Research for Action on Climate Change and Health in the Caribbean:
A Public, Private, People's and Planetary Agenda

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Suggested citation: Allen CF, West RM, Gordon-Strachan G, Hassan S, McFarlane S, Polson-Edwards K, Thomas A, Hospedales CJ, Dubrow R. Research for Action on Climate Change and Health in the Caribbean: A Public, Private, People's and Planetary Agenda. Research for Action on Climate Change and Health in the Caribbean Project, 2024.

10. COLLABORATION BETWEEN AGENCIES

10.1. WHAT IS HAPPENING?

Caribbean countries and territories, as Small Island Developing States (SIDS), have severe resource limitations, making it very important that they pool and share resources in a coordinated way (Lichtveld, 2021). In addition, addressing the effects of climate change on health requires multiple types of interventions and expertise. If health impacts due to climate change are to be reduced, it is important that government, civil society and private sector agencies reduce the practice of operating in silos and instead form active partnerships. Adaptation to the various health risks posed by climate change must also involve collaboration between the health sector and other sectors, especially agencies responsible for planning, infrastructure, disaster management and meteorological data collection and forecasting. All sectors must take account of the likely impacts of climate change on health when developing their plans. In this report, we have examined the roles of various sectors, including water, sanitation and hygiene (Chapter 3), agriculture, food safety and security (Chapter 12), marine resources (Chapter 14), climate-friendly health-promoting infrastructure (Chapter 15) and smart health facilities (Chapter 16).

There are several important examples of Caribbean collaboration between agencies to address climate change and health challenges.

Caribbean Action Plan on Health and Climate Change

The Caribbean Action Plan on Health and Climate Change 2019–2023 is the only regional policy that addresses both health and climate change together. It was developed in consultation with countries through preparatory meetings and by convening regional health and environment leaders of the Caribbean during the Third Global Conference on Health and Climate Change, held in Saint George's, Grenada, on 16–17 October 2018. It aims to protect the health of Caribbean SIDS populations from the adverse effects of climate change by developing climate-resilient health systems, by increasing awareness of the adverse health effects of climate change, by mainstreaming funding opportunities to support countries, and by promoting intersectoral mitigation actions in the health sector. The plan proposes several actions at the national, regional and global levels. Among these, it singles out collaboration, advocating that actors in the health sector "Engage, coordinate, and collaborate with other sectors and development partners for resources to address health and climate change". Further detail is provided in Chapter 18, "Government engagement" (PAHO, 2019).

EU/CARIFORUM Project – Strengthening Climate Resilient Health Systems

In an effort to assist in the implementation of the Caribbean Action Plan on Climate and Health, in 2020, the European Union (EU) in collaboration with the Caribbean Community (CARICOM), funded a multi-partner grant – Strengthening Climate Resilient Health Systems – to six Caribbean institutions (see Table 1). Actions undertaken as part of this project focus on enhancing surveillance systems; supporting public health systems that prioritise adaptation and mitigation needs; generating climate and health data and facilitating communication between government and the public; developing national climate-sensitive early warning systems (EWSs); training personnel working with water, sanitation and food systems; and developing climate-resilient food, water and sanitation safety plans.

Table 1: EU/CARIFORUM Strengthening Climate Resilient Health Systems grant implementation partners

Partner	Contributions/linkages to the project	Examples of multidisciplinary approach
Caribbean Community (CARICOM)	• Organisation of climate change and health youth leadership programmes and engagement of ministries • Empowerment of health leaders and strengthening of institutional structures on climate change and health	Engagement of young people from many disciplines, including health, with other sustainable development and climate partners
Caribbean Community Climate Change Centre (CCCCC)	• Development of climate and health concept notes for financing activities in climate change and health and communicating the importance of the climate and health nexus • Strengthening the capacities and coordination to access resources and improve communication	Formation of links between the health sector and climate, planning and financing activities across the Caribbean
Caribbean Institute for Meteorology and Hydrology (CIMH)	• Development of enhanced EWSs and climate and health bulletins • Development and provision of climate-informed health services	Publication of climate and health bulletins, making linkages between the health and climate sectors
Caribbean Public Health Agency (CARPHA)	• Creation of climate and health EWSs • Creation of climate-resilient water, sanitation and food safety plans • Implementation of EWSs for climate-related diseases and conditions	Development of systems to collect data across multiple disciplines
Pan American Health Organization (PAHO) (lead implementing partner)	• Development of health vulnerability and adaptation assessments, health chapters in National Adaptation Plans and health co-benefits tools • Development of climate-resilient water, sanitation, and food safety plans • Promotion of health in the intersectoral climate change agenda and the creation and use of evidence for planning and decision-making	Formation of interministerial committees for conducting national assessments and developing national plans
University of the West Indies (UWI)	• Organisation of climate change and health leadership programmes • Strengthening of institutional structures on climate change and health	Formation of a cadre of future climate and health leaders across different sectors and disciplines

Source: Adapted from Drewry and Oura (2022), licensed under CC BY-NC-ND 4.0 DEED.

To implement this project, it is necessary to form multisectoral and interdisciplinary teams that will be led by regional organisations and national ministries of health (Drewry and Oura, 2022). There are 17 beneficiary countries (Caribbean Forum [CARIFORUM] states[1] and Cuba).

The project has four components (Drewry, 2021; Drewry and Oura, 2022; Hassan, 2021a; PAHO, n.d.):

[1]Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, the Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname and Trinidad and Tobago.

- Adaptation and testing of PAHO/World Health Organization (WHO) tools to estimate health co-benefits (led by PAHO);
- Inclusion of comprehensive health chapters in National Adaptation Plans (led by PAHO and CCCCC);
- Improved surveillance capacity of professionals working in the health sector and health-determining sectors (led by CARPHA and CIMH);
- Strong effective climate change leadership (led by CARICOM and UWI).

A final cross-cutting element is to promote awareness around climate change and health by providing information to key target populations about the importance of climate, health and the environment. This work is led by PAHO, CARICOM and CCCCC.

PAHO/WHO tools used to estimate health co-benefits include the Health Risk Assessment of Air Pollution tool (AirQ+), Health Economic Assessment Tool (HEAT) for active transport and Green Urban Spaces (Green UR) tool. These tools will give decision-makers necessary data to understand the co-benefits of reductions in air pollution, and increased active transport and parks and open spaces, thus allowing for the development of effective polices and surveillance systems (Drewry and Oura, 2022).

Early warning systems

Agencies have collaborated to develop EWSs that provide alerts on climate-related health risks. Climate-informed disease surveillance platforms have been developed, along with novel ways of reporting integrated surveillance information.

The CIMH and the Instituto de Meteorología de la República de Cuba (INSMET) have both focused on predicting and preventing adverse health outcomes through collaboration with the health sector, public utilities, academia and disaster management agencies (Allen et al., 2021a). For example, INSMET has established a multi-agency Group on Climate and Health, resulting in research projects and publications based on combining climate and health data (Linares-Vega et al., 2020; Ortiz et al., 2015). INSMET also communicates to the public information about predicted climate-related disease outbreaks.

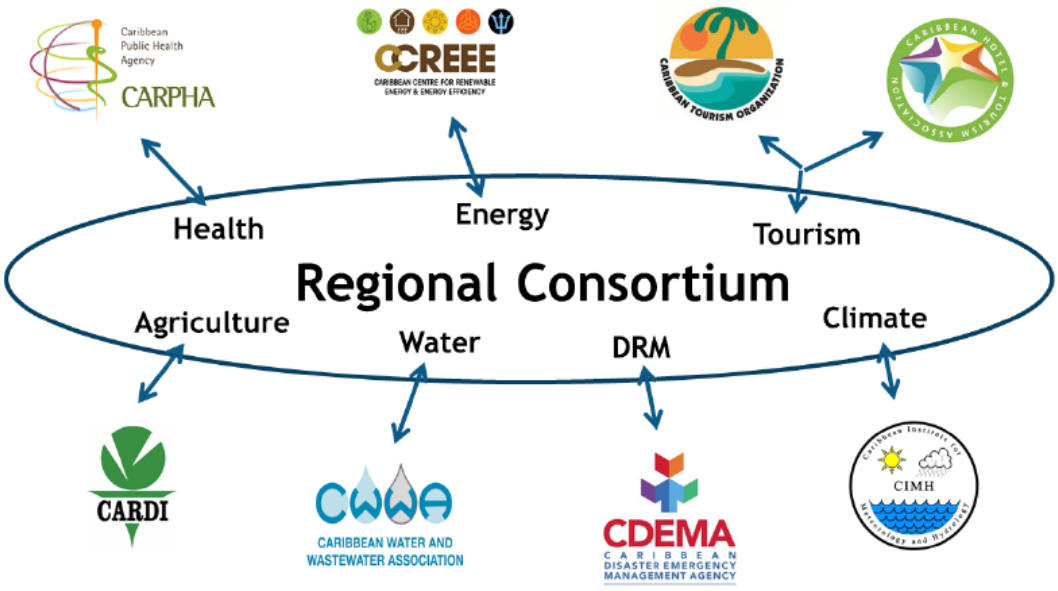
The Early Warning Information Systems Across Climate Timescales (EWISACTs) programme involves the development of EWSs for different sectors (e.g. health, agriculture) and issues (e.g. drought, coral reefs). The Consortium of Regional Sectoral EWISACT Coordination Partners was formed in 2017 under the three-year (2014–2017) Building Regional Climate Capacity in the Caribbean programme. The consortium is a mechanism to drive the co-design, co-development and co-delivery of tailored climate products and services in the agriculture and food security, disaster risk management, energy, health, tourism and water sectors in the Caribbean. Since 2015, the ad hoc meetings of the consortium have provided an important opportunity for seven lead regional technical sectoral agencies (see Figure 1), as well as regional observer organisations,[2] to raise sectoral and governance issues, positions and recommendations related to weather and climate in a cross-disciplinary context within the Caribbean Regional Climate Centre.[3] These sessions facilitate the consultative and participatory processes necessary for successful joint development and implementation of EWSs and are a key

[2]Regional observer organisations include technical organisations (e.g. the CCCCC and the Climate Studies Group at the University of the West Indies, Mona Campus), sector organisations (e.g. the PAHO and the Agricultural Alliance of the Caribbean) and geo-political coordination organisations (e.g. the CARICOM Secretariat and the Organisation of Eastern Caribbean States Commission).

[3]The CRCC serves as the World Meteorological Organization's Caribbean branch. It is housed at the CIMH (https://rcc.cimh.edu.bb/about/about-the-rcc/).

enabler of the significant strides made to date towards the development of sectoral EWSs in the region (CIMH, 2017, 2020; Trotman et al., 2021).

Figure 1: Consortium of Regional Sectoral Early Warning Information Systems Across Climate Timescales (EWISACTs) Coordination Partners



Consortium partners: Caribbean Public Health Agency (CARPHA), Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE), Caribbean Tourism Organization (CTO), Caribbean Hotel and Tourism Association (CHTA), Caribbean Agricultural Research & Development Institute (CARDI), Caribbean Water and Wastewater Association (CWWA), Caribbean Disaster Emergency Management Agency (CDEMA) and Caribbean Institute of Meteorology and Hydrology (CIMH).

Source: CIMH (2017).

The EWISACTs Consortium has developed sector-/issue-specific climate bulletins that include key messages from CIMH's technical climate products, describing opportunities and risks associated with climatic conditions relevant to the particular sector (CRCC, 2018a):

- The **Caribbean Health Climatic Bulletin**. This bulletin is published quarterly and is developed and disseminated by CARPHA, PAHO and CIMH to help the sector manage risk. The bulletin offers insights into predicted climatic conditions (how hot, how wet) for the upcoming season and their health implications, It provides guidance to health professionals on how to manage health conditions that will potentially be affected by upcoming unfavourable weather conditions, such as noncommunicable diseases (NCDs), vector-borne diseases, acute respiratory or gastrointestinal illnesses, physical injury and well-being and mental health (CRCC, 2018b). The bulletin is based on seasonal climate forecasting by CIMH, in collaboration with national meteorological services through the Caribbean Climate Outlook Forum (CariCOF), supplemented by advice from technical officers at CARPHA and PAHO as to the likely health outcomes of the predicted weather. A limitation of the bulletin is that the health predictions are not based on statistical modelling of associations between climate and health

variables. This highlights a general limitation in capacity to link climate data and health outcomes in the Caribbean. The bulletin is available at http://rcc.cimh.edu.bb/caribbean-health-climatic-bulletin.

- The **Caribbean Agro-Climatic Bulletin** of the **Caribbean Society for Agricultural Meteorology (CariSAM)** is a monthly bulletin published by the CIMH and CARDI. This is an operational tool designed to help the agricultural sector manage climate risks and take advantage of climate opportunities. The bulletin is available at http://rcc.cimh.edu.bb/carisam-bulletin.
- The **Caribbean Tourism-Climatic Bulletin** is a monthly bulletin produced by the CIMH, the CTO and the CHTA. It aims to help the tourism sector manage climate risk and take advantage of climate opportunities (R4ACCHC, 2022a). The bulletin is available at http://rcc.cimh.edu.bb/caribbean-tourism-climatic-bulletin.
- The **Caribbean Drought Bulletin** is a monthly bulletin providing early warning of drought in the Caribbean. It packages drought monitoring and forecast information, highlighting in particular the parts of the region where there are concerns about short- and long-term drought (Trotman et al., 2021). The bulletin is available at http://rcc.cimh.edu.bb/climate-bulletins/drought-bulletin.
- **Caribbean Coral Reef Watch** is published between May and December, to correspond with the season in which coral reef bleaching can occur. It is developed by the CIMH in collaboration with the National Oceanic and Atmospheric Administration (NOAA) Coral Reef Watch and tracks the current sea surface temperatures and related coral reef health, globally and regionally. It maps regional thermal stress levels and coral bleaching potential with a lead time of 20 weeks. In addition, included in this early warning tool is a detailed outlook for the countries most at risk of coral bleaching. The bulletin is available at http://rcc.cimh.edu.bb/caribbean-coral-reef-watch.

Dominica's National Resilience Development Strategy

Nationwide collaboration to achieve climate resilience is exemplified by Dominica's National Resilience Development Strategy 2030 (NRDS). This strategy considers six key areas: strong communities, a robust economy, well-planned and durable infrastructure, enhanced collective consciousness, strengthened institutional systems and protected and sustainably leveraged natural and other unique assets. The Climate Resilience and Recovery Plan 2020–2030 seeks to operationalise the NRDS through various initiatives . For each initiative the concept is described, and the key organisations responsible for delivery of the initiative, resources required and outcomes are specified. Collaboration was established by naming key delivery entities for each initiative set out in the plan.

One such initiative is the Enhanced Social Safety Net Initiative, which seeks to ensure that the most vulnerable communities are socially protected from, and resilient to, threats from climate change. This will be achieved by enhancing Dominica's social service delivery to reach the most vulnerable with welfare assistance, creating a registry of citizens who qualify for support, focusing on prevention of poverty and considering cash transfer programmes where payments are linked to resilience-building activities. Collaborative partners include representatives of the Climate Resilience Execution Agency for Dominica (CREAD); government ministries, such as those responsible for finance, sustainable development and health; and village councils (Government of the Commonwealth of Dominica, 2020).

Collaboration with international agencies is an important aspect of collaboration for SIDS. Since Hurricane Maria, the Government of Dominica has partnered with the PAHO, supported by funding from the Foreign, Commonwealth and Development Office of the United Kingdom, in the Smart Health Care Facilities Project (see Chapter 16, "Smart health facilities"). There have also been collaborations with the EU to construct purpose-built emergency shelters in key locations around the country, to safeguard the lives of citizens, particularly the vulnerable; this complements national efforts to build resilient housing. With support from the World Bank, the Food and Agricultural Organization and the Inter-American Institute for Cooperation on Agriculture, practical

assistance has been provided to farmers and agricultural policies to prevent food insecurity have been developed (Baron, 2021).

Lancet Countdown Regional Centre for Small Island Developing States

In 2022, the *Lancet* Countdown Regional Centre for Small Island Developing States (SIDS) was launched. The centre is a collaboration between the *Lancet* Countdown on Health and Climate Change at University College London and the Caribbean Institute for Health Research at the University of the West Indies, Jamaica. The aim of the centre is to bring together academics, researchers, professionals, government officials, advocates and health practitioners concerned with climate change from island states in the Caribbean Sea, the Pacific Ocean, the Atlantic Ocean, Indian Ocean, the Mediterranean Sea and the South China Sea. It will provide high-resolution data for SIDS and collaborate with professionals in the cross-cutting fields of health and climate change. The centre proposes to (Lancet Countdown on Health and Climate Change, 2022):

- Develop integrated climate and health surveillance systems in each SIDS region, to monitor illnesses that are driven or made worse by climate change.
- Develop and implement EWSs based on the integration of health and meteorological surveillance for climate-sensitive diseases, with a priority focus on highly vulnerable groups.
- Increase public financing towards strengthening the climate resilience and capacity of healthcare facilities.

In 2020–21, the *Lancet* Countdown on Health and Climate Change conducted research with stakeholders from the Caribbean and Pacific SIDS working in academia, and national, regional and international public health and environmental agencies, as well as nongovernmental organisations (NGOs). The research critically examined the *Lancet* Countdown suite of climate change and health indicators and led to the suggestion of priority areas for research and the development of indicators appropriate for SIDS. At a 2021 meeting, the results were presented to and discussed by those consulted in the research and a few additional stakeholders. The meeting endorsed the recommendation that a new indicator area be developed – collaboration between agencies – as this was perceived to be important by SIDS and is an area that is not presently monitored by the *Lancet* Countdown on Health and Climate Change (Allen et al., 2021a; Romanello et al., 2022). It was partly in response to this recommendation that this chapter on collaboration between agencies was included in this report.

10.2. WHAT SHOULD BE DONE?

Individual and community actions and how to support them

Include civil society, NGOs and communities in planning, design and implementation of national and local projects/programmes

An important dimension of collaboration is vertical: between agencies at all levels of society. Individuals and communities most directly exposed to climate change risks must be integrally involved and contribute to "bottom-up" decision-making. This is a matter of equity and justice (see Chapter 9, "Distribution, equity and justice in climate change and health"). A multisectoral solution for climate change must include those most affected, who can become champions of action to address climate change (Greaves, 2021).

Individual and community involvement also assists in operationalising decisions made collectively. National plans, including nationally determined contributions (NDCs; i.e. non-binding national mitigation plans required by the Paris Agreement), need to be implemented and delivered by people "on the ground" and are likely to be more efficiently and effectively carried out if local people are involved in both the strategic and operational decisions (Patterson-Waterston, 2021). Service providers and producers of goods should be brought into dialogue on how they can incorporate adaptation and mitigation actions into their work practices and resource utilisation. This implies the need to develop strategies of community consultation and engagement in ways that are informed by developments in communication strategies and technologies (Allen, 2021; R4ACCHC, 2022b, 2023; Scobie et al., 2021). It is important to consider the logistics and timing of collaborating with communities.

Box 1: Examples of Caribbean nongovernmental organisations' current and potential collaboration in climate change initiatives

Caribbean Alliance for Sustainable Tourism

Caribbean Alliance for Sustainable Tourism (CAST) is made up of 32 national tourism associations throughout the Caribbean region. Its parent organisation is the CHTA, whose members are mostly private sector organisations. Like other nongovernmental organisations, the CHTA has an important role to play, engaging its members, other businesses and the public in the implementation of sustainable approaches and driving policy change. For example, CAST and CHTA have the ability to reach not only government and public sector workers but also those working in the private sector in hospitality and tourism, retail and distribution, manufacturing, construction, agriculture, the blue economy and the off-shore oil and gas industry. CAST has the ability to communicate and collaborate at the national (e.g. national associations), regional (e.g. the CTO) and international (e.g. the World Tourism Organization) levels (Williams, 2021).

Faith-based organisations

Faith-based organisations (FBOs) can reach communities through national councils of churches, regional ecumenical organisations (e.g. the Caribbean Council of Churches [CCC]) and globally, for example, through the World Council of Churches, which has 400 member churches worldwide, and the Global Christian Forum. FBOs carry a significant degree of moral authority and suasion and have long been working on the environment and climate change. The World Council of Churches has a dedicated department and educational and advocacy resources on the environment. The CCC contributed to the region's first solar heating venture by establishing a company called Solar Dynamics Limited (www.solardynamicslimited.com). Many within the Caribbean population have deep religious beliefs, and it would be wise to collaborate with FBOs in policy development and project implementation (Granado, 2021; R4ACCHC, 2022c; Scobie et al., 2021).

Participation and engagement will be insufficient if, for example, meetings are planned in places and at times which are inconvenient to community members. It is also important to consider how best to present information to different stakeholders (R4ACCHC, 2023).

National and regional NGOs and/or NGO networks have a large customer or membership base. See Box 1 for examples of ways that NGOs in the Caribbean can be involved in collaboration.

An international example of civil society involvement is the Zurich Flood Resilience Alliance, which consists of humanitarian, NGO, research, and private sector partners working together to increase public and private investment in evidence-informed community-based flood resilience (R4ACCHC, 2023; Zurich Flood Resilience Alliance, 2023). Another international example is an initiative by the NOAA, which involves community groups in mapping the urban heat island effect across the United States of America (see Chapter 6, "Heat-related illness") (Poon, 2022; R4ACCHC, 2023). In Africa, the Cityzens4CleanAir Campaign recruited young people as citizen scientists, who, together with adults, ran along designated routes collecting air quality data using wearable sensors (UrbanBetter, 2022). These examples show the potential for civil society involvement in climate change adaptation and in research that can contribute to evidence-based decision-making.

Structural/governmental and private sector actions

Develop multisectoral coordinating mechanisms, such as national and regional Climate Change and Health Commissions

Governance of the overall response to climate change and health requires the establishment of coordinating mechanisms in each country and in regional institutions. Lessons can be learned from the formation of NCD commissions in the Caribbean. These were established to plan and coordinate the comprehensive prevention and control of NCDs. Some core principles of successful national NCD commissions have been identified: legitimacy emanating from being established by the government; multisectoralism; credibility; transparency; accountability; conflict of interest procedures; adequacy of resources; sustainability; and strategic planning and management. Effective multisectoral lessons learned from NCD commissions include the need for collaboration rather than partnership, for networking of stakeholders, for knowledge of stakeholder skillsets, for staying the course, and for strong leadership (Greaves, 2021). They can be translated to combating health-related impacts of climate change through the establishment of Climate Change and Health Commissions. There needs to be harmonisation in planning for resilience with a 'one agenda, many leaders' approach to addressing climate change (Kumarsingh, 2021).

These commissions, or any other proposed mechanism for collaboration, must include stakeholders from all levels of society and across sectors, such as civil society, the community, the private sector and the government (Allen, 2021). Representatives of different economic and governmental sectors are also needed. This approach is consistent with the Caribbean Action Plan on Health and Climate Change, which has as one of its proposed national actions, 'N.4.5. Engage, coordinate, and collaborate with other sectors and development partners for resources to address health and climate change' (PAHO, 2019). Agreements (e.g. memoranda of understanding) can be established between the health ministry and main stakeholders at the national level (e.g. meteorological services and ministries of environment, food and agriculture, energy, transport, planning, water, sanitation, infrastructure, and public works), which include specific roles and responsibilities in relation to protecting health from climate change (WHO, 2022).

Designate national and agency focal points for climate and health

There should be someone within either the ministry responsible for health or the ministry responsible for the environment who can coordinate efforts to ameliorate the health-related impacts of climate change: a national focal point, in other words. This person should play a key role in any climate change and health commission that

may be established. In addition, there should be climate and health focal points at the regional level within health, disaster management and climate/meteorological agencies, for example CARPHA, PAHO/WHO, the CIMH, the Caribbean Disaster and Emergency Management Agency (CDEMA) and the CCCCC, and the many academic and higher education institutions and their relevant departments (e.g., at UWI, the Faculty of Medical Sciences, the Centre for Resource Management and Environmental Studies, the Institute for Sustainable Development and the Centre for Marine Sciences, among others) (Allen, 2021; Harewood, 2021).

Form alliances between health and other sectors to mitigate climate change

Sectors such as agriculture, energy, sanitation, transportation, and construction are high emitters of greenhouse gases (GHGs), which cause global warming. Furthermore, the same processes that emit GHGs (e.g. burning of fossil fuels) emit air pollutants that directly harm human health (see Chapter 5, "Air quality"). Health issues have not previously been considered in energy planning, for example. Caribbean governments and other entities have started an energy transition from fossil fuels to "clean" renewable energy. There is a need to increase the focus on the health co-benefits of this transition, by, for example, increasing monitoring of air pollution and its impacts on health. Because every sector is involved in the energy transition, the ministry of energy needs to liaise not only with the ministry of health, but also where appropriate, with ministries of planning, transportation, agriculture, manufacturing and industry. Alliances with the private sector are also very important as they provide an "incubator for new ideas" (R4ACCHC, 2023).

Form alliances between health and disaster management agencies and systems

As detailed in Chapter 1, "Health impacts of extreme weather events", collaboration between health and disaster management agencies, notably CDEMA at the regional level in addition to national disaster management agencies, is needed to develop severe weather event responses and strategies. Areas of collaboration include the procurement and logistics of medical supplies; identification of people at medical risk; the provision of climate-resilient storage and emergency response facilities and equipment; and data integration, monitoring and evaluation (Allen et al., 2019; CARPHA, 2018; Harewood, 2021; R4ACCHC, 2023).

Use communication skills to develop mutual understanding between agencies

Agencies and communities have their own "cultures" and means of expression. For true collaboration to take place, communication needs focused attention. Communications specialists should work with agencies and communities to translate information and messages and present them in formats and in ways that promote mutual understanding (R4ACCHC, 2023). At the regional level, there is a literal need for translators and interpreters to enable collaboration between countries and communities that speak different languages.

Develop collaborative mechanisms for research and surveillance

Given the limited resources for research and surveillance, it is important to establish means of cooperation between academic institutions, government ministries and the regional agencies concerned with providing the evidence base for action. Collaboration between agencies involved in health and meteorological research and surveillance is especially necessary. Mechanisms include data-sharing agreements and protocols, central repositories for publications and data, cooperation in the development and/or procurement of climate-resilient facilities/equipment for data collection and storage, and the establishment of joint research ethics review and oversight mechanisms (Allen, 2021; Allen et al., 2019; CARPHA, 2018; Glasgow, 2021; R4ACCHC, 2022b, 2023). (see Chapter 11, "Research and surveillance on climate change and health").

It is also important for research agencies to pursue alliances with implementing agencies and to communicate their research in ways that facilitate evidence-based action (R4ACCHC, 2023).

Research and surveillance gaps and how to address them

Research is necessary to identify suitable models of collaboration, to examine ways to establish and maintain such models in the Caribbean context, to identify the agencies to be involved and to establish indicators for monitoring and evaluation. These indicators should be built into regular schedules of monitoring of collaborative ventures, with systems for data collection, analysis and dissemination (Allen et al., 2021a).

Monitor and evaluate collaborative projects

It is important to establish monitoring and evaluation mechanisms to ensure that the outcomes and impacts of collaborative programmes can be assessed. This includes monitoring of collaborative processes such as the contributions of different agencies and communities to decision-making, using qualitative research. It also includes assessing the contribution of collaborative mechanisms and programmes to goals such as climate resilience and improved health outcomes. Regional and national collaborative health and climate change programmes and projects should each have specified indicators for monitoring and a clear methodology for evaluation. It is important for policy purposes to monitor costings so that the cost-effectiveness of various options can be assessed (Harewood, 2021).

As recommended in the *Lancet* Countdown assessment of climate change and health in SIDS (Allen et al., 2021a), collaboration between agencies should itself be monitored. The extent of collaboration and policy integration between agencies may be difficult to quantify, and qualitative indicators may be necessary. These may, for instance, show the existence of interagency collaborative mechanisms (such as memoranda of understanding or shared data repositories) and meetings, and track progress in implementation of their decisions. Such monitoring mechanisms may be complex to set up and implement, but interviewees emphasised that collaboration is at the root of eventual success in addressing climate change and health links, and must be given priority (Allen et al., 2021a,b).

Process, impact, cost–benefit and/or cost-effectiveness evaluations of collaborative projects may be conducted. Determining the barriers to and facilitators of implementation of a suggested action would also be helpful in determining recommendations for the way forward. Research questions could include, for example:

- Were NGOs included in the planning and design of national projects/programmes?
- Have national and agency focal points been designated for climate and health?
- How many mechanisms have been developed between health ministries/agencies and other sectors/agencies?

Explore ways to promote cross-sectoral collaboration among government departments and between the government and private sectors on climate change and health

Governmental institutions and agencies tend to work in silos. To effectively address the adverse health effects of climate change, a “health in all policies” approach is needed, promoting cross-sectoral collaboration and embedding health considerations into decision-making across sectors. There is a need to understand the best strategies to integrate climate and health discussions into all sectors and across sectors, including the private sector (e.g. the tourism, energy, insurance, and finance industries) (Hassan, 2021b). Questions may include (Hassan, 2021b):

- How do governments effectively engage with the private sector on climate action for health?
- What government–private sector collaborations are needed to address supply chain disruptions that result from climate change and can worsen food insecurity and healthcare service delivery? How can governments realise equity in the global supply chain?

- Which sectors need to be involved in policy development and implementation for health and climate change?
- What are the different ways in which coordination between these sectors could be improved?
- How can we overcome economic and regulatory barriers to facilitate collaboration?
- How can we encourage the financial sector to invest capital and leverage its data science capabilities to facilitate collaboration?
- How do we promote private sector players with an interest in providing solutions and partner them with technical experts in a community of practice or consortium?
- How can we leverage existing examples of collaboration? For example, the Ministry of Planning and Development in Trinidad and Tobago, through the Multilateral Environmental Agreements Unit, is coordinating climate policy and implementing it in collaboration with other Ministries. A cabinet-appointed Ministerial Committee will provide high-level guidance to the implementation of NDCs. This is supported by a Technical Support Committee that can make policy recommendations.
- How can we develop effective tools in the region to foster collaboration such as memoranda of understanding?

Research and surveillance capacity-strengthening needs

To address the research and surveillance needs to ensure collaboration among the private sector, NGOs, national and regional agencies and academia, capacity must be built in implementation science and implementation research, impact evaluation, qualitative and mixed methods research, and advanced statistical methodologies. The following additional specialist expertise is required:

- Participatory monitoring and evaluation;
- Mechanisms to improve data collection and sharing;
- Theories of collaborative and partnership work and organisational effectiveness (R4ACCHC, 2023);
- Communication and media expertise so that research can be presented in ways that different communities can understand (R4ACCHC, 2023);
- Public policy;
- Development of legislation.

There is also a need for enhanced information technology infrastructure and expertise, along with surveillance expertise, to build the databases needed for sharing of information. Statisticians and communications specialists with writing skills are needed to make technical reports accessible to decision-making. UWI can serve as a regional hub for projects, as the university operates from many Caribbean states and has many partners. Furthermore, UWI is interested in expanding the implementation side of its research (R4ACCHC, 2023).

10.3. REFERENCES

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