

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

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13. AWARENESS- AND SKILLS-BUILDING

13.1. WHAT IS HAPPENING?

For action against climate change-related health hazards to be effective, awareness- and skills-building are needed across society at large. Understanding of scientific evidence and skills to act on this understanding are needed by individual citizens, policymakers and specialists such as healthcare and public health experts. Expertise is also needed in a wide range of fields, such as meteorology, statistics, oceanography, disaster management, engineering, research design and grant writing, to name but a few. Cultural shifts are needed towards ecosystems protection and creation of health-promoting environments that mitigate and adapt to climate change.

Here we analyse what is known about awareness and skills relating to climate change and health. Much of the evidence is from presenters at the 2021 Conference on Climate Change and Health in Small Island Developing States: Focus on the Caribbean, most of whom extrapolated global evidence to the Caribbean. There are a few Caribbean studies of the subject, which are also presented.

Public awareness and knowledge

There are few knowledge, attitudes and practice (KAP) studies of climate change and health in the Caribbean. An online survey of Caribbean residents that used convenience sampling provided an overview of public perceptions regarding climate change and health, which informed the communications and visibility plan of the European Union (EU)/Caribbean Forum (CARIFORUM)¹ Project. Most of the approximately 3000 respondents from 10 Caribbean countries thought that climate change affects health a great deal (43%) or a moderate amount (33%). Fewer thought that climate change had an effect on mental health compared with physical health. More than half thought that extreme events, vector-borne diseases (VBDs), heat and air quality are ways that climate change affects health. Less than half picked Saharan dust and mental health, and less than one-third picked contaminated water or food or malnutrition as ways by which climate change affects health. Just over half thought that people with pre-existing health conditions would be affected, while less than one-third thought that the health of outdoor workers, immigrants, pregnant women, indigenous people and healthcare workers would be affected. These findings point to knowledge gaps about which populations are vulnerable to the health effects of climate change. Doctors and nurses were seen as the most trusted information sources, highlighting the importance of having a health workforce educated on the effects of climate on health. Radios, newspapers and Facebook were seen as the most important ways to disseminate information (Drewry, 2021a). The study's principal limitation is in the use of convenience sampling, which may have biased the sample towards people already interested in and relatively knowledgeable about climate change and health. Gaps in knowledge may be larger than identified in this study.

As part of the University of the West Indies (UWI) project on climate change impact on dengue in the early 2000s, KAP studies were conducted in Jamaica, Saint Kitts and Nevis and Trinidad and Tobago. These addressed several questions to inform public engagement strategies, to reduce susceptibility to mosquito-borne diseases, including (Rawlins et al., 2006):

- What do Caribbean people know about the apparent impact of climate change on the environment?

¹The CARIFORUM is a subgroup of the Organisation of African, Caribbean and Pacific States and serves as a base for economic dialogue with the European Union. Its membership comprises the 15 Caribbean Community (CARICOM) states and the Dominican Republic.

- What do they know about dengue fever and its transmission?
- What are their attitudes towards disease prevention by government agencies and by communities?
- What disease prevention strategies are used by communities?

KAP studies conducted with samples of the general population in Saint Kitts and Nevis ($n = 227$) and Trinidad and Tobago ($n = 650$) found that most respondents understood climate change to mean an increase in temperature and rainfall. When asked to rank five climate change issues in terms of importance to life, participants ranked health as most important, followed by water resources, agriculture, biodiversity and coastal degradation. Heat stress and foodborne diseases were considered the most important health issue by participants in Saint Kitts and Nevis and Trinidad and Tobago, respectively (Rawlins et al., 2007).

In Saint Kitts and Nevis, a survey was administered between 2015 and 2017 to assess knowledge of climate change health adaptation. Although 88.6% of respondents had heard of climate change, almost 43.2% felt personally unprepared to manage potential impacts. Approximately 35% of respondents were unaware of any government actions aimed at enhancing adaptive capacity. Half of the respondents indicated a willingness to invest in adaptive capacity. The three most common adaptive capacity-building activities proposed by respondents as improving future resilience were (1) education and awareness programmes, (2) enhanced sustainable land use and (3) renewable energy. The preferred sources of climate change information were internet (62%), television (62%) and radio (44%) (Whittaker and Bell, 2019).

There is little Caribbean research on the effectiveness of public communications on climate and health, and how messages are received by the public. International studies suggest that this is an important area for research. In one study on communicating climate change and health in the media, the authors concluded the following:

The scientific voice struggles to globally highlight this issue to a general audience and that messages that address the topic do not meet the challenges, going from a dramatic framing to a basic adaptation framing. This study gives an insight into the key role of the media and communications in addressing themes relating to climate change and transmitting information to the public to take action.

Depoux et al. (2017), licensed under [CC BY 4.0](#).

In a study from the United States of America, it was found that some climate change terminology used by scientists confounds the public (e.g. phrases like “unprecedented change” and “tipping point”) and participants offered helpful language for improving communication (Bruine de Bruin et al., 2021).

Health professionals’ and other professionals’ capacity

Health professionals occupy a critical position in the response to climate change. First, they are charged with protecting individual and community health through public health measures, which may reduce the impact of climate change on health. Their expertise can be brought to bear on cross-sectoral solutions, and they can articulate climate risks and solutions to patients, the public and policymakers. Second, clinical health professionals will increasingly care for patients whose health conditions are caused or exacerbated by climate change, and they will be tasked with counselling and treating these individuals. Third, health professionals can help modify healthcare systems to cope with increasing burdens of disease, thus becoming more resilient and environmentally sustainable (Sorensen et al., 2023).

An international survey with members of health professional associations ($n = 4654$) revealed that most viewed climate change as an important and growing cause of health harm. They felt a responsibility to educate the public and policymakers about the problem, with 89% willing to engage with policymakers on climate change and health goals. Despite their high levels of commitment to the issue, many survey participants indicated that a range of personal, professional and societal barriers impede them from doing so, with time constraints being the most widely reported barrier. Other barriers identified included lack of knowledge, perceptions that their

personal involvement won't make a difference and lack of support from peers. However, participants said that various resources – continuing professional education, communication training, patient education materials, policy statements, action alerts and guidance on how to make healthcare workplaces sustainable – can help to address those barriers (Kotcher, 2021; Kotcher et al., 2021).

Two studies looked at the perspectives of health sector personnel in several Caribbean countries. A mixed-methods study was conducted with public decision-makers and practitioners from the climate and health sectors in regional agencies and in Barbados and Dominica ($n = 73$) with respect to the development of climate services for VBDs. Participants perceived that VBDs are increasing due to climate change and that current human and technological resources need to be boosted in specific areas to address this challenge (Stewart-Ibarra et al., 2019) (see Chapter 2, “Vulnerability to vector-borne diseases”). In Grenada and Trinidad and Tobago, focus group discussions were conducted with nurses, doctors, veterinarians and technicians. Participants described rises among humans and animals in vector-borne, flood-related, heat-related, respiratory and mental illnesses, and attributed these to local impacts of climate change (Macpherson and Akpinar-Elci, 2015).

A qualitative study with 10 health professionals in Barbados assessed their knowledge of health risks of climate change as it relates to noncommunicable diseases (NCDs). They expressed concern about the prevalence of NCDs among Barbadians. There was less concern about the future burden of NCDs in the context of a changing climate, largely because of a lack of knowledge among most of the health experts interviewed. Those with knowledge of health risks of climate change noted the challenges that climate change would pose to the prevention and management of NCDs, given the impacts of climate stressors on food security, the built environment, and physiological and psychosocial health impacts. Lack of awareness among health professionals of the risk climate change poses to NCD prevalence and impact was said to be reflective of the country's health priorities, which fail to recognise the risk of climate change (Springer and Elliott, 2020).

A 2019 survey by the International Federation of Medical Students' Associations in 112 countries found that 15% of medical schools included climate change in the curriculum, although the extent of coverage varied widely. This included the medical school at UWI Mona, Jamaica, which is the oldest and largest medical school in Caribbean Community (CARICOM) countries. Two former students of the UWI medical school conducted content analysis of UWI Mona courses to qualify as a doctor. They found that only 4.4% of these courses addressed climate change. In discussing their findings, they noted that changing the curriculum may be a lengthy process. They suggested that the Jamaican Medical Students Association Standing Committee on Medical Education could offer supplementary courses to medical students and professionals (Nunes and Mundle, 2021). This highlights the role of nongovernmental organisations (NGOs) in supplementing the education and training provided by formal educational institutions.

A 2022 study that included 299 doctors and nurses, mainly from Barbados, Guyana, Jamaica and Trinidad and Tobago, and the Caribbean College of Family Physicians, assessed the perspectives of health professionals in the Caribbean as a basis to improve the design of education, training and engagement programmes of health professionals as credible leaders in society. Health professionals in this study overwhelmingly thought that climate change was real, but were less clear on causal mechanisms and specific health impacts, and they perceived many barriers to communicating to the public or patients, particularly lack of time, knowledge and support from peers (De Freitas et al., 2023).

The challenge of developing training for Caribbean health professionals has been taken up by the NGO EarthMedic/EarthNurse and its colleagues. They piloted an online course for health professionals in the Caribbean on climate and health, detailed in Box 1. Outside the region, courses to train health professionals in preparedness for extreme events have shown successes (Rivas et al., 2018). In the Caribbean, an online training initiative is providing disaster-related psychological trauma and mental health training for emergency professionals in 10 countries, in collaboration with UWI and the Pan American Health Organization (PAHO) (Ocho et al., 2023).

Box 1: The Caribbean Climate Change and Health Responder Course: a pilot

In March–May 2022, a free, live-virtual, evidence- and competency-based climate change and health course targeted toward health risks in the Caribbean was deployed to (1) increase communication among health professionals about climate and health, (2) equip health professionals with knowledge and skills that could be readily incorporated into practice and (3) engage health professionals with climate and health initiatives within their communities.

The course was based on the Global Consortium on Climate and Health Education (GCCHE) core competencies for health professionals, which cover climate and health analytic skills and knowledge, communication and collaboration, and public health and clinical practice competencies. The training was delivered as follows:

- Ten didactic modules delivered weekly in 60 minutes followed by 30 minutes of moderated questions and answers.
- Bi-monthly interactive 90-minute “skills and practice” sessions, structured around clinical cases, climate tools, communication and leadership strategies, and teaching tools.

All lectures were delivered by local and regional climate and health experts and had accompanying online reading and learning resources. Participants who completed at least 7 of the 10 didactic sessions and passed a short test at the end of the training (with a score of 70% or greater) received a Climate and Health Responder Certificate of Participation. Continuing Medical Education Credit was provided by the American Association of Continuing Education through the Trinidad and Tobago Medical Association.

Invitations to participate were sent via email and social media to individuals and groups representing health professionals, public health workers, hospital administrators, health system leaders, health educators, policymakers, environmental health professionals and government officials. A promotional video was also sent to presidents of medical and nursing associations, chief medical officers, regional universities and PAHO offices. Outreach was also done via the Caribbean Public Health Agency, Healthy Caribbean Coalition, Caribbean Community Climate Change Centre and the Global Climate and Health Alliance.

Participants came from 37 countries, with 1.2% of those registered coming from outside the Caribbean. Occupations included medic/physician, environmental health professional, nurse, student, public health practitioner, mental health professional, emergency responder, social worker and pharmacist. Places of work included governmental agency, academic institution, hospital, private practice and community-based organisation/NGO.

Pre- and post-participation surveys were completed electronically by participants. They revealed significant changes in health professional communication, engagement and application of climate and health knowledge and skills.

The authors concluded that the live-virtual, evidence- and competency-based courses, as well as the regional-specific courses, have the potential to change health professional behaviours toward addressing climate impacts on health.

The project is a collaboration between EarthMedic/EarthNurse, the Caribbean Institute for Meteorology and Hydrology and various institutions at Columbia University, New York, including the GCCHE, Columbia University Irving Medical Center and Mailman School of Public Health.

Source: Sorensen et al. (2023).

A novel educational workshop was offered by EarthMedic/EarthNurse, the GCCHE and the Bahamas Ministry of Health in 2022. This was designed to increase the knowledge and awareness of healthcare professionals and community members while empowering them to engage in climate mitigation and adaptation strategies. A gap analysis to inform the design of the workshop showed that awareness of climate change was high, but understanding of the causes of climate change was low, as was awareness of potential solutions or steps that could be taken within the control of environmental officers, community members and health professionals. Following the training, participants demonstrated increased knowledge of the causes of climate change, health exposures, climate-sensitive diseases and vulnerable populations relevant to the Bahamas. Furthermore, participants reported high levels of willingness and readiness to tackle climate change and its health consequences (Hamilton et al., 2023).

The need for building a cadre of Caribbean leaders with a broad range of skills to address climate change and health challenges has been recognised in the One Health programme and the Climate Change and Health Leadership Fellowship programme managed by UWI (EU et al., 2023). These programmes will help develop a systems approach involving action and mechanisms across sectors. As of 2021, 35 One Health leaders had been trained, and 24 Climate Change and Health leaders were to be trained, to make a strategic difference to the policymaking landscape. The goal is to build networks of Caribbean professionals with multidisciplinary perspectives, given the need to build capacity and alliances across sectors. An academic involved in both capacity-building initiatives noted that progress in designing leadership capacity-building is evolving and that the experience of the One Health programme was built upon in developing the Climate Change and Health Leadership Fellowship programme. The One Health programme provided regular themed, didactic workshops over three years. The design of the Climate Change and Health Leadership Fellowship programme involves more experiential learning through implementing projects, participating in internships and leading workshops and discussions with peers and other experts in seminars. It was noted that support of the trainees by senior management is critical for these initiatives to have impact and be sustainability (Oura and Stephen, 2021).

With around 239 universities and colleges across Caribbean countries (Glasgow, 2021), there is immense capacity for orienting training across disciplines to respond to the growing challenges of climate change and health. UWI is increasing its focus on climate change across its teaching programmes and is developing a ONE-UWI multidisciplinary policy-oriented postgraduate climate studies degree. The integration of health into UWI's teaching on climate change is currently limited, with the notable exception of the One Health and Climate Change and Health Leadership Fellowship programmes, which directly build the capacity of only a small number of people. Primary and secondary schools are also places where content on climate change and health should be infused across subjects. Executives at the head of these institutions may themselves require awareness- and skills-building exercises so that education and training can trickle down to the general population and effect the necessary cultural shifts and skills-building.

There is also a need for tools such as evidence-based manuals and guidelines to help equip professionals and advocates with the skills and processes to achieve their climate change and health goals. PAHO and the World Health Organization (WHO) have developed several such tools, for instance the AirQ+ tool that links health effects and exposure to air pollution (Drewry, 2021b), and also guidelines and standards for the development of climate-smart health facilities (see Chapter 16, "Smart health facilities"). Technical assistance from regional and multilateral institutions also makes important contributions to building and complementing local capacities.

Media, communications and influencers

A wide range of media, including newspapers, radio and television, websites and social media, is important in raising awareness and building skills among the general public. Messages may also be targeted to specific populations. Communications research is needed to identify the specific interests, knowledge, attitudes and behaviour of specific populations and thus design messages and artwork and choose media (Bailey, 2021; Drewry, 2021a).

In a large global study, Perga et al. (2023) reviewed 50 000 scientific publications on climate change in 2020, including an analysis of how the results made their way into the media. The analysis showed that media is biased to natural science-based, large-scale climate projections on a narrow range of threats. Media coverage does not support pro-environmental actions by people and communities, and may promote denial and avoidance, perhaps because people don't relate to the reports. The authors conclude that "if the goal of mediating research is to have a societal impact, then it seems that we are pushing all the buttons that don't work" (Perga et al., 2023).

By conducting content analysis of articles published by the Loop online news network across Caribbean countries, Ewing-Chow (2021) showed that there are many more articles on health than on climate change. Health is the third most popular topic for news articles in Barbados, the Cayman Islands and Jamaica, and the most popular topic in Trinidad and Tobago. This means that discussing health outcomes is a good way to attract interest in climate change action. Ewing-Chow (2021) also noted that there is a lack of news-related content that marries the concepts of health and climate change.

The emotional and spiritual dimensions of climate change (see Chapter 7, "Mental health") are also important to consider in communication. It is important to involve faith-based organisations as they have moral authority and can exercise suasion. People often turn to faith-based organisations for comfort and shelter in times of disaster, including climate change-related disasters. Faith-based organisations can also provide an outlet, solace and hope for people grieving over the damage being done to the Caribbean environment and people. Faith leaders can channel emotions into positive actions to reduce damage to the environment and provide support to people whose health has been affected (Granado, 2021). Celebrities can also exercise their influence in positive directions. In the Caribbean, sportspeople are held in especially high esteem and can build on their expertise to encourage people to take health-promoting action (Murray, 2021).

It is important also to identify influencers within communities who are especially affected, such as youth and indigenous people. They can help lead activism within their own communities and can exercise suasion over other audiences by showing how climate change is affecting them (Alvarado, 2021; Caribbean Organization of Indigenous Peoples, 2015; Itoewaki, 2021; Kronik and Verner, 2010; Lalla, 2021; Lashley, 2021; Nurse-Allen, 2021; Vreezdam, 2021).

Major challenges and the limitations of current research

The findings above point to barriers to engagement in climate change and health action, including lack of knowledge; lack of support from peers, managers and leaders; and lack of a systems-wide, "joined-up" multisectoral and multi-agency approach to skills-building. The limited evidence suggests that the general public and health professionals in the Caribbean are willing to act to reduce the health impacts of climate change, but these barriers prevent them from doing so.

There is no research in the region on the role of the media in communicating climate and health research and stimulating action at the personal, community or societal levels. Given that the Caribbean media carry health stories extensively, and that climate change affects many aspects of health and well-being, there is promise for

linking climate change and health, perhaps through programmes to train and sensitise health and environmental journalists together.

Caribbean responses include the One Health programme and Climate Change and Health Leadership Fellowship programme. These build skills among small numbers of professionals but are expected to have multiple impacts, as these professionals are equipped to exercise leadership across multiple fields. These two leadership programmes used different educational designs and their strategies continue to evolve.

Tools and courses have been, and are being, developed, with the Caribbean Climate Change and Health Responder Course being a capacity-building initiative specifically for the Caribbean. Pre- and post-course evaluation suggests increases in health professionals talking to patients, community members and colleagues about climate change, incorporation of climate change and health knowledge in their work, and confidence that they could engage in a climate and health initiative in their community, institution or practice.

There is an absence of longitudinal research to assess the medium- to long-term impact and sustainability of awareness- and skills-building initiatives in the Caribbean. Monitoring and evaluation of what works is in its infancy in the region. There is also limited communications research around strategies to effect the necessary attitudinal and behaviour changes. While youth, indigenous people, faith-based organisations and other civil society actors are becoming increasingly involved in climate change initiatives, their involvement in the health aspects is lagging behind, and there is little research appraising the effectiveness of their strategies. Overall, monitoring and evaluation of this area is weak in the Caribbean.

13.2. WHAT SHOULD BE DONE?

Individual and community actions and how to support them

Speak about health and social impacts to help engage individuals and communities in climate change action

Health is a common human concern that is more immediately felt than climate change, and so communicating about health can help motivate people to take action on climate change and health (Ewing-Chow, 2021). It is important to emphasise the human angle in messaging about climate change, using human interest stories and appealing to emotions, spirituality and morality (Bailey, 2021; Granado, 2021). This recommendation applies to all agencies and individuals who wish to mobilise action on climate change and health. Health professionals have an important role in speaking to patients and the communities they serve.

Engage civil society organisations and activists in educating and mobilising their peers

Peer-led approaches across all segments of society can motivate action, as peers are likely to be able to identify the challenges that are relevant to their communities. Young people are especially important in engaging their peers, providing information to and inspiring the upcoming generation (Lalla, 2021; Lashley, 2021; Nurse-Allen, 2021):

My experience and reflection [of climate change following Hurricanes Irma and Maria] inspired me to launch a group called Estudiantes de Puerto Rico para la Acción Climática (Puerto Rico Students for Climate Action). We have met virtually and started our journey to learn more about climate and motivate others to appreciate that we can't delay action. We devised a drawing contest for middle and high school students. Through similar activities, we plan to engage more teenagers and provide a channel for their voices as advocates for our planet.

Alvarado (2021), licensed under [CC BY-NC-ND 3.0 DEED](#).

Peers can also assist in translating scientific information in ways that communities understand. For instance, Caribbean tourism professionals have formed the organisation Caribbean Alliance for Sustainable Tourism, which acts as a conduit for technical information from agencies such as the Caribbean Public Health Agency on ways in which their peers can adapt to and mitigate climate change in the interest of health (Williams, 2021). Civil society organisations and activists can build solidarity and skills for advocacy on behalf of vulnerable and marginalised populations, such as indigenous people (Itoewaki, 2021; Vreezdam, 2021). The Caribbean Health Alliance for Climate Action, comprising national medical associations and EarthMedic/EarthNurse, have established as a top priority the raising of public and health professional awareness of the impact of climate change on health (statement released to the media 24 July 2023). Faith-based organisations can be involved in both peer and leadership approaches informed by spirituality and morality (Granado, 2021). Globally, faith leaders have been advocating for more action on climate change, including the Papal Encyclical of 2015, "On care for our common home" (Pope Francis, 2015).

Influencers such as sportspeople can set examples and speak on issues that are important to their fans, motivating them to take action on climate change and health (Murray, 2021; R4ACCHC, 2023). At the global level, the United Nations has established a "Sports for Climate Action Framework" to leverage the role of sport as a vehicle for climate action, education and sustainable consumption, but no Caribbean sports entities are signatory (UNFCCC, 2023).

Provide practical skills and projects that individuals and communities can implement

Caribbean and global research has shown that people are generally willing to assist in climate change and health action and want to know what to do and how to do it (Bailey, 2021; Kotcher et al., 2021; Williams, 2021). For cultural and systemic change, people must be empowered to take actions that they believe will benefit them

and their communities. With sometimes small investments in outreach, education and equipment, people can be involved in positive action and experience psychological benefits from feeling that they can make a difference (Benjamin, 2015). The practical actions people can take should be clearly presented, for example as is done at the beginning of each hurricane season, when people are advised to assemble certain foods and supplies and determine an evacuation plan (R4ACCHC, 2023). Culturally appropriate communications using music, dance and sport can present factually correct information, for example the Caribbean Disaster and Emergency Management Agency's 2021 "Disaster Fighters" YouTube video, which has garnered 1.7 million views.² Learning by doing may be especially effective in achieving climate and health goals, while contributing to a positive spiral of awareness- and skills-building and action (Oura and Stephen, 2021).

Structural/governmental and private sector actions

Use evidence-based strategies to educate and build skills on climate change and health

Behavioural science approaches should be brought to bear on how to motivate behaviour change. For any given social intervention, once the behavioural goals have been set, a systematic approach should be taken to educational and intervention development, identifying barriers to uptake and the abilities of individuals and communities to be able to follow through. This includes looking at documentation and published research of previous interventions and involving key communities (R4ACCHC, 2023). Building the Caribbean body of research is very important to developing effective interventions.

Build a cadre of climate change and health ambassadors

Community influencers can play a key role in motivating behaviour change. Doctors, faith leaders and sportspeople are generally held in high esteem in Caribbean society. Doctors and nurses have been identified as highly trusted sources of information and are in an excellent position to share information with their patients, community members and colleagues (Drewry, 2021; Sorensen et al., 2023). Civil society organisations, including community groups, youth groups, faith-based groups, advocacy groups and professional organisations can play extremely important roles in mediating and asserting on behalf of the communities they represent. It is especially important to provide the relevant people with the information and tools to advocate in support of scientifically based approaches to promoting health in the face of climate change. Their baseline understanding and attitudes should be assessed in designing capacity-building interventions (R4ACCHC, 2023). Providing them with a seat at the table when policy decisions are being made is an important component of engaging them as ambassadors. The Climate and Health Advocacy Network currently being developed in the Bahamas is an example of preparing climate and health ambassadors (Hamilton et al., 2023).

Leadership capacity-building strategies such as the One Health programme and Climate Change and Health Leadership Fellowship programme should continue. They should be continually strengthened through monitoring and evaluation.

Provide climate change and health education in schools

As part of general population education on climate change and health, it is critical to educate children, as they will be increasingly affected by climate change as they get older (R4ACCHC, 2023). Education on climate change and health should be included in school curricula across disciplines to help create unified, systemic approaches to climate change and health in the future (Lashley, 2021; Nurse-Allen, 2021). School principals and teachers should themselves be trained in content and delivery of climate change and health education. The Caribbean

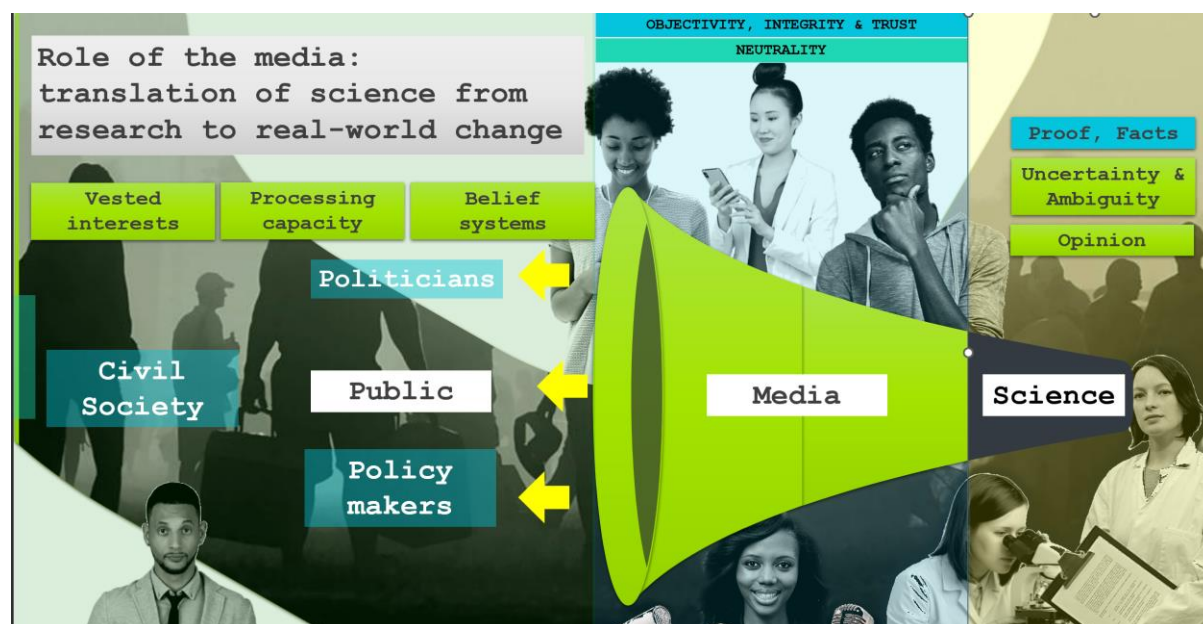
²See "[Disaster Fighters](#)".

Examinations Council should be involved in the development of specific qualifications relating to climate change, and also the inclusion of climate change and health content in examinable courses.

Build media and communications skills in climate change and health

Experts and advocates should create relationships with and build capacity among media practitioners so that they are well informed about the scientific evidence and able to foster attitudes of objectivity and neutrality. National and regional news agencies (e.g. the Caribbean Broadcasting Union) should be involved in capacity-building initiatives. Media practitioners and climate change and health advocates should be provided with skills in audience analyses and how to relay information in a digestible and relatable way. They should be trained to consider the vested interests, belief systems and processing capacity of different target audiences, all of which impact the effectiveness of media messages (Figure 1).

Figure 1: Translation of science from research to real-world change via the media



Source: Ewing-Chow (2021).

Media and communications training and tools should also be developed and made available to government and civil society stakeholders to enhance their impact. Education and mentorship opportunities should be made available to enable a wide range of communication strategies to be used, such as storytelling, videos, music and peer education. Information should be simplified in line with the capacities and interest of the audiences (Bailey, 2021; Ewing-Chow, 2021).

There is very little research in the region on the role of the media in communicating climate and health research and stimulating action at the personal, community or societal levels. Given that Caribbean media carry health stories extensively, and that climate change affects many aspects of health and well-being, it is a promising avenue for linking the two through programmes to train and sensitise health and environmental journalists together.

Create mechanisms for bottom-up as well as top-down learning

Learning should be bottom up as well as top down. This is in part an ethics issue, to ensure that social inclusion and the needs of vulnerable people are factored into climate change and health plans. It is also a matter of efficiency, as, in practice, policies are implemented at the local level and people on the ground will have

expertise in the facilitating factors of and barriers to implementation (R4ACCHC, 2023). By sharing this expertise and advising governments and private developers, the efficiency and effectiveness of projects may be enhanced (Patterson-Waterston, 2021) while avoiding human rights infractions. Mechanisms for dialogue and mutual learning and cooperation must be devised as part of the capacity-building process, so that those in authority can learn from employees, customers and communities (Itoewaki, 2021; Lashley, 2021; Williams, 2021). Academics as well as government and private sector actors should be involved in seeking the views and expertise of community members.

Frame communication according to human and emotional interest, showing the impacts on health

Based on analysis of Loop Caribbean news articles relevant to climate change and health, Ewing-Chow (2021) made the following recommendations for climate change and health messaging to achieve change in attitudes and behaviours:

- **Frame the story from the perspective of health:** the way climate change has traditionally been framed – as an environmental problem – tends not to engage members of the public. By making the case that climate change is a major threat to people’s health and well-being, advocates can engage a much broader cross-section of the public.
- **Connect with human emotions:** this can be done through an influencer model or through human interest stories.
- **Localise the issues:** to many people, the problem of climate change is global and abstract, while human health impacts are local and concrete. Including local examples of health and other human impacts of climate change can help mobilise interest and action.
- **Emphasise the immediate health benefits,** i.e. the “win–wins”, associated with taking action: showing the health co-benefits of climate action is a powerful way to get people involved. Programmes and policies that make it easier for people to walk, cycle and take public transportation create important climate, health and quality-of-life benefits. Individuals embrace information about climate change that uses a health co-benefits frame because recommended behaviours are seen as benefiting them at the same time that specific messages about what they could do to mitigate climate change are conveyed.

Social media can provide important platforms for the communication of these types of information, given their focus on human and emotional interest content. Mobile phone chat groups can also provide important means for sharing this content. If combined with accessible information from health and disaster early warning systems as well as updates on response and recovery from extreme events, these media can play a critical role in mobilising the public to take action.

Build capacity among health and other professionals

Capacity-building and sensitisation training in climate and health is needed for practising healthcare professionals, public health officials and epidemiologists, undergraduate and post-graduate students and faculty in health sciences and medical schools.

Research has shown that health professionals are willing to become involved in climate change and health action but lack the appropriate knowledge and skills (Kotcher, 2021; Kotcher et al., 2021). In addition to health professionals, there is a need for training professionals concerned with the mental and social impacts of climate change, such as counsellors, psychologists and social workers (R4ACCHC, 2023). Recently, courses have been developed for Caribbean health professionals, such as the Caribbean Climate Change and Health Responder Course (Sorensen et al., 2023) and the Disaster-Related Psychological Trauma and Mental Health Training for Emergency Professionals course (Ocho et al., 2023). Online delivery modalities have facilitated a pan-Caribbean skills-building approach. This is especially valuable in helping overcome the human resource capacity constraints

of individual Small Island Developing States and creating transnational networks. Existing training materials, courses and how-to guides can be further adapted to the Caribbean context (De Freitas, 2021).

There have been important Caribbean initiatives to build multisectoral leadership capacities via the One Health and Climate Change and Health Leadership Fellowship programmes. Small numbers of Caribbean professionals have been empowered through teaching and experiential learning to mediate and strategize between sectors to develop and implement plans to address climate change and health. These initiatives should continue, while evolving based on monitoring and evaluation of their processes and outcomes.

To create systemic change in health sector approaches, climate change must also be included in curricula for training health professionals, and their competencies in this area must be assessed as part of their qualifications. Institutional inertia in changing higher education curricula must be overcome through partnership between technical, health professional, student and advocacy organisations, and academic institutions. National and regional professional organisations, such as medical associations and the Regional Nursing Body, should be involved. There is a need to collaborate with accrediting bodies to establish formal qualifications and micro-credentialing schemes. UWI has a leadership role to play as a regional university, as do national tertiary-level training institutions. The Caribbean Accreditation Authority for Education in Medicine and Other Health Professions should include consideration of climate change in its accreditation programmes for medical, dental, veterinary and other health profession education.

Organisations can offer short courses to students while curriculum reform is underway and can complement formal teaching when curricula have been established (Nunes and Mundle, 2021). Likewise, technical, health professional, student and advocacy organisations should reach out to faculties beyond medicine/health sciences in higher education institutions so that they can infuse climate change considerations into teaching a wide range of other disciplines. For courses to have professional standing, there is a need to work with the councils/boards/associations that organise credits for continuing medical education, continuing professional development and technical and vocational education and training.

The “Research and surveillance capacity-strengthening needs” subsections of this report provide listings of the wide range of disciplines that should be involved in research and action. The Caribbean Field Epidemiology Training Program coordinated by the Caribbean Public Health Agency should include climate and health training. This should cover data collection, analysis and operational research, collaborative exercises across departments within and between ministries/agencies (such as the meteorological services and environmental management authorities), and how to communicate on climate and health to different audiences.

Implement institutional change management strategies

To effect the necessary changes, facilitating factors must be put in place throughout and between agencies (Oura and Stephen, 2021). Leaders and managers within agencies must be brought on board through collaboration and education. Policymakers, chief executive officers and managers should lead in establishing incentive structures for employees to engage in climate change and health action, including responsibilities for specific tasks in job descriptions (Kotcher et al., 2021). Feedback mechanisms from employees and customers should be instituted. Sustainable environmental standards should be developed and instituted at each agency (Williams, 2021).

Research gaps and how to address them

Conduct longitudinal and experimental studies of education, training and skills-building interventions

While important interventions have been established, we are a long way from having a precise idea of what works in the Caribbean context. The evaluation of the pilot Caribbean Climate Change and Health Responder Course is a step in the right direction, by measuring communication, engagement and application of knowledge

before and after the course. However, it relied on self-reporting and perceptions of a limited range of questions. There is a need for careful documentation of education, training and skills-building exercises in terms of their objectives, methods, processes, outputs and expected outcomes and impact. Means to document, track and measure these should be put in place. Studies should be carried out to assess how trainees implement their learning when they return to their workplaces and communities, tracking progress and outcomes over the medium to long term. Facilitators of and barriers to this process should be identified along with strategies for how to address them.

There is also a need for experimental designs, so that the outcomes and impacts of each intervention can be measured through comparisons with control conditions. Unfortunately, the tradition of experimental studies on social and education interventions in the Caribbean is weak, and technical and financial assistance may be needed to support their further development.

Learn what works internationally and adapt it to the local context

Studies of education, training and skills-building interventions on climate change and health for specific professions and audiences should be systematically reviewed. Especially given the limited resources available in Small Island Developing States, it is critical to build on existing knowledge. The GCCHE at the Mailman School of Public Health, Columbia University, is a valuable resource, with over 200 universities included in its network.³ The differences in context between the locations of existing studies and the Caribbean should be clearly identified so that appropriate adjustments can be made. Adjusted interventions should then be tested, as recommended above.

Conduct media and communications research

A combination of quantitative surveys, such as KAP studies, and qualitative research can be used in media and communication research. KAP studies should be conducted with the general population and targeted audiences for media and communications. Qualitative research is important to identify the skills required to implement capacity-building. Focus group discussions can be used to assess responses to messages and media used. The characteristics of effective human-interest stories should be identified (Bailey, 2021; Ewing-Chow, 2021).

An important topic for media and communications research is business advertising and public relations activities and how they affect perceptions of climate change and health and peoples' consumption. They may, for instance, promote the use of fossil fuel and derivative products (e.g. plastics) and processed foods and draw resources away from consumption patterns that have co-benefits for health and climate change (R4ACCHC, 2023).

Surveillance gaps and how to address them

Repeated knowledge, attitudes and practice studies

To assess the effectiveness of communications and other awareness- and skills-building interventions, a monitoring system is needed. Indicators of progress in such interventions should be standardised and KAP surveys repeated at regular intervals (R4ACCHC, 2023).

Monitor outputs of training and learning

From school classes and small workshops to full degree programmes, the outputs of awareness- and skills-building exercises should be documented and monitored. The numbers educated should be disaggregated by

³See [Global Consortium on Climate and Health Education](#).

demographics and vulnerability factors. Time-bound target numbers should be specified, and progress monitored. Accompanying this, the inputs should be documented and monitored, such as numbers and job positions of educators, teaching staff to student ratios, and monetary and other resources used.

Research and surveillance capacity-strengthening needs

A robust evidence base is critical for communication with the public and key stakeholder groups such as healthcare professionals and government officials. Strong collaboration will need to be built between health and climate researchers, with accompanying joined-up surveillance and information systems. Early warning systems for health and disaster-related outcomes must be developed in a way that the information is accessible for key audiences. This requires strong collaboration between researchers and communication professionals.

Leadership, technical and financial resources are needed to conduct the necessary research and surveillance. Leaders of government, academic and other agencies commissioning and conducting research need to implement measures requiring documentation, monitoring and evaluation of awareness- and skills-building exercises. Government agencies should be integrally involved in reviewing the resulting documentation and research and using it to orient the design or modification of interventions.

Health professionals should be provided with training and facilities to conduct research on the effectiveness of their capacity-building strategies (R4ACCHC, 2023).

Technical cooperation may be needed in design and implementation of intervention studies, especially in experimental designs for behavioural interventions. Institutions within the Caribbean should continue to strengthen their cooperation and call on external assistance when needed.

Financial resources are needed, especially for any research involving face-to-face data collection. Lack of finance is a major constraint to the conduct of research and surveillance. Lack of continuity in funding is inimical to the necessary longitudinal research and surveillance systems. Caribbean leaders must advocate for the provision of additional and sustained research funding to support the needed research and surveillance.

Awareness and skills are needed across society to effect the necessary actions on climate change and health in the Caribbean. Robust research and surveillance are needed to support evidence-based action, efficiency and effectiveness.

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