Advancing and Integrating Climate and Health Policies:

Insights from Six Geographies

Principal Investigators:

Edward Maibach, MPH, PhD (emaibach@gmu.edu)
George Mason University Center for Climate Change Communication

Sophie Gepp, MSc (sophie.gepp@cphp-berlin.de) (PI from June 16, 2024)
Centre for Planetary Health Policy

Georgiana Gordon-Strachan, PhD (Georgiana.gordonstrachan@uwimona.edu.jm)
The University of the West Indies

Candice Howarth, PhD (C.Howarth@lse.ac.uk)
London School of Economics and Political Science

Jeni Miller, PhD (jeni.miller@climateandhealthalliance.org)
Climate and Health Alliance

Richard Mulwa, PhD (richard.mulwa@uonbi.ac.ke)
University of Nairobi

Poornima Prabhakaran, PhD (poornima.prabhakaran@ccdcindia.org)
Centre for Chronic Disease Control

Tim Rayner, PhD (Tim.Rayner@uea.ac.uk)
University of East Anglia

António Saraiva, PhD (saraiva@usp.br)
University of São Paulo

Remco van de Pas, PhD (remco.van.de.pas@cphp-berlin.de) (PI until June 15, 2024)
Centre for Planetary Health Policy

Funding:

This research was funded by the Wellcome Trust (grant number 228255/Z/23/Z).

Cite as:

Ettinger, J., Fine, J., Gepp, S. Gordon-Strachan, G., Howarth, C., Mulwa, R., Prabhakaran, P., Rayner, T., Saraiva, A., van de Pas, R., Baltruks, D., Ghosh, S., Graham, J., Greaves, N., Jharia, I., Kigundu, K., Maharaj, S., McFarlane, S., Mirow, J., Murphy, M., Musembi, E., Nyukuri, E., Raju, B. J., Sievert, G., Smith, E., Vianna, D., Voss, M., Zimermann, P., Miller, J., Mildenberger, M., Leiserowitz, A., Kotcher, J., & Maibach, E. (2025). *Advancing and integrating climate and health policies: Insights from six geographies.* George Mason University. Fairfax, VA: George Mason University Center for Climate Change Communication. https://doi.org/10.17605/OSF.IO/ZQ4XU

Funded by the Wellcome Trust

Cover photos (upper left to lower right) by João Pavese/Pexels; E. Arthur Phillips; Jorge Royan/Wikimedia; Zulina Media/Pexels; al_si/Pixabay; Pixabay

Abstract

Around the world, national governments are grappling with the interlinked challenges of how to address climate change and protect their citizens' health. This study investigates the current status of climate and health policy integration, and potential for further integration, in six geographies: Brazil, the Caribbean, Germany, Kenya, the United Kingdom, and the United States. We synthesize the findings of studies conducted in each location, drawing on a total of 225 in-depth interviews with high-level stakeholders who work on climate and/or health policy or adjacent policy topics including transportation and agriculture. We found stakeholders in all countries feel that climate policy and health policy are largely separate at present but are beginning to become more integrated. Nearly all stakeholders believe that further integration of climate and health policy would be beneficial. Commonly reported barriers to such integration include shortages of funding and data, silos between climate-focused and health-focused parts of government, low awareness among policymakers and the public, and other systemic challenges. Strategies commonly suggested to enhance policy integration include improving cross-sectoral collaboration, scaling up successful programs and adapting initiatives from other nations, increasing the uptake of science in policymaking, and enhancing research, communication, education, and advocacy. We conclude by exploring potential implications for government actors, health professionals, climate professionals, researchers, philanthropists, and advocates.

Table of Contents

1. Executive summary

Human health depends on planetary health, including a stable climate, and the necessary actions to stabilize our climate can have profound human health benefits. In recognition of the health harms of climate change and the health benefits of climate solutions, policy stakeholders are increasingly contemplating whether climate and health policy should be better integrated — and if so, how. This report synthesizes insights on these questions across six geographies, including Brazil, the Caribbean, Germany, Kenya, the U.K., and the U.S.

From January to July 2024, the research teams in each of these locations conducted between 21 to 65 in-depth interviews with stakeholders in their country or region working on national climate policy, health policy, the climate-health intersection, or related topics such as emergency response. In total, 225 interviews were conducted across the six locations. Participants included legislative staff, civil servants, think tank policy researchers, academic experts, industry consultants, and advocates (individuals and civil society organizations seeking to advance climate and health policy action). The research questions and design were collaboratively developed by the research teams, with additional insights from research participants and members of the Global Climate and Health Alliance.

Current status of climate and health policy

Participants generally reported that climate and health policy are not well integrated, although policy integration in Germany, Kenya, and the U.K. may be slightly more advanced than in Brazil, the Caribbean, and the U.S. Many participants said that climate and health are siloed in different parts of government, including legislative bodies, and felt that health perspectives are not adequately considered in climate policymaking. Even where climate and health policy are somewhat integrated, participants observed a lack of implementation and only superficial or implicit consideration. However, participants in all regions said that climate and health policy are trending towards greater integration. Signs of progress include climate-health integration in some (though not all) national policies, especially those related to air pollution and extreme weather; emerging collaborations through interagency/interministerial working groups; and an increase in relevant research evidence. Participants said these changes are driven by factors such as increased experience with climate disasters, supportive government leadership, and persistent advocacy.

Ideals for climate and health policy

Nearly all participants believed that climate and health policy should be better integrated. They argued that integrating climate and health policy would maximize potential co-benefits, avoid inadvertent duplication of work, avoid conflicting priorities, and boost support for climate policy. They also noted that certain challenges, such as infectious disease, could only be adequately addressed by considering climate in conjunction with health. Other policy areas in which participants from at least three different regions thought climate and health policy should be better integrated include agriculture, nutrition, and food security; climate adaptation and resilience; emergency preparedness and disaster response; housing and urban development; lowering emissions in healthcare; socio-economic justice; transportation; primary healthcare; water governance; and air pollution.

In terms of specific goals at the climate-health intersection, participants from several regions called for policies to provide funding for initiatives, pursue equity and justice for vulnerable populations, institute national indicators and/or targets, develop a national legal framework and/or strategy, increase the use of health and environmental impact assessments, and allocate incentives for climate- and health-protecting activities. Participants hoped that, overall, policymakers could align their decisions with systems approaches — such as ones that acknowledge the socio-economic determinants of human health and the interdependence of humans and animals — and place a stronger focus on harm prevention.

Barriers to advancing and integrating climate and health policy

Many participants commented on resource shortages, primarily lack of funding, accessible data, and skilled personnel. They attributed these scarcities to factors such as competing priorities, a lack of long-term planning, and silos between climate and health professional communities (both within and outside government). Other common barriers related to government structures include fragmentation of climate-health initiatives due to disconnected institutions, the disruptive effects of changes of administration, and bureaucracy and inefficiency in general. Participants also mentioned barriers related to policymaking, including low uptake of scientific evidence, slow pace of policymaking, lack of incentives for long-term planning, poor policy implementation, and the pervasive influence of fossil fuel interests. More broadly, they commented on adverse cultural factors, such as low public awareness of the health harms of climate change, low public support for climate-health policy, undervaluing of harm prevention, political polarization, and climate disinformation and denial. Furthermore, some participants explained that the complexity of climate and health challenges itself constituted a barrier to policymaking.

Opportunities to advance and integrate climate and health policy

Participants observed that elections, national and international policy deliberations, and the recent establishment of new government institutions such as Germany's new public health agency could all present windows of opportunity for climate-health policymaking (though some participants commented that elections could result in unfavorable changes of administration). They also noted several favorable conditions, including growing international momentum for climate-health policy, rising public awareness of the health impacts of climate change, rising public support for climate and health solutions, increasing affordability of renewable energy, and a wealth of co-benefits that can be achieved (such as healthcare cost savings). They highlighted the growing availability of certain material resources, such as funding sources and technological advancements, as well as informational and conceptual resources such as data, model policies, and guiding frameworks. Additionally, participants singled out some actions as particularly feasible at the current moment, including incorporating a climate focus into national health policies and vice versa; introducing a joint climate-health focus into policy in areas such as agriculture, housing, and transportation; implementing existing policies; and enhancing education and outreach.

Strategies to advance and integrate climate and health policy

Participants recommended a broad range of strategies for integrating and advancing climate and health policy. Some of these strategies involved modifications to government structures, such as better coordinating climate-health policies and programs; improving collaboration across climate, health, and related government institutions; streamlining governance across sub-national, national, and international levels; and mainstreaming climate and health programs in existing institutions. They also shared recommendations for policymaking practices — most commonly, adopting a "climate in all policies" and "health in all policies" approach, increasing the use of scientific evidence, adapting and scaling up model policies, using participatory approaches like citizens' councils and assemblies, including health experts in climate policymaking, and limiting the influence of vested interests. They cautioned against creating policies without measurable targets and enforcement mechanisms.

With respect to research and data use, participants recommended improving data accessibility, optimally leveraging existing data sources, taking an interdisciplinary approach, and prioritizing policy-relevant research such as the quantification of health harms and the evaluation of existing initiatives. On the other hand, some participants felt that more research is in fact not necessary because there is already enough evidence to act upon.

Participants' recommendations for advocacy include expanding advocacy networks, mobilizing citizens, pressuring policymakers, cultivating climate and health champions, and remaining persistent despite obstacles. In terms of communication, their most prominent recommendations include enhancing dialogue between climate and health experts, framing climate change as a health issue, conveying health impacts in quantitative terms, connecting climate and health to extreme weather and other emergencies, discussing the economic costs of inaction and the economic benefits of action, using trusted messengers such as health professionals, tailoring communication to target audiences, using a positive frame, and highlighting win-wins. Participants from several countries emphasized the strategic value of educating government officials, health professionals, and climate professionals about climate-health intersections, as well as enhancing their technical skills. Finally, participants suggested increasing collaboration within and across sectors, including not just government but also industries, NGOs, and advocates.

Potential implications

Presidents, Prime Ministers, and their staff could play a leading role in modifying governmental structures to better support progress on climate and health policy. Participants proposed increasing collaboration across different parts of government, for instance through working groups, and noted that these collaborations should be coordinated through a central office. Political leaders could consider establishing such a central coordinating body, perhaps within an existing agency, ministry, or department. They could also consider developing national frameworks to aid in centralized coordination, such as legal and research frameworks. As a complementary strategy, political leaders could establish climate and health programs within each part of government. Educating civil servants across sectors about climate and health could help maintain policy momentum amid political administration changes. Political leaders could also help to further a climate-health agenda through national and international deliberations, such as the annual United Nations Framework Convention on Climate Change Conference of Parties (UNFCCC COP), which may provide useful model policies and programs that could be adapted. Finally, candidates for political offices — incumbents and challengers — may be interested in the reported rise of public support for climate-health solutions, which could prove to be a valuable part of their platforms.

Members of Congress, Parliament, and other national legislative bodies could all play important roles in modifying government structures to better support progress on climate and health policy. According to many participants, conditions are becoming more favorable for climate-health legislation due to mounting public support and international momentum (though after the completion of the interviews, leadership has changed to less favorable administrations in the U.S. government and elsewhere). Additionally, some participants felt that integrating health into climate policy could boost support for climate policy. Participants believed that climate and health policy should be integrated in many domains, including not just agriculture, healthcare emissions reductions, and housing and urban development, but also transportation, sanitation, water governance, emergency preparedness, and other focal areas. Commonly

mentioned policy goals that legislators could pursue include acquiring funding for climate-health initiatives, increasing health and environmental impact assessments, and enhancing equity and justice.

Civil servants could help advance and integrate national climate and health policies and programs by pursuing interagency/interministerial collaborations and by mainstreaming climate and health as a priority within their own institution. Participants pointed out that interagency/interministerial collaboration is necessary to ensure that climate-health initiatives in different parts of government are pursuing complementary, not redundant or conflicting goals. Educating civil servants about the topic should be beneficial — an effort that may be most effective if championed by civil servants themselves. Another idea is for government institutions to issue climate-health policy statements, which could simultaneously inform the public and solidify civil servants' perception that climate and health is a priority for their institution. Participants also stressed the need to implement existing policies and make the most of available funding.

Health professionals and health organizations could play a more substantial role in climate policymaking and help inject stronger health considerations into climate policy. Participants encouraged health professionals to build relationships with climate professionals and claim a place in climate policymaking spaces. Health professionals are also highly trusted and impactful advocates for climate action, with both the public and policymakers. Recommended strategies for communicating about the health impacts of climate change include discussing them in quantitative terms, connecting them to related emergencies such as extreme weather and pandemics, and mentioning specific, local, tangible, and near-term health impacts. However, health professionals are often confronted with many other priorities and inadequate funding, so their capacity for engaging in climate and health policy work may be limited.

Climate professionals and climate organizations could deepen their understanding of the health dimensions of climate change, increase their engagement in health policy, and build relationships with health stakeholders. Framing climate change in terms of health could boost support for climate solutions; focusing on the climate-health intersection could maximize the health benefits of climate solutions; and coordinating with health stakeholders could help avoid duplicating each other's initiatives. Climate stakeholders would benefit from inviting health professionals into climate spaces and enabling them to contribute in substantive ways.

Members of the research community can help provide evidence to inform climate and health policymaking. In addition to conducting new research, it is important to ensure that climate and health stakeholders are aware of, and can access, evidence relevant to their needs. Researchers can endeavor to build relationships with policymakers and other stakeholders, and further develop their communication skills to help promote awareness and application of existing evidence. Many participants pointed out the need to better quantify the health and health-economic harms of climate change, and the health and health-economic benefits of specific policy options. It is also important to ensure that policymakers and other stakeholders can access and understand existing data sources.

Philanthropic foundations and other non-governmental funders can respond to the strong need for funding and thereby help enable climate and health policy progress, including for government programs, researchers, and non-governmental organizations. Public-private partnerships could potentially support government programs, such as adaptation and mitigation initiatives, when state resources are not forthcoming. Additional funding could also build on existing programs. For instance, successful local programs could be scaled up to the national level and adapted for use in other locations.

Advocates can play a powerful role in helping galvanize climate and health policies. Participants offered many recommendations for how advocates can most effectively communicate about climate change and health, such as framing climate change as a health issue, discussing economic costs and benefits, and using trusted messengers such as health professionals. Advocates could seek to build and/or expand their networks and mobilize citizens to pressure policymakers. To have a stronger policy impact, they could also strive to help elect new political leaders and cultivate existing political leaders to become champions for climate and health. A focus on equity and justice could help build climate-health advocacy coalitions. Participants encouraged advocates to remain persistent in the face of setbacks and continue building momentum for climate and health action.

2. Background

As the planet warms to record-breaking temperatures, the health harms of climate change are becoming increasingly prevalent and severe. Extreme weather events such as heatwaves, droughts, wildfires, storms, and floods are causing injury and death worldwide, especially in low-wealth nations, communities of color, and vulnerable populations such as the elderly (Romanello et al., 2023). Furthermore, climate disruptions are leading to food and water insecurity, spreading vector-borne disease, and straining health systems (ibid.). The health benefits of climate action are likewise far-reaching; decarbonization could save millions of lives through improved air quality alone (Lelieveld et al., 2023). There is therefore an urgent need to cut greenhouse gas emissions and support climate adaptation in communities and health systems (IPCC, 2022).

The international community has taken some steps to address the health harms of climate change, such as holding the first Health Day at COP 28 (WHO, 2023a), issuing the COP28 Declaration on Climate and Health (WHO, 2023b), developing a new climate and health resolution among WHO member states (Fletcher, 2024), forming the WHO Alliance for Transformative Action on Climate and Health (ATACH) to support sustainable and climate-resilient health systems (WHO, n.d.), and issuing a ministerial declaration on climate change and health at the 2024 G20 summit (G20 Health Ministers, 2024). At the national level, 77% of countries are developing, or have already developed, national climate and health strategies (WHO, 2021). The implementation of these strategies, however, is hindered by shortages of funding, personnel, research, and technologies (ibid.). Furthermore, a 2024 report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, which drew on the expertise of stakeholders in 57 countries, found that single-issue silos impeded effective governance at the complex intersection of climate, health, food, water, and biodiversity (IPBES, 2024).

To shed light on challenges, opportunities, and strategies for climate and health policymaking, this report brings together insights from six diverse geographies across the Global South and the Global North: Brazil, the Caribbean, Germany, Kenya, the U.K., and the U.S. Below, we provide a brief overview of the health impacts of climate change in each region, summarize existing policies and programs, and discuss other relevant contextual factors. As available, we include each region's "NDC scorecard," a measure developed by the Global Climate and Health Alliance to evaluate the degree to which climate-health links are addressed in governments' national climate commitments (Global Climate and Health Alliance, n.d.).

Brazil

Some of the main effects of climate change in Brazil include air pollution; flooding; forest fires, especially on Indigenous lands (Alencar et al., 2024); and the spread of diseases such as dengue and zika (Saldiva, 2024). Notably, during this study, the state of Rio Grande do Sul experienced devastating flooding (National Confederation of Trade in Goods, Services and Tourism, 2024). Flooding in turn leads to water contamination, health system disruption, disease spread, and mental health problems (Biernath, 2024). Fortunately, Brazil possesses an exemplary Unified Health System, a strong Planetary Health movement, and a presidential administration (the Lula government) supportive of climate policy. Both a National Policy on Climate Change and a National Plan for Adaptation to Climate Change are in place, and there is an Interministerial Committee on Climate Change (Brazilian Government 2024). However, climate-health policies still appear to be largely lacking, and those that exist are not sufficiently enforced.

NDC scorecard: 1/18 points (6%) as of 2023

Caribbean

Because the Caribbean islands have mainly coastal populations, residents' health is affected by issues such as sea level rise (Drewry 2021), hurricanes (Lim et al., 2018; Orengo-Aguayo et al., 2019), and both flooding and droughts (Drewry 2021). Additionally, residents experience increasingly extreme heat (World Meteorological Association 2023). Associated health challenges include the exacerbation of diseases both infectious and non-infectious (Seon 2024) and the trauma of experiencing extreme weather events and being displaced from one's home (Shultz et al 2020, Greaves et al. 2024). In response, many Caribbean countries have created National Adaptation Plans (NAPs) that include emergency preparedness measures, improved health infrastructure, and expanded surveillance of diseases. Despite these integrations of health into NAPs, most Caribbean countries do not yet have designated Health National Adaptation Plans, which are recommended by a World Health Organization Special Initiative on Climate Change and Health in Small Island Developing States.

NDC scorecard: 10.2/18 points (57%) as of 2023

Germany

Some of the main impacts of climate change in Germany include heat waves, which disproportionately affect vulnerable populations such as children and elderly people (Winklmayr et al., 2023); storms and floods, which lead to infectious disease spread and exposure to mold (Butsch et al., 2023; European Environment Agency, 2024); changes to UV irradiance and dose, which are associated with skin cancer and eye problems (Baldermann et al., 2023); air pollution, especially ground-level ozone and particulate matter (Breitner-Busch et al., 2023); and the mental health problems ensuing from all of the above (Gebhardt et al., 2023). The German healthcare system is under considerable financial stress (Bundesministerium für Gesundheit, 2024) and faces severe and growing staffing shortages (Sachverständigenrat Gesundheit &

Pflege, 2024). Positive policy developments include the inclusion of health in Germany's Climate Adaptation Strategy (BMUV, 2008; 2024), a call for climate-resilient health systems in the 2022 agenda of the German G7 Presidency (G7 Deutschland, 2022), Germany's role in drafting the COP28 declaration, and climate actions within the health sector, e.g. through the German Alliance on Climate Change and Health (KLUG). However, the health sector is not included in the Federal Climate Protection Act (Bundes-Klimaschutzgesetz) (Hertig et al., 2023) and does not have a strategy or plan for achieving climate neutrality.

No NDC scorecard is available for Germany because the EU presents a joint NDC which includes Germany. Most EU countries do not submit their own separate NDCs.

Kenya

Kenya is highly susceptible to climate hazards such as droughts and flooding, which in turn aggravate food insecurity, water scarcity, and wildfire (Opiyo et al., 2014; The World Bank Group, 2021). Droughts especially impact arid and semi-arid regions, which tend to be low-wealth (The World Bank Group, 2018); disruptions to agriculture fall hardest on smallholder farmers (Republic of Kenya, 2017). Additionally, rising temperatures and changes to rainfall have increased the range of vector-borne diseases, including malaria (Siraj et al. 2014). Progress towards integrated climate and health policy includes the recognition of health as a climate-sensitive sector in the National Adaptation Plan (Republic of Kenya, 2016), the consideration of health concerns in the National Climate Change Response Strategy (Republic of Kenya, 2010), and the consideration of climate concerns in the latest Health Sector Strategic Plan (Republic of Kenya, 2018). Furthermore, there are existing climate policy collaborations between the Ministry of Health, the National Environment Management Authority, and the Ministry of Environment and Forestry. However, disaster response is still not well coordinated.

NDC scorecard: 5/15 points (33%) as of 2021

U.K.

Notable effects of climate change in the U.K. include increased incidences of flooding, heatwaves, and other extreme weather (UKHSA, 2023). Heatwaves create a particular challenge because U.K. buildings have not been designed to minimize overheating in summer. The U.K. has made some progress towards adaptation through the Climate Change Act, the Emergency Preparedness Resilience Response Framework, and establishment of the Centre for Climate and Health Security. The healthcare system has also made some positive (though slow) steps, including the General Medical Council's recognition of the need for sustainability and the Greener NHS programme's efforts to lower carbon emissions in the health sector and improve resilience to climate impacts. Furthermore, the U.K. demonstrated international leadership on climate and health when it hosted COP26. However, progress on the public health side of climate change, as well as decarbonization beyond the health sector (e.g., in areas such as transport and housing), has been limited, and is hampered by departmental silos. In contrast,

Scotland and Wales have adopted more urgent adaptation and mitigation strategies, such as the 2015 Well-being of Future Generations (Wales) Act (Welsh Government, 2024).

NDC scorecard: 7/15 points (47%) as of 2021

U.S.

Due to the U.S.'s diverse geographic features, climate change poses many different health hazards to Americans, including from air pollution, vector-borne disease, and extreme weather events including wildfires, drought, heatwaves, storms, and floods (Hayden et al., 2023). Policy initiatives to address climate and health have included the Climate and Health Program in the Centers for Disease Control and Prevention; the Office of Climate Change and Health Equity in the Department of Health and Human Services (DHHS); the DHHS's voluntary Health Sector Pledge (U.S. Department of Health and Human Services, 2024); and the Climate Change Initiative in the National Institutes of Health. Despite the progress made by these initiatives, climate and health policies are still mostly developed and implemented separately. Furthermore, the Trump administration is now reversing progress on climate and health policy in the U.S., including through the dismantling of existing government programs (EELP, 2025; Lee, 2025), termination of research funding (Scientific American, 2025), and censorship of terms such as "climate science" and "health equity" (Yourish et al., 2025).

NDC scorecard: 6/15 points (40%) as of 2021

Research questions

This report examines climate and/or health policy stakeholders' perspectives on the following questions:

1) What is the perceived current state of integration (or lack thereof) of climate and health policy in the nation or region?
2) What do policymakers and other stakeholders see as the ideal relationship between health policy and climate policy, and climate-adjacent policy?
3) What barriers currently impede progress toward the ideals (as described in RQ 2)?
4) What opportunities have the potential to aid progress toward the ideal relationship between climate and health policy?
5) Which strategies are seen to be effective for influencing climate and health policy?

Methods

Across all regions, the researchers conducted 225 in-depth interviews with a broad range of climate and health policy stakeholders, including legislators and legislative staff, civil servants, think tank researchers, academic experts, and advocates. These participants worked on climate policy, health policy, the climate-health nexus, or other adjacent areas such as agriculture, emergency response, energy, housing and urban development, social policy, and transportation. The interviews were conducted between January 11th – July 8th, 2024. Each research team interviewed 21 to 65 stakeholders and analyzed their interview data in ATLAS.ti 25 using a combination of inductive and deductive qualitative content analysis. Please see the methods section for more details (p. 40).

Multinational research coordination and individual regional reports

This multinational study was funded by the Wellcome Trust. Senior personnel from the research teams in all six nations and regions collaboratively developed the research questions, interview questions, sampling methods, and analysis strategy. The interview questions and report drafts were also informed by input received from members of the Global Climate and Health Alliance and other stakeholders who attended pre-publication briefings. Additionally, each research team published a regional report containing more detailed findings, which are available here.

3. Findings

Below, we synthesize the findings from the six national/regional reports. Topics include participants' views on the current status of integration of climate and health policy (3.1), optimal integration or separation (3.2), barriers impeding climate-health policy integration and advancement (3.3), opportunities for integration and advancement (3.4), and strategies for integration and advancement (3.5).

Please note that, in the summary tables, a lack of a check mark does not indicate certainty that a finding does not apply to a location, but only that the finding did not arise in the interviews conducted in that location. Additionally, the findings reflect the views of interviewees from each location, and do not represent the views of all stakeholders.

3.1. Current status of integration of climate and health policy

Across the six countries and regions, most participants reported that climate and health policy were not well integrated. (Some countries have multiple categories checked because respondents expressed a range of opinions.) Participants noted a lack of comprehensive national climate-health strategies (Germany), including inadequate consideration of health in national climate adaptation plans (Brazil). In particular, German and Kenyan stakeholders commented that health was not sufficiently integrated into climate legislation. Many participants noticed silos between climate and health government institutions (Caribbean, Germany, U.K., U.S.), as well as between climate and health legislators (Brazil, U.S.), with health experts especially being overlooked in climate policymaking (Kenya). They also commented on the lack of climate adaptation and mitigation policies in healthcare (Germany, U.S.).

Current status	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Not at all integrated						
Not very integrated	X	X	X	X		X
Somewhat integrated			X	X	X	
Fairly integrated						
Very integrated						

Even in countries with relatively higher reported levels of climate-health policy integration, participants noted limitations such as poor implementation (U.K.), superficial rather than thorough integration (Germany), implicit rather than explicit consideration (Kenya), and low awareness among policymakers of certain climate-health challenges, such as mental health (Germany, U.K.). Furthermore, while some participants observed signs of progress towards

mainstreaming health at the COPs, it was also noted that health remains sidelined from negotiations (Germany, U.S.), and it can be difficult to connect progress at the COP to national efforts (Germany, U.K.).

However, participants in every region perceived that climate and health policy were becoming more integrated over time. Signs of progress include the consideration of health in some national climate policies (Brazil, Caribbean – Jamaica, Germany, Kenya) and of climate in some national health policies and programs, such as Kenya's Health Policy Framework and the U.K.'s Greener NHS initiative. In addition to these overarching policies, climate and health policy tended to be more integrated in certain focal areas, including air pollution (Brazil, Germany, Kenya, U.S.), water pollution (Kenya), health system resilience (Caribbean, U.S.), transportation (Germany, Kenya, U.S.), extreme weather and emergency response (Brazil, Kenya, U.S.), and in particular, heat (Germany, U.K., U.S.). Respondents also mentioned policies examining the negative health impacts of emissions (Caribbean – Jamaica), model climate-health plans such as heat protection (Germany), and positive foreign policy developments, including efforts towards mainstreaming health into the UNFCCC meetings (Germany).

Change over time	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Becoming less integrated over time						
No change over time						
Becoming more integrated over time	X	X	X	X	X	

Policymaking dynamics, too, appear to be shifting in favor of climate and health policy integration in several regions. Examples include increased policymaker awareness of climate-health topics (Germany), increased cooperation through interagency/interministerial working groups (Germany, U.S.), and consideration of climate change in health-focused government institutions (Germany, U.S., U. K.) and medical assemblies (Germany). Another promising development is an increase in research evidence related to climate and health (Germany, Kenya), which was said to be due in part to the rising accessibility of digital technologies for gathering contextual data.

Participants attributed this progress to a broad range of factors, including the leadership of supportive administrations (Brazil, U.S.); a rising sense of urgency due to increasing climate disasters (Brazil, Caribbean, Germany); funding mandates; persistent advocacy, including NGO involvement (Germany, U.S.); international and regional integration of climate-health policy (Germany, Kenya); and growing awareness of how climate and health affect other priorities, such as racial justice and food security (Brazil, U.S.).

3.2. Views about optimal integration

Across all regions, there was a strong consensus that climate and health policy should be better integrated. Some of the main rationales mentioned were that integrating climate and health policy could reduce inadvertent duplication of work (Germany, U.S.), avoid conflicting priorities (U.K.), and maximize potential co-benefits (Germany, U.K., U.S.). Participants also commented

that policy integration would appropriately reflect the inherent interconnectedness of climate and health (U.K., U.S.). For instance, they felt that challenges such as infectious disease and socioeconomic inequality could not be adequately addressed without considering both climate and health (Brazil, Caribbean). Moreover, participants in Germany and the U.S. suggested that integrating health into climate policy could help boost support for climate policies.

Views about optimal integration	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Strong consensus that climate and health should be separate						
Moderate consensus that climate and health should be separate						
Mixed opinions						
Moderate consensus that climate and health should be integrated						
Strong consensus that climate and health should be integrated	X	X	X	X	X	X

Participants identified many focal areas where climate and health should be further integrated, including:

- Agriculture, nutrition, and food security (Brazil, Caribbean, Germany, Kenya, U.S.)
- Climate adaptation and resilience (Kenya, U.K., U.S., Germany)
- Emergency preparedness and disaster response (Brazil, Caribbean, Kenya, U.S.)
- Housing and/or urban development (Brazil, Germany, U.K., U.S.)
- Healthcare decarbonization (Germany, U.K., U.S.)
- Socio-economic justice (Brazil, Germany, U.K.)
- Transportation (Brazil, Germany, U.S.)
- Primary healthcare, especially for mental health (Kenya, Caribbean, U.K.)
- Water governance (Brazil, Caribbean, U.S.)
- Air pollution (Brazil, Germany, U.S.)
- Public health (with emphasis on prevention over treatment) (Germany, U.K.)
- Sanitation (Brazil)
- Economy (Brazil)

They envisioned policy aligned with systems thinking (Brazil, Germany, U.K.), e.g. through frameworks such as One Health and Planetary Health, and sought a stronger focus on prevention and structural determinants of health (Germany, U.K.).

Among the specific policy goals mentioned, the foremost were acquiring funding (all locations), aiding vulnerable populations with a focus on equity and justice (Brazil, Caribbean, Germany, U.K., U.S.), creating national climate and health indicators and/or targets (Brazil, Caribbean, Germany, Kenya, U.K.), developing a national legal framework and/or strategy related to climate and health (Caribbean, Germany, Kenya, U.K.), and increasing and/or improving assessments of potential policies' impacts on health and the climate (Germany, Kenya, U.K., U.S.). Other recommended policy goals included fiscal and tax policy revisions (Brazil, Germany), sanctions

for polluting industries (Brazil, U.S.), incentives for activities that benefit climate and health (Caribbean, U.S.), and funding for local climate-health initiatives (Germany, Kenya).

Policy goal	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Acquire funding	X	X	X	X	X	X
Equity/justice policies that benefit vulnerable populations	X	X	X		X	X
National indicators and/or targets	X	X	X	X	X	
National legal framework and/or strategy		X	X	X	X	
Increase health and environmental impact assessments of potential policies			X	X	X	X
Incentives for climate- and health-protecting activities		X	X			X
Fiscal and tax policy revision	X		X			
Sanctions for polluters	X					X
Fund local climate-health initiatives			X	X		

3.3. Barriers to optimal integration

Participants identified barriers pertaining to government structures, policymaking norms, resource scarcity, and cultural factors. One prominent theme was silos between climate-focused and health-focused parts of government (all nations/regions), and relatedly, a lack of coordination of climate-health policies and programs (Brazil, Germany, Kenya, U.S.). Furthermore, participants said that climate and health programs within government institutions, insofar as they existed at all, were not well embedded into institutional culture and structures (Brazil, Germany, Kenya, U.K., U.S.), which contributed to the commonly noted destabilizing effect of administration changes on climate and health initiatives (all nations/regions). In many locations, these problems were compounded by general inefficiency and bureaucracy (Brazil, Caribbean, Germany, Kenya, U.S.). Participants in Brazil, Germany, the U.K., and the U.S. also noted that government structures, including healthcare systems, tend to be slow to change course, both due to their scale and because their institutional design is intended for stability. Similarly, participants noted that the complexity of climate- and health-related government structures could constitute a barrier (Germany, Kenya, U.S.).

Government structures

Barrier	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Siloed government	X	X	X	X	X	X
Administration changes	X	X	X	X	X	X
Poor institutionalization of climate and health in government	X		X	X	X	X
Inefficiency/bureaucracy	X	X	X	X		X
Lack of coordination	X		X	X		X
Systems inertia	X		X		X	X
Complexity of government			X	X		X

Resource shortages included a lack of funding (all nations/regions), a lack of climate-health data needed for policymaking (all nations/regions, though with some disagreement or nuance in Germany and the U.K.), a lack of access to existing data (Brazil, Germany, Kenya, U.K., U.S.), and a lack of appropriately skilled personnel (Brazil, Caribbean, Germany, Kenya, U.K.).

Resources

Barrier	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Lack of funding	X	X	X	X	X	X
Lack of data needed for policymaking	X	X	X*	X	X*	X
Competing priorities	X	X	X	X	X	X
Lack of access to existing data	X		X	X	X	X
Lack of skilled personnel	X	X	X	X	X	

**indicates controversy*

The scarcity of funding was attributed to overall constraints on public budgets and competing priorities (all nations/regions), such as other public health challenges resulting in stressed healthcare systems (Germany, U.K., U.S.). The failure to prioritize funding for climate and health was in turn traced to a lack of long-term planning (Germany, U.K., U.S.). Lack of funding was also linked with silos: participants in Kenya commented on the tendency of philanthropists to "ring-fence" their funding, i.e., confine it to a strict single-issue focus (Kenya), and participants in Germany, Kenya, and the U.S. noted that the scarcity of funding at the climate-health intersection leads to competition rather than collaboration between government institutions. Lack of skilled personnel can also be seen as stemming from lack of funding, with inadequate resources to train and hire climate-health staff.

While a lack of adequate climate-health data was mentioned as a barrier in every region, some participants believed there was sufficient evidence already to justify policy action (Germany, U.K.). These participants questioned institutional norms about what kinds of evidence were privileged, and believed that action on climate and health should not be postponed.

Problems of policymaking included poor uptake of evidence (Brazil, Germany, Kenya, U.K., U.S.); the influence of vested interests (Brazil, Germany, Kenya, U.K., U.S.); the slow pace of passing and implementing policies (Brazil, Caribbean, Germany, Kenya, U.S.); weak implementation

(Brazil, Caribbean, Germany, Kenya, U.K.), for instance due to non-binding regulations; short-term thinking (Germany, U.K., U.S.), in part due to short election cycles; and poor coordination between national and sub-national policies (Germany, Kenya).

Policymaking norms

Barrier	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Poor uptake of evidence in policymaking	X		X	X	X	X
Influence of vested interests	X		X	X	X	X
Slow pace of policymaking and implementation	X	X	X	X		X
Weak implementation	X	X	X	X	X	
Short-term thinking			X		X	X
Poor coordination between national and sub-national policies			X	X		

Participants also mentioned a variety of cultural factors impeding climate-health policy. As previously noted with regard to government structures, participants likewise observed silos between non-governmental climate and health professional communities (all nations/regions), for instance due to climate experts' lack of understanding of the need to include health experts in their work (Kenya). They additionally observed low public awareness of the health impacts of climate change (Brazil, Caribbean, Germany, Kenya, U.S.) and low public support for climate and health policies (Brazil, Caribbean, Kenya, U.S.). In several countries, participants felt that proactively preventing health harms is undervalued (Brazil, Germany, U.K., U.S.). Climate denial and disinformation (Brazil, Germany, Kenya, U.S.), as well as political polarization (Brazil, Germany, U.S.), further inhibit climate-health policy. Other cultural barriers include a perception that economic prosperity depends on fossil fuels (U.S.) and an aversion to considering risks (Brazil). With respect to the last barrier, a participant commented that even in the context of harm prevention, observing a risk was seen as inviting that risk to occur.

Cultural factors

Barrier	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Silos in professional communities	X	X	X	X	X	X
Low awareness of health impacts of climate change	X	X	X	X		X
Low public support for climate and health policy	X	X		X		X
Devaluation of prevention of health harms	X		X		X	X
Climate denial and disinformation	X		X	X		X
Political polarization	X		X			X
Climate experts' lack of understanding of the need to involve health experts				X		
Perceived economic reliance on fossil fuels						X
Aversion to considering risks	X					

Finally, participants identified the inherent complexity of climate and health challenges as a barrier to policymaking (Brazil, Germany, U.S.).

3.4. Opportunities to advance integration

Participants called attention to windows of opportunity for climate-health policy integration and advancement. The most commonly mentioned windows of opportunity were upcoming deliberations about national policy (Brazil, Caribbean, Germany, Kenya, U.S.) and international policy (Brazil, Caribbean, Germany, Kenya), e.g. decisions about Nationally Determined Contributions to the Paris Agreement. In particular, participants in Brazil mentioned COP30, which will take place in the country in 2025, as an opportunity to enhance communication both at the national and international levels. Other windows of opportunity included elections, which offer a chance to influence would-be leaders' stances on climate and health (Brazil, Germany), and the recent establishment of institutions that could house climate-health initiatives, including a new national public health agency (BIPAM) in Germany and the new Centre for Health and Climate Security in the U.K Health Security Agency.

Windows of opportunity

Opportunity	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Upcoming national policy deliberations	X	X	X	X		X
Upcoming international policy deliberations	X	X	X	X		
Elections	X		X			
Recent establishment of new institutions			X		X	

Participants additionally observed many favorable conditions for climate-health policymaking. Most commonly mentioned were the opportunity to realize climate-health co-benefits (all nations/regions), e.g. enhanced physical health through active transportation and reduced air pollution, and a rising awareness of the health impacts of climate change (all nations/regions), driven in part by the increasing frequency and severity of extreme weather events. Other favorable conditions include growing international momentum for climate-health policy integration and advancement (Brazil, Caribbean, Germany, Kenya, U.K.), as demonstrated by the introduction of a Health Day at COP28; the possibility of saving on healthcare costs through climate solutions (Caribbean, Germany, U.K., U.S.); the increasing affordability of renewable energy technology (Brazil, Germany, U.S.); and openness to collaboration between climate and health stakeholders (Germany, Kenya). Furthermore, participants in some countries noted rising support for climate policy (Brazil, Kenya, U.S.). Participants in Germany, however, perceived that climate support was stronger in recent years, but seems to be diminishing.

Favorable conditions

Opportunity	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Opportunity to realize co-benefits	X	X	X	X	X	X
Rising awareness of climate impacts	X	X	X	X	X	X
International momentum on climate and health	X	X	X	X	X	
Possibility of healthcare cost savings		X	X		X	X
Rising support for climate policy	X			X		X
Rising affordability of renewable energy	X		X			X
Large national health system	X				X	
Openness to collaboration			X	X		

Various kinds of resources were also seen as presenting opportunities. Amidst funding shortages, participants highlighted the availability of underutilized or upcoming funding sources (Brazil, Caribbean, Kenya, U.S.). They additionally noted technological advancements (Brazil, Germany, Kenya, U.S.), such as in data collection. Furthermore, participants in Brazil commented on the country's wealth of natural resources well-suited to renewable energy development. Other resources were more conceptual in nature: participants emphasized the value of guiding frameworks such as One Health and Planetary Health (Brazil, Germany, Kenya, U.K.); existing data (Brazil, Germany, Kenya, U.S.) and assessment tools (Caribbean, U.K.); successful model policies and programs that could be adopted or scaled up (Germany, U.K., U.S.); and knowledge-sharing platforms (Brazil, Kenya).

Resources

Opportunity	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Available funding sources	X	X		X		X
Technological advancements	X		X	X		X
Available data	X		X	X		X
Frameworks such as One Health and Planetary Health	X		X	X	X	
Successful model policies and programs			X		X	X
Knowledge-sharing platforms	X			X		
Assessment tools		X			X	
Natural resources conducive to renewable energy	X					

Lastly, participants identified actions that they saw as particularly feasible. Commonly mentioned possibilities included incorporating a climate lens into national health policies (Brazil, Caribbean, Germany, Kenya) and vice versa (Brazil, Germany, Kenya); incorporating both a climate and health lens into policies in related areas (Kenya, U.K., U.S.), such as agriculture, housing, and transportation; implementing existing policies (Brazil, Caribbean, U.S.); and conducting education and outreach (Caribbean, Kenya, U.S.). Less commonly, participants saw opportunities to conduct climate-health research (Caribbean, Kenya), create a climate-health

research network (Kenya), pursue local climate-health actions (Germany, Kenya), and drive bottom-up change (Caribbean).

Particularly feasible actions

Opportunity	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Incorporating climate into national health policies	X	X	X	X		
Incorporating health into national climate policies	X		X	X		
Incorporating climate and health into related policy areas				X	X	X
Implementing existing policies	X	X				X
Education and outreach		X		X		X
Conducting climate-health research		X		X		
Local action			X	X		
Bottom-up change		X				
Creating a climate-health research network				X		

3.5. Strategies to advance integration

Participants suggested strategies for integrating and advancing climate and health policy through changes to government structures, policymaking norms, research, data use, communication, advocacy, and education. To make government structures better suited to climate-health objectives, they suggested increasing collaboration across climate, health, and related institutions (all nations/regions), for instance through interagency/interministerial working groups. They further noted the importance of ingraining a climate-health focus in each government institution (Caribbean, Germany, Kenya, U.K., U.S.), a strategy that can be complementary to collaboration across institutions. For instance, a participant in Kenya emphasized the need to create succession plans so programs do not terminate upon the retirement of key personnel, and participants in Germany and Kenya suggested that government institutions issue statements about climate and health to publicly commit to their positions. Additionally, participants recommended establishing a central body focusing on climate and health (Brazil, Kenya, U.K., U.S.), whether in an existing department or a new one. Finally, participants observed a need for multi-level governance to align international, national, and subnational policies (Brazil, Germany, Kenya, U.K.).

Government structures

Strategy	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Collaborate across climate, health, and related institutions	X	X	X	X	X	X
Institutionalize climate and health programs in existing institutions		X	X	X	X	X
Centralize leadership	X			X	X	X
Multi-level governance (local, state, national, and international collaboration)	X		X	X	X	

In terms of policymaking norms, participants commonly suggested using the approaches of "health in all policies" and "climate in all policies" (Brazil, Caribbean, Germany, Kenya, U.K.) to comprehensively introduce a climate-health focus into related areas such as nutrition and transportation; using participatory policymaking approaches such as citizens' assemblies/councils (Brazil, Germany, Kenya, U.K., U.S.); increasing the uptake of science in policy (Brazil, Germany, Kenya, U.K., U.S.); and adapting and scaling up existing legislation (Caribbean, Germany, Kenya, U.K., U.S.). They also recommended embedding health experts in climate policymaking (Kenya, U.K., U.S.), limiting the influence of vested interests in politics (Germany, U.K., U.S.), strategizing with a long-term perspective in mind (Germany, Kenya), and using litigation to enforce regulations and/or penalize climate- and health-harming actions (Brazil, Germany). To make policies more impactful, participants in Germany suggested creating measurable policy goals and passing binding legislation. Other recommendations included using an all-hazards approach to enhance emergency preparedness (Caribbean), developing joint climate-health budgets (Germany), using models from other countries (Germany), using the adaptive pathways model (a framework that helps guide decisions under conditions of uncertainty; U.K.), proposing ambitious policy packages (U.S.), disaggregating policies as necessary to pass them (U.S.), and focusing on adaptation goals before mitigation goals (U.S.).

Policymaking norms

Strategy	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Climate in all policies/health in all policies	X	X	X	X	X	
Participatory policymaking	X		X	X	X	X
Increase the uptake of science in policymaking	X		X	X	X	X
Adapt or scale up existing legislation		X	X	X	X	X
Include health experts in climate policymaking				X	X	X
Limit influence of vested interests			X		X	X
Long-term strategizing			X	X		
Use litigation	X		X			
Create measurable goals			X			
Pass binding legislation			X			
Use all-hazards approach		X				
Joint budgets			X			
Use models from other countries			X			
Manage uncertainty using adaptive pathways model					X	
Propose ambitious policy packages						X
Disaggregate policies if necessary to pass them						X
Focus on adaptation first, then mitigation						X

In the domain of research and data use, participants primarily underscored the need to prioritize research that is useful for climate-health policymaking (all nations/regions) — for instance, research quantifying the health impacts of climate change and the health benefits of climate solutions (Brazil, Germany, Kenya, U.S.) and research evaluating current policies and programs (Germany, Kenya, U.S.). They further recommended improving data accessibility and making the most of existing data sources (all nations/regions). Participants in Brazil especially noted the need to consider Indigenous knowledge. Participants also reflected on how climate-health research can be most usefully conducted, and by whom: they suggested interdisciplinary research (Brazil, Kenya, U.S.), locally led research (e.g. Africa-led research; Kenya), and citizen science (U.S.), and recommended establishing a national research framework (U.S.).

Research and data use

Strategy	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Do research that is useful for policymaking	x	X	X	X	X	X
Maximize the accessibility and use of existing data sources	X	X	X	X	X	X
Quantify health impacts and benefits	X		X	X		X
Interdisciplinary research	X			X		X
Evaluate current policies and programs			X	X		X
Invest in locally-led research				X		
Citizen science						X
National research framework						X

Commonly suggested strategies for advocacy include mobilizing citizens and growing advocacy networks (all nations/regions), pressuring policymakers to take action (Brazil, Caribbean, Germany, Kenya, U.S.), electing and cultivating leaders who will champion climate-health solutions (Caribbean, Germany, U.K., U.S.), and being persistent in the face of setbacks (Brazil, Germany, U.S.). Participants in Brazil, Kenya, and the U.S. commented that social media was a particularly important advocacy platform. Some participants in Brazil and the U.S. believed that a focus on equity and justice could help build climate-health advocacy coalitions, though some in the U.S. feared that this focus would repel potential conservative climate advocates.

Advocacy

Strategy	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Mobilize citizens and grow advocacy networks	X	X	X	X	X	X
Pressure policymakers	X	X	X	X		X
Cultivate climate-health champions		X	X		X	X
Be persistent	X		X			X
Use social media	X			X		X
Focus on equity and justice to build coalitions	X					X

Another common recommendation was to enhance communication between climate and health stakeholders (all nations/regions). In Brazil, the Caribbean, Kenya, and the U.K., participants also recommended enhancing communication between domestic and international climate and health policy experts. In terms of more specific strategies for climate-health communication, participants suggested framing climate change in terms of health (Brazil, Germany, Kenya, U.K., U.S.), discussing health impacts in quantitative terms (Brazil, Caribbean, Germany, Kenya, U.S.), connecting climate and health with acute emergencies (Brazil, Caribbean, Germany, U.S.) such as extreme weather events or the COVID-19 pandemic, mentioning specific, local, tangible, and/or near-future health impacts (Brazil, Caribbean, U.S.), and discussing economic costs and benefits (Brazil, Germany, Kenya, U.S.). Participants in Germany, however, cautioned that a health frame can risk individualizing the problem of climate change, suggesting that a deliberate emphasis on structural determinants of health may be appropriate.

Participants additionally gave recommendations related to messenger and audience selection. In Brazil, Germany, Kenya, the U.K., and the U.S., participants suggested using trusted messengers such as health professionals. Participants also recommended strategically selecting target audiences (Brazil, Germany, U.S.), then building relationships with them (Brazil, Caribbean, U.S.) and tailoring communication to them (Brazil, Germany, Kenya, U.K., U.S.) — yet also, if possible, reaching out to a broad range of audiences (Brazil, Germany, Kenya). Other recommendations included using positive rather than negative frames (Brazil, Germany, U.K., U.S.), highlighting mutual benefits or "win-wins" for both climate and health (Brazil, Germany, U.K., U.S.), using storytelling (Brazil, Caribbean, Germany, U.S.), having two-way dialogues rather than one-way information transfer (Brazil, Germany), repeating messages to better ingrain them in audiences' minds (Germany), and suggesting concrete actions that audiences can take (Germany).

Communication

Strategy	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Enhance communication between climate and health experts	X	X	X	X	X	X
Frame climate change in terms of health	X		X	X	X	X
Discuss health impacts in quantitative terms	X	X	X	X		X
Use trusted messengers such as health professionals	X		X	X	X	X
Tailor communication to target audiences	X		X	X	X	X
Discuss economic costs and benefits	X		X	X		X
Connect to related emergencies (extreme weather, pandemics)	X	X	X			X
Use positive frame	X		X		X	X
Highlight win-wins	X		X		X	X
Enhance communication between domestic and international stakeholders	X	X		X	X	
Discuss specific, local, tangible, and near-term health impacts	X	X				X
Strategically select target audiences	X		X			X
Build relationships with audiences	X	X				X
Use storytelling	X	X	X			X
Appeal to a wide range of audiences	X		X	X		
Have two-way dialogues	X		X			
Repeat messages			X			
Suggest concrete actions			X			

Participants highlighted the strategic importance of education, especially educating health professionals about climate impacts (Brazil, Caribbean, Germany, Kenya, U.S.) and vice versa (Brazil, Kenya, U.S.). They also suggested training government officials to work on climate-health policy (Brazil, Caribbean, Kenya, U.S.), enhancing the technical skills of climate-health analysts (Caribbean, Kenya, U.K.), training researchers and advocates to communicate

effectively about climate and health (Brazil, Germany), and educating the public about politics so as to increase their civic engagement (Caribbean, Germany).

Education

Strategy	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.
Educate health professionals about climate change impacts	X	X	X[1]	X	X	X
Train government officials	X	X		X		X
Educate climate professionals about health impacts	X			X		X
Enhance technical skills		X		X	X	
Train researchers and advocates to be effective communicators	X		X			
Educate the public about politics		X	X			

[1]*Theme raised during the stakeholder briefing but not in the interviews*

Overall, participants called for building stronger collaborations across sectors, including government, industries, NGOs, philanthropic organizations, and advocates.

3.6. Success stories

Participants highlighted multiple initiatives and programs in their countries that have successfully advanced climate and health policies. These programs offer unique ideas for climate and health policy with significant potential to be scaled up within countries and adapted for use in other countries. Success stories include:

River hospital boats in the Amazon (Brazil): Using international funding, a local civil society organization implemented a river hospital boat program to reach riverside communities in the Amazon rainforest region, which cannot be accessed otherwise. It started with only one boat. Today, there are dozens of boats in operation, and it was also expanded to the Pantanal region. The program has become a national policy named Basic River Health Units (Unidades Básicas de Saúde Fluviais), integrated into the Unified Health System.

Telehealth facilities powered by renewable energy (Guyana): Many regions in Guyana do not have adequate road networks. River and air transport are often used to provide healthcare, which makes accessing these regions very costly. One strategy employed by the Government of Guyana is the introduction of telehealth facilities in twenty-five locations. The facilities are fitted with satellite technology to ensure internet connectivity and the use of medical diagnostic instruments. These facilities are powered by solar energy because of unreliable or absent electricity supply. This intervention has increased healthcare coverage to over 20,000 members of the population, while also reducing emissions through renewable energy.

Urban climate adaptation planning (Germany): In one city, a climate adaptation planning process has been initiated that involves various departments working together to protect the health of vulnerable populations. This includes installing more drinking water access points throughout the city, which would guard against dehydration during heatwaves, and monitoring how heatwaves affect indoor air quality in schools. This example demonstrates that intersectoral collaboration at a local level can play an important role in addressing climate and health challenges, even if broader systemic changes are slower to materialize.

Use of One Health framework to protect the health of livestock and humans (Kenya): In Northern Kenya, the One Health approach guides initiatives to build resilience among pastoral communities that rely on livestock for their livelihood. In addition to government measures to support communities vulnerable to climate disasters, the private sector has provided livestock health insurance packages. However, livestock, climate change, and health policy are currently housed in separate ministries, highlighting the need for further integration.

Greener NHS (U.K.): The Greener NHS program represents an important step towards a sustainable healthcare system. One example of a sustainable practice adopted under the Greener NHS program is the use of anaesthetics that contribute less to greenhouse gas emissions. This example demonstrates that sustainability practices need not compromise standards of patient care. Participants noted that the Greener NHS program should be better funded and more widely implemented.

The Office of Climate Change and Health Equity (U.S.): In August 2021, the U.S. Department of Health and Human Services established the Office of Climate Change and Health Equity (OCCHE). The program — created in response to an executive order from the Biden Administration — sought to coordinate the federal government's response to climate change's disproportionate health impacts on vulnerable communities and populations. Between 2021 and 2025, the Office engaged hundreds of health systems, especially safety net health systems, to pursue enhanced resilience and cost-saving emissions reductions. It created unique data resources, including the nation's first seasonal forecast for health. The Trump Administration disbanded the program in January 2025, but it serves as an example of how climate, health, and equity can be meaningfully integrated in federal policymaking structures.

4. Summary and potential implications

Overall, participants across the six countries and regions perceived that national climate and health policy are not yet well integrated. Examples of this lack of integration include silos within government and the inadequate integration of health considerations into climate legislation. Even in countries where climate and health policies are relatively better integrated, participants said there is limited implementation of these policies and only superficial or implicit engagement with the climate-health intersection.

However, participants generally said that climate and health are becoming more integrated over time. For instance, participants in several countries noted that health is increasingly considered in national climate policies, as well as in certain focal areas such as air pollution, extreme heat, and emergency response.

The prevailing view was that this trend was positive. Participants said that climate and health policy should be integrated in order to maximize mutual benefits, avoid duplication of work, and appropriately address issues at the climate-health intersection. Participants especially emphasized the need to integrate climate and health policy in the areas of agriculture and nutrition, climate adaptation and resilience, emergency preparedness and disaster response, and housing and urban development.

Participants mentioned many barriers to optimal climate-health policy integration and advancement. They commented on issues with government structures, such as lack of coordination of climate-health initiatives; counterproductive policymaking norms, such as poor uptake of evidence; scarcity of funding, data, and personnel; and problematic cultural factors such as a lack of focus on harm prevention.

Equally, participants identified several promising opportunities, such as upcoming policy deliberations; co-benefits that could be obtained; rising public awareness of the impacts of climate change on health; and available funding sources. They also identified feasible actions that could be taken in the current moment, such as incorporating climate into national health policies and vice versa, implementing existing policies, and gearing up education and outreach.

Finally, participants suggested an array of strategies for integrating and advancing climate-health policy. Their suggestions include changes to government structures, such as increasing cross-sectoral collaboration; policymaking strategies, such as improving the uptake of scientific evidence and favoring participatory approaches; strategies for research and data use, such as ensuring that research is responsive to policymaking needs; advocacy strategies, such as

expanding advocacy networks; communication strategies, such as framing climate change in terms of health and the economy; and education initiatives, such as training government officials and educating professional communities.

Below, we discuss potential implications of these findings for legislators, executive leaders, civil servants, health professionals and organizations, climate professionals and organizations, members of the research community, philanthropic organizations and other non-governmental funders, and advocates.

4.1. Potential implications for presidents, prime ministers, and their staff

Political leaders (i.e., presidents, prime ministers, and their staff) may be interested in participants' reflections on how governmental structures could be modified to better support progress on climate and health policy. Participants proposed increasing collaboration across different parts of government, for instance through working groups. Participants from some countries noted that these collaborations should be coordinated through a central office. Political leaders can consider establishing such a central coordinating body, perhaps within an existing agency, ministry, or department. They can also consider developing national frameworks to aid in coordination, such as legal and research frameworks. As a complementary strategy, political leaders can establish climate and health programs within each part of government. Additionally, political leaders may wish to consider how they can build on the growing international momentum for climate-health solutions at negotiations such as the COP, as well as learn from model policies and programs from other nations.

In making these modifications, political leaders will likely face the challenge of how to create lasting progress despite changes in administration. One strategy proposed is to educate civil servants across sectors about the climate and health so they become self-motivated to continue the work in the event of an administration change.

Lastly, potential political leaders planning election campaigns may be interested in the reported rise of public support for climate-health solutions, which could prove to be a valuable part of their platforms.

4.2. Potential implications for members of Congress, Parliament, and other national legislative bodies

In addition to the above findings, legislators may be interested in participants' observation that integrating health into climate policy could help boost support for climate policy. Legislators may also wish to consider participants' recommendation that climate and health policy should be integrated in many domains, including agriculture, emergency preparedness, healthcare decarbonization, housing and urban development, transportation, sanitation, water governance, and other focal areas.

Commonly mentioned policy goals that legislators could pursue include acquiring funding for climate-health initiatives, increasing the use of health and environmental impact assessments, and enhancing equity and justice. Policymakers may also wish to consider participants' recommendations to:

- Use participatory policymaking approaches
- Draw on available evidence
- Scale up successful model policies and programs, including models from other countries
- Include health experts in climate policy development
- Regulate and limit the influence of vested interests
- Focus on prevention and long-term planning
- Use litigation
- Craft legislation that will lead to strong implementation, for instance by including measurable targets, and that cannot be easily overturned by future administrations
- Use an all-hazards approach
- Develop joint climate-health budgets
- Align policies with intersectoral frameworks such as One Health and Planetary Health
- Manage uncertainties using the adaptive pathways model
- Propose ambitious policy packages, even if they will ultimately need to be disaggregated in order to pass

According to participants, conditions are becoming more favorable for climate-health legislation due to mounting public support and international momentum.

4.3. Potential implications for civil servants

Civil servants can help integrate climate and health policies and programs both by pursuing intersectoral collaborations, and by ingraining climate and health as a priority within their own institutional culture and structures. Participants pointed out that intersectoral collaboration is necessary to ensure that climate-health initiatives in different parts of government are pursuing complementary, not redundant or conflicting goals. To ingrain climate and health within institutional cultures, they suggested that it will be beneficial to educate civil servants within each institution about the topic, an effort that may be more effective if championed by civil servants themselves. Government institutions can also play a role in engaging the public about climate and health issues.

Participants additionally stressed the need to implement existing policies and make the most of available funding. In pursuing these and other goals, civil servants will likely run up against the inertia of complex systems, and may need to develop new strategies for circumventing this inertia.

4.4. Potential implications for health professionals and organizations

When commenting on the siloing of climate and health policy, participants especially noted the absence of health experts in climate policymaking, and the corresponding absence of health provisions in climate policy. Therefore, health professionals may want to build relationships with climate experts within and beyond government and claim a place in climate policymaking spaces. These relationships can also be helpful for pursuing climate adaptation and mitigation policies in healthcare.

Health professionals can be highly trusted and impactful advocates for climate policy, both to the public and to policymakers. Effective communication strategies for discussing the health harms of climate change include mentioning specific, local, near-term harms, quantifying their impact, and relating them to emergencies such as pandemics and extreme weather. Additionally, the large scale of some health systems can be an asset in implementing climate-health initiatives. However, health professionals are often confronted with many urgent priorities and inadequate funding, so they may not have capacity for advocacy or climate-health initiatives. This problem suggests that health professionals may wish to carefully decide which climate-health initiatives are most worthwhile and cultivate partnerships to help share the workload.

4.5. Potential implications for climate professionals and organizations

Just as there is an opportunity for health stakeholders to become increasingly knowledgeable about and involved in climate policymaking, participants suggested that climate professionals and organizations deepen their understanding of the health dimensions of climate change, increase their engagement in health policy, and build relationships with health stakeholders. Integrating health perspectives and framings into climate initiatives could increase support for climate policy and maximize mutual benefits for both climate and health. In this work, it is important to invite health professionals into climate spaces and enable them to contribute in substantive ways. For instance, participants noted that although progress had been made toward including health perspectives in UNFCCC COP processes, further efforts are needed to ensure that these perspectives are not sidelined.

4.6. Potential implications for members of the research community

Participants across countries and regions noted that further research is needed to inform climate and health policymaking. In particular, many participants pointed to the importance of better quantifying the health and economic harms of climate change and the benefits of specific policy options. On the other hand, some participants felt that there is already sufficient evidence and that calls for further evidence could potentially delay policy decisions.

To help ensure that existing evidence helps shape policymaking and to better understand whether policymakers need further data, researchers can build relationships with policymakers and other stakeholders, as well as developing their own communication skills. It is also important to ensure that policymakers and other stakeholders can access and understand existing data sources.

In terms of general best practices for climate and health research, national research frameworks and central unifying concepts such as One Health and Planetary Health can help organize and connect research initiatives. Citizen science can also provide valuable data and avenues for engaging the public. Additionally, climate-health research initiatives focusing on a given country may be most effective if led by residents of that country.

4.7. Potential implications for philanthropic foundations and other non-governmental funders

There was a strong consensus across countries and regions that more funding is needed to enable climate and health policy progress, including for government programs, researchers, and non-governmental organizations. Some participants noted that private funding could help fill this gap. Furthermore, participants advised that funders avoid siloing or "ring-fencing" funding programs for either climate or health; further funding opportunities are needed at the climate-health interface. Additional funding can also build on existing programs, which was said to be an important strategy. For instance, successful programs can be scaled up and considered as potential solutions in other nations. This underscores the important role philanthropic organizations can play in facilitating knowledge exchange and network building both within and across nations.

4.8. Potential implications for advocates

Participants felt that advocates can play a powerful role in helping galvanize climate and health policies. Participants offered many recommendations for how advocates can most effectively communicate about climate change and health. The most common recommendations include framing climate change as a health issue; quantifying its health harms; discussing economic impacts; connecting the topic to related disasters such as extreme weather and pandemics; using positive frames; highlighting win-wins; tailoring communication to target audiences; and using trusted messengers, which includes health professionals. Advocates can also strive to increase their individual communication skills.

Advocates can seek to build and/or expand their networks and mobilize citizens to pressure policymakers to act on climate and health. To have a stronger policy impact, they can strive to help elect new political leaders (and cultivate existing political leaders) to become champions for climate and health policies. A focus on equity and justice may help build climate-health advocacy coalitions. Participants encouraged advocates to remain persistent in the face of setbacks and keep building momentum for climate and health action.

5. Limitations

Selection bias. Although each research team invited many relevant stakeholders to participate in the study, high-level civil servants and legislators proved difficult to recruit. It is probable that stakeholders who were more engaged in and enthusiastic about climate-health policymaking were more likely to agree to participate, resulting in self-selection bias. Furthermore, the researchers typically used snowball sampling (albeit with a goal of covering multiple focus areas, political orientations, and professional backgrounds) rather than representative sampling methods. For these reasons, the sample of interviewees in each location is not indicative of the views of all climate and/or health stakeholders in that location.

Response bias. Participants who were familiar with the interviewers' stances on climate and health might have aligned their reflections in accordance with these stances, whether consciously or unconsciously.

Gaps or inaccuracies in participants' beliefs. Due to feasibility constraints, the research teams did not directly assess participants' assertions (for instance, through policy analyses or field experiments). It is possible that participants' beliefs were incomplete or even inaccurate. We hope that this synthesis has helped to fill in any such gaps or inaccuracies somewhat through the comparison of findings across locations. Nevertheless, the lack of certain findings in some countries or regions does not represent evidence of absence, but absence of evidence.

National-level focus. Local, state, and (where present) tribal policymaking have a key role to play in achieving climate and health goals. While this research focused mostly on the national level, additional research could examine these other scales and investigate multi-level policy.

Ephemerality of some opportunities and strategies. Particularly in contexts like the U.S., where both climate and health are caught up in political "culture wars," the political ecosystem is subject to drastic swings towards or away from climate-health goals. Some of the opportunities and strategies described in this report may only be viable during fleeting periods of pro-climate, pro-health leadership. However, some strategies aim to create lasting progress even amid political turbulence.

Language-related limitations. The Caribbean study was only conducted in a subset of Anglophone countries in the region. Additionally, in Brazil and Germany, most interviews were conducted in the respective national languages and then translated into English, possibly losing nuance in the process.

Drafting authors' positionality as U.S. researchers. Three of the authors centrally involved in synthesizing the regional reports — JE, JF, and EM — also conducted the research that took place in the U.S. Although all report authors conferred on the synthesis, it is likely that the analysis is influenced by these authors' U.S.-based viewpoint. Additionally, as the U.S. national report was completed first, the U.S. findings may have influenced how researchers from other countries/regions interpreted their findings.

6. Conclusion

Across the six geographies included in this study, many participants believed that climate and health policy are not yet adequately integrated at the national level. They pointed to separations of climate and health in legislative, regulatory, and professional spheres, resulting in a widespread absence of joint climate-health policy. Even in countries where climate and health policy are relatively better integrated, participants reported that this integration is shallow rather than deep, implicit rather than explicit, and unevenly implemented. However, there is widespread support among participants for stronger policy integration. They argued that thorough integration of climate and health policy is necessary to adequately address intersectional problems, avoid duplication of efforts, and maximize mutual benefits to both climate and health.

Though participants noted many barriers standing in the way of climate-health policy integration such as lack of resources, counterproductive government structures, and silos between sectors, they also observed opportunities for progress, such as upcoming elections and national and international policy deliberations. Participants additionally commented on advantageous factors, such as rising public awareness of the health harms of climate change. To make the most of these opportunities and advantages, they suggested a broad range of strategies that could be used by policymakers, civil servants, climate professionals, health professionals, researchers, advocates, and educators. We invite stakeholders from these groups to consider these insights and recommendations, which we hope will be of some use in their work to safeguard human and planetary health.

7. References

Alencar, A., Arruda, V., Martenexen, F., Rosa, E. R., Vélez-Martin, E., Pinto, L. F. G., Duverger, S. G., Monteiro, N., Silva, W. (2024). Fire in Brazil in 2024: The land portrait of the burned area in the biomes. Technical note. IPAM (Amazon Environmental Research Institute), MapBiomas Network. https://ipam.org.br/bibliotecas/fogo-no-brasil-em-2024-o-retrato-fundiario-da-area-queimada-nos-biomas

Baldermann, C., Laschewski, G., & Grooß, J. W. (2023). Impact of climate change on non-communicable diseases caused by altered UV radiation. *Journal of Health Monitoring,* 8(S4), 57-75. https://doi.org/10.25646/11653

Biernath, A. (2024). The three waves of infectious diseases expected to hit Rio Grande do Sul — and how to contain them. BBC News Brasil in London. https://www.bbc.com/portuguese

BMUV. (2008). Deutsche Anpassungsstrategie an den Klimawandel [German climate change adaptation strategy]. Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection. https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Klimaanpassung/das_gesamt_bf.pdf

Brazilian Government. (2024). Brazil's NDC: National determination to contribute and transform. https://unfccc.int/sites/default/files/2024-11/Brazil_Second%20Nationally%20Determined%20Contribution%20%28NDC%29_November2024.pdf

Breitner-Busch, S., Mücke, H. G., Schneider, A., & Hertig, E. (2023). Impact of climate change on non-communicable diseases due to increased ambient air pollution. *Journal of Health Monitoring*, 8(S4), 103-121. https://doi.org/10.25646/11655.2

Bundesministerium für Gesundheit [Federal Ministry of Health]. (2024). Finanzentwicklung der GKV im 1. Halbjahr 2024 [Financial development of the statutory health insurance system in the first half of 2024]. https://www.bundesgesundheitsministerium.de/presse/pressemitteilungen/finanzentwicklung-der-gkv-im-1-halbjahr-2024-pm-06-09-2024.html

Bush, K. F., Luber, G., Kotha, S. R., Dhaliwal, R. S., Kapil, V., Pascual, M., Brown, D. G., Frumkin, H., Dhiman, R. C., Hess, J., Wilson, M. L., Balakrishnan, K., Eisenberg, J., Kaur, T., Rood, R., Batterman, S., Joseph, A., Gronlund, C. J., Agrawal, A., & Hu, H. (2011). Impacts of climate change on public health in India: Future research directions. *Environmental Health Perspectives*, 119(6), 765–770. https://doi.org/10.1289/ehp.1003000

Butsch, C., Beckers, L. M., Nilson, E., Frassl, M., Brennholt, N., Kwiatkowski, R., & Söde, M. (2023). Health impacts of extreme weather events: Cascading risks in a changing climate. *Journal of Health Monitoring,* 8(S4), 33-56. https://doi.org/10.25646/11652

CNC-National Confederation of Trade in Goods, Services and Tourism. (2024). Analysis of the economic impacts of the disaster in Rio Grande do Sul (RS) and the reconstruction plan. Economics and Innovation Division. CNC-SESC-SENAC. Rio de Janeiro. https://portaldocomercio.org.br/sem-categoria/estudo-da-cnc-aponta-prejuizo-de-r-97-bilhoes-a-economia-brasileira-com-enchentes-no-rio-grande-do-sul/

Debnath, R., Bardhan, R., & Bell, M. L. (2023). Lethal heatwaves are challenging ’s sustainable development. PLOS Climate, 2(4), e0000156. https://doi.org/10.1371/journal.pclm.0000156

Directorate of Environment and Climate Change. (2022). State action plan on climate change. Government of Kerala. https://envt.kerala.gov.in/wp-content/uploads/2022/12/Kerala-State-Action-Plan-on-Climate-Change-2.0.pdf

Drewry J, Oura C. (2022). Strengthening climate resilient health systems in the Caribbean. The *Journal of Climate Change and Health* (6), 2667-2782. https://doi.org/10.1016/j.joclim.2022.100135

European Environment Agency. (2024). Responding to climate change impacts on human health in Europe: Focus on floods, droughts and water quality (EEA Report 3/2024). Publications Office of the European Union. https://www.eea.europa.eu/publications/responding-to-climate-change-impacts/

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80-92. https://doi.org/10.1177/160940690600500107

Fletcher, E. R. (2024). New climate and health resolution wins strong support from WHO member states. https://healthpolicy-watch.news/new-climate-and-health-resolution-garners-strong-support-from-who-member-states/

G7 Deutschland. (2022). G7 health ministers’ communiqué. https://www.g7germany.de/resource/blob/974430/2042058/5651daa321517b089cdccfaffd1e37a1/2022-05-20-g7-health-ministers-communique-data.pdf

G20 Health Ministers. (2024). G20 health ministerial declaration on climate change, health and equity, and on One Health. https://www.g20.org/en/tracks/sherpa-track/health

Global Climate and Health Alliance. (n.d.). 2023 Healthy NDC Scorecard. https://climateandhealthalliance.org/initiatives/healthy-ndcs/ndc-scorecards/

Gebhardt, N., van Bronswijk, K., Bunz, M., Müller, T., Niessen, P., & Nikendei, C. (2023). Scoping review of climate change and mental health in Germany: Direct and indirect impacts, vulnerable groups, resilience factors. *Journal of Health Monitoring,* 8(S4), 122-149. https://doi.org/10.25646/11656

Greaves N., Jankie S., Singh S., Bristol G., Mandeville E., Campbell M., Meinsma N., Newberry Le Vay J., Thompson D., Lawrance E., Maharaj S. (2024). Latin America and the Caribbean research and action agenda (for climate and mental health). Connecting Climate Minds Project. https://nbswmzwquzluimyqnfsf.supabase.co/storage/v1/object/public/documents/Full%20RRAA%20Latin%20America%20and%20the%20Caribbean%2017-03.pdf?t=2024-03-19T10%3A47%3A11.143Z

Hayden, M. H., Schramm, P. J., Beard, C. B., Bell, J. E., Bernstein, A. S., Bieniek-Tobasco, A., Cooley, N., Diuk-Wasser, M., Dorsey, M. K., Ebi, K. L., Ernst, K. C., Gorris, M. E., Howe, P. D., Khan, A. S., Lefthand-Begay, C., Maldonado, J., Saha, S., Shafiei, F., Vaidyanathan, A., & Wilhelmi, O. V. (2023). Ch. 15. Human health. In A.R. Crimmins C. W. Avery, D. R. Easterling, K. E. Kunkel, B. C. Stewart, and T. K. Maycock (Eds.), Fifth National Climate Assessment. U.S. Global Change Research Program, Washington, DC, USA. https://doi.org/10.7930/NCA5.2023.CH15

Hertig, E., Hunger, I., Kaspar-Ott, I., Matzarakis, A., Niemann, H., Schulte-Droesch, L., & Voss, M. (2023). Climate change and public health in Germany: An introduction to the German status report on climate change and health 2023. *Journal of Health Monitoring,* 8(S3), 6-32. https://doi.org/10.25646/11400

IBPES Secretariat. (2024). Media Release: IPBES Nexus Assessment. IBPES. https://www.ipbes.net/nexus/media-release

Intergovernmental Panel on Climate Change. (2022). Climate change: A threat to human wellbeing and health of the planet. Taking action now can secure our future. IPCC Reports. https://www.ipcc.ch/2022/02/28/pr-wgii-ar6/

Koks, E. E., Van Ginkel, K. C. H., Van Marle, M. J. E., & Lemnitzer, A. (2022). Brief communication: Critical infrastructure impacts of the 2021 mid-July Western European flood event. *Natural Hazards and Earth System Sciences,* 22(12), 3831–3838. https://doi.org/10.5194/nhess-22-3831-2022

Kreienkamp, F., Philip, S. Y., Tradowsky, J. S., Kew, S. F., Lorenz, P., Arrighi, J., Belleflamme, A., Bettmann, T., Caluwaerts, S., Chan, S. C., Ciavarella, A., De Cruz, L., de Vries, H., Demuth, N., Ferrone, A., Fischer, E. M., Fowler, H. J., Goergen, K., Heinrich, D., … Wanders, N. (2021). Rapid attribution of heavy rainfall events leading to the severe flooding in Western Europe during July 2021. Word Weather Attribution. https://www.worldweatherattribution.org/wp-content/uploads/Scientific-report-Western-Europe-floods-2021-attribution.pdf

Kumar, A., Mahajan, N. P., Sorokhaibam, R., Sunthlia, A., Babu, B. S., Vardhan, S., & Shrivastava, A. (2020). National Programme on Climate Change and Human Health-2019. *Journal of Communicable Diseases,* 52(3), 43-48. https://doi.org/10.24321/0019.5138.202029

Lelieveld, J., Haines, A., Burnett, R., Tonne, C., Klingmüller, K., Münzel, T., & Pozzer, A. (2023). Air pollution deaths attributable to fossil fuels: Observational and modelling study. *BMJ,* 383. https://doi.org/10.1136/bmj-2023-077784

Lim, Y. K., Schubert, S. D., Kovach, R., Molod, A. M., & Pawson, S. (2018). The roles of climate change and climate variability in the 2017 Atlantic hurricane season. *Scientific Reports,* 8(1), 16172. https://doi.org/10.1038/s41598-018-34343-5

Opiyo, F., Wasonga, O., & Nyangito, M. (2014). Measuring household vulnerability to climate-induced stresses in pastoral rangelands of Kenya: Implications for resilience programming. *Pastoralism,* 4(10), 1-15. https://doi.org/10.1186/s13570-014-0010-9

Orengo-Aguayo, R., Stewart, R. W., de Arellano, M. A., Suárez-Kindy, J. L., & Young, J. (2019). Disaster exposure and mental health among Puerto Rican youths after Hurricane Maria. *JAMA Network Open,* 2(4), e192619-e192619. https://doi.org/10.1001/jamanetworkopen.2019.2619

Pan American Health Organisation. (2019). Caribbean action plan on health and climate change. https://iris.paho.org/bitstream/handle/10665.2/38566/PAHOCDE19007_eng.pdf

Republic of Kenya. (2010). National climate change response strategy. https://repository.kippra.or.ke/bitstream/handle/123456789/1673/2010%20National%20Climate%20Change%20Response%20Strategy.pdf?sequence=1&isAllowed=y

Republic of Kenya. (2016). Kenya National Adaptation Plan, 2015-2030: Enhanced climate resilience towards the attainment of Vision 2030 and beyond. Ministry of Environment and Natural Resources. https://www4.unfccc.int/sites/NAPC/Documents%20NAP/Kenya_NAP_Final.pdf

Republic of Kenya. (2018). Transforming health systems: Achieving universal health coverage by 2022. https://extranet.who.int/countryplanningcycles/sites/default/files/public_file_rep/KEN_Kenya_Health-Sector-Strategic-Plan-2018-2023.pdf

Republic of Kenya. (2017). Kenya Climate Smart Agriculture Strategy 2017-2026. Ministry of Agriculture, Livestock, Fisheries, and Cooperatives. https://faolex.fao.org/docs/pdf/ken169535.pdf

Romanello, M., Di Napoli, C., Green, C., Kennard, H., Lampard, P., Scamman, D., ... & Costello, A. (2023). The 2023 report of the Lancet Countdown on health and climate change: The imperative for a health-centred response in a world facing irreversible harms. The Lancet, 402(10419), 2346-2394. https://doi.org/10.1016/S0140-6736(23)01859-7

Sachverständigenrat Gesundheit & Pflege [Advisory Council on Health & Care]. (2024). Fachkräfte im Gesundheitswesen: Nachhaltiger Einsatz einer knappen Ressource [Healthcare professionals: Sustainable use of a scarce resource]. https://www.svr-gesundheit.de/fileadmin/Gutachten/Gutachten_2024/2.__durchgesehene_Auflage_Gutachten_2024_Gesamt_bf_2.pdf

Saldiva, Paulo. (2024). Human health is a huge indicator of what is already happening because of the climate. Rádio USP, Jornal da USP and TV USP. São Paulo. https://jornal.usp.br/radio-usp/a-saude-humana-e-um-enormador-indicador-do-que-ja-esta-acontecendo-em-funcao-do-clima/

Seon, Q., Greaves, N., Campbell, M., Anderson, S., Henry, P., Augustus, E., ... & Maharaj, S. B. (2024). Exploratory empirical model of combined effects of COVID-19 and climate change on youth mental health. *Nature Mental Health,* 2(2), 218-227. https://doi.org/10.1038/s44220-023-00197-8

Shultz, J. M., Sands, D. E., Holder-Hamilton, N., Hamilton, W., Goud, S., Nottage, K. M., ... & Galea, S. (2020). Scrambling for safety in the eye of Dorian: Mental health consequences of exposure to a climate-driven hurricane. *Health Affairs,* 39(12), 2120-2127. https://doi.org/10.1377/hlthaff.2020.01203

Siraj, A. S., Santos-Vega, M., Bouma, M. J., Yadeta, D., Carrascal, D. R., & Pascual, M. (2014). Altitudinal changes in malaria incidence in highlands of Ethiopia and Colombia. *Science,* 343(6175), 1154-1158. https://doi.org/10.1126/science.1244325

The Lancet Planetary Health. (2022). Be prepared for more heat. *The Lancet Planetary Health,* 6(9), e706. https://doi.org/10.1016/S2542-5196(22)00201-7

UKHSA. (2023). Health effects of climate change (HECC) in the UK: State of the evidence 2023. https://assets.publishing.service.gov.uk/media/659ff6a93308d200131fbe78/HECC-report-2023-overview.pdf

UNFCCC. (n.d.). Nationally Determined Contributions (NDCs). https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs

U.S. Department of Health and Human Services. (2024). Health sector commitments to emissions reduction and resilience. https://www.hhs.gov/climate-change-health-equity-environmental-justice/climate-change-health-equity/actions/health-sector-pledge/index.html

Welsh Government. (2024). Well-being of Future Generations (Wales) Act 2015: Guidance on our law to improve social, economic, environmental and cultural well-being. https://www.gov.wales/sites/default/files/pdf-versions/2024/7/1/1719821303/well-being-future-generations-act-essentials.pdf

Winklmayr, C., & an der Heiden, M. (2022). Hitzebedingte Mortalität in Deutschland 2022 [Heat-related mortality in Germany 2022]. Epidemiologisches Bulletin, 42, 3-9. https://doi.org/10.25646/10695.3

The World Bank Group. (2018). Disaster risk management development policy financing with a catastrophe deferred drawdown option. https://projects.worldbank.org/en/projects-operations/project-detail/P166303

The World Bank Group. (2021). Climate risk profile: Kenya. https://climateknowledgeportal.worldbank.org/sites/default/files/2021-05/15724-WB_Kenya%20Country%20Profile-WEB.pdf

World Health Organization. (2021). WHO health and climate change global survey report. https://www.who.int/teams/environment-climate-change-and-health/climate-change-and-health/evidence-monitoring/global-survey

World Health Organization. (2023a). COP28 Health Day. https://www.who.int/news-room/events/detail/2023/12/03/default-calendar/cop28-health-day

World Health Organization. (2023b). COP28 UAE Declaration on climate and health. https://www.who.int/publications/m/item/cop28-uae-declaration-on-climate-and-health

World Health Organization. (n.d.). Alliance for Transformative Action on Climate and Health (ATACH). https://www.who.int/initiatives/alliance-for-transformative-action-on-climate-and-health

World Meteorological Association. (2023). State of the climate in Latin America and the Caribbean. https://library.wmo.int/viewer/68891/download?file=1351_State_of_the_Climate_in_LAC_2023_en.pdf&type=pdf&navigator=1

Yourish, K., Daniel, A., Datar, S., White, I., & Gamio, L. (2025). These words are disappearing in the new Trump administration. The New York Times. https://www.nytimes.com/interactive/2025/03/07/us/trump-federal-agencies-websites-words-dei.html

8. Methods

8.1. Coordination across research sites

The George Mason University Center for Climate Change Communication (Mason 4C) led the coordination of the research across all six geographies. Biweekly calls for all research partners were held beginning in November 2023 to deliberate on key methodological decisions, including formulating the research questions, interview strategy and questions, analysis approach, and many other decisions at each stage of the research project. All partners were also given the opportunity to comment on one another's draft reports.

This research was originally intended to include seven geographies. A team of researchers from India (PP, SG, BJR, IJ) were involved in all phases of the project. Regrettably, for reasons beyond their control, they were unable to use their data, and therefore the resulting study includes only six geographies.

8.2. Recruitment

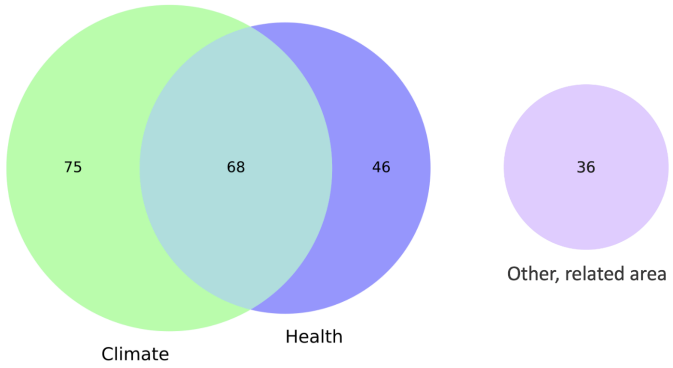
To create a purposive sample of climate and health policy stakeholders, each research team recruited individuals who worked, or had recently worked, in the following focal areas and roles:

- **Foci:** The formulation or implementation of climate policies, health policies, climate and health policies, or related issues at the national level. Related issues included agriculture, disaster prevention and response, the economy, energy, housing and urban development, and transportation.
- **Roles:** Legislators; legislative staff; civil servants (including leaders such as ministers); judiciary employees; academic experts; think tank employees; members of advocacy organizations or NGOs; and industry consultants.

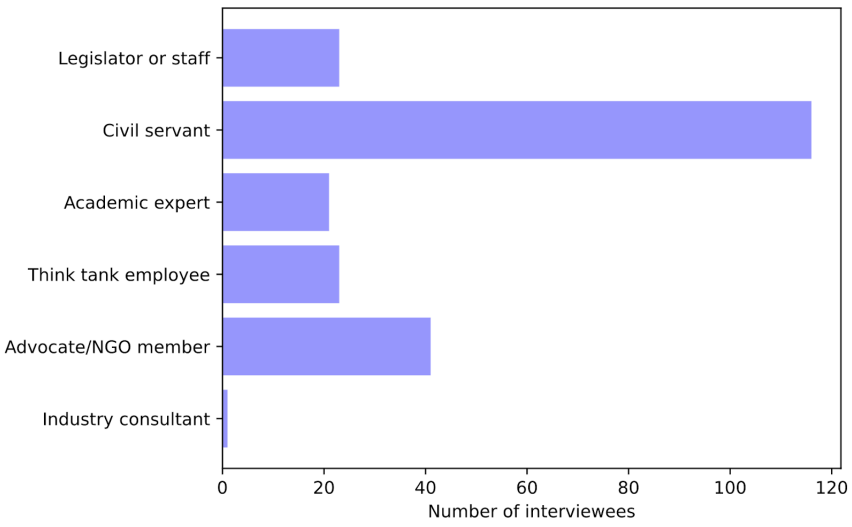
In addition, some research teams (Brazil, Germany, and the U.K.) recruited participants working at the sub-national level, and the Caribbean research team recruited participants working at the regional level. The Caribbean participants were primarily based in Antigua, Barbuda, Bahamas Islands, Barbados, Dominica, Guyana, Jamaica, and Trinidad and Tobago.

The research teams drew on their professional networks, as well as internet searches, to identify potential participants. They recruited participants through email invitations, phone calls, and snowball sampling (asking participants to recommend other potential participants). The breakdown of interviewees by region, focal area, and role is available below.

Focus	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.	*Total*
Climate	11	16	9	10	9	20	*75*
Health	2	12	10	2	8	12	*46*
Climate and health	4	8	6	4	20	26	*68*
Other, related area	16	3	0	5	5	7	*36*
Total	*33*	*39*	*25*	*21*	*42*	*65*	*225*



Role	Brazil	Caribbean	Germany	Kenya	U.K.	U.S.	*Total*
Legislator or staff	3	5	4	0	3	8	*23*
Civil servant	15	24	12	10	22	33	*116*
Academic expert	3	3	2	1	8	4	*21*
Think tank employee	5	2	4	5	1	6	*23*
Member of advocacy organization or NGO	7	5	3	5	7	14	*41*
Industry consultant	0	0	0	0	1	0	*1*
Total	*33*	*39*	*25*	*21*	*42*	*65*	*225*



8.3. Interviews

The interviews were semi-structured; researchers asked a core list of questions decided ahead of time, but also posed non-predetermined questions to pursue themes arising in the moment. The U.S. team drafted the interview questions, and all teams revised them and adapted them to their respective national or regional contexts. The interview questions elicited participants' experiences and opinions related to the current status of climate and health policy, the ideal relationship between climate and health policy, barriers preventing this ideal from being achieved, and opportunities and strategies for furthering climate and health policy. The full interview guide is available in the appendix.

Interviews were mostly conducted via Zoom, Google Meet, or Microsoft Teams, with a small number of interviews being recorded in person in some countries in accordance with participants' preferences (Brazil, Caribbean). Interviews typically lasted thirty minutes to an hour. One to two researchers were present in each interview, and only one participant was interviewed at a time. Interview transcripts were either auto-generated through the video chat platform (or Cockatoo, an AI transcription program) or obtained through transcription services (Kenya, U.K.). Interviews were conducted in Portuguese in Brazil, German or English in Germany, and English in the Caribbean, Kenya, U.K., and U.S. Translation was done using automated translation (DeepL Translate, Grammarly) and further reviewed manually.

8.4. Analysis

Each research team collaboratively coded the transcripts of the interview recordings in ATLAS.ti Web. They used mixed deductive and inductive manual qualitative content analysis (Fereday & Muir-Cochrane, 2006). All teams used six deductive code groups based on the main themes of the interview questions:

1. **Experiences** related to climate/health policy [Participant describes how climate and/or health comes up in their work, whether on a daily basis or over a longer period of time]
2. **National status** of climate/health policy [Participant describes the current relationship of climate and health policy at a national level in their country]
3. **Ideals** for climate/health policy [Participant describes what the relationship between climate and health policy should look like, in their opinion]
4. **Barriers** to climate/health policy [Participant describes challenges for advancing climate and health policies]
5. **Opportunities** for climate/health policy [Participant describes promising ways to advance climate and health policies]

6. **Strategies** for climate/health research, policymaking, and implementation [Participant describes methods for advancing climate and health policies, such as communication strategies, political strategies, and any other approaches]

Then, coders on each team created inductive codes within these deductive categories. The U.S. inductive codes, which were completed first, were shared with the other teams as an example codebook. Each coding team, consisting of 2–4 coders, first analyzed and jointly discussed a small sample of 3–4 interview transcripts, then independently coded the rest of the transcripts with regular group discussions.

Once coding was complete, each team conducted an analysis based on a list of questions (see appendix) that was drafted by the U.S. team and collaboratively refined by all teams. Alongside the six themes listed above, the analytical questions also covered several themes that emerged in the data: equity and justice, economic impacts and benefits, specific climate-health impacts, and specific policies. The analysis additionally probed into patterns of which categories of participants, if any, tended to espouse which views.

8.5. Engagement with Global Climate and Health Alliance Stakeholders

To make our research more relevant to climate and health stakeholders' concerns and priorities, we asked for input on our research questions from members of the Global Climate and Health Alliance (GCHA). We sent the GCHA mailing list a feedback survey containing the questions in November 2023, and received 264 responses. In July 2024, we invited GCHA members (as well as other stakeholders) to briefings on the preliminary results from each national or regional study. In the discussion period of each briefing, the research teams asked the attendees to reflect on how the findings of each briefing aligned or conflicted with their experiences, whether they noticed any missing insights, and whether there were any main takeaways that they saw as most important. These reflections informed our consideration of the potential implications of the findings.

9. Acknowledgements

This research was funded by the Wellcome Trust (grant number 228255/Z/23/Z). We acknowledge and thank the following individuals:

The Brazilian research team expresses its gratitude for the administrative support provided by our colleagues from the Institute of Advanced Studies and the Fundação de Apoio à Universidade de São Paulo (FUSP). We also extend our sincere appreciation to all stakeholders who contributed to this research. Our deepest thanks go to our colleagues from George Mason University for their leadership and for fostering a collaborative environment. Additionally, we are grateful to our fellow research teams for their support and knowledge exchange — we have learned a great deal together.

The Caribbean research team thanks the multisectoral actors who facilitated recruitment of participants for this project in the respective countries; particularly Dr. Callae Dorsett-Phillipe (Bahamas), Nurse Priscilla Prevost (Dominica), and Dr. Darren Dookeeran (Trinidad and Tobago).

The German research team wishes to thank our international partners, especially at George Mason University for the coordination and guidance of the project, as well as the interviewees for their time and valuable insights.

The Kenyan research team extends their gratitude to all stakeholders who took part in this research. We would like to thank all those who participated and provided comments during the virtual conferences where we shared our work for further input. We particularly appreciate the intellectual and administrative support from our colleagues from George Mason University and our colleagues from other research teams for the engagement and allowing us to learn from you all.

The U.K. research team wishes to acknowledge and thank our international partners who helped shape the research protocol.

The U.S. research team thanks all interviewees, stakeholders who provided input, and all other research teams.

All teams thank members of the Global Climate and Health Alliance (GCHA) for their feedback on our research questions, preliminary findings, and draft reports, and we thank GCHA team members for soliciting this feedback and coordinating stakeholder convenings.

10. Declaration of competing interests

Sophie Gepp and Edward Maibach serve on the Board of Directors of the Global Climate and Health Alliance.

All other authors have no competing interests to declare.

11. Appendix

Interview questions

The following list shows the interview questions asked to participants working on climate policy. The questions were adapted for participants working on health policy, both climate and health policy, and adjacent areas.

1. How much do human health impacts or benefits feature in your work?
    a. Could you briefly give me an example of a recent time when health issues came up in your work on climate policies?
    b. Can you think of a time in the past when health issues came up in your work on climate policies?
        i. What kinds of people or organizations were involved, and what positions were they advocating?
        ii. What were the outcomes?
        iii. How typical was this example of how health issues generally come up in your work?
        iv. What about it was typical or atypical?
2. To what extent are health and climate policies linked, or not, in [their country/region]?
    a. *(If links are mentioned)* In what ways are they linked?
3. Should they be more closely linked than they currently are in [their country/region], or more separated?
    a. *(If they think climate and health policy should be linked in any way)* What are the benefits of linking climate and health policy?
    b. Do you think incorporating health considerations can build support for climate policies?
        i. Why or why not?

4. How could climate policy or policymaking procedures be improved in [their country/region] to more fully incorporate health considerations?

    a. *(If they don't mention specific policies or policymaking procedures)* Are there specific climate policies or policymaking procedures that could be created, improved, or removed to more fully incorporate health considerations?

    b. Do any specific success stories come to mind?

    c. Are there models from other countries that you have used, or are considering using, in your work?

5. What do you think is the biggest barrier to achieving the types of policy changes that you described?

    a. What would it take to overcome this barrier? (such as communication approaches, resources, and other strategies)

    b. Are there any other important barriers? *(If so, ask how to overcome them)*

6. What opportunities do you see to achieve the types of policy changes that you described earlier in our conversation?

    a. Are there any other opportunities you see?

    b. What would it take to move forward with these opportunities?

7. *(If relevant to participant's background)* In your experience, what (if anything) has worked to influence policymakers to support climate policies?

8. *(If relevant to participant's background)* How, if at all, have health considerations influenced your country's positions in international climate negotiations? (such as COP28, for example)

9. Is there anything else that didn't come up in our conversation that you want to share before we end?

Analysis questions

For each question, we compared responses across different groups of interviewees (e.g. climate experts versus health experts; progressives versus conservatives; civil servants versus legislators, etc.)

Experiences

- To what extent, and in what ways, do health experts experience links between climate change and their work?
- To what extent, and in what ways, do climate experts experience links between health and their work?
- How often, in what contexts, and in what ways do climate and health experts interact? In what contexts are they siloed?

Current national situation

- To what extent, and in what ways, do participants feel that climate and health are linked or separate in national policymaking?
- To what extent and in what ways did participants perceive that health considerations were influencing their nation's stance in international climate negotiations?

Ideals

- To what extent, and in what ways, do participants feel that climate and health policymaking should be more integrated or separate in their country?
- Integrated or separate in which respects?
    - Behind-the-scenes policy planning
    - Policy instruments
    - How policies are communicated about
- What success stories or models did participants mention, if any?
    - Where did these success stories come from?
    - How did they recommend building on these successes?

Barriers

- What are the reported barriers to climate and health integration?
    - Which barriers were most commonly mentioned, and by whom?
    - Which were rarely mentioned, but potentially important?
- What are the reported barriers to climate and/or health policy advancement (not necessarily integrated)?
    - Which barriers were most commonly mentioned?
    - Which were rarely mentioned, but potentially important?

Opportunities

- What are the reported opportunities (i.e., existing and/or developing conditions in the policy environment) for climate and health integration?
    - Which opportunities were most commonly mentioned?
    - Which were less commonly mentioned but particularly compelling?
- What are the reported opportunities (i.e., existing and/or developing conditions in the policy environment) for advancing climate and/or health policy (not necessarily integrated)?
    - Which opportunities were most commonly mentioned?
    - Which were less commonly mentioned but particularly compelling?

Strategies

- What strategies and tactics did participants suggest for advancing climate and health policymaking?
    - Communication strategies/tactics for engaging policymakers
    - Communication strategies/tactics for engaging the public
    - Non–communications strategies
- To what extent, and in what ways, did participants feel that a health frame could increase or decrease support for climate policy?
- To what extent, and in what ways, did participants feel that a climate frame could increase or decrease support for health policy?

Other relevant issues

- To what extent, and in what ways, does climate justice/equity come up in the participants' responses?
- To what extent, and in what ways, do economic impacts and benefits come up in the participants' responses?
- What kinds of climate impacts were discussed?
- Which specific policies were discussed?

Overall synthesis

- Distribution of knowledge
    - Which climate and health policy topics did interviewees know the most about?
    - Which climate and health policy topics did interviewees know the least about?
- Policymaking themes
    - Were there any themes across the participants' experiences of policymaking processes not covered by the above questions? For instance, what were some of the positive/rewarding aspects and what kinds of frustrations/difficulties did they experience?
- Good quotes
    - Were there any statements or stories that particularly stuck out? What makes these instances unique and important?

Suggested Citation:

Ettinger, J., Fine, J., Gepp, S. Gordon-Strachan, G., Howarth, C., Mulwa, R., Prabhakaran, P., Rayner, T., Saraiva, A., van de Pas, R., Baltruks, D., Ghosh, S., Graham, J., Greaves, N., Jharia, I., Kigundu, K., Maharaj, S., McFarlane, S., Mirow, J., Murphy, M., Musembi, E., Nyukuri, E., Raju, B. J., Sievert, G., Smith, E., Vianna, D., Voss, M., Zimermann, P., Miller, J., Mildenberger, M., Leiserowitz, A., Kotcher, J., & Maibach, E. (2025). *Advancing and integrating climate and health policies: Insights from six geographies*. George Mason University. Fairfax, VA: George Mason University Center for Climate Change Communication. https://doi.org/10.17605/OSF.IO/ZQ4XU