

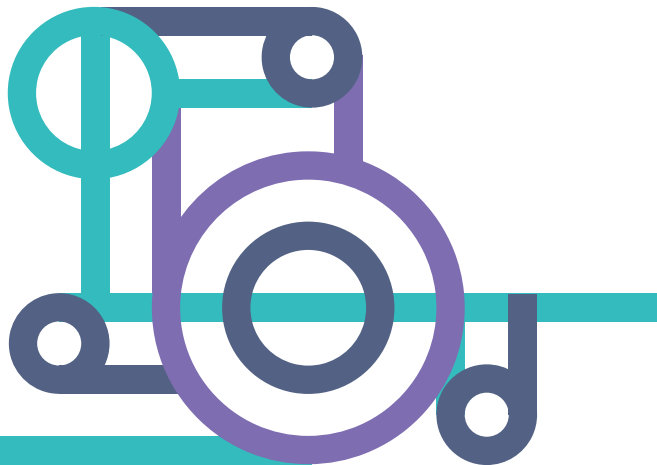
TIME TO ADAPT: ACCELERATING CLIMATE ADAPTATION FOR HEALTH EQUITY

Catalyzing Solutions for Community Action



Women-led smart agriculture in Casamance - Senegal.
Photo credit: Enda Santé





The members of the Collective Minds Climate Council include Elhadj As Sy (Kofi Annan Foundation), Dr. Awa Marie Coll Seck (Minister of State for the Republic of Senegal; Galien Forum Africa), Dr. Alan Dangour (Wellcome), Nathalie Delapalme (Mo Ibrahim Foundation), Dr. Vanessa Kerry (Seed Global Health), Jack Leslie (Duke University), Anil Soni (WHO Foundation), Dr. Agnès Soucat (Division of Health and Social Protection, Agence Française de Développement), Paul Walton (Africa-Europe Foundation) with Vanina Laurent-Ledru (Foundation S), Maryam Hassimi (Foundation S), Elke Konings (Management Sciences for Health), and Eliza Love (Management Sciences for Health).

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EXECUTIVE SUMMARY

Climate change is happening now. Neglecting the needs of climate-exposed communities will contribute to forced displacement, exacerbate food and water insecurity, speed the emergence of zoonotic diseases—such as COVID-19—and increase cardiovascular, lung, and infectious diseases, all of which will have severe consequences for the global community.

Our global strength depends on how well we work together to support and protect the most vulnerable by both mitigating emissions and adapting at scale to inevitable changes. Support for local climate change adaptation falls dramatically short of needs and is often out of reach for those who need it most. In particular, people in low- and- middle income countries (LMICs) contribute the least to the causes of climate change yet bear the brunt of its worst impacts—while having the fewest resources to adequately adapt to these changes. Supporting and accelerating locally led adaptation for health resilience is not only essential to reducing poverty and achieving the UN Sustainable Development Goals but also a matter of restorative justice.



The Collective Minds Climate Council, convened by Foundation S and the Africa-Europe Foundation, has developed this report to call attention to the urgent need to elevate local adaptation in the climate discourse, highlight the connection between climate change and health, and prioritize locally led adaptation in building health resilience to climate change.

The report focuses on rapid action for increasing health resilience through four avenues:

1. **Putting local communities at the center of decision-making and solutions.** Local communities that understand best their specific vulnerabilities, resources, and needs must be at the center of planning and implementing of adaptations to address health impacts of climate change.
2. **Building and applying evidence of effective local solutions.** Monitoring, evaluation, and learning must be integrated into climate adaptation planning efforts to understand what works (or does not) in addressing health impacts, scale effective solutions, and mobilize political commitment and financing.
3. **Channeling flexible financing directly to local communities.** Flexible grants, loans, and regular budget allocations provided directly to local communities in LMICs—in amounts ample enough to cover real costs—can enhance the quantity, quality, and equitable access to adaptation financing to address health priorities.
4. **Fostering an enabling environment for sustained progress on local adaptation.** Incorporating health into the climate dialogue—with broad recognition and policy support for local adaptation across all levels—will contribute to comprehensive policies and strategies that safeguard vulnerable populations, enable communities to take the lead, enhance health resilience, and achieve sustainable and equitable outcomes.

The time for action is now. We call on the global community to join us in acting at speed and scale to address the climate–health emergency. We must:

- ✓ **Prioritize local solutions driven by communities.** Policymakers and funders must reflect the urgency of the climate–health emergency and abandon business-as-usual approaches to rapidly scale up efforts to develop and fund innovative local approaches to climate adaptation. We must leverage current data from existing efforts to fuel continuous learning as we work toward solutions.
- ✓ **Support a resilient local health workforce and infrastructure.** We must have enough skilled health workers, including community health workers, to meet growing demands and who are equipped and fully resourced with climate-resilient health systems, technology, and know-how.
- ✓ **Break silos for local action with lasting impact.** Climate change’s pervasive impact requires policymakers to transcend traditional sector-specific interventions and embrace a comprehensive approach that recognizes the relationships between sectors. Multisectoral agreements to increase accountability, shift ownership, and promote all-encompassing policies will catalyze and sustain local action.
- ✓ **Catalyze flexible financing to local communities.** Policymakers and funders—with a catalytic role for the private for-profit and philanthropic sectors—must devote much more funding for local adaptations to the health impacts of climate change and make it directly available to the most climate-vulnerable communities to build health resilience.

Supporting and accelerating locally led adaptation for health resilience is not only essential to reducing poverty and achieving the UN Sustainable Development Goals but also a matter of restorative justice.



In Madagascar, mentorship strengthens the health workforce resilience. Photo credit: Samy Rakotoniaina, MSH

THE URGENT HEALTH CHALLENGE



The climate crisis is a health crisis.”

Dr. Tedros Adhanom Ghebreyesus, World Health Organization, 2022¹

The impact of climate change on human health and health systems is severe—and irreversible.

Climate change underlies an array of new and re-emerging health challenges, including increases in infectious disease outbreaks and spread (and the risk of new pathogens that jump from animals to people), maternal mortality, noncommunicable diseases, food insecurity and malnutrition, and worsening mental health.² Already one in four deaths globally are attributable to preventable environmental causes,³ and each year seven million people die from air pollution.⁴ The effects of climate change, including environmental degradation and biodiversity loss, reduce the availability of clean air, safe drinking water, sufficient food, and secure shelter, all of which are vital to human health and well-being.⁵ Reduced access to these life-sustaining resources not only contributes directly to disease and ill health, it also leads to migration and displacement, which shift and expand disease patterns to new locations and new population groups and increase demand on local systems.⁶

Health systems are struggling to keep up, especially in LMICs.⁷ While the effects of climate change present new and evolving health needs, they also disrupt health supply chains and damage roads, health facilities, and other essential health infrastructure. They also make it harder for people to access health services by undermining livelihoods and household finances and displacing families and communities, often further from health facilities. This means that health systems must provide services in innovative ways to make sure no one is missed. But doing so often places additional burdens on health workers, who are already under-resourced and in short supply.



Water access in a climate impacted community in Casamance- Senegal.
Photo credit: Enda Santé

Hard-won gains in health outcomes, poverty reduction, and universal health coverage are at risk of reversal.⁸

Quickly changing health needs—and systems that cannot respond effectively—undermine hard-won progress toward the UN Sustainable Development Goals (box 1), which have already been set back by the COVID-19 pandemic.⁹ Climate change is expected to drive some 132 million people into extreme poverty by 2030, in addition to the 100 million who are already impoverished by health care costs each year.¹⁰ And though nearly half of the world’s population—over 3 billion people—live in areas that are highly vulnerable to climate change,¹¹ certain communities are more vulnerable because of gender, geographic, demographic, health, sociopolitical, and socioeconomic factors as well as discrimination (figure 1).¹²

For LMICs especially, the cumulative effects of climate change threaten to reverse years of poverty reduction efforts and hinder economic growth. LMICs experience disproportionate levels of exposure to climate risks despite contributing the least to global warming, unjustly widening existing health and socioeconomic inequities. The African continent, for instance, constitutes 17% of the world’s population and accounts for less than 4% of global greenhouse gas emissions but has experienced an estimated 35% of global mortality due to climate-related disasters.¹³ The disparities, unsurprisingly, reflect historical injustices—through colonialism, enslavement, and resource extraction—that have benefited people in high-income countries at the expense of those in LMICs for centuries. Confronting the effects of climate change in the health sector, therefore, is not only about saving lives. It is also a fight for equality.

Box 1. A dire forecast



Unabated climate change could lead to **250,000 excess deaths per year** from 2030 to 2050 (WHO).

Economic losses from climate-related disasters have **increased sevenfold** over the past 50 years, rising from an average



of \$49 million to a staggering **\$383 million per day globally** (UN).



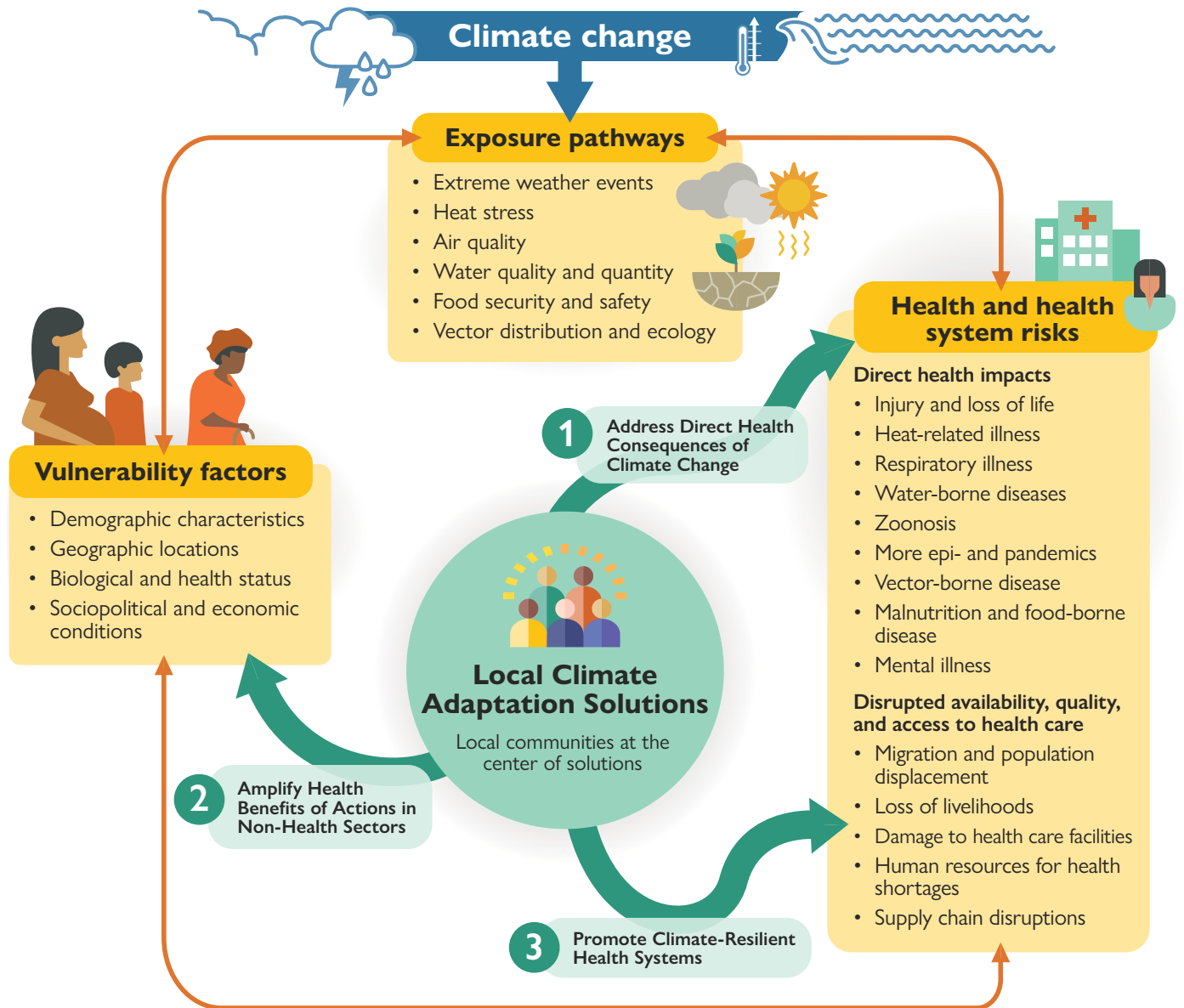
Ecological threats are projected to put **1.2 billion people** at risk of displacement by 2050 (IEP).



The fight for climate action is also a fight for a more just and equal society.”

Simon Stiell, UN Climate Change Executive Secretary, at the Bonn Climate Change Conference, June 2023

Figure 1. Climate change affects health and health systems in all communities in many different ways, both direct and indirect, but some communities—especially the poorest and most vulnerable—are hit harder and often are less able to adapt.



Mitigating the future effects of climate change on health and well-being and on health systems is essential. But because irreversible damage is already done and continues to accelerate, adapting to rapidly changing environments is equally critical.



This is not about North versus South, or emitters versus non-emitters... It is about crafting a win-win outcome for all of us.”

Kenyan President William Ruto, Paris, June 2023

Global action has failed to meet commitments and address the magnitude of the problem.

World leaders—and especially those from countries most responsible for pollution and carbon emissions—have failed to translate political and financial commitments into tangible action. Global efforts to reduce carbon emissions still have not met the commitments made in the 2015 Paris Agreement, and high-income countries have repeatedly pledged to provide, but have not delivered, substantial climate financing to the most climate-exposed communities.¹⁴ Moreover, the existing global financial architecture fails to adequately support LMICs to address climate change and exacerbates growing inequalities, key issues highlighted by the Bridgetown Initiative (which calls for a more equitable global finance system in light of three interconnected and unprecedented crises: climate, economic, and health).¹⁵ Empty promises have eroded trust and severely impeded progress on climate action. Holding countries accountable for their commitments to scale up action is central to health and climate justice.

Financing for climate adaptation for health falls short.

According to the Intergovernmental Panel on Climate Change, “Ambitious, accelerated action to adapt to climate change is ... paramount, together with strong mitigation efforts.”¹⁶ Climate adaptation aims to reduce people’s exposure and vulnerability to climate hazards, including minimizing health risks and impacts.¹⁷ Yet, despite growing recognition of the importance of adaptation in building climate-resilient systems and infrastructure, only 34% of total climate finance (around \$28 billion) was channeled to adaptation in 2020. For comparison, the average annual adaptation costs in LMICs today are estimated to be \$70 billion and are expected to rise to over \$200 billion by 2030.¹⁸ And of the \$28 billion in adaptation financing, less than 5% (and under 0.5% of that from multilateral institutions) was dedicated to health.¹⁹ The amount of official bilateral development assistance for health with an explicit focus on climate is negligible.²⁰

Direct support for local action, especially for highly vulnerable communities, is meager.

Because local actors have the best understanding of the priorities and realities of their own communities, they are best positioned to formulate and lead adaptation efforts. Local actors and communities build solutions that are more effective, efficient, and sustainable because they can more easily integrate priorities into local agendas, build community trust, and engage socially excluded voices.²¹ Yet the communities that face the most significant impacts of climate change often are excluded from decision-making processes and cannot access the financial resources and expertise they need: just 10% of global climate funds were dedicated to local-level activities in 2016.²² This is especially the case for groups often marginalized, such as women, Indigenous people, youth, and the differently abled, even in countries that have multistakeholder mechanisms on health and climate change.²³ The same factors that make some communities and individuals more vulnerable to climate change not only shape how individuals experience the effects of climate change on their health, but also influence their abilities to take part in decision-making, access essential information, and play a role in implementing and monitoring adaptation measures.

By necessity, many communities have already been adapting to the direct and indirect impacts of climate change on health, including in areas that strongly influence health outcomes, such as housing and food security, and that build resilience within health systems. And though there is ample data on the costs of inaction,

Key terms

Adaptation: Action or process of adjusting or responding to actual or expected climate changes and their effects to moderate harm or exploit beneficial opportunities (IPCC)

Community-based adaptation: Characterized by community-level leadership in assessing risks, planning strategies, prioritizing the use of investment resources, implementing adaptation measures, and monitoring the results of interventions in communities (GCA)

Locally led adaptation: Characterized by local actors, which may include local communities, government, civil society, the private sector, or households, having individual and collective agency over planning, prioritizing, implementing, and monitoring local adaptation (WRI)

Resilience: Capacity of a system to cope with and adjust to a hazardous event or trend while maintaining essential functions (IPCC)

evidence on the impact of local adaptation activities remains scant, and learning from locally led and community-based initiatives is not routinely documented or systematically shared. This limits the ability to understand effective approaches and inform programming, investments, and policies with evidence of what is proven to work, what has not worked, and what currently shows promise.²⁴

Urgent collective action is needed to mobilize sufficient financing and political support for local actors and communities to effect essential, evidence-based adaptation measures that equitably strengthen health resilience against the impacts of climate change.

THE WAY FORWARD



Adaptation to climate change starts and will end in our communities.”

Dr. Awa Marie Coll Seck, Minister of State, Senegal, 2023

The global toll of climate change on human health is the aggregation of local consequences directly felt by individuals, families, and communities. As the full toll of climate change on health becomes clearer, the need for adaptations that are conceived and driven locally has deepened. Because people’s health is affected both directly and indirectly, a holistic approach to local adaptations is essential. A framework for such an approach is articulated by the World Health Organization (WHO): direct health consequences of climate change, climate resilient health systems, and health benefits of actions in non-health sectors (table 1).

Table 1. Local adaptations strengthen health resilience to climate change through three pathways that together improve health outcomes.

Address Direct Health Consequences of Climate Change	Promote Climate-Resilient Health Systems	Amplify Health Benefits of Actions in Non-Health Sectors
<p>Adapt to protect health against the direct consequences of climate change</p> <p>This may include:</p> <ul style="list-style-type: none"> Using health technologies (e.g., vaccines, bednets) to protect against climate-related health changes (e.g., [re-] emergence of yellow fever or malaria) Rapidly addressing health impacts of climate disasters (e.g., provision of goods, shelters, or emergency health supplies) <p>For example, in India, several cities now have heatwave response plans to provide cool drinking water and temporary shelter to the most vulnerable community members. (CPR India)</p>	<p>Adapt to build resilient and sustainable primary health care systems</p> <p>This may include:</p> <ul style="list-style-type: none"> Health infrastructure and supply chains designed to withstand current or future climate risks (e.g., reinforcing electric grids to withstand extreme weather) Health workforce sufficient in number and trained to better detect, investigate, and respond to climate-related health threats <p>For example, in Madagascar, community health volunteers are trained to look for signs of potential disease outbreaks that occur more frequently and outside of normal seasons due to climate change and to use mobile apps to alert authorities for immediate action to contain an outbreak. (MSH)</p>	<p>Adapt to promote the health benefits provided by climate action in non-health sectors</p> <p>This may include:</p> <ul style="list-style-type: none"> Climate resilience measures integrated into non-health sectors (e.g., regenerative agriculture practices adapted for sustainable food production, more city parks and green space to reduce urban heat) Policies to strengthen collaboration between animal and human health sectors based on a One Health approach²⁵ <p>For example, in Senegal, local communities have re-established mangroves in coastal areas to protect their land from flooding as ocean levels rise in order to continue cultivating sufficient healthy foods. (Livelihoods)</p>

Adapted from WHO Department of Environment, Climate Change and Health²⁶

Avenues for Accelerating Local Action

The three areas for local adaptations formulated by WHO illustrate many pathways by which health and well-being can be strengthened against the negative effects of climate change. Locally driven action in any of those areas, however, remains stymied by contextual barriers. To accelerate effective local adaptations for health resilience to climate change, the Collective Minds Climate Council identified four levers of change that align closely with the principles of locally led adaptation adopted at the 2021 UN Climate Change Conference (COP26)²⁷ and together must be in place:



Nutrition program with Friendship NGO in a climate impacted community in Bangladesh. Photo credit: Daouda Diouf, Foundation S

- 1. Putting local communities at the center of decision-making and solutions.** Local communities understand best their specific vulnerabilities, resources, and needs. Their voices and active involvement must be at the center of climate change adaptation planning to ensure that solutions are contextually relevant, maximally effective, and sustainable.²⁸
- 2. Building on and applying evidence of effective local solutions.** The health impacts of climate change are already being felt heavily in LMICs, prompting some to implement climate adaptations. Monitoring, evaluation, and learning functions must be integrated into adaptation efforts to understand, improve, and tailor approaches; identify and scale effective solutions; and mobilize political commitment and financing. We cannot afford to wait for all the data and evidence to be amassed before scaling up climate change adaptation efforts.
- 3. Channeling flexible financing directly to local communities.** By providing grants, loans, and regular budget allocations directly to local communities in LMICs—in amounts ample enough to cover real costs—we can enhance the quantity, quality, and equitable access to adaptation financing at decentralized levels. This approach ensures the agility and flexibility required to effectively address rapid changes in local contexts, constraints, and priorities.
- 4. Fostering an enabling environment for sustained progress on local adaptation.** By incorporating health into the climate dialogue, we can develop comprehensive policies and strategies that safeguard vulnerable populations, enhance health resilience, and achieve sustainable and equitable outcomes. A cross-cutting approach, together with broad recognition and support of local adaptation, can contribute to an enabling environment for addressing climate and health issues at the local level.

Putting Local Communities at the Center

Shifting decision-making power and oversight of adaptation efforts to local stakeholders is critical to sustainable and just outcomes. But this should not mean transferring the entire burden of responsibility for climate adaptation to local communities. Locally led adaptation goes beyond engaging communities in seeking solutions, instead ensuring that communities have “individual and collective agency over defining, prioritizing, designing, monitoring, and evaluating adaptation actions.”²⁹ Solutions need to reflect the differing values across all stakeholders, importantly Indigenous peoples, women, children, and other socially excluded groups (box 2). Furthermore, the scale of expected adaptation needs cannot be met via a project-based approach. Solutions must be embedded and institutionalized within local systems, taking into consideration future risks and climate resilience. The One Health approach could help, if it is locally guided.



Placing communities at the center of adaptation to the effects of climate change means taking full measure of their contribution not only in the identification of priority issues, in the search for local solutions, but above all, in their application on the ground. It is by respecting this philosophy that we can truly strengthen the resilience of our communities.”

Nguissali Turpin, Executive Director ENDA Santé, 2023

Box 2. Centering communities in climate-resilient health systems in Kenya and Malawi

The work of [With My Own Two Hands](#), an organization ensuring access to clean water and climate-smart regenerative agriculture practices in Kenya, is rooted in understanding and addressing community needs with women at the forefront of decision-making. The organization uses community participation and sustainability assessments to hold itself accountable to the communities affected by adaptation solutions and their long-term viability. The assessment considers eight indicators (e.g., poverty index, water stress, resource scarcity, prevalence of undernourishment, out of school rates, social and cultural barriers, geopolitical contexts, and adaptability of stakeholders) to pinpoint priority community needs and identify viable and sustainable solutions. The assessment process is stewarded by local “agents of change,” who include local government officials, community-based organizations, clergy, clan elders, and community leaders.

Suggested Solutions

- **Require representation of and prioritize contributions from local actors—particularly groups often excluded or marginalized—on decision-making bodies that steer climate adaptation interventions**, including funding review and selection committees, climate vulnerability and adaptation assessment processes, and national adaptation plan development.
- **Support actions that strengthen the adaptive management capacities of local actors**, including designing and evaluating climate preparedness and response planning interventions. In South America, for example, [Gran Chaco Proadapt](#) has

established an intensive program for community members to create, understand, and disseminate information on early-warning systems for floods.³⁰

- **Prioritize adaptation approaches that are institutionalized within local systems**, with a focus on sustaining long-term infrastructure, maintaining well-trained human resources, or systematizing processes and programs, rather than short-term, project-based solutions.
- **Build distributive and procedural justice criteria into adaptation planning processes focused on Indigenous peoples, women, and youth** to ensure intentional consideration of how climate and health impacts are distributed across and within communities and to ensure equity in the climate adaptation process, including transparency, representation, and accountability.
- **Strengthen the capacity of the local health workforce to address climate-related health needs** by training more health workers to detect and respond to climate impacts, ensuring their safety and access to the tools and resources needed, and distributing (and redistributing) the workforce to meet the needs of communities. For instance, in Malawi, [Seed Global Health](#) helps health workers meet growing disease burdens due to climate change by expanding training and supporting greater access to quality care, in collaboration with the government's family medicine, midwifery, and community health programs and district hospitals.
- **Engage non-health actors in community health preparedness and response efforts** to mainstream health within climate actions across all sectors and encourage a whole-of-society approach that employs a One Health lens to address cross-cutting priorities.

Distributive justice is considered in terms of how climate impacts are distributed in society, or how adaptation measures and their impacts, both positive and negative, are distributed across society.

Procedural justice refers to the fairness in the process of climate adaptation, considering transparency, accountability, and diversity of decision-making processes. (ESP)

Building and Applying Evidence of Effective Local Solutions

People need greater access to information and data on current approaches and their impact to inform adaptation planning. Evidence on models that have positive health outcomes and can be scaled, as well as experiences that demonstrate implementation challenges (including unintended or harmful effects),³¹ must be documented, shared, and used to continuously improve local adaptation. The need for more data, however, should not delay implementation of solutions. Implementation science approaches should be used so that as adaptations are implemented, refined learning is immediately translated to program and policy improvements. An accessible body of evidence on the effects of climate adaptation efforts on health will also anchor health as a central concern in the broader dialogue on climate change and make the case for more political and financial support.

Suggested Solutions

- **Embed monitoring, evaluation, and learning functions within all adaptation efforts to be led by local implementers**, including measurement frameworks. Provide support in bolstering the capacities of local implementers to routinely collect, analyze, document, and use information. Examples of successful approaches to [bottom-up monitoring and evaluation](#), with local systems feeding into national adaptation reporting, can be found in Kenya, Mali, Morocco, and Senegal.³²
- **Measure the health impacts of adaptation solutions implemented in all sectors, including different impacts on women, the differently abled, and other diverse groups**, to maximize our understanding of health benefits and risks. Readily available data will help identify high-impact adaptations, along with their favorable conditions for replication. Growing evidence of health and other benefits of climate adaptation in turn will amplify the importance of health in the climate dialogue.
- **Include and amplify Indigenous-led approaches to adaptation** in research and evidence-gathering practices and platforms. Indigenous knowledge and practices in land stewardship and biodiversity management can enrich collective progress and, because they are often overlooked, must be intentionally included and elevated in evidence platforms.³³ For instance, the Indigenous-led [Pawanka Fund](#) provides financing for communities advancing the recovery and revitalization of [Indigenous knowledge and practices](#) for climate resilience. The fund incorporates project monitoring and assessment efforts led by Indigenous leaders who share learnings with other Indigenous-led project groups to amplify best practices and strengthen networks for solidarity and mutual support.
- **Prioritize adaptation research in climate-vulnerable areas** by using local research centers and academic institutions that focus on implementation science. They can play a key role in understanding adaptation needs and informing actions to better anticipate and prepare for local climate risks.
- **Leverage learning to adjust solutions in real time** by transferring technologies, tools, and best practices to local actors to rapidly collect, analyze, and apply data to refine approaches continuously during implementation and improve methods for adaptation in ever-changing climate contexts (box 3).
- **Integrate health indicators into free and reliable platforms that track local adaptation approaches across all sectors**, for instance, by building health-specific tags on the [Global Hub on Locally Led Adaption](#), to understand and maximize their health benefits.

Box 3. Combining cross-sectoral data for stronger decision-making in Ethiopia

To better anticipate and respond to diseases worsened by extreme weather events and climatic changes, the Government of Ethiopia has established a Climate-Health Working Group to link climate and health information. For example, the working group has improved malaria response by bringing together timely national data showing climatic conditions and areas favorable for mosquito breeding from the National Meteorological Services with routine malaria surveillance data from the Ministry of Health. These data sets are analyzed together to predict the impact of projected weather patterns on malaria spread for evidence-based decision-making, such as preventative actions like mosquito net distribution or insecticide spraying.



“Today we say to the world leaders, the global financial institutions, and the private sector, come together, and let us put the funds necessary to help the world’s most vulnerable countries adapt, transition, and withstand this climate crisis. Only then, will we make sure that we leave a liveable world for our children. Action cannot be taken some time off in the future, it needs to be taken today, today, today.”

Mia Mottley, Prime Minister of Barbados, June 2023

Channeling Flexible Finance Directly to Local Communities

Accelerating locally led climate adaptation demands greater quality, quantity, and access to financing for local actors when and as needed. Ideas and recommendations for specific mechanisms to mobilize more funds have been put forward, for instance by the [Sharing Strategies initiative](#), and deserve deeper exploration. Devolving financial management to the lowest appropriate level enables more agile management of funding to address true community priorities—including redirecting funds to the most pressing needs during crises—and promotes stronger financial oversight by actors who understand the nuances of complex, contextual risks. National governments play a key role in increasing financing available for communities and in prioritizing health in the national climate dialogue through nationally determined contributions and national adaptation plans. Governments can then direct financing to decentralized bodies through tested mechanisms, such as:

- Direct grants or loans to local actors through enhanced direct access, as with [Antigua and Barbados’s Sustainable Island Resources Framework](#)

- Regular budget allocations to devolved government bodies, like [Kenya’s County Climate Change Fund](#)
- Incorporation in broader government programs, such as [India’s Mahatma Gandhi National Rural Employment Guarantee Scheme](#)³⁴

Government-driven financing, however, cannot currently fulfill the vast needs. The private sector should lead by example, rather than wait for government regulations to force it to act, going beyond funding corporate social responsibility activities to, for instance, examine investment portfolios and asset allocations and commit to net zero operations. The private and, notably, philanthropic sectors have provided minimal financing for climate adaptation. They must step up to fill critical funding gaps and can play an essential role in unlocking financing, especially providing catalytic incubation financing for communities to test and refine effective local solutions and build the evidence to galvanize the significant financing needed from the global community.³⁵

Flexible, unrestricted funds provided directly to communities through grants or concessional financing in response to climate disasters will be increasingly important and should be ample enough from the outset to fully cover real and long-term costs instead of forcing recipients to

“prove” their ability to manage it. The reach of financing can be extended through blended financing arrangements and partnerships among funding actors that reduce both duplicative efforts and, by harmonizing funding requirements, undue burdens on communities in accessing critical financing.

Suggested Solutions

- **Develop and expand financing for communities** by strengthening health national adaptation plans to leverage resources like the Green Climate Fund’s enhanced direct access financing and by making use of the COP27 Loss and Damage Fund for climate-resilient health infrastructure (box 4).
- **Include performance measures to assess health benefits** across all local adaptation investments to demonstrate the impact of synergistic health–climate funding and facilitate more such investments.
- **Reinforce local governments’ and community stakeholders’ efforts to mobilize and rapidly deploy resources** by strengthening budget advocacy and public financial skills.
- **Strengthen the climate literacy of health professionals and health policy leaders** so they can engage meaningfully in developing climate change policy in the health sector.
- **Improve the literacy of finance, planning, energy, and other line ministers in the climate change, health, and economic nexus** to better understand the opportunities for long-term savings and broad protection of multiple sectors through investments in health. For example, introducing [Climate Budget Tagging](#) can help governments monitor and track spending on climate-related activities and mainstream climate change

Box 4. Diverse models to devolve reliable climate adaptation financing to communities

[Kenya’s County Climate Change Fund](#) is an innovative mechanism for shifting adaptation financing to local governments and strengthening local communities’ roles in managing and using funds to increase climate resilience. Each county receives a set contribution of 1–2% of annual local government budgets, which is managed by community-elected representatives, providing predictable funding for community-driven adaptation solutions.

[Namibia’s Environment Investment Fund \(EIF\)](#), one of the first entities to access Green Climate Fund financing through enhanced direct access, implemented a devolved grant scheme that directly financed communal conservancies (self-governed, democratic, community-based organizations managed by member-elected committees) to operationalize community-based natural resource management to strengthen resilience to climate impacts. The EIF demonstrates another successful mechanism for a national fund to funnel financing from international donors to local institutions to lead investment-ready climate adaptation solutions ([IIED](#)).

Through the [Devolved Climate Finance \(DCF\) Alliance](#), governmental and nongovernmental institutions in Kenya, Mali, Senegal, and Tanzania are raising and managing adaptation funds at the local level to strengthen public financial management capacities closer to communities. Although the DCF mechanism is designed to be unique to the sociopolitical context of each community, they share an aim of enabling local actors to fund local climate resilience investments and integrate climate resilience into their long-term planning. For example, [communities and local authorities in Senegal held community forums](#) to collaboratively identify and prioritize adaptation investments. Adaptation committees, comprised of local actors, assessed locally sourced investment proposals by using defined criteria, including the extent to which proposed investments will enhance resilience to climate change; ensure a participatory approach in design, management, and monitoring and evaluation; and meet local development priorities.

in public financing management, an approach both Kenya and Jamaica have adopted.³⁶

- **Leverage blended financing** to rapidly fill critical funding gaps, deploy unrestricted flexible funding quickly in response to climate disasters, and explore solutions with higher financial risks.³⁷
- **Improve tracking of global climate financing for adaptation and report annually at each UN Climate Change Conference** to restore trust in commitments, increase transparency, and ensure accountability to climate-vulnerable communities.³⁸
- **Streamline and simplify requirements to access climate finance** to enhance local actors' ability to tap into available financing. Allow for more flexibility in the use of financing as adaptation needs evolve.

Fostering an Enabling Environment for Sustained Progress

Policy changes are needed at the global, national, and local levels to center communities in climate solutions, guide and incentivize funders to support them, and accelerate and support community adaptation efforts. Because climate change impacts health and well-being through its effects across sectors, policies should foster intersectoral collaboration and political action that are critical to building health resilience. Educating and mobilizing broad coalitions of actors across sectors are essential to galvanizing political commitment and investment in climate adaptation and mitigation in all sectors that strengthen health outcomes while also reinforcing climate resilience in other areas.³⁹ Such coalitions should include civil society, nongovernmental, and community-based organizations as well as global and local policymakers, international donors, private sector and philanthropic actors, and, importantly, communities themselves.



Suggested Solutions

- **Strengthen the voice of health professionals in the climate dialogue at the global, national, and local levels** by requiring representation from the health sector on climate-related planning committees and technical working groups. Similarly, it is of equal importance to enhance the inclusion of climate professionals in the health dialogue across all levels by requiring representation from the climate sector in health-related committees and working groups.
- **Establish health targets in national climate adaptation plans** to underscore the links between health and climate and ensure that health is prioritized. WHO has published guidance on [Quality Criteria for Health National Adaptation Plans](#) to support policy makers and ministries of health in understanding good practices in integrating health targets into national plans.
- **Advocate for the development of local climate change action plans with a health focus** to identify local priorities, enable communities to take the lead, outline response efforts, and increase transparency and accountability across administrative levels (box 5).
- **Leverage national and subnational climate vulnerability and adaptation assessments** to identify communities that are highly vulnerable to climate-related health risks.
- **Support stronger integration of health and climate**, advocating for health in all climate policies and climate in all health policies from the global to the local level.
- **Increase global public goods for climate and health at the national and subnational levels**, including the water, sanitation, transport, electricity, housing, and health care infrastructure and services necessary to meet basic health needs and ensure broader environmental protection. Prioritizing fundamental services and infrastructure is particularly important in communities where livelihoods depend on common resources, such as pastoralism, agriculture, or fishing.

Box 5. Legal frameworks facilitate local climate action

In recognition of the limitations of a typical, top-down approach in national action planning and in line with its commitment to devolve 80% of adaptation funding to the local level, the Government of Nepal established a national [Local Adaptation Plan for Action](#) (LAPA) framework. LAPAs are jointly developed by local government units, community groups, and civil society organizations, and funding is channeled directly from the federal government to community-based groups to implement adaptation activities. LAPAs aim to make adaptation planning a more inclusive, responsive, and flexible process for identifying the most vulnerable people and enabling them to make informed decisions on priority adaptation actions ([IIED](#)).

Focus on the most vulnerable in national adaptation priorities

Although all 20 national action plans reviewed by WHO in 2020 [identified health as a high-priority sector vulnerable to climate change](#), the extent to which health risks were considered and addressed in adaptation planning varied widely. Some countries leveraged their national action plans to specify target groups, largely the most vulnerable geographic or population groups. For example, [Fiji's plan](#) emphasizes actions that promote benefits to women and people living in rural areas, with lower incomes, or from other disadvantaged groups. One of the ways the Fijian government advances this goal is by setting standards for collaboration with disadvantaged communities in knowledge production, such as working with local farmers to understand and amplify climate-adaptive farming practices.



The choices and actions implemented in this decade have impacts now and for thousands of years (high confidence)."

IPCC Climate Change Synthesis Report, 2023



Photo credit: MSH

CALL TO ACTION

If we fail to address climate change and its impact on health now—and especially on the health of the most climate-vulnerable—decades of progress toward improved health outcomes and universal health coverage will be reversed.


A health-centered approach to climate action is a global opportunity to invest in fundamental human rights and health and to move us toward well-being for all. The threat to global health posed by climate change requires a holistic approach to ensure the world is better prepared for the next global health emergency. Policymakers have already moved on from the COVID-19 pandemic, reducing investments in resilient health systems

and returning to a pre-pandemic approach of sector-specific policymaking, leaving communities vulnerable to climate-related health emergencies. Unless this trend is reversed, the world will find itself ill-prepared to confront the next health emergency.

To be effective, global efforts to confront climate change must support local adaptations to the health impacts of climate change. Global policymakers, leaders, and private sector actors must seize the opportunity to do so by pursuing holistic, locally driven solutions, ensuring that local communities have the financial, institutional, and technical resources to design and implement local community adaptation measures that save lives and build systemic resiliency.


We call on the global community to join us in acting at speed and scale, especially in the following actions:

Prioritize local solutions driven by communities.




The climate change crisis is a global health emergency of monumental proportions that defies business-as-usual approaches. Policymakers and funders must reflect this urgency and rapidly scale-up efforts to develop and fund innovative local approaches to climate adaptation. We must leverage current data from existing efforts to fuel continuous learning and improvement as we work toward solutions. We cannot delay action, waiting for the evidence to mount; the time for action is now.

Support a resilient local health workforce and infrastructure.




To combat present and future climate-related shocks, we must have enough skilled health workers to meet growing demands, and they must be equipped and fully resourced with climate-resilient health systems, technology, and know-how. Only with capable, qualified, and supported health workers, including community health workers, can we mount an effective response and ensure sustainable health outcomes. Embracing this challenge brings not only economic dividends but also greater equity among diverse communities.

Break silos for local action with lasting impact.



Climate change's pervasive impact requires policymakers to transcend traditional sector-specific interventions and embrace a comprehensive approach that recognizes the relationships between sectors. Global, multisectoral agreements to increase accountability of high emitters, shift ownership to local levels, and promote all-encompassing policies will catalyze and sustain action.

Catalyze flexible financing to local communities.



Policymakers and funders—with a catalytic role for the private sector, including philanthropy—must devote much more funding for local adaptations to the health impacts of climate change and make it directly available to communities, particularly the most climate-vulnerable, to build health resilience tailored to their unique contexts. More and direct funding will spark local innovation and new approaches that can be scaled up, exponentially increasing the impact of initial investments.

ABOUT THE PARTNERS

Foundation S, the philanthropic organization of Sanofi, was launched in May 2022 to improve the lives of vulnerable populations by catalyzing community-based solutions and expanding access to medicines. To create healthier futures for generations to come, Foundation S is committed to four key areas: childhood cancer, climate change and its impact on health, humanitarian aid, and neglected tropical diseases.

Foundation S operates as a “think and do tank.” Through the “think tank,” Foundation S works with global experts and thought leaders to identify solutions to global health challenges that impact LMICs. Meanwhile, through its “do tank,” the Foundation addresses those challenges with its partners through collective action. To advance the urgent need for action and attention to the impact climate change has on communities and public health in some of the most vulnerable countries around the world, in 2023, Foundation S convened the Collective Minds Climate Council. Members of the Climate Council serve as advisors and co-advocates in the movement to accelerate and raise awareness about the impact of climate change on health and to accelerate policy change and global financial support for climate adaptation in countries most at risk.

The Africa-Europe Foundation (AEF) is an independent platform for multistakeholder dialogue, frank debate and strategic analysis, working to strengthen the partnership between Africa and Europe. During the inception phase of AEF (2021-2022), multistakeholder Strategy Groups were set up and mandated to offer a safe space for exchange on complex issues of Africa-Europe relations at the nexus of climate and development. These Strategy Groups form the backbone of AEF’s work to catalyse

innovative partnerships and unlock untapped areas of cross-continental cooperation, from the future of health and the reform of financial systems to energy, agri-food and blue economy, with investment in youth leadership as a cross-cutting priority. AEF’s #AUEUTracker aims to complement existing efforts to monitor and facilitate the implementation of political and financial commitments of the cross-continental partnership; and through its strategic research and outreach programme AEF is reaffirming Africa-Europe relationship at the multilateral level. As a co-founder of the Collective Minds Council, AEF is dedicated to ensuring health is at a central pillar of a strengthened Africa-Europe partnership and mainstreamed as part of the global action on climate change.

Management Sciences for Health is a mission-driven, global nonprofit organization that has helped countries adapt science-based solutions to build and sustain strong, resilient health systems that effectively and efficiently deliver high-quality, people-centered health services. Since 1971, MSH has collaborated with policymakers, health professionals, communities, private-sector entities, and other development partners in over 150 countries, with a special emphasis on securing quality, accessible, and affordable health services for the most vulnerable populations. MSH has focused special attention on strengthening health systems in fragile contexts and reinforcing their resilience to shocks, public health emergencies, and trends, such as climate change.

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Authors: The Collective Minds Climate Council would like to give special thanks to the lead writers of the report: Elke Konings (MSH), Eliza Love (MSH), and Christie Roberts (MSH).

Designers: Lestari Hupudio (MSH) and Lee-Arng Chang (MSH).

REFERENCES

- 1 Tedros Adhanom Ghebreyesus (@DrTedros), Twitter, 2 Nov 2022.
- 2 "Coronavirus, Climate Change, and the Environment [C-CHANGE]: A Conversation on COVID-19 with Dr. Aaron Bernstein, Former Director of Harvard Chan C-CHANGE," Harvard TH Chan School of Public Health, Center for Climate, Health, and the Global Environment (undated), <https://www.hsph.harvard.edu/c-change/subtopics/coronavirus-and-climate-change/>.
- 3 A Prüss-Ustün, J Wolf, C Corvalán, R Bos, M Neira. *Preventing Disease through Health Environments: A global assessment of the burden of disease from environmental risks* (Geneva: WHO, 2016), <https://www.who.int/publications/i/item/9789241565196>.
- 4 "Air pollution: Impact," WHO webpage, accessed July 2023, https://www.who.int/health-topics/air-pollution#tab=tab_2.
- 5 "Climate change and health," WHO factsheet, last modified 30 October 2021, <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>.
- 6 Intergovernmental Panel on Climate Change (IPCC). *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Hans-Otto Pörtner, Debra C Roberts, et al [eds]). (Cambridge, UK and New York, NY, USA: Cambridge University Press, 2022). doi:10.1017/9781009325844.
- 7 Yibeltal Assefa, Charles F Gilks, Remco van de Pas, Simon Reid, Dereje Gedle Gete, Wim Van Damme. "Reimagining global health systems for the 21st century: lessons from the COVID-19 pandemic," *BMJ Global Health*, (2021): 6:e004882. <http://dx.doi.org/10.1136/bmjgh-2020-004882>.
- 8 Nick Watts, W. Neil Adger, Paolo Agnolucci, Jason Blackstock, Peter Byass, et al. "Health and climate change: policy responses to protect public health," *The Lancet*, vol 386 no 10006 (22 June 2015):P1861-1914. doi: 10.1016/S0140-6736(15)60854-6.
- 9 Wenwu Zhao, Caichun Yin, Ting Hua, Michael E. Meadows, Yan Li, et al. "Achieving the Sustainable Development Goals in the post-pandemic era," *Humanities and Social Sciences Communications*; 9:258 (2022). doi: 10.1057/s41599-022-01283-5.
- 10 Stéphane Hallegatte, Brian Walsh. "COVID, climate change and poverty: Avoiding the worst impacts," WHO Development and a Changing Climate Blog, 7 October 2020. <https://blogs.worldbank.org/climatechange/covid-climate-change-and-poverty-avoiding-worst-impacts>.
- 11 IPCC. "Summary for Policymakers," *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Core Writing Team, H Lee and J Romero, eds.) (Geneva, Switzerland: IPCC, 2023). pp 1-34. doi: 10.59327/IPCC/AR6-9789291691647.001.
- 12 Nick Watts et al, 2015. WHO, "Climate change and health," 2021. Also, Rhea J Rocque, Caroline Beaudoin, Ruth Ndjaboue, Laura Cameron, Louann Poirier-Bergeron, et al. "Health effects of climate change: an overview of systematic reviews," *BMJ Open*, 11 (2021):e046333. doi: 10.1136/bmjopen-2020-046333. WHO. *COP26 special report on climate change and health: the health argument for climate action*, 2021. <https://www.who.int/publications/i/item/9789240036727>.
- 13 Wanjohi Kabukuru. "UN: Africa, already suffering from warming, will see worse," AP News, 2 March 2022. <https://apnews.com/article/climate-change-impacts-africa-f3ce8833ec7620d4d7fbca014981bf63>. Also, "Climate and weather related disasters surge five-fold over 50 years, but early warnings save lives - WMO report," UN News, 1 September 2021. <https://news.un.org/en/story/2021/09/1098662>.
- 14 Nick Watts, Markus Amann, Nigel Arnell, Sonja Ayeb-Karlsson, Jessica Beagley, et al. "The 2020 report of The Lancet Countdown on health and climate change: responding to converging crises," *The Lancet*, vol 397, no 10269 (9 Jan 2021):129-170. doi: 10.1016/S0140-6736(20)32290-X. Also, Organisation for Economic Cooperation and Development (OECD). *Aggregate Trends of Climate Finance Provided and Mobilised by Developed Countries in 2013-2020, Climate Finance and the USD 100 Billion Goal*. Paris, France: OECD Publishing, 2022. https://read.oecd-ilibrary.org/finance-and-investment/aggregate-trends-of-climate-finance-provided-and-mobilised-by-developed-countries-in-2013-2020_d28f963c-en.

- 15 The 2022 Bridgetown Initiative, "Urgent and Decisive Action Required for an Unprecedented Combination of Crises: The 2022 Bridgetown Initiative for the Reform of the Global Financial Architecture," webpage of the Office of the Prime Minister of Barbados, Sept 2023. <https://www.foreign.gov.bb/the-2022-barbados-agenda/>
- 16 IPCC, *Climate Change 2022: Impacts, Adaptation and Vulnerability*, cited in UN Environment Programme (UNEP), *Adaptation Gap Report 2022: Too Little, Too Slow—Climate adaptation failure puts world at risk*, Nairobi, Kenya, 2022.
- 17 Marina Romanello, et al. "The 2022 report of the Lancet Countdown on health and climate change: health at the mercy of fossil fuels," *The Lancet*, vol 400, no 10363 (5 Nov 2022):1619-1654. [https://doi.org/10.1016/S0140-6736\(22\)01540-9](https://doi.org/10.1016/S0140-6736(22)01540-9).
- 18 UNEP. *Adaptation Gap Report 2022: Too Little, Too Slow—Climate adaptation failure puts world at risk*, Nairobi, Kenya, 2022.
- 19 Tilly Alcayna, Devin O'Donnell, Sabrina Chandaria. "How much bilateral and multilateral climate adaptation finance is targeting the health sector? A scoping review of official development assistance data between 2009-2019," *PLOS Glob Public Health* 3(6): e0001493. Jun 2023. <https://doi.org/10.1371/journal.pgph.0001493>.
- 20 Naomi Beyeler, Marco Schäfer. UCSF Institute for Global Health Sciences and Open Consultants. *Improving investments in climate change and global health: Barriers to and opportunities for synergistic funding*. San Francisco, USA, 2023.
- 21 Marek Soanes, Neha Rai, Paul Steele, Clare Shakya, James MacGregor. *Delivering real change: getting international climate finance to the local level*, London, UK: International Institute for Environment and Development (IIED) Working Paper, 2017.
- 22 UNEP, 2022. Also, Marek Soanes, et al, 2017.
- 23 WHO, 2021 *WHO Health and Climate Change Global Survey Report: Tracking Global Progress*, Geneva: WHO, 2021. <https://www.who.int/publications/i/item/9789240038509>.
- 24 Pauline F D Scheelbeek, Alan D Dangour, Stephanie Jarmul, Grace Turner, Anne J Sietsma, et al. "The effects on public health of climate change adaptation responses: a systematic review of evidence from low- and middle-income countries," *Environmental Research Letters*, vol 16, no 7 (2021):16:073001. doi: 10.1088/1748-9326/ac092c. Also, Amanda Glassman, Janeen Madan Keller, Julia Kaufman, Ian Mitchell. "A Dual Evidence Agenda: Delivering Greater Impact for Development and Global Challenges," Center for Global Development, Mar 2023. <https://www.cgdev.org/sites/default/files/dual-evidence-agenda-delivering-greater-impact-development-and-global-challenges.pdf>.
- 25 One Health is "an integrated, unifying approach that aims to sustainably balance and optimize the health of humans, animals, plants and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent. The approach mobilizes multiple sectors, disciplines, and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems..." Taken from: *One Health Joint Plan of Action (2022-2026) Working Together for the Health of Humans, Animals, Plants, and the Environment*. Rome: Food and Agriculture Organization of the United Nations, UNEP, WHO, and World Organisation for Animal Health, 2022. <https://doi.org/10.4060/cc2289en>.
- 26 Diarmid Campbell-Lendrum, Tara Neville, Christian Schweizer, Maria Neira. "Climate change and health: three grand challenges," *Nature Medicine*, vol 29, no 7 (Jul 2023):1631-1638. doi: 10.1038/s41591-023-02438-w.
- 27 "Principles for locally led adaptation," IIED, accessed 9 Aug 2023, <https://www.iied.org/principles-for-locally-led-adaptation>.
- 28 Kiyomi de Zoysa, Tamara Coger, Nisha Krishnan. "Can the Global Goal on Adaptation Be Locally Led?" World Resources Institute, 22 Jul 2022, <https://www.wri.org/technical-perspectives/can-global-goal-adaptation-be-locally-led>.
- 29 Tamara Coger, Ayesha Dinshaw, Stefanie Tye, Bradley Kratzer, May Thazin Aung, et al. "Locally Led Adaptation: From Principles to Practice," Working Paper. Washington, DC: World Resources Institute, 2022. <https://doi.org/10.46830/wriwp.21.00142>.

- 30 "Communities in South America's Gran Chaco Are Organizing to Withstand Climate Change," World Resources Institute, 26 Apr 2021, <https://www.wri.org/insights/gran-chaco-communities-build-climate-resilience>.
- 31 Siri Eriksen, E Lisa F Schipper, Morgan Scoville-Simonds, Katharine Vincent, Hans Nicolai Adam, et al. "Adaptation interventions and their effect on vulnerability in developing countries: Help, hindrance or irrelevance?" *World Development*, vol 141 (May 2021):105383. doi: 10.1016/j.worlddev.2020.105383
- 32 Neha Rai, Simon Anderson. *How bottom-up M&E insights can inform national adaptation planning and reporting*. London, UK: IIED, 2018. <https://www.iied.org/sites/default/files/pdfs/migrate/17488IIED.pdf>
- 33 "How Indigenous Peoples Enrich Climate Action," UN Climate Change, 9 Aug 2022. <https://unfccc.int/news/how-indigenous-peoples-enrich-climate-action>
- 34 Dave Steinbach, Aditya V Bahadur, Claire Shakya, Mary Thazin Aung, Christa Joy Burton, et al. *The good climate finance guide for investing in locally led adaptation*, London, UK: IIED, 2022. <https://www.iied.org/sites/default/files/pdfs/2022-11/21231IIED.pdf>.
- 35 IIED, "Principles for locally led adaptation.
- 36 "Is Climate Finance Supporting Frontline Communities? Most Government's Don't Know," World Resources Institute, 20 Jul 2021. <https://www.wri.org/insights/climate-finance-frontline-communities>.
- 37 Suzanne Cox, Adam Sabow, Tom Hellstern, Kimberly Henderson, Tracy Nowski, et al, "It's time for philanthropy to step up the fight against climate change," McKinsey & Company, 20 Oct 2021, <https://www.mckinsey.com/capabilities/sustainability/our-insights/its-time-for-philanthropy-to-step-up-the-fight-against-climate-change>.
- 38 Tamara Coger, Ayesha Dinshaw, Nisha Krishnan, Brandon Pytel. "Is Climate Finance Supporting Frontline Communities? Most Governments Don't Know," World Resources Institute, 20 July 2021, <https://www.wri.org/insights/climate-finance-frontline-communities>
- 39 Marina Romanello, et al, 2022.

