains. The 11 codes that continue to guide Jamaica's construction sector are:

- 1. Jamaican Building Codes JBC- the parent document that covers general requirements for construction and to witch all other codes make reference
- 2. Existing Building Code for retrofitting of and making additions to old buildings
- 3. Small Building/Residential Code - for all buildings up to 300 m^2 similar requirements to the JBC and include requirements for slab roofs.
- 4. Fire Code - details requirement for fire safety measures including clearance for occupancy administered by the Jamaica Fire Brigade
- 5. Maintenance code- -for maintaining existing building structures and facilitating repairs
- 6. Mechanical code for installation and performance of which vaccine systems heating systems on other such devices in a building
- 7. Energy Conservation code -providing guidance for creating energy-efficiency spaces and for installation and use of devices such as air conditioners
- 8. Plumbing code for installation of systems in both residential and commercial buildings
- 9. Private sewage code - provision for the installation and disposal of sewage systems
- 10. Fuel Gas Code- -Requirements for safe installation and performance of fuel gas systems such as appliances, piping and accessories for cooking
- 11. Electrical Code - Requirements for electrical wiring of buildings and equipment.

RECOMMENDATIONS

In rebuilding ensure compliance to the codes. The following are critical and are applicable as short-term to long-term interventions:

- Foundations of residential and commercial buildings must be in compliance with the requirements of the code.
- Steel structure has been designed by professionals.
- Columns and beams structures must be so tied together to reinforce the building.
- Blocks used in construction must be complaint the Jamaican standard for hollow concrete blocks JS 35 2022, and have compressive strength of 7Mpa.
- Aggregates used must also comply with standards JS124 for concrete aggregates.
- Roofs must be installed and reinforced using hurricane straps and where possible screws instead of nails

These codes are referenced in the Building Act of 2018 and monitored through the Ministry of Local Government and Rural Development therefore in building, also seek guidance from the Municipalities and associated local authorities.

* Short-term (0–6 months); **Medium-term (6–18 months): ***Long-term (18+ months)

CONCLUSIONS

The resilience of our national physical infrastructure is key to maintaining the gains in Jamaica economic growth. The perception and belief of hope and the possibility of greatness is foundational to the resilience of our people.

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POLICY BRIEF

Strengthening Food Sovereignty after Hurricane Melissa

No. 6 - December 11, 2025

Sylvia Adjoa Mitchell

Leaf of yampie (*Dioscorea trifida*) in second season of growth from a germinated true seed

EXECUTIVE SUMMARY

Hurricane Melissa directly impacted thousands of farmer's fields. In the midst of despair, we can recover and climb higher using all we have learnt. We can strengthen food sovereignty in Jamaica, to secure our food, protect our environment, and support our rural communities while being climate-smart and climate-just. To do this, we will need to protect our seeds (those used to make our foods, medicines, houses etc) and their wild relatives. Lack of knowledge makes the task difficult. Who knew yampie had true seed, let alone germinate them? True seeds and vegetative propagules need to be protected differently, at both an institutional and community level. We recommend immediate, short-term and long-term solutions.

INTRODUCTION

- Hurricane Melissa made landfall in Jamaica as a catastrophic Category 5 storm on October 28, 2025, causing unprecedented destruction. Trees were uprooted, leaves and fruit blown off, plants disturbed. Crops destroyed. Prices in the market sky-rocketed.
- We need to increase food security but in a manner that protects and facilitates cultural knowledge and ways of doing, referred to as food sovereignty. Food sovereignty means farmers control their own seed systems, local knowledge is valued and protected, communities set their own agricultural priorities, and food systems are built from the ground up, not dictated from outside. So we need to empower our farmers, not increase dependency. Our success with the Youth Yam Farmers Training Programme (YYFTP) has taught us that direct collaboration between scientists and farmers, while building inter-generational knowledge, is the way to go.
- Questions arise – Who has seeds, what kind of seeds are available? Has Jamaica stored any seeds? Do we know when our seeds are produced, where they are produced, or how long they can be stored without losing their ability to germinate? Can we access organic seeds? Who has clean planting material (tissue cultured plantlets), to avoid disease being spread from one area to another? How fast can we multiply and provide tissue culture plantlets for our major crops which were damaged, primarily for local food consumption, as a first goal.
- How do we prevent glut? How do we sustainably use our biodiversity? How can we ensure the food planted will reach the consumer fresh and full of nutrients? How do we use short-term and long-term mitigation to achieve food sovereignty?

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POLICY BRIEF

Strengthening Food Sovereignty after Hurricane Melissa

MAKING THE CASE

Hurricane Melissa exposed the following vulnerabilities in Food Sovereignty in Jamaica:

- **Local provision of suitable food and water.** Many communities were cut off for days. Community storage of water and preserved local foods using solar energy is needed.
- **Immediate call for food.** We eat a very restricted diet, mostly meat(chicken) and rice. Jamaicans will not eat strange food. But foods we traditionally ate have been neglected although they are healthier and grow well in Jamaica. For example, yam, cocoyam, dasheen and badoo for starch; calaloo, purslane, moringa, gumma, hook and dasheen leaf for vegetable, and myriads of fruit. Can we make these better known, more appealing, and thus expand our food choices?
- **Provision of seed.** The cry from the farmers is, where are the seeds? How can we grow what we eat without suitable seeds? Several of the seeds distributed did not sprout or are unsuitable for our climate. What about organic and heirloom seeds? Do we even know the need for such seeds?
- **Preserving Autonomy.** If climate-smart agriculture does not preserve autonomy, it risks replacing one form of vulnerability (climate) with another (corporate control).

RECOMMENDATIONS

The following are some recommendations emerging from the experience with Hurricane Melissa (and other weather extremes that have impacted Jamaica):

- **Determine the needs of farmers for seeds.** Establish community seed banks (refugia for plant genetic resources for food and agriculture and their wild relatives, and encourage everyone to plant, reap and eat at least one plant, rural and urban), school gardens (for canteen use) and ancestral gardens (for maintaining local food varieties).*
- **Increase soil health** by adding ameliorants that can restore life to the soils such as microbe enhanced bamboo biochar.**
- **Encourage and highlight existing collaborations** between government, academia, and farmers. and encourage networks for training, research and marketing. *, ** and ***
- **Encourage small farmers** to maintain, store and exchange seed collections in polyclonal farms. ***
- **Increase funding** for plant related research associated with food security. *, ** and ***
    - **GAP analysis of crop production.** Compare the historical production levels of local crops vs present status at this time of the year linked to local market needs. *
    - **Identify our seeds and plants to the variety level.** There are still useful plants in the forest we do not even have pictures of, let alone classification *, ** and ***
    - **Produce clean planting material & soil ameliorants** to increase productivity. Expand tissue culture facilities we have in Jamaica and separate function of gene bank from multiplication services. *
    - **Collect data on the food we eat, and crops we produce,** vs the food we import, and the food we would like to eat. Record quantity, monthly changes, and nutritional quality.**
    - **Research** on value-added products and better storage methods that retain nutritional value***
- **Diversify our diets** by incorporating our ancestral and 'forgotten' foods.*
- **Increase farmer utilization of 'waste' materials.** Increase cold storage facilities, solar powered solutions, the processing of glut into value-added products and market access to farmers.***
- **Protect our farmers** from those who reap but never planted. Develop a robust Agricultural Warden and Court System.*

* Short-term (0–6 months); **Medium-term (6–18 months): ***Long-term (18+ months)

CONCLUSIONS

The University of the West Indies can help with implementing these recommendations. The Medicinal Plant Biotechnology Research Group of the Caribbean Centre for Research In Bioscience (CCRIB) is available to assist in any way deemed useful and meaningful.

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POLICY BRIEF

Tools for Strengthening Disaster Preparedness and Caribbean Resilience - TOPIM

No. 7 - December 11, 2025
Randy Aird and Samantha Hallam

Satellite image of Tropical Cyclone Melissa eye on October 28, 2025, 17:00 UTC prior to making landfall in Jamaica. The observed track of the hurricane is shown as well as the landfall intensity highlighted by the information box.

EXECUTIVE SUMMARY

The Caribbean is one of the most vulnerable regions to Atlantic tropical cyclones (TCs) due to its location relative to Atlantic storm development and tracks; and the strong reliance of its small economies on climate sensitive sectors such as tourism, fisheries and agriculture. This vulnerability requires tools that are specific to the Caribbean which can aid in disaster preparedness and response. One such tool is the Tropical cyclone Ocean-coupled Potential Intensity Model (TOPIM) which was developed in collaboration with The University of the West Indies- Mona, Maynooth University and Bermuda Institute of Ocean Sciences. The tool was useful in forecasting the strength of Hurricane Melissa that made landfall on October 28, 2025 as category 5 near New Hope, in the parish of Westmoreland. With a maximum sustainable wind (MSW) speed of 295 km/h (159 kts; 82 m/s), TC Melissa caused widespread damage across the island, with the heaviest impacts in the parishes of Trelawny, St. James, Hanover, Westmoreland, and St. Elizabeth.

INTRODUCTION

- Category 5 TC Melissa caused widespread damage across the island, with the heaviest impacts in the parishes of Trelawny, St. James, Hanover, Westmoreland, and St. Elizabeth.
- There was immense damage and destruction to buildings, the electrical grid, road infrastructure, agricultural lands, and the forest cover by both the wind force and associated flooding.
- A tool that was useful in predicting that conditions around Jamaica were conducive for a category 5 TC was the Tropical cyclone Ocean-coupled Potential Intensity Model (TOPIM) which was developed in collaboration with the University of the West Indies- Mona, Maynooth University and Bermuda Institute of Ocean Sciences.
- The TOPIM model is an ocean sensitivity model that accounts for the unique ocean dynamic of the Caribbean in addition to its tropical characteristics.

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POLICY BRIEF

Tools for Strengthening Disaster Preparedness and Caribbean Resilience - TOPIM

- A forecast advisory published on October 25, 2025, from the National Hurricane Center (NHC) predicted TC Melissa to have a MSW of 130 kts (241 km/h; 67 m/s) on October 28, 2025, making it a Category 4 upon landfall.
- Observations made on October 28, 2025, showed that the TOPIM model closely predicted the potential intensity of TC Melissa. TOPIM predicted a minimum central pressure of 902 mb while the observed was estimated at 892 mb, a difference of 10 mb. TOPIM had predicted a MSW of 157 kts (290 km/h; 81 m/s) while the observed was 160 kts (296 km/h; 82 m/s) a difference of 3 kts (6 km/h;1.5 m/s).

MAKING THE CASE: ATTRIBUTION

- Looking at the drivers of this devastating storm, TOPIM has attributed the intensity of TC Melissa to ocean waters being warmer than the climatological average.
- For the days leading up to TC Melissa's landfall, the ocean water surrounding Jamaica was 1.4°C warmer than the climatological average (period 1979 to 2000).
- According to the TOPIM model, this heat anomaly was a contributor to TC Melissa being 36 kts (67 km/h, 18.5 m/s) stronger than it would have been under normal conditions
- Warm ocean waters are the fuel for hurricanes, and the Caribbean has been warming around 0.2°C per decade since 1965 leading to the increasing average hurricanes intensity of 5 kts (9 km/h, 2.6 m/s) per decade observed.
- This year alone, the Atlantic has seen three Category 5 hurricanes, a level matched only once before, in the record-breaking 2005 season.

RECOMMENDATIONS

- TOPIM made an earlier prediction compared to other sources which would have allowed for earlier warning to stakeholders if it had been one of the primary tools in their toolbox.
- A part of the resilience efforts must be a focused on the deveopment and use of localised and regionalised tools that are geared towards understanding the intricacies and dynamics of the Caribbean environment, especially as the region faces greater risks from a warming climate.

CONCLUSIONS

There is immense value in having Caribbean based tools that account for the nuances of the Caribbean environment and can be utilized with greater confidence by regional stakeholders. TOPIM is one such tool and provides the opportunity for greater use in coming Atlantic hurricane seasons.

ADDITIONAL INFORMATION

- Hallam, S., Hallam, J., Guishard, M., Aird, R., and Campbell, D.: TOPIM – Modelling hurricane Intensity in the Caribbean Region, EGU General Assembly 2025, Vienna, Austria, 27 Apr–2 May 2025, EGU25-6831, https://doi.org/10.5194/egusphere-egu25-6831

- Dr. Samantha Hallam is funded by ObsSea4Clim "Ocean observations and indicators for climate and assessments" is funded by the European Union, Horizon Europe Funding Programme for Research and Innovation under grant agreement number: 101136548
- TOPIM project is part of Ireland's 'Our shared Ocean Programme" and is funded by the Department of Foreign Affairs though Ireland's development cooperation programme, Irish Aid, administered and managed by the Marine Institute on behalf of Irish Aid/

THE UNIVERSITY OF THE WEST INDIES

POLICY BRIEF

Older Adults, Chronic Disease and Hurricane Melissa

No. 8 - December 11, 2025
Denise Eldemire-Shearer

EXECUTIVE SUMMARY

Older persons are vulnerable to the impacts of hurricanes in several ways. They lose roofs, homes and surroundings, but the effects are worsened by having chronic diseases which require medications and health care which is disrupted - so are family supports, leaving them alone. Disaster planning at all stages needs to include the specific requirements of older persons, as they are likely to have age-specific needs in addition to the general needs.

INTRODUCTION

- Hurricane Melissa made landfall in Jamaica as a catastrophic Category 5 storm on October 28, 2025, causing unprecedented destruction, disrupting medical services, food supplies, and housing, and further impacting family relationships.
- Older persons (60+) have been identified as a vulnerable group in such situations (PAHO 2012). Seventy-two percent (72%) of Jamaican seniors have at least one chronic disease, commonly diabetes, hypertension, arthritis and heart disease, and rely mainly on the public system for prescriptions and managed care (MAWC, 2017).
- Older persons have specific needs in disasters due to having chronic diseases, which need continuous management. In hurricanes such as Melissa, many health services are disrupted, roads are blocked, and care is not readily available. Older persons often depend on family support, physical, emotional and financial, which is also disrupted, leaving them without their usual sources of support.
- Older persons can experience declines in mental and physical activity, decreased strength, and increased functional limitations, making them more vulnerable in disasters and thereby requiring specific interventions to aid in their recovery.

MAKING THE CASE

- Hurricane Melissa has impacted seniors as medication and other medical supplies (e.g., glasses and canes) have been destroyed or lost. Dietary requirements are affected by disruptions to food and water supplies, impacting the diets of those with chronic disease. Mobility has been further affected by the blocked roads, and wet conditions increasing the pain and suffering of arthritis, further aggravating their poor conditions.

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POLICY BRIEF

Older Adults, Chronic Disease and Hurricane Melissa

MAKING THE CASE

- Mental Health is affected due to the impact and losses, and uncertainty of what`s next including anxiety, depression and adjustment disorders. Disruptions have occurred in familiar family supports as they, too, have had their lives disrupted and are not available to help older family members or those with a disability so the older persons worry about them too.
- All this is aggravated by the difficulty of community workers in accessing some communities to get to the older persons so they feel left out. As in Gilbert and Ivan, older persons have been reluctant to leave their location to access relief for fear of predators taking whatever they have left. Older persons, especially the older ones 80+, because of limitations in mobility, have difficulty standing in lines waiting for relief supplies.

RECOMMENDATIONS

- **Pre-Disaster:** Community groups (public and private, including Non-Governmental Organisations and Churches) should have lists of where vulnerable older persons, especially those living alone, are located, so as to offer targeted assistance before and after.
- **Short-Term (0-6) Months** Relevant agencies such as the Office of Disaster Preparedness & Emergency Management (ODPEM), the National Council for Senior Citizens, Local Government and the Ministry of Health and Wellness need to do a quick situational analysis identifying where older persons are.
- MOHW, through the medical teams, especially Community Health Aides, need to get medication to them, and, where possible, accompanied by medical checks, including of cuts and stitches to prevent infection and tetanus.
- Residential facilities and shelters need to be monitored for the health care needs of older persons, including items not usually included in relief, such as adult diapers, incontinent pads and basic medications.
- Activities by MOHW should be coordinated with other relief activities, including the Ministries of Labour and Social Security and Local Government (MLSC), to ensure that older persons have adequate supplies, including mobility aids.
- MOHW needs to ensure that older persons are included in disease surveillance activities. Health education is key to ensuring they are aware of potential illnesses, especially infectious diseases and how to prevent them. Mental Health support to reduce the emotional impact of going through Melissa is critical. It is also important to see older persons as a resource for others, as they have survived previous disasters and are resilient.
- **Medium (6-18) Months:** Re-establishment of full health services to ensure continuity of chronic disease care, accompanied by a communication plan to inform seniors of changes is necessary. Seniors should be referred to Relevant Social Services for rehabilitation grants to reduce stress and re-establish a sense of normality. Mental health services, to reduce stress and promote wellness should be continued. In previous hurricanes, there has been abandonment of older persons in shelters, so ensuring relocation where necessary is important.
- **Long-Term:** Ensure that older persons are included in disaster planning. Maintain lists of where vulnerable older persons, those who live alone, recently hospitalised, bedridden or frail, live and plan for interventions before and after.
- Important to make plans to address the causes of the impact of disasters, including addressing climate change and ensuring the recovery and build back efforts are climate resilient.

CONCLUSIONS

In conclusion, disaster management in taking vulnerable groups into consideration needs to be aware of the specific needs of older persons, in addition to them having the same food, water, safety, housing and transport needs as everyone else. Furthermore, the root causes, such as climate change and resilience, need to be addressed.

- PAHO (2012). Guidelines for Mainstreaming the needs of older persons in disaster situations in the Caribbean: A contribution to World Health Day 2012, Ageing and Health. Area on emergency preparedness and disaster relief.
- Mona Ageing and Wellness Centre (2017). Situational Analysis Of (60+) In Jamaica

THE UNIVERSITY OF THE WEST INDIES

POLICY BRIEF

What We Learn About Hurricane Melissa From Two Automatic Weather Stations at The UWI, Mona

No. 9 - December 11, 2025

Jayaka D. Campbell, Michael A. Taylor and Tannecia S. Stephenson

Photo Archive - March 23, 2021: Mr. Evan Thompson (Director, Meteorological Service of Jamaica) explains feature of the newly installed Automatic Weather Station at a brief ribbon-cutting hosted prior to the Virtual Launch. Listening keenly, from left to right: Prof. Dale Webber (Principal, The UWI Mona), Dr. Tannecia Stephenson (Head, Department of Physics), the Hon. Pearnel Charles Jr , Minister of Housing, Urban Renewal, Environment and Climate Change, Ms Claire Bernard (Deputy Director General, the Planning Institute of Jamaica) and Prof. Michael Taylor (Dean, Faculty of Science and Technology). Photo credit: Spalding. (https://www.mona.uwi.edu/fst/uwi-mona-launches-its-aws) In public domain.

EXECUTIVE SUMMARY

Two automatic weather stations at The University of the West Indies, Mona Campus recorded weather conditions during the period of October 22-30, 2025. The stations are located at The UWI Bowl and on the roof of the Physics Department. The data capture the meteorological conditions associated with Hurricane Melissa that made landfall on October 28, 2025, and brought extreme wind speeds and torrential rainfall to the island. The event produced rainfall totals in a single day, which exceeded the normal October monthly average, along with hurricane-force winds.

INTRODUCTION

- The UWI Mona officially launched its Automatic Weather Station (AWS) on March 31, 2021. The AWS, sited in the vicinity of The UWI Bowl, was installed under a Memorandum of Agreement between The UWI, Mona and the Meteorological Service of Jamaica (MSJ), becoming part of the MSJ's island wide network.
- The station additionally provides climate data for research purposes and is being used as the pilot for an innovative solution being spearheaded jointly by the Climate Studies Group, Mona (CSGM) in the Department of Physics, and MSJ for electronic real-time data transmission. The installation was funded through a World Bank project under the Pilot Programme for Climate Resilience (PPCR), which was executed by the Planning Institute of Jamaica.
- A second station was also mounted on the roof of the Department of Physics under a research project initiative to support climate and energy research.

THE UNIVERSITY OF THE WEST INDIES

POLICY BRIEF

What We Learn About Hurricane Melissa From Two Automatic Weather Stations at The UWI, Mona

OBSERVATIONS

Temperature: Temperature readings remained consistently warm across both stations during the nine-day observation period.

- The UWI Bowl station recorded an average temperature of 25.4°C, with values ranging from a low of 21.3°C to a high of 32.8°C.
- The Physics Roof station showed slightly warmer conditions, averaging 25.7°C with a narrower range from 22.6°C to 30.5°C. The elevated Physics Roof location exhibited greater temperature stability, likely due to reduced surface cooling effects and better exposure to ambient air masses.

Wind Analysis: The Physics Roof station recorded the highest wind gust of 114.3 km/h at 2:05 PM, representing violent storm conditions on the Beaufort scale and **approaching Category 1 hurricane intensity**. This wind speed is capable of causing widespread structural damage, including uprooting trees as well as damaging roofs on well-built structures.

- The UWI Bowl station recorded a maximum gust of 101.4 km/h at 5:15 PM, occurring three hours later than the Physics Roof peak.
- The elevated position of the Physics Roof station contributed to the higher recorded wind speeds, as rooftop locations experience reduced surface friction and greater exposure to the full force of hurricane winds.
- Average wind speeds during the period were relatively modest—8.3 km/h at UWI Bowl and 7.0 km/h at the Physics Roof—highlighting the exceptional nature of Hurricane Melissa's impact on October 28.

Rainfall Analysis: The UWI Bowl station recorded extraordinary rainfall totals during Hurricane Melissa's passage. The station measured 607.2 mm of total rainfall between October 22-30, with 345.0 mm (56.8% of the total) occurring on October 28 alone during the hurricane's landfall.

- According to the Meteorological Service of Jamaica (1991-2020 climatology), Kingston's normal October rainfall is 234 mm. **Hurricane Melissa's single-day total of 345.0 mm represents 147% of the entire normal October monthly rainfall—meaning the hurricane delivered nearly one and a half months' worth of typical October rainfall in just 24 hours.** The total nine-day rainfall of 607.2 mm exceeds 2.6 times the normal October monthly total.
- The maximum instantaneous rain rate of 286.8 mm/hr was recorded at 8:50 PM on October 28, indicating a period of extreme torrential downpour associated with the hurricane's most intense rain-bands. Rain rates of this magnitude overwhelm drainage systems, cause severe flash flooding, trigger landslides on steep terrain, and create life-threatening conditions.
- For context, rainfall exceeding 50 mm/hr is considered very heavy; **the observed rate of 286.8 mm/hr is nearly six times this threshold and represents one of the most intense short-duration rainfall events** that can occur in tropical cyclones.

CONCLUSIONS

Hurricane Melissa underscores the need for real-time weather data collection. The weather variables measured at The UWI, Mona highlight the opportunities that such a system will allow. Hurricane Melissa's single-day total on The UWI, Mona Campus was 345.0 mm - 147% of the entire normal October monthly rainfall. Category 1 hurricane winds were experienced on campus and were sufficient to uproot trees and impact light poles. An expansion of real time weather data collection will enable Jamaica to learn more about extreme events impacting our shores.

THE UNIVERSITY OF THE WEST INDIES

POLICY BRIEF

A Reparatory Justice Approach to Land Reform for Climate Resilience Post-Hurricane Melissa

No. 10 - December 11, 2025

Marcus Goffe, Yentyl Williams and Dane Malcolm-Buchanan

EXECUTIVE SUMMARY

Jamaica's extreme vulnerability to hurricanes can significantly be traced to slavery, colonialism and the plantation economy. The colonial machinery forced Indigenous people off their lands and built settlements along the coast and in low-lying areas, often near rivers and streams. During slavery, the majority had no land tenure. After emancipation from slavery, the majority of the population was forced into small, marginal areas, without any legal rights to the land and building codes were non-existent or not enforced. As a result, "squatting" in informal settlements has been a major problem for centuries which exacerbates Jamaica's climate resilience as a country. Jamaica's National Squatter Survey (NSS), which is still ongoing, already shows that an estimated 600,000 people (approximately 20% of the population) live in informal settlements around the island. The data shows that Kingston and St. Andrew have the highest concentration (62%), followed by St Catherine. However, rural areas account for over 60% of the total number of these settlements. This therefore represents a significant part of the population which is extremely vulnerable to destruction by hurricanes and other weather extremes. Informal settlements often lack basic services (60% lack no access to proper sanitation and 30% lack reliable electricity) and are located in flood-prone areas, like Portland's riverbanks. Deforestation and improper waste disposal in squatter communities exacerbate these vulnerabilities. Substantial land reform is that provides land tenure and access to building materials approved to withstand Category 5 or stronger hurricanes, floods and other natural disasters.

INTRODUCTION

- Hurricane Melissa made landfall in Jamaica as a catastrophic Category 5 storm on October 28, 2025, causing unprecedented destruction.
- The hurricane highlighted the high number of Jamaicans who reside in board housing and their resultant extreme vulnerability to climate change and damage from intensified hurricanes, more intense than we have historically been accustomed.
- Many concrete structures also failed as a result of the hurricane, which indicates inadequate building standards, which begs the question about the enforcement of the building code.
- The severity of the damage and destruction caused by the hurricane highlights once again the lack of security of land tenure and inadequately constructed homes made of building material capable of withstanding a Category 5 hurricane.

THE UNIVERSITY OF THE WEST INDIES

POLICY BRIEF

A Reparatory Justice Approach to Land Reform for Climate Resilience Post-Hurricane Melissa

MAKING THE CASE

Hurricane Melissa exposed some of the vulnerabilities/gaps in:

- Land tenure/land security; Land and housing distribution;
- The extent to which the high number of board houses in Jamaica affects the climate resilience of the nation;
- Jamaica's hurricane preparedness. It may be considered counterproductive to rebuild inadequate board and zinc structures that cannot withstand a Category 5 or stronger hurricane.
- Jamaica's Building Codes. Even some concrete structures which were approved for construction, failed, highlighting either the obsolescence of the codes in addressing Category 5 hurricanes or the need to ensure greater adherence to them.

RECOMMENDATIONS

The following are some recommendations emerging from the experience with Hurricane Melissa (and other weather extremes that have impacted Jamaica):

- Mapping of the more environmentally vulnerable lands and communities is necessary to start adequately preparing those lands, the buildings and the communities thereon, for Category 5 hurricane and other weather extremes. (Short-term)
- Explore different, more environmentally sound and disaster-resistant building materials (Short to Medium-term)
- Reclaim commons, in fisheries, agriculture, forests, or urban spaces through justice-oriented frameworks that prioritize community control, dignity, and ecological sustainability (Medium term)
- Encourage and facilitate community-based forms of governance that provide more secure, equitable and environmentally protected outcomes. (Medium to long term)
- Land reform and redistribution must center historical land occupation and use, rather than imposing bureaucratic or market-driven solutions. Recognise possessory rights to protect against eviction through appropriate policy and legislation; issue forms of legal recognition of possessory title. Regularisation should include providing secure tenure, mass land titling, basic services, and integration into city planning. (Medium to Long term)
- Redistribution must confront intersecting systems of race, class, caste, and gender and properly cater for children and community building. (Long term)
- Reform planning processes to be community-centered, allowing increased community participation in decision-making and community responsibilities towards the commons (Short, Medium and Long term)

* Short-term (0–6 months); **Medium-term (6–18 months): ***Long-term (18+ months)

CONCLUSIONS

Concomitant with the journey on the 'Road to Republic' but with urgent need to boost Jamaica's climate resilience now, Jamaica needs to redistribute Crown Lands and other government-owned lands to persons in informal settlements, by allocating lands with land titles to informal settlers, to repair the unrepaired harm done to the victims of the Crown's crimes against humanity of slavery and colonialism and to increase climate resiliency in Jamaica.

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POLICY BRIEF

Strengthening Vector-borne Disease Surveillance Pre- and Post-Hurricane

No. 11 - December 11, 2025

Sheena Francis, Denielle Boothe, Georgiana Gordon-Strachan, Jhordanne Jones, Michael Taylor and Tannecia Stephenson

EXECUTIVE SUMMARY

Caribbean Small Island Developing States (SIDS) face multiple, interlinking climate-driven health risks, where increasingly intense hurricanes interact with fragile health systems, amplifying vector-borne, water-borne, zoonotic, respiratory, and non-communicable diseases (NCDs). Flooding, damaged infrastructure, and disrupted health care drive factors that influence the transmission/ contraction of diseases and can additionally cut off access to primary healthcare for essential treatment for NCDs. The introduction of non-native invasive species adds new vector threats, requiring continuous surveillance and adaptive control. The Category 5 hurricanes Irma, Maria, Beryl, and Melissa, experienced in the past 5 years, indicate rising regional hazards that overwhelm national response capacity and limit the ability of countries to support each other between events. To protect the region, a coordinated, climate-informed health agenda is needed, linking multi-disease surveillance, WASH resilience, and sustained vector control with regional financing, disaster insurance, and measurable annual goals for preparedness. Strengthening health systems before storms—not only reacting after impact—is critical to building long-term resilience against escalating climate-sensitive disease threats.

INTRODUCTION

- High intensity hurricanes making landfall have become increasingly frequent in the recent years. Hurricane Melissa made landfall in Jamaica as a catastrophic Category 5 storm on October 28, 2025, causing unprecedented destruction.
- The Caribbean remains endemic to several vector-borne diseases including dengue, chikungunya, and Zika. Countries in the region routinely report outbreaks of water- and food-borne illnesses, such as leptospirosis, cholera (where present), and acute diarrhoeal infections. Evidence suggests that disease outbreaks tend to rise following hurricanes, likely due to flooding and associated environmental changes.
- The cost of managing healthcare post disaster is enormous for economically challenged countries.
- Are there policies/ systems that can be implemented to positively support post-hurricane healthcare challenges?

THE UNIVERSITY OF THE WEST INDIES

POLICY BRIEF

Strengthening Vector-borne Disease Surveillance Pre- and Post-Hurricane

MAKING THE CASE

- The region has been hit by high intensity hurricanes. Is this a new demonstratable trend?
  - Hurricanes Melissa, Beryl, Maria and Irma, occurred between 2017 – 2025, and impacted Caribbean countries as a category 5.
- These high intensity climate-systems are costly for the country not just for infrastructural repair/damages, but also healthcare. Hurricane Dorian that made landfall in the Bahamas To repair health facilities alone exceeded $ USD 20 million
- Heavy rainfall and flooding often create conditions that increase habitats for mosquitoes and other aquatic vector insects. These expanded habitats can intensify the transmission of existing vector-borne diseases. In addition, these climate events are frequently linked to heightened risks of water-borne, zoonotic, and respiratory diseases.
- Flooding and infrastructural damage can further disrupt healthcare services, which can cut off access to primary healthcare for essential response and or disease treatment for the affected populations.
- Leptospirosis and increased in dengue incidence were the primary diseases reported following 12 hurricanes that made landfall in the Caribbean between 1963 – 2025.
- Caribbean countries have long advocated for integrative vector-control programmes, however storms trigger multisectoral public health challenges that extends beyond vector-control diseases.

RECOMMENDATIONS

The following are some recommendations emerging from the experience with Hurricane Melissa (and other weather extremes that have impacted Jamaica):

- Build climate-informed, multisectoral strategies that link entomological and epidemiological surveillance, WASH, and social welfare.
  - Surveillances should occur pre- and post- hurricane.
  - Surveillances should not report on a single pathogen vector-borne diseases, but take into consideration multiple diseases that may be transmitted in the result of a storm.
  - Future changes need to be data driven
- Have targets to reduce disease outbreaks yearly, pre- hurricane. Implement strategies and goals that will facilitate this.
- Recognize the Caribbean as a whole instead of independent countries, affected by similar challenges. Hurricanes can affect multiple countries, as observed with Hurricanes Melissa, Maria and Irma
- Implement a multi-hazard preparedness system that factors climate and health and considers sub-island ecological/ disease vulnerable zones.
  - Identify stations/ shelters that may be used to access healthcare services to receive/give aid from military or for medical personnel.

All challenges here, should be treated as short to long term, and be routinely assessed for the practicality and usefulness, with time.

* Short-term (0–6 months); **Medium-term (6–18 months): ***Long-term (18+ months)

CONCLUSIONS

For sustained effective health-system resilience, a climate–health agenda for Caribbean SIDS and a proactive system are necessary. This includes climate-informed, multisectoral strategies that link entomological and epidemiological surveillance, WASH, and social welfare, recognizing the Caribbean as a whole, to ensure resilience against the full spectrum of climate-sensitive diseases threatening the region.

THE UNIVERSITY OF THE WEST INDIES

POLICY BRIEF

Build-Back-Resilient through Analysing Historic Vernacular and Modern Architecture Hurricane Strategies

No. 12 - December 23, 22025

Patricia Elaine Green

Hurricane Melissa caused minimal damage to the Jamaica Vernacular Architecture "Wynter House" in St. Elizabeth, Jamaica. Photo credit Wattle and Red Earth (WARE) Collective Museum of Traditional Building and Craft.

EXECUTIVE SUMMARY

The increased intensity of Caribbean hurricanes and the wide-scale loss of buildings require scientific analyses to inform re-building strategies. Caribbean architecture history and evolution demonstrate a tradition of building back resilient for the small-scale private housing, including larger-scale housing, public, and religious buildings. This included methodologies for anchorage on the land, site orientation, building material, types of opening, roof profiles, immediate landscape environment context, among others. Resilience architecture embodied before, during, and after hurricane strategies, including oral knowledge transference. In Jamaica the literature referenced the English learning lessons from the Spaniards and both from the Tainos, with a continuous knowledge thread of the majority population of enslaved Africans designing and constructing resilient hurricane and earthquake architecture across the centuries. These were woven into Jamaica Building Laws. Currently, new technologies have appeared on the Jamaica architecture landscape. Allow the science to demonstrate architecture resilience in higher recorded hurricane intensities for current rebuilding activities.

INTRODUCTION

- Hurricane Melissa made landfall in Jamaica as a catastrophic Category 5 system on October 28, 2025, causing unprecedented destruction.
- The media focused on the widespread destruction of modern and historic buildings with little attention to the architecture that survived.
- Post-disaster assessments should also include the surviving architecture alongside those damaged or destroyed.
- Scientific analyses should be undertaken on both damaged and surviving architecture to inform strategies to build-back-resilient to mitigate the increasing intensity of hurricanes.

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POLICY BRIEF

Build-Back-Resilient through Analysing Historic Vernacular and Modern Architecture Hurricane Strategies

MAKING THE CASE

Hurricane Melissa exposed some architecture vulnerabilities/gaps through:

- Methodologies for anchorage on the land.
- Building material and construction technology.
- Types of openings and roofing.
- Immediate landscape environment context

RECOMMENDATIONS

The following are some recommendations emerging from the experience with Hurricane Melissa (and other weather extremes that have impacted Jamaica):

- **Inspect on-site** historic/traditional, modern and hybrid architecture that was impacted, particularly those with Hurricane Melissa devastated roof and walling. (short-term)
- **Include inspection** of historic/traditional, modern and hybrid architecture with minimal to no Hurricane-Melissa damage. (short-term)
- **Document evidence of architecture** before, during, and after preparation and practices using images and interviews. (short- to medium-term)
- **Undertake scientific simulation exercises** to analyze Hurricane Melissa field and oral evidence. (medium-term)
- **Determine through simulations** mitigation strategies. (medium-term)
- **Use the scientific evidence** to enhance and improve the building codes. (medium-term)
- **Publish** findings. (short-, medium-, and long-term)

* Short-term (0–6 months); **Medium-term (6–18 months): ***Long-term (18+ months)

CONCLUSIONS

Build-Back-Resilient after Hurricane Melissa must include scientific analyses of the architecture to mitigate damages during Category-5 and predicted increased hurricane intensities. The analyses should engage adaptation through examining architectural traditional practices and modern interventions on the Caribbean cultural landscape to help save lives, protect livelihoods, and maintain economic stability during and after hurricane seasons.

THE UNIVERSITY OF THE WEST INDIES

POLICY BRIEF

Protecting Student Achievement from Hurricanes in the Caribbean

No. 13 - December 23, 2025

Sheena Francis, Denielle Boothe, Georgiana Gordon-Strachan, Jhordanne Jones, Michael Taylor and Tannecia Stephenson

EXECUTIVE SUMMARY

Caribbean Small Island Developing States (SIDS) face multiple, interlinking climate-driven health risks, where increasingly intense hurricanes interact with fragile health systems, amplifying vector-borne, water-borne, zoonotic, respiratory, and non-communicable diseases (NCDs). Flooding, damaged infrastructure, and disrupted health care drive factors that influence the transmission/ contraction of diseases and can additionally cut off access to primary healthcare for essential treatment for NCDs. The introduction of non-native invasive species adds new vector threats, requiring continuous surveillance and adaptive control. The Category 5 hurricanes Irma, Maria, Beryl, and Melissa, experienced in the past 5 years, indicate rising regional hazards that overwhelm national response capacity and limit the ability of countries to support each other between events. To protect the region, a coordinated, climate-informed health agenda is needed, linking multi-disease surveillance, WASH resilience, and sustained vector control with regional financing, disaster insurance, and measurable annual goals for preparedness. Strengthening health systems before storms—not only reacting after impact—is critical to building long-term resilience against escalating climate-sensitive disease threats.

INTRODUCTION

- High intensity hurricanes making landfall have become increasingly frequent in the recent years. Hurricane Melissa made landfall in Jamaica as a catastrophic Category 5 storm on October 28, 2025, causing unprecedented destruction.
- The Caribbean remains endemic to several vector-borne diseases including dengue, chikungunya, and Zika. Countries in the region routinely report outbreaks of water- and food-borne illnesses, such as leptospirosis, cholera (where present), and acute diarrhoeal infections. Evidence suggests that disease outbreaks tend to rise following hurricanes, likely due to flooding and associated environmental changes.
- The cost of managing healthcare post disaster is enormous for economically challenged countries.
- Are there policies/ systems that can be implemented to positively support post-hurricane healthcare challenges?

THE UNIVERSITY OF THE WEST INDIES

POLICY BRIEFS

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POLICY BRIEF 1: Strengthening Local Meteorological Services To Improve Disaster Preparedness	Prof. Tannecia Stephenson is a co-Director of the Climate Studies Group Mona and Deputy Dean of the Faculty of Science and Technology. Mrs. Jacqueline Spence-Hemmings is Head of Climate Services, Meteorological Service Branch, Ministry of Water, Environment and Climate Change. Prof. Michael Taylor a co-Director of the Climate Studies Group Mona and Dean of the Faculty of Science and Technology. Dr. Jayaka Campbell is a senior climate modelling specialist in the Climate Studies Group Mona and senior lecturer in the Department of Physics.
POLICY BRIEF 2: Reducing Water-related Risk through Household Strategies	Dr. Shaneica Lester is a Lecturer at The University of the West Indies, Mona, whose work advances water security, environmental governance and climate resilience in the Caribbean.
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POLICY BRIEF 4: Strengthening Jamaica's Biosecurity for Post-Hurricane Recovery	Mr. Damion Whyte is an assistant lecturer in the Department of Life Sciences at The University of the West Indies, Mona
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POLICY BRIEFS

ABOUT THE AUTHORS

POLICY BRIEF 7: Tools for Strengthening Disaster Preparedness and Caribbean Resilience - TOPIM	Mr. Randy Aird is pursuing a PhD in Applied Physics with a focus on tropical cyclones and is a member of the Climate Studies Group, Mona at The University of the West Indies. Dr. Samantha Hallam is the lead Principal Investigator on the TOPIM project which is developing and rolling out the TOPIM model across the Caribbean to assist with hurricane intensity prediction.
POLICY BRIEF 8: Older Adults, Chronic Disease and Hurricane Melissa	Prof. Denise Eldemire-Shearer is Professor of Ageing and Public Health and the Executive Director of Mona Ageing and Wellness Centre.
POLICY BRIEF 9: What We Learn About Hurricane Melissa From Two Automatic Weather Stations at The UWI, Mona	Dr. Jayaka Campbell is a senior climate modelling specialist in the Climate Studies Group Mona and senior lecturer in the Department of Physics. Prof. Michael Taylor a co-Director of the Climate Studies Group Mona and Dean of the Faculty of Science and Technology. Prof. Tannecia Stephenson is a co-Director of the Climate Studies Group Mona and Deputy Dean of the Faculty of Science and Technology.
POLICY BRIEF 10: A Reparatory Justice Approach to Land Reform for Climate Resilience Post-Hurricane Melissa	Marcus Goffe, Yentyl Williams and Dane Malcolm-Buchanan
POLICY BRIEF 11: Strengthening Vector-borne Disease Surveillance Pre- and Post-Hurricane	Dr. Sheena Francis is a researcher at the Caribbean Centre for Research in Biosciences, specialising in vector biology, resistance mechanisms, and control strategies. Denielle Boothe is an MSc candidate in Biomedical Research whose work builds on a background in Animal Biology, with a focus on vector biology. Dr Georgiana Gordon-Strachan is the Director of Tropical Metabolism Research Unit at the Caribbean Institute for Health Research, at the University of the West Indies and specializes in epidemiology, health policy, health services research, research methods, and Biostatistics. Dr. Jones is a UWI-CCRIF postdoctoral research fellow with the Climate Studies Group Mona, and specializes in hurricane and and climate variability. Prof. Michael Taylor a co-Director of the Climate Studies Group Mona and Dean of the Faculty of Science and Technology. Prof. Tannecia Stephenson is a co-Director of the Climate Studies Group Mona and Deputy Dean of the Faculty of Science and Technology.