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

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DOMAIN 1: CLIMATE CHANGE HEALTH IMPACTS, EXPOSURES AND VULNERABILITY

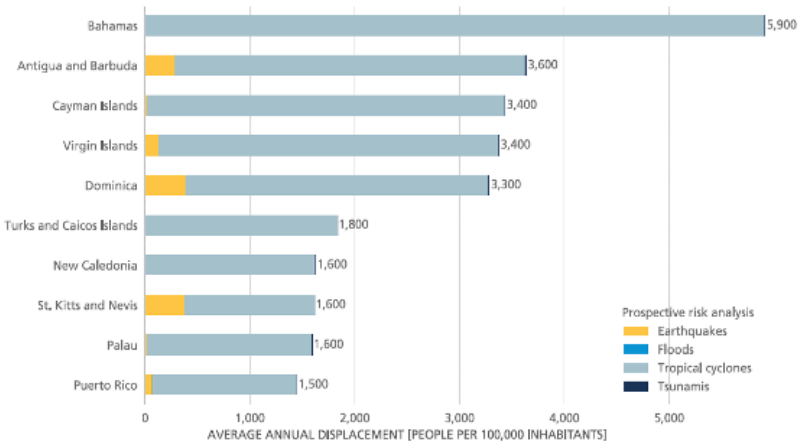
8. POPULATION DISPLACEMENT AND MIGRATION

8.1. WHAT IS HAPPENING?

Migration is a strategy that individuals and households may undertake to improve health, well-being and livelihoods in response to economic uncertainty, political instability, persecution or environmental change. Voluntary migration can be used when adapting to the impacts of climate change, whereas involuntary forms of migration and displacement occur when other forms of adaptation are inadequate and migration as a response to climate change is the only choice (Cissé et al., 2022).

The Internal Displacement Monitoring Centre (www.internaldisplacement.org/aboutus) has developed a measure based on estimates of the average number of people expected to be displaced each year by sudden-onset hazards, including flooding, tropical cyclones, tsunamis and earthquakes: the average annual displacement (AAD) measure. Relative to population size, the 10 countries with the greatest AAD are Small Island Developing States (SIDS), of which 8 are in the Caribbean (see Figure 1). The Bahamas, for example, is at risk of an annual average of 5900 people per 100 000 inhabitants, or 5.9% of its population, being displaced by tropical cyclones (Anzellini et al., 2017). Extreme storms and floods are the most significant weather-related drivers of population displacement globally (Desai et al., 2021). Hurricanes have caused major displacement and migration from Barbuda, the Bahamas, Dominica, Puerto Rico and the United States Virgin Islands internally, and also externally to neighbouring islands and outside the region (Blocher et al., 2021; Brown et al., 2016; Campbell and Emmanuel, 2019; Desai et al., 2021; Dubrow, 2021; Hill, 2014; R4ACCHC, 2022a; Thomas and Benjamin, 2020). Displacement can be temporary or permanent, and can be caused by the need to seek housing, medical care, education, food security, employment and/or a sense of security. Some temporary migration occurred after Hurricane Maria (2017) in Dominica, where many people left in the immediate aftermath and then returned home within a year to rebuild and reestablish themselves (CARPHA, 2018). Displacement can also occur when one's livelihood is affected by climate change, as is happening to farmers, fisher folk and people working in the tourist sector. Water and food insecurity and coastal erosion associated with climate change can also lead to migration (CARPHA, 2017; Kelman et al., 2021; Ravaliere and Murphy, 2017).

Figure 1: Average annual displacement relative to population size (Number of people displaced per 100,000 inhabitants)



Source: Internal Displacement Monitoring Centre, with United Nations Population Division data (Anzellini et al. [2017]), licensed under CC BY-NC-SA 3.0 IGO.

National systems that are sensitive to climate change, such as food, education and health systems, and national economies can be placed under strain due to an influx of migrants. Migrants can move toward, as well as away from, areas heavily affected by climate change, since their migration may be motivated by a variety of factors. In the Caribbean, rural to urban migration presents environmental challenges as cities and towns are often

overcrowded and lack capacity for expansion due to surrounding hills and their proximity to the coast. Existing climate change-related urban problems may be aggravated, such as the urban heat island effect, air pollution and flooding (Campbell-Lendrum and Corvalán, 2007). Migration from the Caribbean to developed countries presents similar challenges, although limitations in the capacity of destination countries to cope with the influx may be exaggerated by politicians who encourage xenophobia for their own political ends (Parenti, 2011). Informal settlements, often occupied by migrants, are especially vulnerable to health impacts of climate change (Heslop-Thomas and Bailey, 2006).

It is believed that climate change has interacted with economic and political pressures to cause the migration of over 7 million people from Venezuela to other countries globally. As of November 2022, over 200 000 Venezuelans had migrated to the Caribbean, specifically to the Dominican Republic (115 300), Trinidad and Tobago (35 300), Guyana (19 600), Aruba (17 000) and Curacao (14 000) (R4V Inter-Agency Coordination Platform for Refugees and Migrants from Venezuela, 2022a). Global warming and drought have caused most of Venezuela's glaciers to disappear. Without adequate rain or glacial supplies, Venezuela's hydroelectric power production, which supplies most of the country's electricity, has diminished. Venezuela has also been affected by water and food insecurity. Trinidad and Tobago has been the largest recipient of Venezuelan migrants per capita. This rapid and huge influx as a proportion of the total population has placed a burden on Trinidad and Tobago's systems and resources, including health care, especially during the COVID-19 pandemic (Chemnick, 2019; Dubrow, 2021; Lindo, 2021).

Climate displacement has gendered dimensions. In some cultures (e.g. Maasai in Tanzania), it is often able-bodied men who migrate first, leaving behind women as primary caregivers to children and the elderly (Cissé et al., 2022). However, among Venezuelan migrants into the Caribbean, there are more women than men (R4V Inter-Agency Coordination Platform for Refugees and Migrants from Venezuela, 2022b). Women, children and lesbian, gay, bisexual, transgender and intersex people may be at particular risk of sexual and physical abuse in migrant shelters, affecting their mental health and well-being (Brody, 2021).

Health outcomes of migration vary according to geographical context, country of origin and circumstances of migration. The "healthy migrant effect" refers to the observation that migrants tend to be healthier than non-migrants remaining in their communities of origin (Hunter and Simon, 2017). This may be because migrants, before the start of their journey, tend to be in good health and financially better off than non-migrants. However, the "healthy migrant effect" does not always hold. People involuntarily displaced because of severe weather events are less likely to be in good health and the trauma of migration may worsen their health status (Cissé et al., 2022; Ravaliere and Murphy, 2017). During the migration process and after they reach their destination, involuntarily displaced people may face a lack of adequate shelter, food, water and health care; the loss of social networks; economic hardship; crowded living conditions; and even prolonged detention. These factors can lead to the exacerbation of noncommunicable diseases, the spread of infectious diseases, sexual and gender-based violence, injuries, poor pregnancy outcomes and mental disorders.

Involuntary displacement and migration can lead to or exacerbate mental illness. This can be aggravated by the interruption of health care, sleep deprivation, unhygienic accommodation, heightened exposure to vector- and water-borne diseases, and vulnerability to sexual abuse, substance misuse and violence (Cissé et al., 2022; Herrán, 2021; R4ACCHC, 2022a). For example, changes in physical environment can cause emotional distress and disorientation and the loss of one's home can create feelings of loss of permanence, belonging and personal identity. For both those migrating and those remaining, there can be feelings of loneliness and insecurity (WHO, 2022). After Tropical Storm Erika in Dominica in 2015, the primary perceived healthcare need identified by healthcare providers and displaced survivors was mental health services for adults and children (Ravaliere and Murphy, 2017). Displacement can be particularly traumatic for indigenous populations with a deep attachment to their land. On the other hand, migration from SIDS can improve mental health and well-being. Such was the case for migrants from Tonga, particularly women, to New Zealand, where their improved mental health and

well-being was attributed to greater income and social opportunities, and also better public services (Kelman et al., 2021).

Migrants may be exposed to new infectious diseases in the host country, with insecure access to health services, housing and jobs aggravating their vulnerability. Care must be taken to develop culturally sensitive health systems and services to protect both the migrants and the host communities (Cissé et al., 2022; R4ACCHC, 2022a). For example, the vaccination of migrants against infectious diseases not only protects migrants, but also helps to provide herd immunity to the entire host community.

Climate change may aggravate existing inequalities and patterns of marginalisation (Foresight, 2011). Wealthier households and those with higher levels of educational attainment have a greater capacity to adapt to a climate hazard and remain *in situ*. However, they also have greater resources to migrate and may do so. Lower-income households have fewer resources to enable them to adapt *in situ* or to migrate. Thus, the migration of lower-income households is often as a reaction to the loss of livelihoods, and the move often intensifies their poverty status and their exposure to future climatic and other hazards in their new location (Cissé et al., 2022; Natarajan et al., 2019). Some people are not capable of migrating for reasons such as health and mobility challenges and a lack of financial resources; others, for a variety of reasons, do not wish to leave their homes. These circumstances can cause increasing poverty and exposure to climate drivers of ill health.

In the Caribbean there has been limited research on the effects of climate change-induced displacement (internal or external) on health and health systems. Research has tended to focus on migration resulting directly from extreme events such as hurricanes and the impacts on mental health (CARPHA, 2018; Herrán, 2021; Mezdour et al., 2016; Ravaliere and Murphy, 2017). There are some studies from the Pacific Islands that have examined climate and nonclimate drivers of migration and effects on health (Blocher et al., 2021; Mycoo et al., 2022).

8.2. WHAT SHOULD BE DONE?

Individual and community actions and how to support them

Include communities at risk of displacement and displaced people and migrants in developing response plans for population displacement and migration

Within countries, local and national government agencies and communities at risk of displacement should collaborate to identify the geographically defined communities most at risk of displacement through climate drivers such as sea level rise, flooding, landslides, bush fires and tropical storms (Mycoo et al., 2022). Contingency arrangements such as temporary accommodation, evacuation plans and permanent resettlement plans should be put in place. Strategies of "managed retreat" from coastlines and other areas threatened by climate change should be operationalised. Given that the hurricane season remains somewhat predictable, plans for relocation should be accelerated in the run up to and during hurricane season (R4ACCHC, 2023).

If external migration becomes necessary, communities of migrants now resident in the destination country (diaspora communities) can assist with developing contingency plans regarding how displaced people will be relocated and how families can be kept together. Individuals and organisations from the home country and in the diaspora can provide important sources of support. For instance, Caribbean people and organisations based in high-income countries often provide remittances to support people who have been affected by disasters within the region. They also sometimes assist in facilitating temporary or permanent relocation to other countries and in providing support in those countries.

Structural/governmental actions and private sector actions

Ensure a coordinated governmental and community response

Government agencies, in collaboration with faith-based and nongovernmental organisations, especially migrant organisations, should consider the needs of displaced people in planning for the hurricane season. Plans for shelter, food, clothing and housing can be made in advance. Schools, churches and community centres can be checked for suitability as temporary housing, and a list of households able to house displaced people can be drawn up (R4ACCHC, 2023).

Develop strategies for managed retreat: orderly, planned migration away from areas at extremely high risk of adverse climate impacts

There are areas at such high risk of adverse climate change impacts that movement of people away from these areas is virtually inevitable – the question is whether this retreat will be orderly and planned versus chaotic and unplanned. Very low-lying coastal areas threatened by sea level rise are a primary example of these high-risk areas. Managed retreat, which can involve movement of both people and infrastructure, has obvious advantages over unplanned retreat, which can involve substantial destruction and hardship. However, it is crucial that strategies for managed retreat involve full input from and the consent of affected communities (R4ACCHC, 2023). Dominica has developed a strategy for relocating people away from hazard-exposed areas. This can be adapted to other Caribbean countries/territories (Blocher et al., 2021).

Develop strategies that improve access to health care for climate migrants

From a public health perspective, it is important to provide migrants with full access to healthcare services (R4ACCHC, 2023). Without such access, health problems among migrants may be aggravated. These potential problems include health conditions caused by the trauma of the move and encounters with new sources of disease in the host country, as well as preexisting health conditions and infections. Health conditions brought by migrants may also affect the host population. A leading concern in host countries is that migrants may bring

infectious diseases against which the host population has limited or no immunity. For instance, it has been noted that the Caribbean was a "hotspot" for the spread of chikungunya and Zika to North and South America through the travel and migration patterns of Caribbean people and through tourism (Mavian et al., 2018).

Develop strategies that afford climate-related migrants the same status as refugees

Climate-related migrants are not afforded the same status as refugees. There are no legally binding agreements obliging countries to support climate migrants (Lindo, 2021). Caribbean policymakers need to develop agreements on how climate migrants within the region will be accommodated (and to ensure their access to health care). There is also a need for advocacy to increase responsiveness to climate migrants' needs in countries outside the region. Caribbean governments' work on climate adaptation can help prevent the need for migration to countries outside the region.

Include climate migration and population displacement in regional and national disaster preparedness and recovery plans

The needs of people displaced by climate change within and between countries should be integrated into regional and national disaster preparedness and recovery plans, based on assessments of the needs of each country/territory and the capacity to support migrants from other countries/territories (R4ACCHC, 2023). Planning must consider:

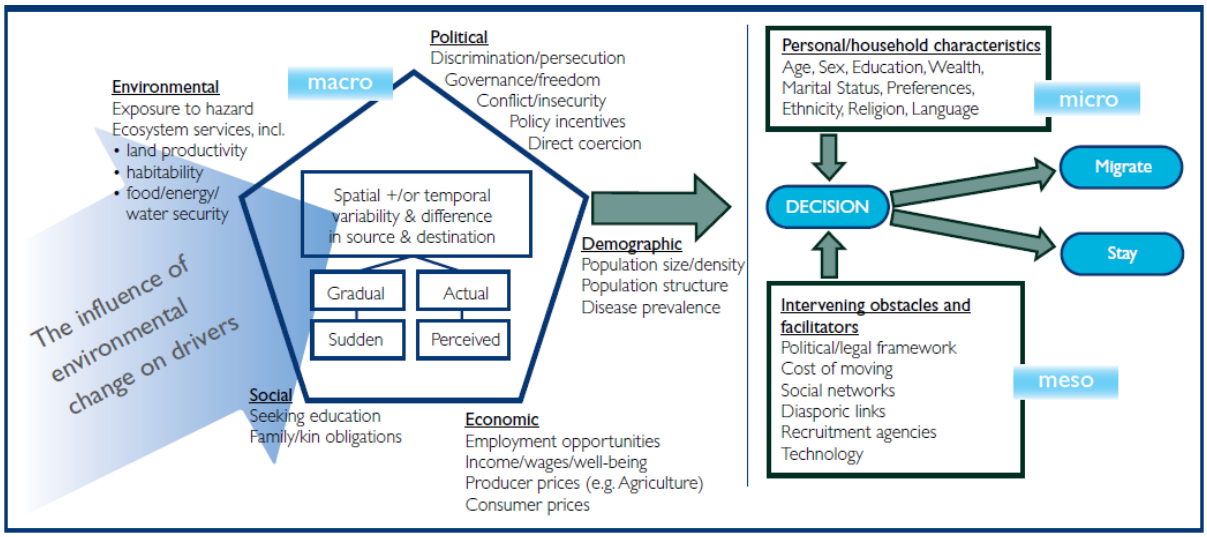
- Internal migration within one country/territory, e.g. rural to urban mobility;
- Migration between Caribbean SIDS or from other geographical areas into the Caribbean (e.g. Venezuela);
- Temporary versus permanent migration;
- The impact on national systems of receiving countries, notably health care (including mental health), social services, education, housing, education and security;
- Vulnerable groups such as women and children, people with disabilities and those who remain in the affected area.

Research gaps and how to address them

Identify the push factors for Caribbean migration

The Foresight framework demonstrates that the decision to stay or to migrate is contextual. It is influenced by multiple complex and interrelated social, economic, environmental, political, personal and household factors (Foresight: Migration and Global Environmental Change, 2011; Figure 2). The combination of factors driving Caribbean migration needs to be identified to better prepare for, adapt to and recover from climate-related hazards. Using this framework, research can be conducted with people who have migrated to identify the combination of factors that pushed them to migrate, including the role of climate change.

Figure 2: Foresight migration decision framework



Source: Foresight: Migration and Global Environmental Change (2011); licensed under the Open Government Licence v1.0.

For policymakers to understand the context in which displacement risk occurs, the INFORM Risk Index can be used. This is "a composite indicator that identifies countries at risk of humanitarian crisis and disaster that would overwhelm national response capacity" (INFORM Risk Index, 2022; R4ACCHC, 2023). There are three main components (Anzellini et al., 2017):

1. Natural hazards and exposure: events that might occur and exposure to them. Hazards include tropical cyclones, seismic events (earthquakes and volcanic eruptions), floods, droughts and tsunamis.
2. Socioeconomic stability: this quantifies what makes a population vulnerable when faced with a hazard. It is calculated using development, deprivation, inequality and aid dependency components. It uses country-level indicators such as the United Nations Development Programme Human Development Index, a measure of inequality (the Gini coefficient) and the total official development assistance per capita in the last two years.
3. Institutional capacity: this evaluates governments' priorities and institutional readiness in implementing disaster risk reduction activities.

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) is studying displacement and migration and may prove a useful international collaborator and funder for such research (R4ACCHC, 2022b).

Determine the cost of displacement and migration to inform humanitarian responses and national disaster planning and coordination

The cost of population displacement and migration is not only at the individual and family levels. There is also a cost to the community and national economies of both the country/area that has lost part of its population and to receiving countries/areas. Some questions include the following (R4ACCHC, 2023):

- For the migrants and receiving country/area:
  - What are the costs of housing, education, health and security for a displaced person?
  - What is the loss of income to the individual/family while trying to rebuild their home in a new country? What is this loss of income at the community and national levels?
- For those who remain and do not migrate:

- What are the costs of long-term consequences of not migrating? Costs to the individual could include loss of health, housing or land, and employment costs to the economy could include the costs of rebuilding and providing economic and social support to those who remain, or the eventual cost of future relocation.

Examine the connections between climate-related migration and health

There has been limited exploration of the effects on health of climate-related migration in the Caribbean. There is some evidence of mental health and well-being impacts on migrants (R4ACCHC, 2023). Some questions that can be examined include:

- What are the mental health challenges among climate migrants, and what are their specific causes?
- How does the incidence of infectious or chronic diseases compare among migrants versus the general population in places of origin and destination?
- What are the implications for healthcare provision? How can healthcare systems respond to promote health-seeking behaviour and access to health care among displaced people and among those left behind?

To answer these questions, data on health conditions need to be collected from both migrants and the general population. Collection of data from migrant communities can be challenging as they may not be in contact with services, especially if they are undocumented. Outreach services for migrants based on human rights principles need to be developed to increase access to services and enable the collection of the necessary data based on ethical research practices. The health of climate-related migrants should be disaggregated by sex, gender, race, ethnicity and age.

Identify the challenges faced by the healthcare system with respect to providing high-quality health care to migrants

One of the greatest challenges to migrants is access to health care. Migrants may have chronic conditions, such as noncommunicable diseases and HIV, that require ongoing treatment and medication. They may be exposed to new infectious diseases in the host country, and they may transmit diseases in the receiving community. Host healthcare systems must be equipped with information from research and surveillance. This will enable them to develop an efficient and competent administrative and medical workforce and appropriate medicines and technologies to respond effectively to care for migrants, especially when there is a sudden influx. Care must also be taken to develop culturally sensitive health systems and services (Cissé et al., 2022).

Conduct a review of national policies and regional (e.g. Caribbean Community and Organisation of Eastern Caribbean States) policies, treaties and agreements regarding immigration and refugees

It is important to identify which countries have migrant and refugee policies and how these relate to health and safety. Regional policies, treaties and agreements on migrants and refugees should be reviewed to assess their suitability in the context of climate-related migration and displacement. Policies on access to health care by migrants should receive special attention. This review should inform new agreements between Caribbean countries and with other countries on how the health and safety needs of migrants and refugees will be met, with a special focus on diseases associated with climate change as identified in the current report.

Determine the effectiveness of the individual, community, structural/governmental and private sector actions suggested above

Research questions for evaluation could include, but are not limited to, the following:

- What community preparations have been put in place to address the needs of displaced people in planning for the hurricane season? Did these preparations effectively meet their needs?
- What are the barriers to and facilitators of implementing policies that assist Caribbean governments with internal and external migration?
- Have national governments and regional entities such as Caribbean Community (CARICOM) and the Caribbean Public Health Agency put policies in place to ensure the health, safety and human rights of migrants?
- Have climate-related migration issues been included in national disaster preparedness and recovery plans?
- What is the economic impact of migration on the receiving country's health system?

Surveillance gaps and how to address them

Conduct disaster displacement risk assessments for both immediate climate-related disasters and long-term, slow-onset climate-related events

Climate-related displacement and migration can be addressed by a range of measures such as planned relocation that is voluntary (to a certain extent) with accompanying finances, or by building up the resilience of at-risk populations that may refuse to move from potentially high-risk disaster zones. Disaster risk assessments, including an estimation of the size of at-risk populations and available resources, will help communities and local and national governments to plan for displacement caused by short-term climate-related disasters such as hurricanes and floods or longer-term impacts such as sea level rise, drought and land erosion (Desai et al., 2021; R4ACCHC, 2023).

Monitor reasons for migration and the health concerns of migrants

There are challenges in monitoring climate-related migration. It is not always ethical or practical to monitor the movements of individuals or to enquire as to why they moved. Given national restrictions on immigration, there are risks in divulging reasons for migration, and undocumented migrants by definition do not appear in official records. For these reasons, it may only be possible to query documented migrants about the reasons they migrated. Censuses may present opportunities to record reasons for migration to a country, but questions on reasons for migration may be subject to reporting bias given the sensitivities around migration. Health surveys should be conducted periodically among migrants, comparing their health status and the environmental conditions they face with those of non-migrants. Following extreme events, monitoring of population movements should be undertaken, and samples of mobile populations may be involved in studies to record the circumstances that caused them to move, their health concerns and their access to essential services.

Strengthen monitoring of population displacement and migration resulting from severe weather events

Following hurricanes, the number of people in shelters is taken as a measure of population displacement. This approach is limited, since many people may take shelter in other households or buildings, and some may find no shelter and become homeless. It is important that local government entities conduct inquiries as to the local patterns of displacement and shelter-seeking in their communities and provide support to households and other private and public entities providing shelter. In the months following severe hurricanes, it is important to monitor travel patterns to assess the extent of temporary and permanent migration to other countries.

Research and surveillance capacity-strengthening needs

Climate-induced population displacement and migration can be voluntary or involuntary. It is very contextual and multidimensional. Researchers or research teams need to be proficient in many different technical areas such as economics, sociology, psychology and urban planning. They also need to be competent in both

qualitative methodologies, to ask the “why” and the “how” questions, and quantitative methodologies, to ask the “how much” and “how many” questions.

Information technology databases need to be created to link the health impacts of population displacement, such as on mental health, to environmental hazards such as hurricanes. Demographic data on migrants experiencing these health issues need to be captured and monitored over time to enable better health outcomes.

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